DISSERTATION

INEQUALITY AS A CAUSE OF MACRO-INSTABILITY AND PRODUCTIVE INEFFICIENCY

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ABSTRACT

INEQUALITY AS A CAUSE OF MACRO-INSTABILITY AND PRODUCTIVE INEFFICIENCY

These essays will examine the impact of inequality from both macro and micro perspectives. The first issue to be raised will be the contribution of inequality to macroeconomic instability. In the third chapter the focus will expand to determine whether an optimal level of inequality can be found. Much of the examination will be informed by principles outlined in the Progressive Utilization Theory (PROUT) developed by the philosopher P. R. Sarkar.

As this dissertation was written during the recovery from the Great Recession, a timely controversy is addressed in the first chapter – whether growing inequality contributes to economic instability. Arguments for and against the proposition are critically examined in detail. It is concluded that the accumulated weight of the arguments favor the position that inequality can indeed help destabilize economies.

In the second chapter econometric evidence is presented to show that high inequality contributes to the severity of economic downturns, both in terms of GDP declines and in consumption losses. Attention is also given to the impact of inequality in contributing to the global crisis leading to the Great Recession. While the initial evidence presented here cannot be considered conclusive in demonstrating a causal link between inequality and that specific crisis, it is shown that rising inequality was present in most of the 15 countries included in the study which were suffering recessions.

An attempt to define an efficient limit to inequality will be the focus of the third chapter. The discussion will extend from the PROUT principle that any inequality that is accepted by society is only justified to the extent that it provides incentives for greater service to society by those receiving more than others. Any amount of income or in-kind amenities provided to a person that is beyond the

minimum requirements by the standards of that society should not exceed the value of the extra services coaxed from that person by the extra incentives. A humanistic model of motivation for productivity is developed that suggests that people are productive for a variety of reasons besides material rewards. This is intended to place the need for incentives, and by extension inequality, in a perspective that suggests wide inequality is unnecessary and economically inefficient. Diagramatic analysis that introduces the Sarkarian Individual Productivity Curve demonstrates reasonable limits to inequality.

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Introduction

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It is unusual for a video focused on something as dry as a graph to generate interest on YouTube. Nonetheless, a graphic depiction of inequality in the U.S. was so surprising that it went viral (Light, 2013). The video was inspired by the results of a poll asking people what they thought wealth distribution in the U.S. was like, and what they thought it should be ideally. Most respondents were way off with their estimates, for example guessing that the top 20% own about 60% of all wealth, rather than the true 85%. However, 92% of the 5000 respondents, across regions and party affiliations, thought that an ideal distribution would be far more equal than even their overly optimistic estimates of the reality. Nonetheless, the bottom 40% possess nearly no wealth at 0.2% of the nation's total, and many have negative net worth. In the slow recovery from the Great Recession close to 15% are in poverty.

Although almost no one considers such inequality healthy it persists and is generally tolerated. It may be because people see no realistic alternative. Also, individuals may not recognize how the long but slow trend of rising inequality has impacted them personally. Even economists who track the trend are not united on what harms may come from it, or even if there is any harm at all. If there is a case to be made for a more egalitarian society, potential harm from excessive inequality will have to be demonstrated in a coherent theory and documented in fact. This dissertation is an attempt to further such an effort.

The first chapter confronts perhaps the most central economic issue at the time of this writing, the cause of the global financial crisis of 2008. The crisis led to severe recessions in many countries, followed by slow and difficult recoveries. Since the crisis was preceded by a trend of rising inequality in the U.S. and other countries a literature has formed questioning whether inequality was a contributing

cause, and more generally whether inequality promotes macroeconomic instability. I critically explore important examples of that literature and categorize them according whether the link between inequality and instability is supported, and the mechanisms proposed for the transmission.

In the second chapter I strive for a more specific and definitive conclusion. I find empirical evidence to test whether excessive inequality can worsen the severity of economic downturns, as is claimed in some PROUT literature. Recessions and consumption drops are tracked in 25 countries over a century. Econometric results are robust, showing a strong link between inequality determined by various measures and increased severity of economic calamities. In a preliminary review of countries in recession as a result of the 2008 global financial crisis, it was found that most of them also experienced increased inequality. This raises the possibility of future fruitful research in the connection between inequality and specifically the recent crisis.

In Chapter 3 a Proutist theoretical framework will be used to demonstrate that an ideal distribution can be defined from both economic and ethical perspectives. Relevant aspects of PROUT theory are introduced, and a simple mathematical model of a Proutist distribution is compared with other distributions more widely recognized in economics. I then explore elements that promote human productivity in a healthy society, and where financial incentives fit in. That discussion will lead to a Proutist model for determining what degree of income inequality is economically and ethically justified.

1 Inequality and Macroeconomic Instability

Until recently the question of whether inequality contributes to macroeconomic instability was rarely considered. There was no place for it in mainstream economic theory. Even immediately after the global financial crisis hit and the Great Recession took hold there were few voices calling attention to a possible link. The noted authority on inequality A. B. Atkinson and his student Salvatore Morelli (p. 42) write in their study of the subject, "The idea that inequality is a cause of economic crises may appear an outlandish suggestion." They note that there is not a word about inequality in recognized mainstream studies of financial crises such as Reinhart and Rogoff (2009) or even in a well-known account of the recent crisis from Paul Krugman (2009), who has written eloquently of the dangers of growing inequality in other contexts.

But things have changed. The possibility of a link had gained such attention that Krugman felt compelled in subsequent works to give the idea at least skeptical attention (Krugman, 2012, p. 83), and seems to have gradually come around to accepting the notion (Krugman, 2013). President Obama (2013) felt confident enough about the idea to promote it as an accepted fact in a major policy speech about inequality. It is certainly evidence of widespread concern over inequality that a thick scholarly book about it has become an unlikely best-seller. The author Thomas Piketty (2014) gave the link to crisis brief treatment, but his conclusion is unequivocal : "In my view, there is no doubt that the increase of inequality in the United States contributed to the nation's financial instability."

The 2008 financial crisis, arriving after a decades-long trend of increasing inequality, did bring the issue new attention. The apparent link has been presented starkly in data assembled by Pickety and Saez (2003), updated below. Their frequently reproduced diagram of top income shares since the early 20th century shows pre-crisis levels of income concentration at the top reaching heights that were

approached only once before in the past century, immediately before the 1929 stock market crash foreshadowing the Great Depression. The implication is clear.

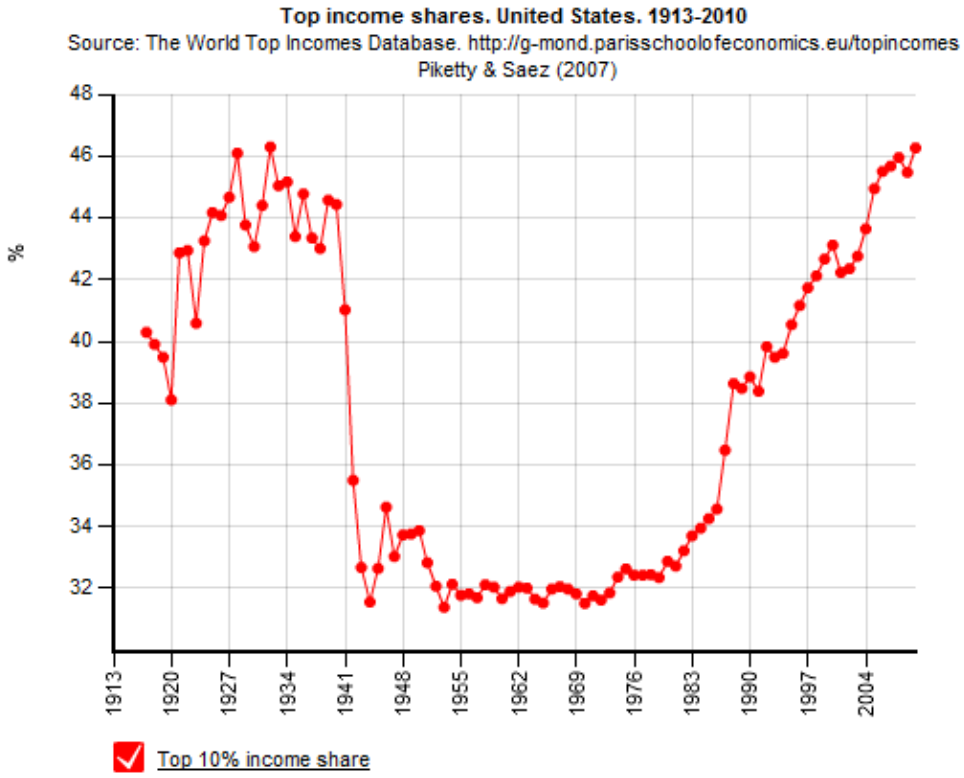

Figure 1.1 U.S. top income shares over the past century

However, to establish a link between inequality and macro-instability it is necessary to identify the mechanism by which the economy is affected. Several attempts have been made from differing theoretical frameworks to identify these mechanisms, and there have been attempts to refute any link as well. In the following chapter I will attempt to categorize, explain, and evaluate these efforts.

The range of conclusions to research on inequality and instability may be thought of as something of a continuum, described as follows:

1. There is no connection.
2. The connection is not clear, or unsure.

3. They are problems with a common cause. They occur simultaneously, but one is not a cause for the other.
4. Inequality is central to the onset of financial crises and resulting recessions.

The research reviewed here will be further categorized by economic school of thought where it may be helpful to understand how conclusions were derived. These approaches include neo-classical/new classical, Keynesian, post-Keynesian/Minskian, Marxist, and Proutist. It is hoped that insights can be gathered from the different strands of research to arrive at a holistic view of how inequality may affect instability.

Serious flaws were found in all of the research arguing against a causal link between inequality and instability. It was concluded that most of the researchers arguing for the causal link presented the stronger case.

1.1 No connection

We begin our attempt to categorize views with those who conclude there is no connection between inequality and instability. As noted above, much, if not most, of the economics profession will be in this category. We take omission of any discussion of the topic as evidence.

Researchers Michael Bordo and Christopher Meissner (2012) have taken the issue of inequality and financial crisis head on. Their paper is a response to two influential works that claim to find a causal link between inequality and instability, the book *Fault Lines* by Raghuram Rajan (2010) and a paper by M. Kumhof and Romain Rancière (2013). (These works are discussed below in sections 1.5 and 1.6.) Although the conclusions in these papers stem from very different premises, they are similar in that both cite the increased use of credit by lower income groups as an important cause for the recent crises. Kumhoff and Rancière also seek to generalize the role of inequality in promoting instability, finding it to be a factor leading to the Great Depression as well. Bordo and Meissner challenge the inequality link with historical evidence reaching back to 1920. Their informal observations note that although there are

prominent examples where increasing inequality was present, notably the U.S. before the Great Depression and the Great Recession, they also cite several examples where credit growth leading to banking crises were not associated with rising inequality. They conclude that the presence of growing inequality before the financial collapse of 2007 was historically anomalous, and that there is no evidence to support the view that inequality is historically a major contributor to financial crises.

Bordo and Meissner note the novelty of the argument that inequality causes macro-instability, as the issue has rarely come up in mainstream literature. They also cite previous empirical studies, especially that of Borio and White (Borio & White, 2004), who present a Minsky-like argument that increased financial instability in the low inflation era since the 1980s is primarily due to financial deregulation combined with lender overconfidence. Bordo and Meissner present these explanations as more plausible alternatives to the hypothesis that inequality is involved.

In econometric analysis the authors first find strong links between credit growth and banking crises in 14 countries since 1880. Having established the importance of credit growth in financial instability, they test whether credit growth has any relationship to changes in income concentration. Using top income shares as the independent variable along with other controls in various modifications to their model they fail to reject the null hypothesis of no relationship between growing inequality and credit growth. Variables that they find to be consistently statistically significant with respect to credit growth are GDP growth and short-term interest rates.[1]

The authors further cite historical "anecdotal" evidence to support the statistical findings. The aim is to show that income concentration accompanying the credit booms of the 1920s and 2000s are coincidental rather than causal. A major point made is that while the 1920s were a period of rising top

[1] Note that Rajan does not make claims of a consistent pattern linking inequality with credit growth. Rather it is a result of political decisions and other circumstances unique to the early 2000s.

incomes, the rising inequality "does not seem to be associated with any stagnation in real wages for the working class."[2] Nonetheless, credit greatly expanded, most of it in mortgages although consumer credit doubled as well. To explain the housing boom of the 1920s the authors point to a study by Eichengreen and Mitchener (2004, as cited in Bordo and Meissner, 2012) which cited increased competition between lenders, monetary stability and improved housing quality as causes. They further cite White (2009, as cited in Bordo and Meissner, 2012) to include low interest rates and economic growth among the causes, along with less benign culprits including newly-invented mortgage securitization, weakened lender supervision, lower lending standards, and outright corruption, for example bribes to Florida politicians by developers in return for low supervision. Bordo and Meissner conclude that the boom was supply-driven, not demand driven, as would be necessary in order to be consistent with Rajan and Kumhof-Rancière. He further cites White's strong conclusion that the housing bust had little to do with bank crises of the era.

In short, Bordo and Meissner aim to counter the reasoning of both Rajan and Kumhof-Rancière. They write, "There is simply no evidence of a political conspiracy to increase home-owning in the 1920s in the USA in order to win votes. Nor is there any evidence that the demand for credit rose in order to make up for lost income and lagging consumption." Rather, they assert the weight of the evidence supports the Borio and White view that competition in the financial sector and accommodative monetary policy drove the credit boom.

Evaluation

Perhaps the biggest problem with this study is that it is measuring the wrong thing. The econometrics seem sound, both technically and intuitively. They show that credit booms are linked with

[2] I refute this below. But even inequality from the top is consistent with views discussed in this paper that explain how inequality coming from the top by itself could be sufficient to cause crises

banking crises, but that historically inequality is not necessarily the cause of credit booms. (This does not refute that inequality can be associated with credit booms in important cases, as with the recent global crisis.) However, we are most concerned with any kind of financial crisis because of the impact it may bring to the rest of the economy – most prominently a severe downturn along with its accompanying human suffering. Indeed, if a financial crash or bank failures have little impact on the wider economy one would be hard pressed to characterize them as crises. The damage to the wider economy is the implied motivation behind Rajan's work, and it is even more explicitly the primary concern in Kumhof/ Rancière where the aim is to explain what led to the most severe economic crises of the past century, the Great Depression and the Great Recession. Furthermore, an important outcome of the Kumhof/ Rancière model is a decline in output. Bordo and Meissner (p. 11) define banking crises as episodes that "involve systemic panics, widespread failures in the banking industry, and large losses to the capital base of the domestic banking system." One might assume a number of these episodes are associated with major output declines, but that is not specified as a requirement for inclusion in the study, nor is it even mentioned.

As I demonstrate below in the empirical portion of this study, in regression results bank crises are only weakly linked historically with the most severe economic downturns. To illustrate that more informally, of the 99 instances of GDP drops assembled for my study 30 were associated with bank crises. Of those, only 12 out of the 30 met the standard of a severe downturn as defined as at least a 5 percent GDP decline. For comparison, of the 99 recessions 29 occurred when severe inequality was present, measured as a Gini score of 40 or more. Eighteen of the 29 (62 %) resulted in severe recessions.

Bordo and Meissner are responding simultaneously to two studies linking inequality with economic instability, even though the two studies are derived from very different premises. Indeed, the authors write of Kumhof and Rancière's work as "…complementing the Rajan hypothesis…" in spite of important differences (Bordo & Meissner, p. 2). He further conflates the perspectives by referring to

them unitedly throughout the paper as "RKR" for the Rajan/ Kumhof/ Rancière frameworks. Arguably, the studies are similar in that both emphasize unsustainable debt. However, the mechanism for transmission from inequality to the credit boom is entirely different. Rajan claims the growth in mortgage credit resulted from political interference in the home mortgage market. In Kumhof and Rancière's model the increased leverage in the economy comes both from increased lending by the rich looking for returns on their growing savings and more borrowing by workers seeking to maintain consumption with lower wages due to lost bargaining power. The argument Bordo and Meissner present would be strengthened by greater attention to these differences.

Bordo and Meissner's work misses especially as a response to Rajan in yet another way. Rajan does not develop a case study intended to demonstrate principles that can be generalized to other crises. Rather he describes specific circumstances that explain the crisis beginning in 2007 and proposes lessons for the future. Bordo and Meissner aim to refute Rajan's thesis when they say there was no "political conspiracy" to increase home lending in the 1920s, but Rajan never claimed that. The search for alternative explanations for the credit boom of the 1920s is more applicable to Kumhof and Rancière who do attempt to create a generally applicable DSGE model. While the model is calibrated to the facts of rising inequality and indebtedness in the decades preceding the 2008 U.S. crisis, Kumhof and Rancière write of the similarity between 1929 and 2007.

There is a final weakness in the Bordo/Meissner argument to address. In order to refute the applicability of circumstances preceding the recent crisis to other financial crises, the authors claim that although inequality grew from the top during the 1920s, it was an era of widely growing incomes, not wage decline or stagnation (Bordo & Meissner, p. 17). They do not cite any source for their claim. However that is not the case according to any evidence that I can find. Below is a chart of average hourly earnings from a survey in the Statistical Abstract of the United States (1929, p. 350). While there is a slight increase toward the end of the decade after a steep drop at the beginning, the pattern shows

more stagnation than remarkable growth. The next graph derived from average incomes reported in the World Top Incomes Database provides more recent data and a more long-term perspective. It confirms the 1929 data. The 1920s do not show significant wage increases, especially compared with the postwar decades of the fifties and sixties, or the late 1990s. My observations are confirmed by a detailed study of income distribution in the 1920s by Holt (1977) who writes, "…the prosperity of the twenties was a prosperity of the few but not of the many."

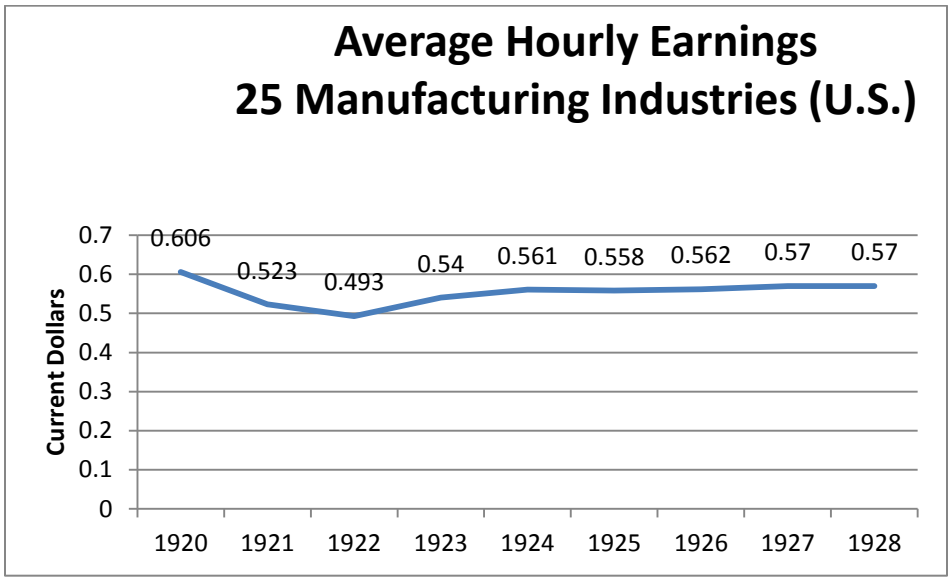

Figure 1.2 Average hourly earnings 1920s (U.S.) (Source: Statistical Abstract of the United States)

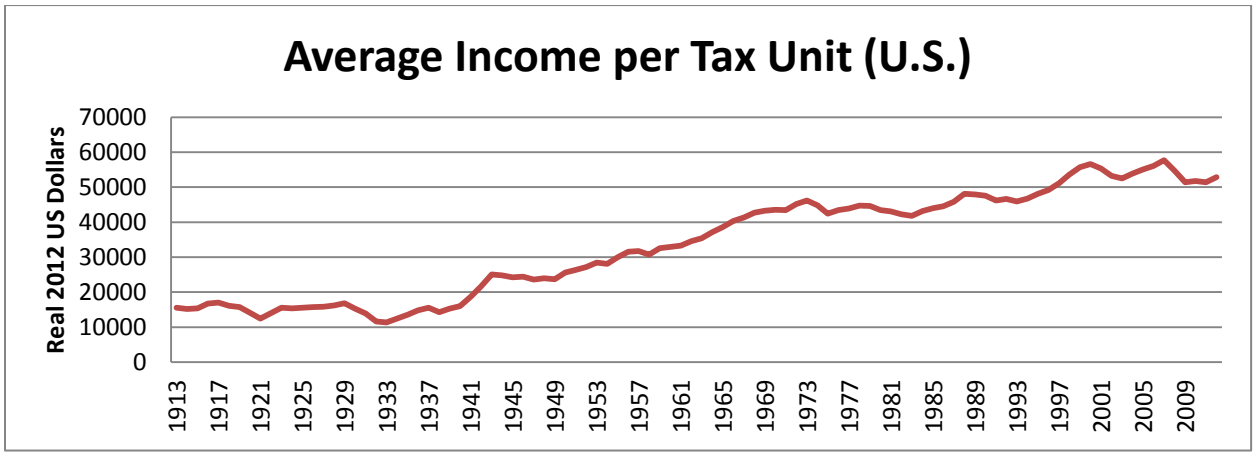

Figure 1.3 Average income U.S., past century (Source: World Top Incomes Database)

Clearly, inequality in the period preceding the Great Depression came not only from the top, but was worsened by stagnant middle wages as well. The resemblance to the period before the recent crisis remains unmistakably and eerily close.

Bordo and Meissner attempt to refute the notion that inequality is a major cause for economic calamities. Their study responds to widespread discussions on the question not only among economists, but in the popular media as well. Specifically, they attempt to refute the conclusions of Rajan and Kumhof/ Rancière. I have maintained that since they have limited their statistical inquiry to the link between inequality and credit expansion leading to bank crises, they have failed to get to the heart of arguments linking inequality with great economic crises, which will be identified by large drops in output. While credit expansion following a rise in inequality is an important part of the Kumhof/ Rancière model, the authors' criticism is less valid against Rajan's conclusions since he never intended his work to be more than a cautionary explanation of events specific to the period preceding the Great Recession. (The details of both the Rajan and Kumhof/ Rancière studies are addressed elsewhere in this paper.)

The exaggeration of the improvement in worker wages intended to bolster their argument that inequality had little to do with the credit boom of the time actually weakens it. It was shown that the claim of rising employee incomes in the 1920s is false; inequality intensified from the top due to rising incomes for the wealthy but also from below with stagnant worker wages. That is consistent with the Kumhof/ Rancière model where worker bargaining power is weak; its prediction of a crisis did play out at the end of the 1920s.

1.2 Unclear linkage

A major cause for uncertainty regarding the connection between inequality and instability is the ambiguity of the results of empirical studies thus far. As already mentioned, interest in the question has increased since the most serious economic crises of the past century in the U.S., the Great Depression

and the Great Recession, were both preceded by significant increases in inequality. However, studies including more crises in more counties have been less conclusive. As we have seen, Bordo and Meisner (2012) reject the connection based on their research.

A. B. Atkinson and Salvatore Morelli (2011) have undertaken the most extensive study available at this writing devoted entirely to the relationship between economic crises and inequality. The 70 page paper was written in response to interest in the topic and the proliferation of literature seeking to find possible connections. The paper reviews some of this literature, but its primary contributions are in its empirical components, case studies of selected crises along with a thorough historical survey of economic crises and their connection with inequality.

The case studies show a mixed picture. For example, in the Scandinavian crises of the early 1990's, Sweden's banking crisis was preceded by rising inequality, but distribution remained stable before the crises in Norway and Finland. In the four years preceding the East Asian crisis of 1997 inequality rose in Malaysia, but not to levels that were unusual for that country. Inequality also rose before the crisis in Indonesia, but not in Singapore. However, inequality rose sharply in several of the East Asian countries after their crises.

The authors next turn their attention to their database of inequality trends covering 25 countries over a period of 100 years. In addition, they amassed records of banking crises, GDP disasters, and consumption collapses over the same period. Adopting the view of previous researchers into economic crises (Reinhart & Rogoff, This Time is Different, 2009; Barro R. J., Rare Disasters, Asset Prices, and Welfare Costs, 2009), the authors agree that the study of crises requires looking at many incidents over a long period of time and over many countries. In contrast with Bordo and Meisner , they do not limit their review to banking crises as tests of instability, asserting the importance of output and consumption disasters since they impact more people than purely financial crises (Atkinson & Morelli, p. 2).

For each crisis identified they determined whether inequality was rising before or after the crisis or both, as their intent was to determine if instability increases inequality as well as whether inequality causes instability. They are particularly interested in finding the frequency of what they call a "classic Λ" pattern with inequality rising before the crisis and falling afterwards, as accompanied the Great Depression. However, few crises took this shape – only one banking crisis and one consumption crisis. For the purpose of this paper, where I am considering the role of inequality in causing instability, I am most interested in the frequency of cases where inequality preceded disasters.

Of the 22 banking crises where a determination of the inequality trend could be made, six were preceded by rising inequality. At less than a third, it is not a large portion. However, it is questionable how important this is in terms of human impact, since the banking crises usually do not seem to have a deep impact on the "real economy" by themselves. The authors note that banking crises are not strong indicators of GDP or consumption disasters. Of all 72 banking crises only 18 coincided with any of the 100 consumption and 101 GDP collapses. This is similar to my findings mentioned in my commentary on Bordo and Meissner above, and also consistent with my regression results reported below where bank crises were not consistently shown to be statistically significant causes for major GDP or consumption collapses.

In the other macro crises, rising inequality beforehand was more frequent. Of the 26 consumption collapses where the inequality trend could be determined 9 were preceded by rising inequality. The portion is higher compared with the banking crises, but still does not overwhelm as evidence. In most instances (15) there was little change in inequality, but notably, there were only two cases with falling inequality. The result for the GDP collapses is similar, with 9 out of the 25 GDP incidents preceded by rising inequality. (10 were preceded by stable inequality, while 6 occurred after falling inequality. Six incidents were not classifiable.)

The authors conclude that "the findings indicate only limited support" for the hypothesis that increasing inequality is an important contributor to severe macro- instability. They further acknowledge a limitation of their approach in that they did not test for the relative level of inequality, concluding, "Therefore the level hypothesis cannot be ruled out at this stage." (p. 48) However, their conclusion can probably best summarized with their statement, "Overall … our findings suggest that there is no hard and fast pattern." Rather, what stands out is how different the many crises were.

Evaluation

This is a valuable first empirical look at the degree to which inequality creates macroeconomic instability. The limitations of the methodology and the ambiguity of the conclusions invite further inquiry into the topic. In this section I will discuss some of the limitations of the study and how my own research overcomes the methodological limitations in order to advance the topic further toward more conclusive results.

Among the authors' aims mentioned in their introduction is to find "how far inequality has increased the probability of crises." (p. 3) However, they also note that economic disasters are "fortunately, relatively rare events." (p. 4) But unfortunately, small numbers do not allow for discerning statistical probabilities. They attempt overcome this limitation by adopting a long-run view, covering a period of 100 years. However, the number of incidents found is still small for statistical inference. The method of simply counting severe disasters associated with recent increases in inequality can provide a clue to a relationship or may detect obvious patterns, but it does not statistically establish causation or disprove it either. Stiglitz (2013, p. 427), who forcefully argues that inequality destabilizes economies, nonetheless asserts that a particular episode of high inequality does not necessarily cause a crisis because many mitigating factors may intervene. Therefore, he writes, his advocacy for the view that inequality is destabilizing is not incompatible with empirical studies that cast doubt on the relationship such as that of Bordo and Meissner (2012). The argument can be extended to the inconclusive results of

Atkinson and Morelli. The authors are correct in not formally rejecting any hypothesis based on their study while accurately reporting that no clearly observable pattern has emerged. In my research, using Atkinson and Morelli's database, I attempt to overcome the statistical problem of the relatively few incidents of the most severe consumption and GDP disasters by including all downturns, including less severe ones, in the regression calculations in order to test for causes of severity.

Another potential problem is an inconsistent measure of inequality. In order to overcome the limited inequality data available, especially before the mid-20th century, the authors use four different measures interchangeably. Their preferred measure is the Gini, but lacking that the researchers use top income shares, or lastly, the poverty rate (p. 16). However, these measures are affected by different kinds of inequality, which in turn suggest different mechanisms for transferring inequality to macro-instability. Rising poverty rates can be associated with loss of income share at the bottom of the income scale (but not necessarily if there is an economy-wide loss of income), while top share can show gains among the rich without the rest of the population losing ground. The authors take the Gini to indicate "general" inequality, particularly sensitive to losses by the middle class. Income concentration at the top will tend to support theories pointing to risky investments by the wealthy as a cause for instability, while loss of income share at the middle and bottom will support theories focusing on weak aggregate demand. The authors do not infer a causal mechanism transmitting instability where they find crises preceded by inequality; they are engaged in a preliminary look at the evidence to see if a relationship immediately stands out. However, since they previously review the different theories behind the controversy and detail the important differences in the varying measures of inequality, to lump all the measures together for their empirical work is surprising and limits the usefulness of the conclusions. The problem is avoided in my empirical study by treating gini scores and top shares as separate independent variables.

The researchers were also confronted with the difficulty in defining what constitutes a severe downturn. Further complicating the issue is the possibility that a certain drop in output or consumption may have a larger societal impact in one period of time than another. For this reason they use a stricter standard to identify GDP and consumption disasters prior to 1950 than after. Following the lead of Barro and Ursúa (2008), from whom the authors obtained much of their data, Atkinson and Morelli identify GDP and consumption disasters before 1950 as a decline from peak to trough of more than 9.5%. However, the threshold from 1950 on is 5%. They reason that expectations influence public perceptions of the impact, and in the post-war era of higher growth and greater stability due to the adoption of growth and development policies a 5% decline would be perceived as a disaster. That is reasonable, yet may still seem arbitrary. In my approach, using much of the same data, all disasters are identified consistently through the entire period surveyed. However, different thresholds of decline in output and consumption are used separately to test the impacts of the various measures of inequality and controls.

More limitations of the Atkinson and Morelli study require attention. As mentioned above the authors make no attempt to gauge the impact of the level of inequality, only the change shortly before a crisis. I found in my research that both are important in their potential impacts on crises. An additional problem is that the authors did not include GDP and consumptions drops resulting from the recent crisis. While that may have been unavoidable due to the unavailability of data when the report was written soon after the crisis, it is an important omission since it was the recent crisis that brought the question of inequality and instability to public's attention. I have included countries caught in the recent crisis as far as possible in my database.

As a final point, in their literature review the views of heterodox economists are conspicuously absent [aside from a brief quote from Marx's *Capital* (Atkinson & Morelli, p. 44)], even though economic instability and inequality are both central to much heterodox literature. I have included and contrasted Marxist, post-Keynesian, and Proutist views in my study.

1.3 Simultaneous causation

Some economists have argued that it is not coincidental that inequality increased immediately before the financial collapse of 2008, although they do not find a direct link of causation between the two. Rather, the forces that caused the inequality to grow also made the economy and its financial system more subject to crisis. Post-Keynesian economists press this view most consistently in their analysis.[3] Representative views from that school will be presented here.

Post Keynesian/Minskian View

While all the views presented here see the rapidly rising debt level preceding the recent crisis as an important cause it is most central to those whose analysis draws from the views of the Post-Keynesian economist Hyman Minsky. According to his well-known financial instability hypothesis the origins of recurring financial crises lie in periods of prolonged apparent stability. The successful lending undertaken during these periods leads to lending more confidently to ever-riskier borrowers. (Keen, 2013) Inequality does not play a discernible role in Minsky's theories. Indeed, Minsky developed his theories in response to events in the post-war era when middle incomes were still growing and top incomes were declining. [Minsky commented heavily about the economic turmoil of the seventies when the income trends began to reverse. Still, rising inequality had not yet attracted wide attention. Minsky himself makes no explicit mention of inequality in his introduction to the financial instability hypothesis (Minsky, 1977).]

[3] An exception is the careful study of credit growth and spending before and after the Great Recession by Cynamon and Fazzari (2014), who place blame for the recession squarely on increased inequality. They conclude that a drop in consumption when credit was no longer available for the bottom 95% brought about the Great Recession. Consumption had been maintained previously with credit because of low income growth. The authors maintain the growth and ultimate crisis of indebtedness is consistent with Minsky's financial instability hypothesis. However, it is also (and perhaps more) consistent with Marxist and mainstream Keynesian views discussed later in this paper with underconsumption hypotheses.

Steve Keen published a Minskian model which brings results closely resembling characteristics of the U.S. economy in the decades leading to the recent crisis, including a long period of apparent stability with low inflation, declining wages, and increasing indebtedness. However, the debt is taken on by firms (not consumers). Wages fall as debt levels increase because rising debt costs for firms are transferred to workers (Keen, 2013, p. 233). Firm debt levels rise to unsustainable levels, causing a severe collapse. What is noteworthy for the purpose of this paper is that in this explicitly Minskian model declining wages are a result of the process of accumulating debt (not the reverse as in models proposing that workers take on more debt in response to falling wages). It is the (business) debt level that eventually brings about collapse, not the declining income share of workers. Capitalist share of income fluctuates around a stable level until it falls drastically in the collapse – an indicator that inequality coming from the top is also not a significant factor in the collapse modeled here.

A post-Keynesian who has made inequality the primary focus of his research is James Galbraith.[4] Galbraith's book *Inequality and Instability* (Galbraith, 2012) comprehensively covers issues studied at his University of Texas Inequality Project, including inequality measurement problems (he champions the Theil's T inequality measure), the challenge of obtaining quality datasets, and the relationship between inequality and long-run development. However, in spite of the title a relatively small portion of the book is devoted directly to short-run instability in general or the recent crisis. Pointing to exhaustively collected global data, Galbraith concludes that changes in inequality follow macroeconomic trends, not the other way around. Also, true to a post-Keynesian perspective, he finds that changes in financial sectors dominate the trends.

[4] In correspondence Steve Keen identified Galbraith as a representative voice for post-Keynesian scholars on the relationship between inequality and crises.

In the U.S. he finds that inequality peaked around 2000 with upper income growth arising from the tech boom stock bubble and rising technology sector incomes. After the tech bubble burst Bush policies targeted the housing sector to maintain aggregate demand, primarily by promoting easy credit. The crisis of 2008 resulted. The recent crisis, then, arrived after a trend of two decades during which the policies that promoted instability, for example by creating the housing boom, also promoted inequality. Inequality primarily comes from the top in financial gains from the booms. The crisis, he writes "was the consequence of a deliberate effort to sustain a model of economic growth based on inequality that had, in the year 2000, already ended (Galbraith, p. 293)." Elsewhere he writes, "…inequality is the barometer, in many ways, of the instabilities that global credit relationships create (Galbraith, p. 18)." Inequality, then, invariably accompanies instability; it cannot be identified as the cause.

Since Galbraith's work is among the most comprehensive on macroeconomic implications of inequality and also argues against other heterodox views that identify inequality as a cause of instability, his approach will be given detailed coverage here.

Galbraith on Inequality and Crisis

Galbraith takes the long view. Inequality is the result of inter-sectorial trends that do not change quickly. Where there are rapid changes in inequality it is generally due to financial phenomena, such as asset bubbles. The work leans heavily on the seminal theory of Simon Kuznets linking changes in inequality to the development process. In an update to the Kuznets hypothesis Galbraith argues that that the original influential Kuznets paper (Kuznets, 1955) has been misinterpreted, or at least that there has been misplaced emphasis in follow-up research.

Kuznets modeled development as a movement of workers from an agricultural sector to a non-agricultural sector. In a less developed agricultural economy there is relatively low inequality. However, as workers move from agriculture to growing and higher paying non-agricultural industries, inequality increases. Once most workers settle in the non-industrial sector towards completion of the

development process, inequality falls again. The theory gave rise to its famous depiction as an inverted U diagram showing rising, then falling inequality as the development process advances. Much empirical research has been devoted to determining whether such a relationship reliably holds.

To Galbraith, what is most important to take from the Kuznets paper nearly 60 years later is not that the pattern of development will forever diminish inequality, but the importance of inter-sectorial movement. The rise and fall of different industries continues, and inequality will change as a result. According to Kuznets' model, overall inequality can change due to changing inequality within an industrial sector, or changes in the disparities between sectors, or changes in the relative sizes of the sectors. It is a model, then, that is well-suited for empirical testing with the Theil inequality index, or Theil's T. The index is a summation of the relative share going to each group in a population, but also has a unique property that allows disaggregation to measure inequality within groups as well. Furthermore, the group measures are weighted for the relative size of the group populations.[5] Galbraith employs a revised Kuznets hypothesis first to interpret global trends in inequality, and then again in combination with the Theil's T measure to link inequality to recent financial disturbances in the U.S.

Contrary to the prediction of the conventional Kuznets curve, some advanced economies, notably the U.S., U.K., and Japan, are seeing an increase in inequality. This is a consistent trend that can be shown in an "augmented Kuznets curve" that adds an upward sloping tail on the right of the usual downward sloping part of the curve (Galbraith, p. 52). The new inequality originates with the top earners. Much of it comes from high incomes that arise from the increasingly important financial services sector. These countries also supply capital goods globally, especially high technology. Both

[5] Theil's T is given in the book (Galbraith, 2012, p. 31) as $T = \sum_{i=1}^{m} \left\{ \left(\frac{p_i}{p}\right) \left(\frac{y_i}{\mu}\right) ln \left(\frac{y_i}{\mu}\right) \right\}$, where $\frac{p_i}{p}$ is a group population weight and $\frac{y_i}{\mu}$ is the ratio of average income in group *i* to the average income of the whole population. In words, it is the summation of population share of each group times the relative mean income share of the group times the log of the income share.

financial services and technology exports are sensitive to the business cycle. The rapid increases in inequality in the 1990s and the 2000s followed booms in these industries.

Galbraith also argues that rising inequality is a global trend that is resistant to attempts by individual countries to combat it with policies (p. 70). In a globally connected era, global macroeconomic occurrences outweigh national characteristics and even the development strategies of individual countries. Galbraith shows that while inequality was greater in non-OECD countries than in OECD countries, as would be expected by the conventional Kuznets hypothesis, there was a common increase in inequality from the 1980s on. The argument that the phenomenon has a common cause is bolstered with panel data econometrics that separate the effects of dynamics within countries and time effects that impact all countries. He finds that most of the change in inequality between 1963 and 2000 is due to the time effects, occurrences that affect all countries at a point in time. Examples would be the inflation and negative real interest rates of the 1970s associated with declining inequality, or the collapse of commodity markets and the debt crises of the 1980s associated with increasing inequality. Inequality marched on in the 1990s, fueled by the aftermath of collapsing command economies of Eastern Europe, financial booms of East Asia culminating in the crisis of 1997, and the tech boom. The rise in inequality halts around 2001 with low interest rates and a revival in commodity markets. More recently inequality returned to its upward trend with the global oil price spike and the home financing bubble in the U.S. and Europe. The overall impact has been, in spite of some fluctuation, an unrelenting global increase in inequality. The primary cause has been changes in the state of global finance. The conclusion is that changes in inequality around the world result from macroeconomic trends that affect the whole world. These trends are not in themselves driven by inequality, nor are major crises.

Galbraith makes full use of the Kuznets approach and the helpful properties of the Theil index in his analysis of growing inequality in the U.S. As with global inequality, in the U.S. it is found to be a long-run phenomenon, with fluctuations attributed to financial booms. With the Theil's T index as his

measure, Galbraith uses inequalities between industrial sectors as well as geographical inequalities as proxy measures for overall inequality.[6] Returning to his original thesis, he writes, "As Kuznets taught, the source of this increase could be either changes in relative wages or changes in sector employment shares, or both." (p. 134) The largest contributors to inequality were from the NAICS categories of professional and technical services, and finance and insurance. While the number of jobs in finance declined, that was more than compensated for by the large increase in average earnings. On the other hand, while earnings in technology grew more slowly there was a large increase in the quantity of employment. Inequality was worsened from below with employment increases in sectors where salaries are below average, prominently administrative and waste services, along with real estate rental and leasing. The rising inequality, then, "…reduces to two core facts: rapidly growing pay in a few small high-paid sectors, and growing employment in a few large but low-paid sectors." (Galbraith, p. 135) Potential reasons behind these trends are not explored.

The upshot of the argument is that rising inequality is due primarily to changing salaries in a small number of subsectors, not affecting most people in the middle. The fastest rise in inequality occurred in the late 1990s. The cause was easy to find, salary growth in the computer and electronic manufacturing industries. The conclusion is bolstered by geographical analysis of income inequality in the period. Inequality was led by income gains in centers of the technology boom such as San Francisco and San Jose, Seattle, Raleigh-Durham, and Boston, along with financial centers that benefitted from the boom such as Manhattan (Galbraith, p. 143). The boom ended with the collapse of the tech stock bubble, accompanied by a pause in the growth in inequality (Galbraith, p. 130).

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[6] He devotes considerable space to justifying this, and also to justify including only wage income rather than capital or other forms of income in his survey. The trends he documents from 1990 to 2007 closely parallel those found with more frequently used measures such as the Gini.

The sources of rising inequality in the mid-2000s were different, but could be identified by the same means. Above-average construction industry salaries grew as a result of the housing boom, but the bigger factor contributing to inequality was the growth in the number of these jobs. The analysis of geographical disparities reinforces that evidence, as income growth centered in counties in southern California, New Orleans, Las Vegas, and southern Florida, centers of the housing boom. Predictably, incomes also grew in the New York area as that financial center prospered. Galbraith finds further geographical disparity from an unexpected source: Growth in government and lobbying under George W. Bush. Massive security spending following 9/11 and subsequent wars created a "Beltway boom," raising incomes around Washington, D.C. (Galbraith, p. 145). To summarize, rising inequality in the 2000s was primarily driven by the housing boom centered in a few counties, the associated financial boom, and public spending related to a wartime economy.

Consistent with a Minskian view, Galbraith persuasively argues that growth in recent decades has been driven by bubbles that have benefitted relatively few in specific industries and geographical areas. Inequality rose as the richly-rewarded beneficiaries of these trends saw their incomes rise past that of other Americans. The exception occurred in the 1990s as booms in the technology and financial sectors were accompanied by full employment, rising median incomes, and improvements to the nation's technological infrastructure. However, the real estate boom of the 2000s brought little permanent benefit. Fed by government policies intended to forestall economic stagnation as well as corrupt practices in the private financial sector, it ended in a disastrous economic crash that seems inevitable in hindsight. Inequality did not cause the crises, but was a characteristic of the financial booms upon which the U.S. economy depended for growth. The inequality was mostly caused by income growth at the top.

Evaluation

Galbraith has made important contributions with this book. The affirmation of Kuznet's theory and its novel use, along with the careful tracing of inequality trends to their financial and geographical

origins provides new insights. Nonetheless, the work cannot be considered the last word on the subject of inequality and stability. Problems remain with the analysis, as will be explored here. Importantly, the work does not sufficiently account for income stagnation in the middle as a contributor to inequality, or to its aggravation of tendencies toward macro instability, ideas developed in competing views. Many of Galbraith's insights are not incompatible with those of these other researchers, and it is unfortunate he does not contrast his findings with theirs.

For example the discovery that wage disparities between industrial sectors as well as between geographical areas can provide good approximations for overall inequality while also identifying sources of inequality is novel and important, and can complement the work of other researchers. He acknowledges the value of comparing his work with that of others when he shows rough similarity in inequality trends he measures with the Theil's T with those measured with the Gini (Galbraith, p. 59). However, sometimes the data he presents seems to contradict findings of other researchers in the field, and in places the conclusions reached within the book seem contradictory. For example let us look at two diagrams reproduced from the second chapter where he argues that it is important to distinguish between pay inequality and overall income inequality, as the latter includes investment income largely influenced by the stock market (Galbraith, pp. 40, 42).

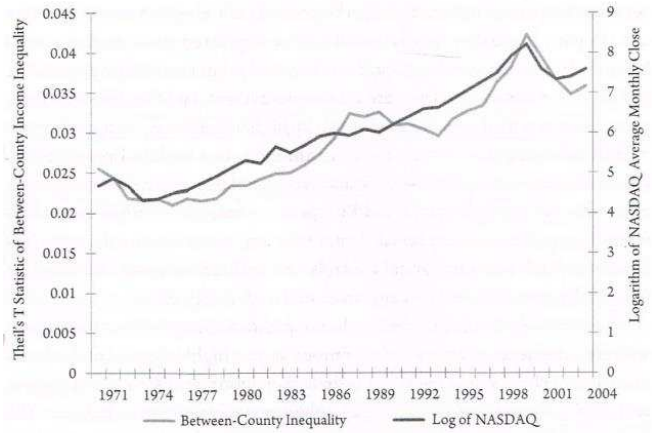

Figure 2.5. Inequality between Counties in the US and the (log) NASDAQ stock index, 1971–2004.

Figure 1.4 Inequality between counties with NASDAQ Index (Galbraith, 2012)

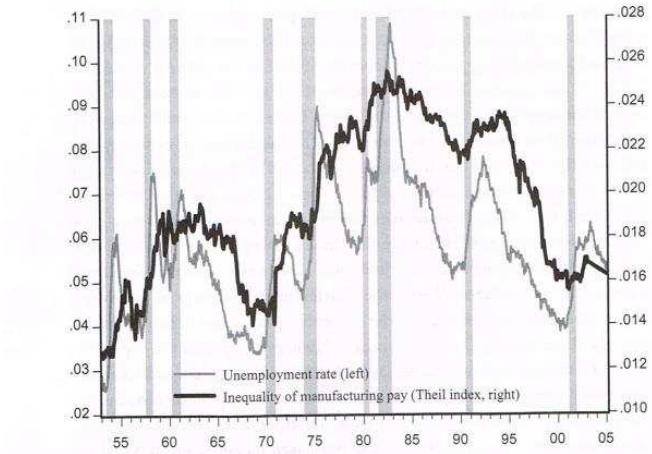

Figure 2.6. Pay inequality in manufacturing and unemployment in the US, 1953–2005, monthly data. (Recessions marked in vertical grey bars.)

Figure 1.5 Pay inequality with unemployment from Galbraith (2012)

The trend shown in the first diagram will look familiar to most observers of rising inequality in the U.S. Galbraith uses the Theil's T measure for inequality between U.S. counties as an indicator of overall income inequality. The growing inequality, he shows, is led from the top and is closely correlated with changes in the stock market. The second diagram shows the close relationship between historical changes in pay inequality with the unemployment rate. The implication suggested for both graphs is that

pay inequality is largely due to macroeconomic phenomena. Overall inequality arises from financial trends affecting top earners. Wage rates, however, are relatively stable but inequality in pay is affected by factors such work hour reductions when unemployment is high.[7]

However, elsewhere in the book pay inequality is measured differently and shows a different trend. In order to disaggregate the causes for pay inequality he presents the following diagram showing changes in total inequality between NAICS industrial sectors (Galbraith, p. 130).

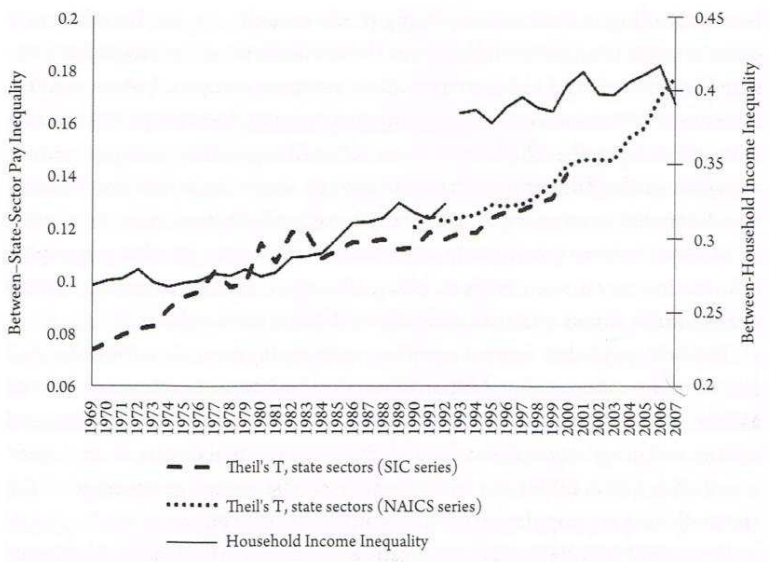

Figure 6.1. Between–state-sector earnings inequality and household income inequality 1969–2007.[5]

Figure 1.6 Inequality between industrial sectors with household inequality, U.S.

Here, pay inequality is shown to be continually rising (with important pauses) and to roughly parallel household income inequality as measured with the Gini by the Census Bureau. This graph is intended for a different purpose from the previous one, as the Theil's T inequality curve is later disaggregated to show that much of the inequality increase comes from wage increases in the

[7] Furthermore, Galbraith uses the results to attack the "skill-bias" explanation for rising inequality prevalent in mainstream economics: Rising inequality is caused by macro factors, not micro factors such as a work force unprepared for the high tech demands of the contemporary workplace (p. 127).

information technology sector in the 1990s and from the building boom in the 2000s. Although this is a valuable contribution to our understanding of the evolution of inequality in the U.S., the graph raises confusion as it seems to contradict the conclusions raised in the previous graph where pay inequality is shown to fall in the 1990s. Yet both seem to be presented as accurate measures of overall pay inequality. Further confusion is introduced with the suggestion that inequality is increased during boom times, whereas the previous graph showed pay inequality increasing with unemployment.

There are unexplained differences with other researchers as well. Perhaps the most widely recognized recent empirical work in inequality trends has been done by Piketty and Saez, who are cited at the beginning of this chapter. In a recent paper Saez updates the famous diagram of top income shares, as reproduced below (Saez, 2013).

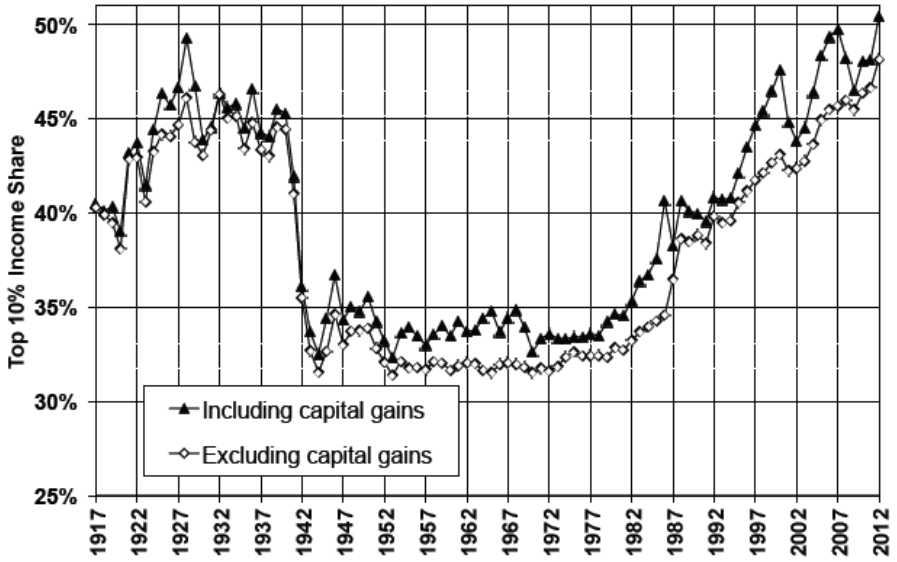

Figure 1.7 Saez on historic top income growth, with and without capital gains

Here top income shares as derived from tax return data are shown to be rising sharply and steadily from the 1970s, interrupted but not stopped by recessions in 1991, 2001, and 2007. The series excluding capital gains indicates the wage share captured by top salary earners. Top salaries rise closely

with overall income gains, although they do not rise as quickly or fall as fast during stock market bubbles or crashes. Indeed, Saez notes that a characteristic that distinguishes the rising inequality of recent decades from previous periods is that it is largely salary-driven, indicating that the new rich are "working rich" (Saez, p. 5). These findings are consistent with Galbraith's (figure 3.6), as well as his related finding that top wages which most widen inequality come from a few hot high-salary industries, located in a few counties. It also confirms that top total incomes are sensitive to asset market trends, as top total income shares drop severely with financial crashes in 1987, 2001, and 2008. However, it is difficult to reconcile with Galbraith's earlier claims of a sharp difference between the trend of overall income inequality driven by investment income from stock market booms and trends in wage inequality, which have changed little. The Saez diagram shows top salary shares to be following total top income shares closely and continually rising, even after the Great Recession, a strong indicator of growing wage inequality. It would be helpful for Galbraith to clarify why his findings differ. The discrepancy stands as an example of how Galbraith's work would benefit from more comparison with the findings of other researchers. Such clarification would also be helpful for those developing theories relating inequality to instability discussed elsewhere in this paper. Theorists proposing that instability arises from risky investments enabled by rising top income shares will appreciate validation that top incomes are indeed rising and will find evidence of the sources of that income helpful. Those emphasizing inadequate aggregate demand due to stagnant middle incomes will also benefit from evidence of whether inequality is widening from below.

That latter concern is where Galbraith's study falls short the most. There is little here to suggest that middle or low income people have been harmed by the trend of rising inequality. In places, the trend seems to be presented as benign. While he documents the growing size of low-paid industrial sectors and the limited opportunities in sectors with high and growing wages, he strangely emphasizes his finding that American wage structures are "surprisingly stable" and that wage rankings reflect

"settled differentials." (Galbraith, p. 127) This does not explain the critical question of why median wages were steadily growing along with growing productivity in the post-WW II era but stopped growing in recent decades. Do the "settled differentials" allow for income growth? One will not find an answer in this study. A hint is provided by Saez (2013) describing the income distribution since the Great Recession, typical of the recent era: "…the top 1% captured 95% of the income gains in the first two years of the recovery."

In response to conservative commentators including Henry Paulson, George W. Bush, and Alan Greenspan who are quoted as acknowledging the inequality trend with concern, he states:

> What is striking about these concerns, though, is how little they reflect the actual phenomena of rising inequality in America from the mid-1970s to the present. Though it is true that American jobs shifted out of unionized manufacturing and into services, that phenomenon is not primarily one of large numbers being left behind. On the contrary: the labor force expanded, adding women, minorities, and younger workers at a high rate. Historic regional differences declined, as the South converged to the national average. And in the late 1990s, with full employment, wages for low-wage workers rose and poverty rates for minority populations hit all-time lows. In addition, measures such as the expanded Earned Income Tax Credit and a higher minimum wage kicked in, helping further to make work pay and to stabilize incomes at the bottom of the pay structure. Yet this was exactly the moment when income inequality hit its all-time high.

He then presents this challenge: "Clearly – and however uncomfortable it may be for some of the prevailing narratives on the American Left – it is necessary to take a different view." (Galbraith, p. 147)

Here Galbraith not only ignores or dismisses arguments made by other researchers, he also ignores important issues that should be apparent. When low wage sectors are expanding while an elite few achieve unprecedented wealth, it looks a lot like many Americans are "being left behind." Furthermore, the ahistorically stagnant median wages through most of the period studied are not mentioned. If that is not seen as evidence of the bulk of society being left behind one wonders what would qualify.

Galbraith's counter-argument to the "prevailing narratives" lists several positive developments for low and middle income earners while inequality increased from the top. These mostly occurred during

the late 1990s, a unique period in recent history when most participants in the economy did indeed gain from the technology boom. However, Galbraith conflates that brief period with the entire time from the mid-1970s, during which the middle class and poor usually either lost ground or increased their incomes at a historically slow rate. In yet another inconsistency he writes at length elsewhere about the differences in the rising inequality of the 1990s and of the 2000s, noting that the latter period lacked any of the saving graces found in the former (Galbraith, p. 146).

As already mentioned, the differences (as well as similarities) between the two periods are critical for evaluating the role of inequality in promoting instability from the standpoint of other researchers. That (middle) incomes were rising in the 1990s but not in the 2000s makes a big difference for researchers looking for reasons for the expansion of consumer credit and also on constraints on aggregate demand. The differences are particularly important for the outlook of PROUT. According to PROUT theory, severe downturns result from both wealth concentration and exploitation. In the 2000s exploitative elements were more present than in the 1990s, as evidenced by declining wages and predatory credit. In the view of PROUT those elements made the inevitable crash of 2008 worse for the economy as a whole as compared with the bursting of the technology bubble in 2001.

Overall, Galbraith's argument that unsustainable patterns of growth also promoted inequality is persuasive. However, as with his other conclusions, his argument would be strengthened by contrasting it with others. It is not clear that his finding that rising inequality corresponds with unsustainable financial booms must conflict with the views of researchers who conclude that the rising inequality also further aggravates instability. The possibility of feedback loops should be explored; that is, the possibility that financial booms create inequality, which in turn further destabilizes an economy.

A final critique addresses the casual treatment given what one would expect to be a central concern of Galbraith's book. Although the title is *Inequality and Instability* and the Great Crisis is included in the subtitle, the discussion explaining his view on the cause of the recent crisis and its

relation to inequality takes up but a page in the sixth chapter and two pages at the back of the book. The treatment seems extraordinarily brief, to the extent that it undermines his argument. He stands on strong ground when he concludes that economic growth in the U.S. had been based on bubbles, as he demonstrated in chapter six. Also, few would find his conclusion controversial that policies contributed to the bubbles. However, he ascribes short-sighted cynical intentions to these policies without evidence. For example, he implies that in the prelude to the crisis the wars in Iraq and Afghanistan were undertaken as a kind of stimulus program. The tech boom had collapsed, and foreign sources of investment had evaporated as other parts of the world recovered from crises of their own. He writes,

> Every region that was open to crisis, with the possible exceptions of China and India, had already had one. Internally, the appeal of the major American leadership sector had worn out. What to do?
>
> The solutions of the Bush era passed briefly via military commitments, in Afghanistan and Iraq, whose effects on internal distribution appear in the rise of the Washington metropolitan region as the leading economic winner… (Galbraith, p. 292).

That the Bush administration engaged in two wars as a strategy to stimulate the economy after the tech boom and foreign investment fizzled is a serious charge, one that is made with no further explanation or justification beyond this sentence. Galbraith does show elsewhere that the Washington, D.C. area benefitted from the resulting government expansion and that it contributed to pay inequality. However, that falls short of strong evidence that the wars amounted to an intentional economic strategy.

In any case, Galbraith further asserts that the strategy proved to be insufficient by 2004. He writes, “A remaining option was to foster the growth of demand by the world’s one remaining solvent class: American households, who still had the capacity to borrow against their homes. But this, too, was limited…” (Galbraith, p. 292) Credit had to be further extended to the lower income population that had previously not been considered qualified for it. Therefore Bush launched the “ownership society,” opening the door to a financial boom based on industry-wide fraud. Again, that this was an intentional

growth strategy is asserted without evidence. Bush is singled out for blame although it is acknowledged his policies were made possible by a steady erosion of regulatory standards taking place over two decades. That gives the appearance of partisanship. But then giving due emphasis to the fact that affordable housing policies were long-standing would undermine the theory that they were a response to the macroeconomic difficulties specific to the early 2000s.

To a large extent Galbraith's argument suffers from the same fundamental weakness as that of Raghuram Rajan (Rajan, 2010), a neo-classical perspective presented elsewhere in this paper. (See section 1.6.) Both attribute intentionality to housing policies which contributed to the crisis, seeing the policies as deliberate attempts to force growth and stability on an economy suffering from weak fundamentals. But they both fail to produce a smoking gun. Rajan at least showed awareness that the argument would be viewed skeptically, and therefore devoted considerable space to its presentation. Galbraith merely makes a brief assertion.

Absent from Galbraith's string of causation for the crisis is inequality in itself. It is the secondary result of those same causes. These causes he cites were policies intended to spur aggregate demand through various kinds of bubbles, but the reason aggregate demand has been inadequate in the first place, if not for rising inequality, remains unexplained.

1.4 Inequality as a major cause of instability

As noted in the introduction to this chapter, in recent years the view that instability is connected to inequality has gained wider acceptance. Joseph Stiglitz (2013, p. 114) has gone so far as to write, "In the wake of the 2008 global financial crisis, there is now an increasing global consensus that inequality leads to instability, and that instability contributes to inequality."

Theories explaining the link can be roughly broken into the following categories. One should note, however, that advocates of these views frequently combine or merge the categories, and also accept factors unrelated to inequality as relevant. Differences may often be seen as a matter of emphasis.

1. Instability comes from above. Income and wealth concentration produces a glut of savings, leading to risky investments and bubbles.
2. Instability comes from below. Stagnant or falling incomes lead to inadequate aggregate demand (underconsumption) and/or excessive reliance on credit.
3. The link is political, related to both categories (1) and (2). Economists have charged that political capture by wealthy elites has contributed to excessive deregulation. Others, generally on the opposite end of the political spectrum, point to populist government policies that pressure financial institutions to provide easy credit to the poor.

Let us examine these categories, identifying prominent adherents to these views and their reasoning.

1.5 Instability comes from above

The Search for Yield

Several expressions of this view have been brief and informal. In a widely cited article for a general audience, Branko Milanovic (2009)explained, "There is a limit to the number of Dom Pérignons and Armani suits one can drink or wear." Further summarizing the argument succinctly, he writes,

> We should not focus on the superficial aspects of the crisis, on the arcane of how "derivatives" work. If "derivatives" they were, they were the "derivatives" of the model of growth pursued over the last quarter a century. The root cause of the crisis is not to be found in hedge funds and bankers who simply behaved with the greed to which they are accustomed (and for which economists used to praise them). The real cause of the crisis lies in huge inequalities in income distribution which generated much larger investable funds than could be profitably employed.

Milanovic's argument that the rich consume proportionately less and save more hearkens back to that fundamental concept of Keynesian economics, the marginal propensity to consume. Keynes (2009, p. 64) called it "obvious" that as income rises the proportional gap between income and spending will also increase. This is because households will prioritize meeting family consumption needs over any desire for accumulation, and meeting desired consumption levels is more easily accomplished as income

grows. This Keynes called a "fundamental psychological rule," that savings will increase along with income.[8]

An extension of this argument is that the rich seek riskier investments. Having income well beyond their consumption needs, they will look for the highest return on their savings. Stated more strongly, one could say they have money to burn on risky investments that hold the potential for unusually high returns. The Proutist economist Ravi Batra (1985, pp. 127-128) develops this idea. Citing the well-known Arrow-Pratt hypothesis of decreasing absolute risk aversion, he suggests the wealthy are more disposed not only to more speculative investments, but to fuel speculative fevers when they seek to profit from asset bubbles. "…only the very rich as a class are willing and can afford to squander money on assets with a high but relatively illusive return," Batra writes. "In other words, wealth inequity is a prerequisite for manias and bubbles."

However, income and wealth concentration may force savers who would normally favor normal or moderately high returns from safer investments into more speculative ones, as Milanovich suggests in his quote above. In the case of the recent crisis, the income flowing to the top contributed to what has been called the Giant Pool of Money (Blumberg & Davidson, 2008) . Milanovich argues that as the demand from this pool for investment returns exceeded the availability of high quality investments, investors turned to less safe ones, and investment brokers scrambled to develop new financial instruments to sell. There is anecdotal as well as more formally developed evidence that in the recent crisis instability in financial markets came from the "demand side" for investment opportunities.

[8] Whether the rich in fact save proportionately more has been a long-standing economic controversy which I will not attempt to resolve here. Dynan, Skinner, and Zeldes (2004) provide a summary of this literature, along with theoretical and empirical evidence of a positive relationship between income and saving.

Revealing testimony comes from Allan “Ace” Greenberg. As the former CEO and chairman of Bear Stearns, the first big investment bank to fail in 2008, he was in the middle of the cascading crisis. In an interview for the PBS Frontline documentary “Inside the Meltdown,” he describes how clients pushed him beyond where he was comfortable. After Greenberg told the interviewer that he recognized at the time that the speculation and the growing prices in the housing market made no sense, the following exchange took place (Frontline, 2009):

> *So when all this is happening and people are making money hand over fist and doing real well, and the market is growing, are you ever nervous? ...*
>
> I was, and I felt some things were going on that were just nuts. Some of the demands our clients were making upon us I thought were just unbelievable.
>
> *Like?*
>
> They would just ask you to run risks that you didn't want to run or shouldn't run. On the other hand, in theory, you couldn't afford to offend your biggest clients; they wouldn't do business with you anymore. So that was a problem. Our biggest clients obviously were the ones who were buying and selling these corporations, creating debt maybe that was in excess of what the company could support.
>
> But I wasn't as vociferous as I should have been, maybe. It's very hard to stop a locomotive going 60 miles per hour. It takes a lot of braking power to stop that. And this stuff was highly lucrative when it was working. Excesses did occur. Deals were done that were just too big for the companies they were buying. And you read about the ones that are in big trouble that were done [over] the last two years. The equity has gone entirely and maybe even more. So did I know things were getting a bit out of hand? Yes. Was I as vociferous as I should have been? Maybe not.
>
> *Why not?*
>
> As I said, it's hard to turn off the spigot when things are profitable. You have a tremendous amount of people working for you in this area, and it meant virtually closing it down, because if you turn down one of these clients on something they wanted to do, they just put an X through your name and say, "You're finished." So the pressure is -- but we were big boys. I'm not complaining. We made mistakes.

Although the exchange is somewhat confusing as Greenberg seems to switch from discussing the housing market to corporate buyouts, the point is clear that pressure for offering increasingly risky investments came from investors. A more fully-developed treatment of this hypothesis comes from researcher Photis Lysandrou (2011). He tells a compelling story of global demand for high quality, yet profitable investments, for which the conventional securities market was not adequate. Much of this demand came from high net worth individuals.

A first leg of the argument is simply that rich individuals comprise a very large portion of the global demand for securities. In 2006, shortly before the crisis reached its critical point, high net worth individuals were the second largest holders of the various kinds of financial securities, only behind banks.[9]

Lysandrou seeks to present an alternative to supply-side explanations for excesses in the financial industry, for example excessive greed, inadequate regulation, etc. Instead he points to growing demand for financial instruments that coincided with constraints on the growth for conventional financial products, both in the U.S. and internationally. To explain the global demand for U.S. securities Lysandrou rejects the simplistic argument that Asians save too much and Americans save too little. Investors in emerging market countries flocked to U.S. securities for the lack of better options. While emerging market economies accounted for 30 percent of global output in 2006, they issued only 14 percent of the world's securities. Many of these countries simply do not have as developed financial markets. Lysandrou finds this partly due to government policies, with emerging market governments pushing more personal-relation-based forms of finance, along with a limited governance infrastructure for securities markets. This pushed investors toward U.S. and European securities, with a preference for American securities markets due to the dominance of the dollar as an international reserve currency. This also explains a preference for home securities markets on the part of American and European investors (more than a frequently cited "home bias"). International options for transparent and reliable securities are simply limited. In short growing wealth concentration in the U.S. pushed up demand for U.S. securities while at the same time these investors faced competition for these securities from

[9] According to figures compiled by Lysndrou banks held $74.4 trillion in securities, while wealthy individuals held $37.2 trillion. Further down the list were pension funds, mutual funds, insurance companies, government reserve funds, and sovereign wealth funds.

emerging markets. Lysandrou reinforces this view with data showing tremendous capital flows away from emerging markets and toward the U.S.

The high demand for securities pushed up securities prices and caused yields to fall. Regulatory requirements prevented conventional securities from growing as fast as the demand. He points out that both U.S. and foreign investors looked for higher returns, but still desired quality securities especially those rated AAA. The problem was "resolved" with the growth of exotic securities, prominently asset-backed securities (ABS) that were further packaged into various varieties of collateralized debt obligations (CDOs). Lysandrou charts the rapid growth of ABS issuance, particularly in the U.S. in the same 2000-2007 period that saw the capital flows discussed above. In his telling the demand pushed investment banks to issue CDOs based on ever worse quality mortgages. By 2006 of the $11 trillion worth of ABS issued that year, $6.5 trillion were based on home mortgages, of which about a third were backed by non-conforming loans. These vary from "jumbo loans" (those with a higher balance than allowed under conventional terms) to NINJA loans, issued to borrowers not required to document income, a job, or assets.

Lysandrou rejects the more common supply-side "standard explanation" of greedy mortgage brokers making loans on too easy terms, spurred on by equally greedy investment bankers who securitized the loans and pushed them on unsuspecting buyers with the help of complicit rating agencies. He writes, "… just as plausible is the explanation that runs this story in the reverse direction: in the search for yield, investors pressured the investment banks to supply structured credit products in ever greater quantities and, to do this, these banks needed the mortgage originators to take whatever steps were necessary to induce as many subprime borrowers as was possible to take out mortgage loans." (Lysandrou, 2011). Why he believes these explanations are mutually exclusive is not clear. While the process required eager investment buyers, it also required reckless and unethical sellers and low-income home buyers who were shut out of lower cost conventional mortgage markets.

A final leg of the argument emphasizes the role of hedge funds, which exist to provide at least the promise of high returns to the wealthy or institutions willing to pay high fees. “The basic task of hedge funds is to generate for their clients above average returns for which they get paid above average fees,” Lysandrou writes (p. 336).

The period of the subprime boom corresponds to an acceleration of the growth of funds under hedge fund management. The link to the subprime disaster lies in hedge fund ownership of collateralized debt obligations (CDOs), those hyper-complex securities that flourished at this time. In the case of CDOs backed by mortgages, buyers would purchase “tranches” of the securities, each tranche offering payment to investors according to a specified order of priority if any of the mortgage borrowers defaulted. Of the several kinds of financial institutions that held CDOs hedge funds by far held the largest share, totaling 48% of the global market for CDOs in 2006. (The rest were held by banks, asset managers and insurance companies, in order of holding size.)

Lysandrou describes the hedge fund industry as being confronted with a dilemma. On the one hand they’re whole purpose is to provide above-average returns to their investors, who were flocking to them because of the difficulty obtaining high yields elsewhere. However, the hedge funds were having difficulty themselves finding high returns in the low-yield environment of the early to mid-2000s. The resolution required a search for alternative financial products. This search was not passive, but involved actively pushing investment banks to provide alternative kinds of securities. Lysandrou quotes a Goldman Sachs executive in testimony before the British House of Commons: “To a significant degree it has been the reach for yield in the part of institutional investors in particular that goes a considerable distance in explaining this very rapid growth of structured credit products.” (Lysandrou, p. 337)

The pressure from investors resulted in ever-more complex financial instruments. The period saw the proliferation of “CDOs-squared” where less attractive lower or “junior” tranches were repackaged and marketed in new multi-tranche CDOs. (The process is repeated in CDOs-cubed.) A further innovation

was “synthetic CDOs” based on credit default swaps, which also evolved to further levels of complexity. Lysandrou reasons that all of these would not have been created, at least not at the scale that they were, had there not been willing, even demanding, buyers. He questions the usual explanation that they were created to disperse credit risk. Rather, they were intended to serve as “…wealth containers of a particular risk return vintage.” (Lysandrou, p. 337)

Hedge funds drove the demand for these, and behind the hedge funds were wealthy individuals chasing yield. High net-worth individuals made up almost all of the investors in hedge funds in 2000, although institutional investors joined in later in the decade.

To summarize Lysandrou’s view, demand for safe yield contributed to the problem of a short supply by creating a vicious cycle: the demand for securities further raised their price and lowered yields. That contributed to the need for alternative securities that could be rated highly, preferably AAA. Lysandrou (p. 337) points out that there are very few debt securities with AAA ratings – a handful of sovereign nations and a few major corporations. The financial innovators of this period created thousands of new AAA rated products; it is doubtful they would have done this if conventional securities were adequate to meet the demand.

Researchers Michael Lim Mah-hui and Khor Hoe Ee (2011) complement Lysandrou’s research well by locating the origins of the Giant Pool of Money. There is a remaining question in the demand-side explanation for how inequality contributed to the crisis. Lysandrou, along with others, notes the contribution from emerging markets to the “giant pool of money” chasing yield. But why did this “global savings glut” [to use the term coined by Ben Bernanke (Bernanke, 2005)] develop? While Lysandrou cites institutional factors in emerging markets for the capital outflows, Lim Mah-hui and Hoe Ee return to the original hypothesis in the case of China: inequality is to blame. In explaining the crisis in the U.S. they paint a picture of under-consumption in both the U.S., the center of the crisis, and in China, a major

source of the destabilizing investment funds. They cite flat wage growth in China in spite of three decades of rapid growth. Even though wages have risen recently, they still lag behind productivity gains.

The key data behind China's current account surplus, according to the authors, is its savings to investment ratio, which has been consistently high. The Chinese savings rate is close to 50%, the largest component of which comes from households. The other side of the coin is weak consumption, which declined from 50% of GDP in 1992 to 36% in 2007 (Lim Mah-hui & Hoe Ee, 2011). The authors cite several reasons for this dramatic change, all related to pro-market economic reform and the subsequent increase in inequality. Inequality rose dramatically, with China's Gini score rising from 0.32 in 1978 to 0.5 in 2006. As a related indicator, the share of GDP going to labor dropped from 57% in 1978 to 37% in 2005. At the same time productivity grew at a 20% annual rate in the early 2000s.

While slow income growth restrained consumption, the need to save increased as social means of maintaining economic security deteriorated. The reforms reduced the availability of free health care, subsidized housing, and education. Furthermore, state owned enterprises that were encouraged to act more like profit maximizing corporations also reduced the social benefits they provided.

As a result, in spite of a high investment rate of 40% (Lim Mah-hui & Hoe Ee, 2011), savings still by far exceed investment. Moreover, much of that investment was channeled to the export sector. The result was under-consumption, similar to what also plagues the U.S. The difference, the authors say, is that the under-consumption problem was "resolved" in the U.S. by expanding the availability of credit, as has been widely observed. In contrast, consumer credit markets are not well developed in China.

With exports at 35% of GDP in 2006, growing foreign reserves were mostly invested in U.S. treasuries, which were used to provide liquidity to U.S. banks. Thus, "Ironically, under-consumption and excess savings in a poor country like China are funding the excess consumption and debt bubble in the US." (Lim Mah-hui & Hoe Ee, p. 223) An important fact in the argument is that savings did not significantly rise globally, making the case for a *global* savings glut overly broad. Rather the authors

summarize by calling their story "… a tale of two gluts" that became intertwined – the Chinese savings glut, on the one hand, and the US debt and over-consumption glut, made possible by over-leveraged and reckless financial institutions.

Related Views

The previous section presented arguments that inequality from above introduces systemic instability via the destabilizing influence of the rich on financial markets. Another line of thinking points to the influence of the rich on the real economy. As the rich take a larger share of the nation's income and wealth their purchases make up a larger share of aggregate demand. But their income and wealth are more dependent on the stock market, bringing new volatility to aggregate demand. Furthermore, their lavish consumption sets a standard for emulation, feeding the problem of overconsumption and overleveraging by the rest of society. Coincidentally, two of the most prominent advocates of this view are both named Robert Frank.

The first Frank (2011) is a journalist who has made a career of chronicling the lifestyles of the rich and their impacts on the rest of society. He contends that the rich contribute to economic instability through their growing share of spending. He cites Ajay Kapur, the Citibank analyst who brought perhaps unwelcome attention to the bank's investment services with his report that asserted that the U.S. and some other advanced economies were becoming "plutonomies," economies where spending is dominated by the wealthy (Kapur, Macleod, & Singh, 2005).[10]

Frank bolsters his theory with more formal research showing a major change in spending and saving habits in very affluent households in a time of rapidly rising asset prices. Maki and Palumbo

[10] He advised his well-heeled clients to invest in companies selling luxury products. Copies of his reports, which have been used as evidence of outrageous inequality promoted by the financial sector, became an embarrassment and gradually disappeared from the internet as Citibank threatened web sites with legal action (Political Gates, 2011).

(2001) show that the savings rate among the top quintile of earners plummeted in the 1990s due to the wealth effect from the hot stock market. The group started the decade with the highest rate of savings at 8.5 percent. However, by the end of the decade the top quintile was the only one to have a negative saving rate, -2.1%. (The savings rate of the lowest 40% rose during this period of rising wages.) The reason for this surprising turn of events was clear: At the same time the upper quintile experienced rapidly rising net worth-income ratios. The stock market boom was causing the value of their assets to rise so rapidly that the wealthy felt no need to save.

Frank takes the argument a step further. An enlarged portion of aggregate demand that is dependent on the stock market or other asset booms is prone to instability. Frank quotes Kapur (of the infamous Citibank Plutonomy memo), "Average Americans spend a lot of their incomes on necessities, things like toothpaste or broccoli or shaving cream. Even if they have to tighten their budgets, they're still going to buy toothpaste and broccoli. For the wealthy, many of their purchases are discretionary. So if they have a bad bonus, they're not going to buy a luxury item." (Frank R. , 2011) That makes a big difference when the rich make up a large and growing share of overall purchases. He cites an estimate by the economist Mark Zandi from 2010 that the rich account for even a larger share of the nation's purchases than cited by Kapur in the early 2000s. The top 5% accounted for 37% of all U.S. consumer purchases, just slightly less than the spending of the entire bottom 80%, who accounted for 39%. (Frank R. , 2011, p. 157) That spending share shows a major increase since 1990 when the top 5% accounted for 25% of consumer outlays. But what goes up can go down. When an asset bubble crashes, as the stock market did after the real estate bubble crash of 2007-2008, the rich stop spending and depress the service economy increasingly oriented toward serving them. On the other hand, although corporate profits and the stock market have recovered, boosting once again the spending of the rich, it has not been enough to bring rapid recovery to the whole economy. High unemployment and stagnant middle wages continue to drag down total spending.

In a follow-up report from 2006 Kapur and his fellow authors summarize their argument, "We think this rising wealth is the real reason why the rich are happy to keep consuming, and are behaving rationally in so doing. They simply do not need to save as much to maintain a healthy wealth balance, as they did in prior decades, because their wealth is growing rapidly." (Kapur, Macleod, & Singh, 2006, pp. 3-4) This resolves the different between the two explanations presented here for how the rich destabilize economies, whether through risky investment or through cyclically unstable consumption. It can be both – As the rich acquire a growing share of both income and wealth they account for a large share of aggregate demand that fluctuates with stock market booms and busts, while also retaining sufficient wealth to dominate, and potentially destabilize, financial markets.

The Expenditure Cascade

According to economist Robert H. Frank, the rich not only influence the economy directly with their consumption choices but also influence the purchases of lower income groups. Moreover, as inequality grows and the rich take a larger national income share their influence grows. That has much to do with why Americans have been saving less and have been prone to overextend themselves with credit, fueling the 2008 financial crisis. Frank has presented his ideas in a book intended for a lay audience (Frank R. H., 2007) as well as in a more academic work augmented with mathematical modeling and econometric evidence (Frank, Levine, & Dijk, 2010).

Frank's theory is a direct challenge to the prevailing approach in economics that assumes consumer choice to be autonomous and purely rational. He joins with early economists and economics dissidents in recognizing a social imperative in consumption. Adam Smith, acknowledged the social determination of what are considered necessities, famously writing, "A linen shirt . . . is, strictly speaking, not a necessary of life. . . But in the present times, through the greater part of Europe, a creditable day-labourer would be ashamed to appear in public without a linen shirt, the want of which would be supposed to denote that disgraceful degree of poverty which, it is presumed, nobody can well

fall into without extreme bad conduct." (Smith, 2012, p. 331) Identifying purchase motivations such as "invidious comparison," "pecuniary emulation," and "prescriptive expensiveness" required to maintain social standing were central to the contributions of Thorstein Veblen (1994).

A more recent and direct influence on Frank is the critic of orthodox consumer theory James S. Duesenberry, whose ejection from recent economic textbooks Frank laments (Frank, Levine, & Dijk, 2010; Frank R. H., 2007). Frank asserts Duesenberry's relative income hypothesis explains actual consumption and savings patterns better than the more mainstream permanent income hypothesis. In what Duesenberry calls a "demonstration effect," he explains that a family will increase their consumption when they experience more frequent contact with superior goods as the expenditures of others increase (Duesenberry, 1948). This becomes relevant to our present discussion examining the effects of increased inequality since as the rich play a larger role in expenditures, and as markets cater to them more, there is an increased likelihood of exposure to superior goods. Moreover, as these goods set a common standard, the perceived social pressure to purchase these goods becomes greater.

A further critical insight from the relative income hypothesis (absent, Frank asserts, from the standard theory) is that it explains the apparent discrepancy between the facts that richer people tend to save more, but when national income rises as a whole the savings rate does not change. This suggests that what is regarded as a necessary level of spending is established socially, not independently, and determined by the spending of those in higher income groups. When the rich increase their spending as well as increase in number, this sets off the "expenditure cascade," reaching those in the middle and lower end of the income spectrum who feel compelled to increase expenditures even though their incomes have been stagnant. Frank points out that although expenditures increase satisfaction does not, as more money is spent on "positional," or publicly visible goods, such as housing, while crowding out high utility yielding non-positional goods such as leisure. The result is a spending

arms race making no one better off, like the concert audience in which all stand up at the same time to get a better view.

Frank emphasizes that what motivates the expenditure cascade is not envy. Rather, he argues that it is inherent in the human social makeup to regard the adequacy of one's possessions in relative terms. Furthermore, other social pressures reinforce stretching budgets, notably the desire to live in good school districts where houses tend to be more expensive.

While Frank presented his expenditure cascade argument before the Great Crisis, it helps explain why millions of Americans purchased homes they could barely afford and otherwise overextended themselves with credit. Prominent economist-authors on the crisis, including Rajan (p. 30) and Krugman (2012, p. 84) have cited Frank's views. Furthermore, it provides a unifying point for arguments linking instability to inequality, explaining how the causality can simultaneously come from above and below.

1.6 Instability comes from below

The standard explanation for instability due to inequality coming from middle and lower income groups has been straightforward. A decline in spending power reduces consumption, the largest component of aggregate demand. Traditional Keynesians would view this as occurring after a cyclical drop in investment. However, the recent crisis took on a new appearance. In the years approaching the crisis consumption remained high, even increasing over previous decades as a share of GDP, in spite of stagnant middle and lower incomes. The consumption was maintained by an explosion in the use of credit. When the increase in debt reached its inevitable end, the crisis hit. With some variation this scenario is accepted by both Keynesian and Marxist economists.

I will focus first on works aimed at a popular audience written by prominent economists, including Keynesians, Marxists, and Proutists. Then I will review more formal contributions which include mathematical modeling, much of which has been done by Marxist economists. For organization, the

discussion will be divided according to mainstream and radical views, with Keynesians falling under the "mainstream" description.

Mainstream Views

Joseph Stiglitz

The Keynesian argument linking inequality with recession is stated succinctly by Stiglitz:

> 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. (Stiglitz, 2012, p. 33)

Stiglitz presents an interesting thought experiment, writing, "…in some sense, the entire shortfall in aggregate demand – and hence in the U.S, economy – today can be blamed on the extremes of inequality." (Stiglitz, 2013, p. 107) He estimates that if the top 1% were to receive a 15% share of the nation's income rather than 20% aggregate demand would increase 1 percent directly, but up to 2% when multiplier effects are included, corresponding with an approximate 2 percentage point reduction in unemployment. Addressing the recession directly, he estimates that the value of the wage share lost during the recession exceeds the American Recovery and Reinvestment Act stimulus spending.

Looking to the origins of the crisis, Stiglitz argues that government policies increased inequality by favoring the rich, which in turn fed instability. Responding to the 2001 tech bust recession, Bush cut income taxes for the rich. However, that was an ineffective stimulus due to the lower marginal propensity to consume among the wealthy. Capital gains taxes were cut under Clinton from 30% to 20%, then further to 15% under Bush, with the justification that greater investment and growth would result.

But these tax cuts were also counter-productive. Corporations did not expect the cuts to last, so paid out as much as possible in dividends rather than acquiring capital equipment. Stiglitz (2013, p. 110) ruefully notes that investment actually fell in the early 2000s outside of real estate. Cuts in estate taxes may have also discouraged spending as there was greater incentive to set aside money for family bequests, to the loss of charities which would have put the money to use immediately.

Another important factor weakening the economy's ability to withstand shocks has been the erosion of both public and private safety nets, weakening automatic stabilizers. These changes make recessions more likely, more severe, and longer. Income taxes have become less progressive as social protections have been weakened. Parallel changes in the private sector, such the shift from defined benefit retirement plans to defined contribution plans, have also impacted working people by eroding security in weak economic times (Stiglitz, 2012, p. 36).

Federal Reserve policies were also entwined with the "politics of inequality." (Stiglitz, 2013, p. 110) Stiglitz's criticism takes on a "damned if you do and damned if you don't" quality as he criticizes both tight money inflation-targeting policies and ultra-low interest rates used to combat downturns. The contribution of tight money policies to inequality seems straightforward, as it is well-known that they favor creditors over debtors, and when applied prematurely keep unemployment high. However, beyond the obvious Stigitz cites balance sheet effects: Prices and wages may fall, but debt obligations do not. Lower wages may make firms better off, but that advantage for the economy does not offset the greater burden on households that must reduce spending. Thus the economy becomes more susceptible to shocks while harming the poor disproportionately and prolonging downturns by reducing the ability of low and middle income consumers to buy.

The easy money policies used to fight recessions since the 1990s earn a rebuke from Stiglitz primarily because they have been used as a substitute for more productive Keynesian fiscal policies such as tax cuts for low-income people or building public infrastructure. Rather than achieving long-term

macro stability, expansionary monetary policies encouraging growth through bubbles. Low interest rates encouraged the tech bubble in the 1990s and the housing bubble in the 2000s. But there are further unintended consequences. For example, low interest rate policies lower the consumption of interest-dependent retirees. Some workers delay retirement, reducing opportunities for new workers. Unintended impacts go beyond the shores of the U.S. and other developed countries as money chasing higher yields floods into emerging markets, creating bubbles there and raising prices of commodities for the poor.

Political consequences of inequality in turn worsen inequality and hamper government's ability to counter economic downturns. Fiscal policy, for example investment in education or infrastructure, is constrained because elites demand smaller government since strong government may lead to redistributive policies. Furthermore, deficits that invariably follow a severe downturn are called "unsustainable," giving rise to new conservative demands to rein in spending. Although redistribution is in the interest of a well-informed median voter whose income is below the average, outcomes in recent elections in many democratic countries do not conform to a median voter hypothesis. Rather, factors such as lobbying and campaign contributions are more important and have greater influence on political outcomes favoring the rich.

Stiglitz to an extent also echoes the arguments for instability due to inequality coming from the top with his scathing description of financialization. However, the trend also has detrimental effects on lower-income groups, furthering instability from below. As political capture by the rich brings a pro-market philosophy to government that erodes the safety net, it also promoted the deregulation of the financial sector. The resulting financialization directly destabilizes the economy, but also contributes to inequality with its own destabilizing effects. Again, we see circularity: the large financial sector demands and receives deregulation along with weaker anti-trust enforcement, but also more stringent

bankruptcy laws. Financialization further destabilizes less developed countries (LDCs) and emerging markets, as capital flows are pro-cyclical.

In short, Stiglitz describes a vicious cycle in the U.S. of recent decades in which policy-reinforced inequality creates instability, which in turn worsens inequality. Economic volatility makes firms risk averse, reducing the investment needed both to emerge from recessions and to build long-term sustainable growth. The middle and lower income groups bear a disproportional burden from recessions as safety net programs are weakened and policies favoring the rich keep wages low. The low aggregate demand that results prolongs recessions and sets the stage for future recessions.

Robert B. Reich

Reich (2010) makes points similar to those of Stiglitz: The recession occurred because growing inequality squeezed the purchasing power of the middle class. A unique narrative that he offers is a sequence of coping mechanisms Americans used to maintain their living standards as they faced their new reality of stagnant incomes. In the shared prosperity of the post-war decades Americans had come to think of a continually improving standard of living to be the norm. As average incomes ceased to grow in the seventies and eighties, women in previously one-earner households entered the labor market in large quantities in order to maintain family living standards. The next approach was for to work longer. Average working hours grew until they exceeded even those of the industrious Japanese. The final coping mechanism was to go into debt. It was facilitated by rising home prices, deregulation of financial markets, and low interest rates maintained by the Federal Reserve to prop up the weak economy. The debt took many forms, including credit card balances, student loans, auto loans, and especially mortgages and home equity loans. When the credit bubble inevitably burst, the economy collapsed.

Formal Modeling Within the Mainstream

Much attention has been drawn to a paper by IMF economists Michael Kumhoff and Romain Rancière (2010) as the first and perhaps only (along with a later iteration) mainstream attempt to model

instability that results from inequality. That it employs a dynamic stochastic general equilibrium model, an approach favored in mainstream economics, likely contributes to its recognition. It primarily models underconsumption, but also contains elements supporting an “instability from above” view.

The model divides the population into two groups, workers who comprise 95% of the population, and the rest who are investors. The key variable propelling the results is the workers bargaining power, which is set to drop over a 10 year period. As a result worker incomes fall but their consumption falls less, as investors lend to workers to make up the shortfall. By year 30 the steadily growing leverage brings defaults and a financial crisis that plunges the economy into a deep recession. Although the defaults temporarily reduce the debt of workers, they are not helped much because the crises further lowers wages as well. Soon worker debt is up to previous high levels.

Adding credibility to the model, when the calibrations are tweaked to more realistically mirror conditions preceding the 2008 crisis, outcomes become worse for workers and the economy as a whole. For example, the rising incomes of investors may be used either for consumption, investment in capital goods, or investment in loans. If fewer capital goods are purchased more money is channeled toward lending, increasing leverage and instability. This more closely resembles the pre-crisis trends, with historically low levels of investment and the rise of financialization. With another calibration the authors lengthen the time period wherein worker bargaining power is restored. After all, they note, worker bargaining power did not increase noticeably in the years preceding either 1929 or 2007. While the probability of the initial crisis is less compared with the baseline scenario, it rises steadily thereafter following increasing leverage. According to the authors, this illustrates a key point: “If workers see virtually no prospects of restoring their earnings potential even in the very long run, high leverage and high crisis risk become an almost permanent feature of the economy.” (Kumhof & Rancière, p. 18)

By the model, alleviating the plight of workers at the time of the crisis can be accomplished in either of two ways. There can be an orderly reduction of worker debt, or an increase in bargaining

power. While the first solution reduces leverage and stabilizes the economy assuming that spillovers from the financial sector are minimized, worker leverage continues to rise after a time. However, restoring worker bargaining power at the time of the crisis in the baseline scenario not only causes the crisis to be avoided but steadily reduces leverage into the future since the workers have greater means to pay down their debts. The authors acknowledge that restoring worker leverage in the contemporary globalized world will not be easy.

In a later revamping of the model (Kumhoff, Rancière, & Winant, 2013) the issue of inequality becomes more explicit as the two groups are identified as the top 5% of income earners and the lower 95%. Outcomes are similar to those in the previous model. Of particular interest is a "counterfactual experiment" intended to see if the model can produce more socially desirable outcomes. They attempt to replicate the rapid reduction in inequality which occurred during the Roosevelt era, when the top 5% income share fell from 33% to 22%, and at the same time household debt-to-GDP ratio fell from 36% to 14%. (Credit for these improvements is given to rising marginal income tax rates, which rose to 90% by 1944.) When shocks reduce the income share of the top 5% the probability of the initial crisis is greatly reduced, while consumption grows for the bottom 95% and their debt levels fall. Future crises also do not occur.

Radical Views

The contention that underconsumption is a major cause for economic instability has a long history in economics, particularly among its dissidents. The outline of a theory of inadequate demand stemming from inequality was articulated by Sismondi in the 18th century (Lutz M. A., 1999). Hobson's emphasis on underconsumption along with a critique of thrift put him on the outside of respectable economic theory in the late 19th century, but served as a precursor to the work of Keynes and made Hobbes influential for contemporary social economists (Lutz M. A., 1999; Nemmers, 1956).

The early economist who created the most detailed theoretical framework explaining underconsumption was Marx. Contemporary Marxist authors have used this framework to write some of the most penetrating works on the recent crisis. Prominent among them are John Bellamy Foster and Fred Magdoff (2009), both associated with the journal Monthly Review, and Richard Wolff (2010). As their views are similar, their perspective can be conveniently surveyed through Wolff's essay "Capitalism's Crisis through a Marxist Lens," summarized below. Following that an example will be presented of more formal modeling in the Marxist tradition which shows underconsumption leading to crisis.

Richard D. Wolff: "It's the system, stupid."

Marxist economist Richard Wolff sees the crisis as a result of the workings of class structure. Furthermore, the recent crisis should not be seen in isolation but in the context of a long history within capitalism of recurring instability characterized by booms, bubbles, and busts. Regulatory reforms like tighter reigns on banks will not be sufficient to break this pattern. Rather, Wolff (p. 83) writes, "To deal effectively with capitalism's *recurring* (Wolff's emphasis) crises requires changing to a non-capitalist class structure."

The primary problem is stagnant wages. Wolff emphasizes the growing difference between rising productivity and worker wages, something mainstream observers such as Robert Reich (2010) discuss as well. A difference is the name Wolff gives the trend: exploitation. Stagnant wages accompanied by soaring capitalist profits derived from greater productivity created the recent crisis. A huge amount of output was created, but workers lacked the resources to purchase it. After paying corporate top executives and shareholders, the surplus was further divided to finance efforts intended to reduce payrolls such as the transfer of production abroad and installing labor-substituting technological improvements. Finally, it paid for lobbying legislators to further improve the condition of the capitalist elite, for example with tax cuts.

This set the stage for financialization. The surpluses were deposited in banks, enlarging the banks and spurring the development of new financial instruments such as collateralized debt obligations so that even greater financial profits could be gained. The growth of the new instruments, along with the danger they brought, grew largely in the shadow banking system untouched by traditional regulation.

But just as in previous eras, capitalists were dependent on workers to purchase the output of their firms. But now there was a problem. Wolff (p. 84) writes, "The financial profits depended on the rising surpluses that depended on the stagnant wages." But financialization also provided a solution: massive lending to workers.

Wolff and other Marxist writers emphasize the bitter irony of this double blow. He deftly states, "…US capitalism…substituted rising loans for rising wages to workers. It took from them twice: first, the surplus their labor produced; and second, the interest on the surpluses lent back to them." Other mainstream economists have also noted the destabilizing connection between stagnant incomes and growing debt, but with different emphasis. Credit as a way to placate the poor is central to Rajan's thesis (See page 102), but his culprit is government policy, not capitalism. Reich (2010) also stresses the growing divide between rising productivity and stagnant wages, all accompanied by growing debt, but does not go so far as to present the disparity as essentially a theft.

In fact, taken individually, all of the occurrences leading up to the crisis mentioned by Wolff, such as growing inequality, the sale of overly-exotic financial instruments, etc., are also discussed by other more mainstream authors. The difference is placing these occurrences into a comprehensive critique of the workings of contemporary capitalism. As Stiglitz presented an alternative reality with less inequality (see above), Wolff (p. 85) offers a more radical one free of the causes for the recent crisis:

> Had this capitalist system been replaced by another, say one in which the workers who produced the surpluses in each enterprise also functioned as the collective appropriator and distributor of those surpluses, US history since the 1970s would have differed greatly. Workers appropriating their own surplus would likely NOT have frozen their real wages (hence no exploding consumer debt). Workers who collectively appropriated their own surpluses would likely NOT have given immense new payouts to top managers. The

distribution of personal income would thus NOT have become so unequal across the last thirty years. Workers appropriating their own surpluses would likely NOT have devoted huge portions of them to move their jobs overseas. And so on.

PROUT View

PROUT agrees that the cause of crises is fundamentally systemic. PROUT theorists will further agree with Wolff that the long-term solution to an unstable economy is to democratize it by institutionally transforming most production so that it is done by labor-managed cooperative firms. Prout further proposes a decentralized economic planning regime that will prioritize resource use to optimize human development. In the context of the recent crisis, it would be unlikely that responsible planners who were accountable to their communities would allocate investment into an overheated housing and commercial real estate market. If affordable housing was in short supply policy makers motivated by human development values would not regard it sufficient to lead low-income citizens to loan sharks. Finally, a Proutist income distribution would prioritize raising incomes at the bottom to ensure that all are able to purchase their requirements as recognized by prevailing standards, eliminating the need for excessive debt.

However, in a conventional capitalist framework wealth inequality is seen as the primary cause of especially severe economic downturns. Part of the view has been described previously in the section titled “Instability comes from above.” But in the holistic view of PROUT elements of instability will also come from below.

According to P. R. Sarkar the concentration of wealth is the fundamental cause of a depression (Sarkar P. R., p. 91). A secondary but related cause is a blockage in the circulation of money. These have been combined in the recent crisis, as well as at the beginning of the Great Depression. Wealth concentration occurred, followed by a credit crunch after the crisis. These causes may be categorized as problems of inequality arising from above. However, conditions leading to crisis are further aggravated by what Sarkar calls exploitation.

Several of the factors leading to the recent crisis could be interpreted in terms of exploitation, the misuse of other human beings to further one's own interests. Most of these abuses are also cited by other authors mentioned in this section. Proutists will agree with Marxists who contend that that profits accruing to capitalists morally belong to workers, and also with Marxists who endorse economic democracy and contend that workers ought to control their own firms. PROUT will also agree with Marxists and many mainstream authors that stagnant incomes in spite of rising productivity contribute to instability through underconsumption. The pervasive culture of consumerism promoted by corporations through advertising and other media is also seen by Proutists as a form of exploitation, as well as a poor substitute for opportunities for spiritual growth and development of other potentialities. Consumerism contributed to the "keeping up with the Joneses" mentality emphasized by authors such as Frank (2007), which likely contributed to the credit bubble. Perhaps the clearest example of exploitation preceding the recent crisis would be the systematic predatory lending that fattened profits throughout the financial system.

Ravi Batra, the most prominent PROUT-influenced economist, has been a pioneer in linking inequality to economic instability. One might even say, borrowing from a country song, that he wrote about the dangers of growing inequality before discussing inequality was cool. In his early work he showed that wealth concentration peaked not only before the Great Depression but also before the severe depression of the 1870s (Batra, 1985, p. 130). As far back as the 1980s when the current trend of increasing inequality was in its early stages Batra (1985) warned of its potential to destabilize. Wealth concentration brings riskier investments, as was already discussed. But more fundamentally, he wrote, systemic risk increases as more people are left with fewer assets. They will rely on more on credit, a prediction that now looks remarkably farsighted. Moreover, as banks find fewer credit-worthy borrowers, many banks will resort to dropping their lending standards. By the mid-2000s Batra affirmed and updated this claim by observing that many lenders had gone much further than simple loose

lending. He gave an early warning of the mortgage bubble, calling attention to the fraudulent and abusive loans being sold (Batra, 2008, p. 23).

To summarize, in the Proutist view crises only happen with excessive inequality and fundamental misuse of resources. Preceding the recent crisis we had a financial system out of democratic control and oriented toward short term profit rather than serving human development. It is a moral failure, a lack of vision, and a denial of human purpose as much as a purely economic failure.

Formal Modeling from a Marxist Perspective

The influential Marxist economist Michal Kalecki developed macroeconomic models emphasizing the distribution of incomes between profits and wages. Rohit (2011) produced a Kaleckian model specifically responding to the recent crisis, showing the need for ever more speculative investments to maintain growth after a declining income share for wages. The results of the model are detailed below.

An empirical paper by Stockhammer and Stehrer (2011) testing Marxist theoretical frameworks generally supports an underconsumption hypothesis. The authors test two Marxian macroeconomic models, that of Goodwin and that of Kalecki. Goodwin's model predicts weaker aggregate demand with greater labor share of national income due to weaker investment. However the Kaleckian model would result in greater aggregate demand, as the greater consumption would outweigh the relatively reduced investment. Tests of 12 OECD countries generally favored the Kaleckian model.

Rohit

Although the results of Rohit's theoretical model emphasize underconsumption as the primary culprit in the recent crisis it serves double duty, showing how the U.S. economy of the past three decades has become unstable from below as well as from above. Rohit modifies a Kaleckian growth model to demonstrate how underconsumption can both aggravate a downturn and slow growth in the long run. At the same time the model demonstrates how consumption led by the wealthy can also

destabilize the economy, adding credence to the "plutonomy" argument offered by Frank (2011) and others, as summarized previously.

Rohit seeks to explain seemingly contradictory trends in the U.S. economy. On the one hand worker incomes are stagnant and wage share of total income is in decline. On the other hand, before the crisis consumption was growing to make up a larger portion of GDP than has historically been the case. Furthermore, in spite of this increase in the consumption share of GDP, growth has been slower than in previous decades. At the same time, the U.S. experienced a spurt of growth in the late 1990s, and again in the early 2000s. Finally, the original Kaleckian framework predicts loss of worker wage share during downturns, but predicts that it will rise again in the recovery. However, in recent decades workers have lost wage share both in the recessions and in the brief booms.

In the model at equilibrium both short-run and long-run growth are dependent on a wealth effect, a dividend effect, and the underconsumption effect. In the short run growth, or what may be better termed recovery, is determined by the change in capacity utilization. The wealth effect would be determined by the change in the price of stock market equities, more specifically the ratio between the price of equities and the price of capital. When the value of this ratio increases it indicates that there is a growing disparity between the price of equities and the value of the underlying capital goods—in other words there is a stock market bubble. The dividend effect is the change in capacity utilization that occurs as a result of a change in the corporate dividend pay-out ratio. Greater wealth and dividends impact growth by increasing consumption by the rich. Underconsumption is identified as a change in capacity utilization that occurs when the profit share of overall income grows at the expense of workers' share. Partial differentiation results in capacity utilization that is positive with respect to the wealth and dividend effects, but negative to the underconsumption effect.

The implication is clear: In order to prevent a recession or to generate a recovery under conditions of a declining labor share of income, declining worker consumption must be more than compensated by

an increase in capitalist consumption due to the wealth effect associated with a stock price bubble and/or the dividend effect caused by an increase in the dividend payout ratio. Profit levels are assumed to be constant, so that will not be a source of higher dividends. Investment also will not save the day, as it is assumed here to be dependent on demand.

The three effects also impact long run growth, which is again positive in the wealth and dividend effects, but negative with respect to the underconsumption effect. The author notes that there are reasonable limits to increases in the dividend ratio. Therefore, in the presence of growing inequality (measured here as the rising share of profit in overall income) only a stock bubble can overcome the underconsumption effect to achieve growth.

A limitation of the baseline model acknowledged by Rohit is that it assumes no bargaining power on the part of workers. However, in order to explain stagnant worker income share in recent boom times as well as the busts, Rohit adds a supplementary equation incorporating the effect of inflation (p/p_e, where p the current price level and p_e is the expected price level) and the unemployment rate, citing as predecessors both Marx and Phillips of the Phillips curve fame. In Rohit's version wage demands are dependent on the expected price level, but realized real wages are constrained by the unemployment rate. Workers can push up the wage share with increased bargaining power during times of low unemployment. Capitalists, assumed to have market power, can hold on to their income share under such circumstances by increasing their markup, which pushes up the price level. However, in recent times two factors have weakened worker bargaining power even in boom times. First, union strength has diminished. Secondly, globalization forces American workers to compete with a global "reserve army of labor" even when unemployment is low. The global labor force is used as a credible threat against domestic labor demands for higher wages. The Phillips curve is essentially shifted downward and flattened by these forces. Hence it is possible to have a very low unemployment rate, as in the late 1990s, without wage shared growth and also with low inflation.

This model has remarkable explanatory power for recent events, as well as for the observations of other authors cited in this section. Several lament the bubble-led growth of the past three decades, with its inherent instability. The model demonstrates that bubbles are the most likely way to achieve growth with persistent inequality. Although booming stock prices of the 1990s provide the closest parallel to this model, the principle holds with other kinds of assets, like the real estate boom of the 2000s. The wealthy have benefitted disproportionately from these booms, and splurged to keep overall consumption in the economy high in spite of wage stagnation, as has been emphasized by Frank (2011) and other authors cited here. When the bubble bursts, the underconsumption effect thrusts the economy into a recession in the short run (as in 2001 and 2007), and hinders growth in the long run, as has been seen in the slower growth of recent decades compared with the post WW II period. The added modeling of bargaining power explains how the stagnant worker wages that lead to underconsumption are likely throughout the business cycle in the current economic environment.

One can quibble that the model does not capture all of recent trends. Importantly, real worker incomes rose during the 1990s, even though incomes at the top grew much faster. So while the author is correct that the income share of workers declined, they did gain in the period in real terms, a point that could have been clarified. Also, the model does not explicitly capture the growth in worker debt as an important way that consumption was maintained.

1.7 Government caused the crisis

Arguments for government errors with respect to inequality contributing to the recent crisis take drastically divergent forms. The Keynesian views of Stiglitz and Reich have already been discussed. Stiglitz, whose views were summarized above, details how government policies have worsened inequality while also weakening financial regulations, making financial crises more likely and recovery from downturns more difficult due to underconsumption. Krugman (2012, p. 83) also emphasizes the problem of political capture of the political process by the rich which results in destructive financial

deregulation, although he has expressed skepticism of the role of underconsumption in the recent crisis. On the other hand, in what can be called a more neo-classical outlook, Raghuram Rajan argues that it was actually misdirected government efforts to aid the poor which contributed heavily to the crisis.

Raghuram Rajan

Raghuram Rajan argues that inequality contributed to the crisis indirectly by creating political pressures for government policies that in turn pressured lenders to ease credit standards excessively. Increasing the availability of credit was a way of maintaining customary levels of consumption for lower-to-middle income people facing stagnant wage growth. This was easier than implementing policies likely to have a more substantial and long-lasting impact, such as improving education. As the argument of the former IMF chief economist has received perhaps the most public attention among the theories linking inequality and instability, it will receive detailed examination here.[11]

It will be argued that while Rajan does identify some policies that made credit more available to the poor, he fails to show that these policies are a direct response to political pressure arising from inequality. Furthermore, he understates the private sector's potential to respond to new profitable markets.

Rajan calls growing economic inequality one of several "fault lines," fundamental flaws in the global economic system that led to the economic collapse of 2008. Aside from rising inequality, which is perhaps the most publicized part of the book, Rajan also makes an extensive and persuasive argument for the contributing role of trade imbalances which encouraged foreign investors unfamiliar with American asset markets to increase demand for U.S. mortgage-backed securities. He also covers commonly discussed issues such as the incentive structures within financial institutions that encourage

[11] See, for example, an *Economist* article (2011) featuring his theory and his widely-sold and award-winning book.

risk-taking for short-term profit. His discussion of moral hazard from expectations of government bailouts is another well-explored theme. Keeping in mind that these variables are also important to Rajan's explanation for the crisis, let us focus on his view of how inequality comes in, as that is most relevant here.

Failure of the education system lies at the root of growing inequality and fixing that would provide a genuine solution. That is important to the argument, because to Rajan, it was ineffective government actions aimed at inequality that contributed to the crisis, not inequality itself.

While rising incomes at the very top 1 percent or higher has received much attention, that is not the kind of inequality that Rajan finds most troubling. Rather it is the growing gap between those at the 90th percentile and the median (the 90/50 ratio). This is where the impact on inequality of a failing education system is most apparent. Rajan points to the frequently-cited Goldin and Katz (2009) study documenting a slowdown in recent decades in the rate at which the population is expanding its average years of schooling.[12] Family attitudes are a contributor to the education gap, along with social advantages that come to middle and high-income families. (Rajan, 2010, p. 28) Careful to present a well-rounded argument, Rajan also acknowledges other frequently-cited causes for growing inequality, including weakened trade unions, globalization, and immigration.

Whatever the cause, inequality caught the attention of the political class. However, a gridlocked and polarized government was not been able to develop programs to address core causes, especially a poor education system. More effective programs of redistribution were also unlikely. How then to improve the lives of constituents, or at least to reduce complaints and resentment? The bipartisan path of least resistance has been to ease credit availability. Rajan writes, "As evidence mounted in the early

[12] Galbraith (2012) uses considerable space in his book, reviewed elsewhere in this paper, to rebutting the conclusions of this study.

1990s that more and more Americans faced stagnant or declining incomes, the political establishment started looking for ways to help them with fast-acting measures – certainly faster than education reform…" (Rajan, p. 34) In response, easing access to home mortgages was found to be a painless way to address the political problem, while providing additional political benefits:

> Politicians love to have banks expand housing credit, for credit achieves many goals at the same time. It pushes up house prices, making households feel wealthier, and allows them to finance more consumption. It creates more profits and jobs in the financial sector as well as in real estate brokerage and housing construction. And everything is safe – as safe as houses – at least for a while. (Rajan, p. 31)

Rajan lists several legislative and administrative government actions that eased access to mortgage credit, spanning multiple administrations from the 1990s. Special attention is given to the government-sponsored enterprises (GSEs) Fannie Mae and Freddie Mac (Rajan, p. 41). The narrative begins with the 1992 Federal Housing Enterprise Safety and Soundness Act, which set affordable housing goals for the agencies (as Fannie and Freddie are also frequently called) and established a system to monitor progress. Reasonable as that seems, Rajan argues that it was folly to expect profit-seeking enterprises to fulfil a public purpose. Although founded by the government, the mortgage GSEs acted every bit like the profit-seeking corporations that they were. Not unlike other large corporations, they lobbied heavily to influence laws and regulation affecting them. For example they succeeded in enacting legislation to reduce funding for their regulation and to reduce their capital requirements. Succeeding administrations pushed the agencies to greater risk. First Clinton increased requirements for low-income lending to 50%, then Bush increased it to 56%. Rajan argues further that the pro-lending political environment made regulation lax, writing, "…support for housing credit was so widespread that few regulators, if any, dared oppose it." (Rajan, p. 31) What made these policies especially attractive to politicians was that they could achieve their policy goals by "twisting the arms" of the agencies

without increasing government expenditures. The FHA also is criticized for guaranteeing loans to low-income borrowers on a large scale even as the crisis was forming in 2007.

Finally, Rajan shows that a disproportionately large number of subprime loans went to low-income borrowers, who became the source of most mortgage defaults. He points to studies which show that credit growth was negatively correlated with income in the period before the crisis. Furthermore, much of this new borrowing came from zip codes where incomes were low, and would be associated with subprime mortgages. This to Rajan is more evidence of government involvement in the credit market, as well as the irresponsible lending which set the stage for widespread defaults and the crisis.

Evaluation

Rajan's argument may be divided into two parts. First, he seeks to establish that government actions were an important, and perhaps the most important, cause of the widespread mortgage defaults which led to the crisis. Secondly, he argues that these mistaken policies were a direct response to growing inequality. Both points are controversial, but the latter one presents Rajan with the greater challenge in his effort to convince his readers. Let us assess the two arguments in order.

There is a large literature blaming government actions for the crisis, much of it from conservative political sources. Rajan heavily cites two of the most vocal authors representing this view, Edward Pinto and Peter Wallison of the American Enterprise Institute. Pinto (2015) has compiled much data supporting the argument, while his frequent co-author Wallison has been more a polemicist promoting the view in numerous articles, for example opinion columns in the *Wall Street Journal* and *Forbes* as well as in blogs at the American Enterprise Institute. As a member of the Congressionally-sponsored Financial Crisis Inquiry Commission (FCIC), Wallison (2011) also authored one of the dissents to the Commission's report. Wallison has argued

essentially that government actions were the *only* cause of the crisis. Therefore, he reasons, more government interventions to prevent future crises, such as financial reform, are wrong-headed and serve only to stifle growth (Wallison, "Wall Street's Gullible Occupiers", 2011).

The argument that Rajan presents is more nuanced and multi-faceted. As was noted, he cites several "fault lines" leading to the crisis. Nonetheless, he does not distance himself from Wallison and Pinto's controversial conclusions and data. In response to critics who downplay the government's role, Rajan writes, "This certainly was not the only factor at play, and to argue that it was is misleading. But it is equally misleading to say it played no part." (Rajan, p. 42)

Much of the argument between Wallison and Pinto and their detractors has had a chicken-and-the egg quality: Did Government actions toward the GSEs cause the private sector to promote sub-prime mortgages on a massive scale, or did the GSEs follow the market to retain market share? Notably, no commentator read in the course of this research holds the GSEs blameless. The difference is that the former view lays the blame for the entire crisis at the feet of government policy, especially toward the GSEs, while the latter places the GSEs as at the most side-contributors to a much larger process. Sorting through claims becomes all the more difficult since they are associated with entrenched political positions. Indeed, Wallison takes it as a validation of his position that his view on the crisis was adopted by the all of the 2012 Republican presidential candidates and by most Republican members of Congress. He further boasts that his research into the cause of the crisis has persuaded many Republican Congress members to call for the repeal of the Dodd-Frank financial reforms (Wallison, 2012).

The controversy is clearly seen in the Financial Crisis Inquiry Commission Report. The democratic majority presented what seems to be the view of most researchers on the subject, that the GSEs were significant contributors to the crisis, but not the main cause (Financial Crisis Inquiry Commission, p. xxvi). The commission cites several pieces of evidence. First, they maintain that GSE mortgage securities essentially maintained their value throughout the crisis, and further, were not a significant contributor

to financial firm losses. Furthermore, they conclude that the GSEs were late to the game of dealing in subprime mortgages, writing, "…they followed rather than led Wall Street and other lenders in the rush for fool's gold." (Financial Crisis Inquiry Commission, p. xxvi) The GSEs greatly increased their purchases and guarantees of risky loans in 2005 and 2006, well into the housing boom. However, while they purchased private label (that is, non-GSE) subprime mortgages, they selected ones with the highest ratings, and reduced their share of that market to 28% by 2008, down from 40% in 2004. Citing these numbers, the report emphasizes that the agencies never held a majority of these securities. The motivation for loosening underwriting standards in these purchases and loan guarantees was to "meet stock market analysts' and investors' expectations for growth, to regain market share, and to ensure generous compensation for their executives and employees." Broad public policy support for expanding home ownership was used to justify these policies. Nonetheless, the commission found that default rates for GSE-backed mortgages were substantially lower than those securitized by other firms. Finally, the commission concluded, citing interviews and other evidence, that HUD housing goals contributed only "marginally" to decisions to engage in riskier activities during this period.

The Wallison dissent disputes nearly all of these conclusions. An indication of the extent to which Wallison is an outlier in his views compared with most other researchers may be the existence of a separate dissent by three other Republican members of the commission. In their dissent they write, "Fannie Mae and Freddie Mac did not by themselves cause the crisis, but they contributed significantly in a number of ways." (Hennessey, Holtz-Eakin, & Thomas, 2011, p. 437)

In his dissent Wallison emphasizes that it was the widespread sale of mortgages to low-income borrowers that distinguished this crisis from previous housing bubbles, and made it more dangerous. Community Reinvestment Act (CRA) and Department of Housing and Urban Development (HUD) requirements on the GSEs and lenders to increase lending to low-income groups forced the lenders to compete for these borrowers, and recruit them with progressively lower lending standards. He writes,

“It wasn’t the size of the bubble that was the key; it was its content.” (Wallison, 2011, p. 445) The quantity of mortgages to less qualified low-income borrowers was more important than the complex securitization frequently cited elsewhere. Predatory lending likely occurred, but was insignificant. Rather, “it also appears that many people who received high risk loans were predatory borrowers, or engaged in mortgage fraud, because they took advantage of low mortgage underwriting standards to benefit from mortgages they knew they could not pay unless rising housing prices enabled them to sell or refinance.” He does not detail how this could have occurred without the widespread cooperation or at least negligence of the lending institutions.

A Washington Post article from early in the crisis (Leonnig, 2008) details the sequence of government involvement in the mortgage crisis and lends credence to some of Wallison’s claims. HUD did indeed require Fannie Mae and Freddie Mac to purchase more “affordable” loans, while there was little effort to check whether these new borrowers could afford their payments. Oversight was weakened by a Clinton administration decision to allow the agencies to purchase subprime mortgage-backed securities and count them toward their affordable housing lending obligations. It is more difficult to impose lending standards when purchasing securities based on packaged loans than when purchasing loans directly from the originator. Moreover, in practice it was not possible to screen the millions of mortgages contained in the securities for quality. GSE purchases of such securities ballooned in the years preceding the crisis as the subprime loans became more popular. The purchases helped create a market for such loans. The article confirms that the agencies targeted the cream of the market, the least risky subprime loans. However, these purchases helped capitalize a larger market in which less qualified borrowers were allowed to enter. A Freddie spokesperson is quoted as saying, "The market knew we needed those loans." She goes on, the higher goals "forced us to go into that market to serve the targeted populations that HUD wanted us to serve." The quote may be seen as self-serving, as it pushes

responsibility for poor judgment on to the government and away from Freddie management. Nonetheless, it fits Wallison's narrative precisely.

However, the article also supports points in the majority report. It confirms the buildup of market share of subprime securities purchased to 44% in 2004 – a large share although never the majority – but also a steady decline to 20% by 2006. Furthermore, in the article (written before the agencies were nationalized at the beginning of the most intense phase of the crisis) most experts interviewed saw the mistakes largely as regulatory failures rather than fundamental flaws in the mission of the agencies. For example, in response to the decision to accept subprime securities to meet agency affordability goals, an academic expert said, "That was a huge, huge mistake. That just pumped more capital into a very unregulated market that has turned out to be a disaster." Another academic expert said, ""For HUD to be indifferent as to whether these loans were hurting people or helping them is really an abject failure to regulate."

Perhaps the most telling evidence in the article for regulatory failure, as well as a refutation of Wallison's claim that predatory lending was insignificant, is the estimate from the National Association of Affordable Housing Lenders that 30% of subprime borrowers during the pre-crisis period could have qualified for lower cost and safer prime loans. To the extent that the estimate is accurate, it would represent a fundamental failure on the part of HUD to fulfil its mission of helping the public find affordable housing.

There is independent support for the Financial Crisis Inquiry Commission (FCIC) majority view from an academic source as well. In a detailed study of the mortgage industry and securitization preceding the crisis Simkovic (2013) largely confirms the FCIC finding that the agencies maintained high underwriting standards for loans that it securitized. (Simkovic makes the case that reductions in lending standards throughout the industry were largely the result of increased competition.) In fact,

performance of loans purchased directly by the GSEs had among the lowest delinquency rates in the industry, about half the rate prevalent in the total mortgage market.[13]

However, the agencies also purchased large quantities of private-label MBS. Although they attempted to limit their purchases to the highest rated of these securities, they still proved to be the undoing of the GSEs. It is the extent to which private-label purchases along with their more traditional direct mortgage purchases harmed the larger market which is in dispute.

For the industry as a whole, all parties to the debate agree that the quality of loans declined after 2005, as is clearly shown by Simkovic (p. 213). Serious delinquencies from all kinds of loans issued from 2005 to 2008 skyrocketed. However, as figure 3.8 below shows, the overall quantity of mortgage-backed securities issued declined from a peak in 2003. Moreover, agency dominance in the market declined precipitously after 2004. It rose again as the crisis deepened until the agencies dominated more than they had in a decade, since private issuers left the market.[14] This calls to question Rajan's assertions, following Wallison and others, that agency dominance in the MBS market forced the industry toward greater risk. Rather, it supports Simkovic's contention that it was competition from private issuers entering the market that drove a deterioration of standards throughout the industry, or in his word, a "race to the bottom." (Simkovic, 2013, p. 222) Also, the diagram shows that the agencies were reducing their footprint in the market as the most troubling lending expanded.

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[13] (Footnote. The delinquency rate for loans purchased by Freddie Mac and Fannie Mae at the end of 2010 was 3.8% and 4.5% respectively. For comparison, the rate of delinquency or default for FHA loans was 8.1% and 8.6% for the total mortgage market. The rate for all non-agency MBS was 25.6% (Simkovic, p. 243).

[14] The FCIC report (pp. 310-313)details Fannie's successful lobbying of the Treasury, regulators, and Congress members to reduce constraints on its lending in 2007. Even though the GSEs were already posting huge losses, the Treasury, regulators, and Congress members relented because they believed that Fannie and Freddie were the only entities available to provide the liquidity the mortgage market needed to prevent its collapse.

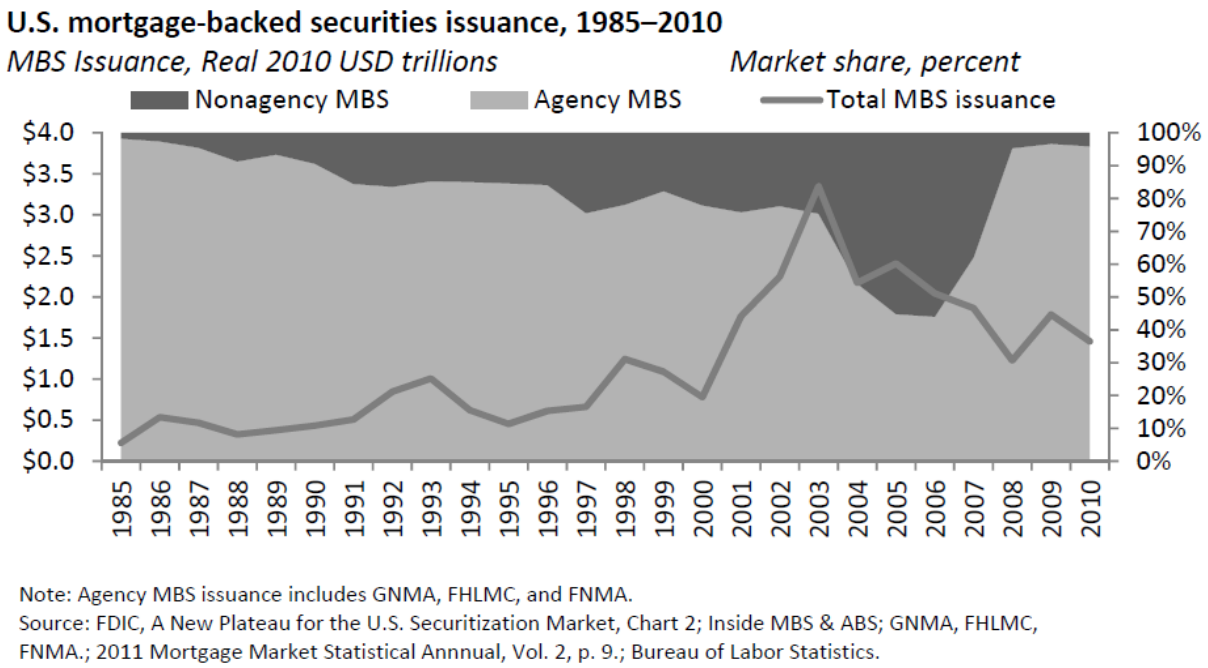

Figure 1.8 MBS issuance, from Simkovic (2013)

Let us examine how Rajan (p. 38) defends his case. Using the Pinto data, he emphasizes the government dominance in the market during the 2005-2007 period of extra risky lending. His claim that Fannie and Freddie along with the FHA, VA, and other government entities kept their purchases steady during this time and were exposed to 59% of the subprime and Alt-A[15] market by mid-2008 is difficult to reconcile with the evidence that the GSEs were withdrawing from these markets after 2004 accounting scandals (Leonnig, 2008; Simkovic, 2013). The claim is plausible if the mortgages with subprime characteristics that the GSEs purchased directly from originators are added together with the private label MBS the GSEs purchased. The view is clarified by Wallison and Pinto (2012, p. 7), responding to the "myth" that private subprime securitization exceeded government-sponsored securitization during this period. They claim that Fannie and Freddie purchased 20% of private label mortgage securitizations

[15] These are "Alternative to Agency" loans, or those that do not meet traditional Fannie Mae or Freddie Mac requirements.

between 2004 and 2006, a number similar to that reported by Leonnig and Simkovic. However, Wallison and Pinto assert that since these were packaged by private securitizers with the confidence that they would be purchased by the agencies given the agencies' voracious demand, they should be considered equivalent to securities packaged by the agencies themselves. In that case, the combined original issuance and purchased securities would add up to $3.2 trillion, compared with $2.6 trillion in purely private issuance. This is about 55%, close to Rajan's claim of 59% for all government-related entities in 2008. "Thus," Wallison and Pinto (2012) write, "the private-sector market share of securitizations never exceeded GSEs issuances between 2004 and 2006." They do not admit, however, that the agency share in this market was declining, as indicated by the Simkovic figure 3.8. Also, Rajan's claim of high agency involvement in subprime mortgages does not acknowledge that by the crisis year of 2008 most private MBS issuers had fled the market, leaving it almost exclusively to the GSEs. Simkovic (p. 264) summarizes the agency private-label MBS purchases in question simply and succinctly: "From 2001 to 2008, the GSEs purchased approximately 30% of subprime private label MBS and approximately 10% of Alt-A private label MBS." This is a significant amount, but allows for plenty of impact from private purchasers.

Why the agencies jumped heavily into these private-label MBS purchases is a matter of intense dispute. Rajan (p. 38), citing Wallison and Calomiris (2008), argues that acceleration of subprime mortgage purchases occurred after 2004 because both Fannie May and Freddie Mac suffered major accounting scandals that forced the dismissal of their top management. In order to maintain the favor of Congress (and to fend off calls to limit their activities) the agencies bowed to the desires of key members of Congress to increase lending to low-income groups. This required directly backing more subprime loans as well as purchasing large quantities of private label MBS based on loans with lower quality characteristics, which the agencies could count toward their affordable housing (AH) lending requirements. Simkovic, however, disputes this view, claiming the scandals caused agencies to reduce their subprime exposure in the light of increased regulatory and public scrutiny. Private securitizers filled

in the gap. He acknowledges that HUD affordable housing goals may have played a role in agency acquisition of private-label MBS, but concluded that any effect was limited. More likely, he said, is that the GSEs made the same mistakes that private purchasers made in underestimating the risk, placing excessive trust in private securitizers and MBS ratings. The private purchasers, of course, were not under HUD pressure.[16]

Although Rajan cites Wallison and Calomiris (2008) to make his argument, Wallison proves less than helpful to Rajan if more of Wallison's writings are examined. In his dissent to the FCIC Report Wallison strangely contradicts himself to agree that Fannie lost market share of private-label MBS in the crucial years of 2005 and 2006, when the quality of mortgages issued deteriorated the most. In a passage intended to dispute the claim that the agencies increased their exposure to subprime mortgages in order to compete for market share, Wallison shows with data similar to that presented by Simkovic that GSE purchases of subprime private-label MBS declined significantly in these years. Citing internal memos, he argues Fannie executives decided that they had neither the infrastructure nor the financial ability to manage securities based on the lower quality loans that were increasingly dominating the market (Wallison, 2011, pp. 505-506).[17] Furthermore, Wallison quotes another memo from Fannie Chairman Stephen B. Ashley in which he discusses an order from their regulator the Office of Federal Housing Enterprise Oversight (OFHEO) to increase capital levels. Ashley also confirmed that the agency's

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[16] This view that denies or diminishes the significance of government AH goals in the GSEs' troubles is shared by prominent economists associated with politically liberal views, such as Paul Krugman (2008) and Joseph Stiglitz (2010). This may provide further indication of how this debate is politically polarized.

[17] Wallison quotes from what he calls the "Crossroads Memo" of June 2005 in which Fannie Executive Vice President Tom Lund declares that "We face two stark choices: 1. Stay the Course [or] 2. Meet the Market Where the Market Is". The first option meant to continue maintaining their higher standards for mortgage purchases except for what was required to meet AH standards, while the second meant to join in the rush with private securitizers to purchase lower quality loans and MBS. He concludes, "Realistically, we are not in a position to 'Meet the Market' today." (Wallison, 2011, p. 506)

ability to enter the subprime market more ambitiously was unlikely, writing that "…taking on more risk or opening new lines of business will be viewed dimly by our regulators." Wallison's point is to show that the agencies were not only reluctant to enter the subprime market more heavily but were institutionally unable to do so due to a lack of infrastructure to manage the entry and regulatory pressure preventing it. What subprime purchases they did engage in were only to satisfy AH requirements, and these were begun several years before. However, Wallison contradicts his other writings in multiple ways. In Wallison and Calomiris (2008), the article central to Rajan's argument, Wallison contends that the agencies increased subprime lending after the accounting scandals of 2004 in order to stay on the good side of Congress. Here, however, while he repeats the argument that Fannie and Freddie wanted to increase low-income lending to satisfy some Congress members, he shows they ultimately decided against it. It seems that his narrative changes when attempting to refute different points made by his rivals, in this case that GSE entry into subprime markets was due to competition with non-government affiliated securitizers. In fact he confirms the view made elsewhere by his more mainstream rivals that the agencies were constrained by regulation, and also that the GSE accounting scandal brought greater regulatory attention which further diminished their subprime exposure. The overarching contradiction presented in this passage is that in the critical period when lending standards declined the most Wallison acknowledges that the agencies reduced their subprime lending and did not strive to maintain market share. That means that private agents in the market who were not under government pressure for AH requirements must have played a significant, if not dominant, role in causing the crisis. This Wallison never acknowledges in any of his writings; if there is consistency in his writings on this subject it lies in his insistence that government pressure to lend to low-income groups was the sole cause of the crisis.[18]

[18] Wallison certainly acknowledges that other agents behaved badly, but he contends that none of

Unlike Wallison, Rajan does acknowledge that the private sector played an important role in the crisis, and much of his book is devoted to details of that role. However, relying heavily on a source who contradicts himself in different writings or when arguing different aspects of his case also weakens Rajan's argument.

There is further disagreement about the quantity of substandard mortgages held by the GSEs. This is important to Rajan's argument, as he claims that the agencies' official accounting understated their exposure to substandard loans. Here is where Rajan advocates for Pinto's research most forcefully (Rajan, p. 38). The data compiled by Pinto lies behind the argument put forward by Rajan, but also the many articles and blogs on the cause of the crisis written by Wallison. An example of agency misclassification offered by Rajan is that that Fannie only classified loans as subprime if they came from originators that specialize in subprime loans.

Pinto defined subprime and Alt-A loans as follows: He divides both kinds of non-traditional loans into "Self-denominated" or "Not Initially Classified as …" It is the latter category that has attracted controversy. Self-denominated subprime loans would include those from lenders that specialize in sub-prime mortgages, along with those packaged in specifically subprime MBS or that had especially high interest rates. Those "Not Initially Classified as Subprime," also called by Pinto "Subprime by Characteristic," were made to people with credit scores below 660. Self-denominated Alt-A loans would be those designated as such by the originator, or those that were packaged in Alt-A MBS. Those "Not Initially Classified as Alt-A" would be loans with non-traditional characteristics such as adjustable rates (ARMs), interest-only, or negative amortization. In addition, Pinto places in this category high LTV (Loan to Value) loans. Here he includes nearly all loans with less than a 10% down payment (Pinto, 2015).

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them would have brought the economy to crisis without the government pressure for affordable housing. (Wallison, 2011, p. 444)

Wallison claimed some validation for championing Pinto's subprime mortgage counts when the S.E.C. filed a suit against Fannie and Freddie executives for making false disclosures about the size of the companies' subprime holdings (Wallison, 2012). A prominent critic of the Pinto/Wallison designations is New York Times financial columnist Joe Nocera, who expressed what Wallison called "the conventional narrative of the left" in criticizing his FCIC dissent.[19] Calling Pinto's data "inflated," Nocera writes, "Pinto classifies just about anything that is not a 30-year-fixed mortgage as "subprime." (Nocera, 2011) In particular, Nocera points to loans classified by Pinto as Alt-A and assumed to be of inferior quality because they had low documentation but nonetheless were made to borrowers with high credit scores. One would also think that that all high LTV loans may not be bad, as many qualified first time home-buyers are not able to put 10% down but receive otherwise conventional loans. Nocera also points to the low delinquency rate among agency mortgage holdings as evidence that Pinto's data are misleading. It is beyond the scope of this paper to go through Pinto's data to check its validity. The point to be made here is that Rajan again weakens his case when he does not disclose that the Pinto data he relies on is at best controversial as a reliable indicator of the quality of GSE mortgage holdings and their role in spawning the crisis.

The second of Rajan's arguments must also be examined – his claim that the problem of growing inequality was behind government attempts to ease access mortgage credit for low-income groups. The case seems nearly impossible to prove, and it would be difficult to show that it is even plausible. It is insufficient to show that many pro-home ownership policies aimed at the poor were enacted and that they had a large and destabilizing effect on financial markets. Rajan would also have to show that the policies were more than what they seemed at the surface – simply another of many programs intended

[19] Nocera also went so far as to label the Wallison/Pinto theory putting the GSEs in the center of the crisis as "loony." (Nocera, 2011) Wallison (2012) reasonably responded that using that kind of term was an unhelpful way of delegitimizing an opponent's view in a debate.

to assist low-income Americans, in this case aimed at helping them achieve the advantages that come with home ownership. Instead, they were collectively a "palliative" to stifle discontent when the political will to provide lasting solutions to inequality was not to be found (Rajan, p. 39). Rajan himself acknowledges the difficulty of establishing conscious intent, writing that the policies were "guided by the preferences and applause of the audience" rather than a "Machiavellian plan." Nonetheless he stands by his thesis.

An example of the difficulty of the argument would be with respect to the Community Reinvestment Act. Rajan makes much of Clinton-era efforts to strengthen enforcement as an example of a political response to growing inequality. However, the act itself dates from the 1970s, before the inequality trend took hold. If the motive behind establishing the law in 1977 was to prevent redlining and to encourage the availability of financial services in low-income neighborhoods, it is not evident why the motive behind strengthening enforcement in the 1990s would be different. Similarly, the expansion of affordable housing requirements on the GSEs could as easily be seen as a continuation of a long history of anti-poverty efforts as much as a short-term response to inequality. Rajan does not supply any direct evidence of the connection between specific housing policies and inequality, such as speeches or statements supporting the policies on those grounds.

It can also be asked whether it is credible that in recent years government has been responsive to the concerns of the poor at all, regardless of the inequality trend. When Rajan presented his theory in a well-attended session at the annual Allied Social Sciences Associations (ASSA) conference of 2011, Daron Acemoglu (2011) raised the question to devastating effect when delivering his response. First, he presented data that shows a negative correlation between legislation that is enacted and the preferences of low-income voters. To punctuate his point he presented the slide below showing New Orleans residents pleading for help in the aftermath of

Hurricane Katrina. It was a stark image meant to typify official indifference to the well-being of the poor.

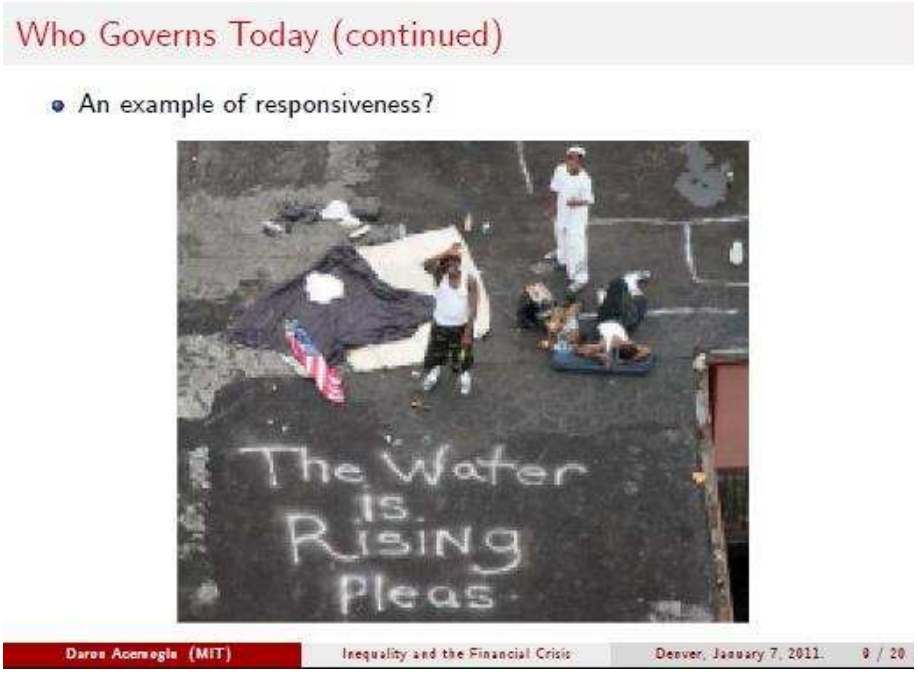

Figure 1.9 A slide from Acemoglu's presentation in response to Rajan, showing Hurricane Katrina victims

We do not seem to have many recent examples of government being overly responsive to the needs of the poor. On the other hand, Acemoglu provided multiple examples of effective lobbying by the financial industry for lower regulations and fewer restrictions. Acemoglu along with many others also observed that the response to the crisis provided bailouts to large lenders but little to help troubled homeowners, providing more doubt regarding government responsiveness to the poor. One may add, the failure to monitor and regulate how affordable housing requirements were carried out could be seen as much as indifference to the well-being of the poor as a political concession to them. Low income borrowers who ended up paying higher interest rates than necessary or were lured with deceptive low teaser rates were not done any favors.

Rajan has presented a unique and widely disseminated theory of how growing inequality contributed to the recent financial crisis. Those concerned with widening inequality in the U.S. may thank him for bringing the issue to a wide audience. Unfortunately, the mechanism he proposes to link inequality with the recent U.S. financial crisis strains credibility.

As noted, his argument stands on two pillars, first that government pressures upon lenders to achieve affordable housing goals was a major cause of the crisis and second that these policies were a direct response to growing inequality. In this review serious flaws were found in both parts of the argument.

It is not difficult to show that government actions and the GSEs contributed significantly the crisis. Rajan shows that both the Clinton and Bush administrations acted to increase access to mortgage credit for low-income citizens. Importantly, the Clinton-era decision to allow the agencies to purchase non-agency debt as a way to meet their AH goals allowed them to load their balance sheets with their most dangerous assets. Then the Clinton and Bush administrations did little to discourage the agencies' expansion of nontraditional credit or to supervise it. Pro-lending attitudes in Congress also fueled the agency actions.

However, Rajan overstates the dominance of the LGEs in the most destabilizing parts of the subprime markets, as well as the government's role. It has been shown that that the agencies reduced their purchases of non-agency securities both in absolute terms and as a share of the total market in 2005 and 2006, when mortgage-backed securities became the most toxic. Furthermore, other researchers have offered reasonable alternative explanations for why the agencies purchased these risky loans and securities, other than government requirements or attempts to curry the favor of politicians. For example, Simkovic provided a compelling case that competition from new private securitizers played an important role. Since Rajan argues the incompatibility of the agencies' public purpose with their for-profit status, he should not find it

unlikely that the agencies simply found what they believed to be an opportunity to profit and took it. Other research such as that done by the FCIC and Stiglitz (2010) pointed to the desire on the part of agency executives to obtain large bonuses and other compensation as was available in firms not affiliated with the government

Rajan employed the same questionable data that Wallison used to make Wallison's case that mischief comes from government intervention in market dynamics. However, Rajan had a different purpose. He intended to argue further that the interventions resulted from a response to the trend of growing inequality. But showing that housing policies targeted low income people and that their impact was large does not provide evidence for the motive behind the actions. It is not possible to distinguish such intentions from those behind many other anti-poverty programs over decades. The circumstantial evidence provided by Rajan is not stronger than alternative explanations given by other researchers.

1.8 Summary

This review tends to support to those arguing for a link between economic inequality and macro-instability. Serious flaws were found in literature arguing the contrary view. The most direct attack came from Bordo and Meissner, who showed that a statistical link between inequality and bank crises could not be established. They also argued that the period preceding the Great Depression bore little resemblance to the arguments and models offered by the researchers they sought to refute. However, it was shown that bank crises were weak predictors of the most severe economic downturns. Moreover, Bordo and Meissner mischaracterized the economy of the 1920s in important ways, primarily by asserting inaccurately that wages were rising. Galbraith argued that inequality does not cause instability but that they are nonetheless related: The bubble-based growth of the past three decades in the U.S. created both inequality (mostly from the income growth of top earners) and instability. However, in my critique I argued

that Galbraith ignored problems emphasized by other researchers, including the destabilizing potential of stagnant wages in the middle and lower parts of the income spectrum as well as potential instability from income concentration at the top.

Those arguing for a causal link approached the problem from different angles. Their views are summarized in the following table:

Table 1-1 Summary of theories linking inequality and instability

Instability from above or below?	Mechanism of transmission: Inequality→crisis	Argument generalized or specific to 2008 crisis?	Examples of proponents	Research tradition of primary proponents
Above	Increased demand for financial products	Generalized	Batra, Milanovich, Lysandrou	PROUT (Batra)
	Decreasing risk aversion	Generalized	Batra, Milanovich	PROUT (Batra)
	Inequality increases political influence of wealty→financial deregulation; weaker wages, safety net, and job security	Specific to 2008	Krugman, Reich, Stiglitz	Keynesian
	Expenditure Cascade	Generalized	R. H. Frank	Keynesian
	Unstable consumption by rich	Generalized	R. Frank, Rohit	Not well defined (R. Frank) Marxist (Rohit)
Below	Underconsumption	Generalized	Batra, Reich, Rohit, Stiglitz, Wolff	PROUT, Keynesian, Marxist
	Excessive use of credit due to wage stagnation	Generalized and specific to 2008	Nearly all; Batra, Kumhof & Rancière, Reich, Stiglitz, Wolff,	PROUT, Keynesian, Marxist
	Government pressure on lenders for AH goals	Specific to 2008	Rajan	Neo-classical
	Systemic Failure; lack of economic democracy	Generalized	Batra, Wolff	Marxist, PROUT

Persuasive arguments have been presented that most of the factors listed in the table contributed significantly to the crisis. Although researchers will tend to emphasize one or two factors as they seek to explain how inequality can destabilize, our understanding can be expanded by incorporating all valid arguments. Indeed, a rare event like a severe crisis is likely something akin to a perfect storm, with multiple causes conspiring to bring about disaster. To take the recent crisis as an example, inequality from above increased demand for exotic financial products while stagnant wages increased demand for credit from below. Both trends were exacerbated by political trends favoring the rich, as well as psychological factors as described by Frank's "expenditure cascade." The gap between wages and productivity increases created an unstable economy that could only grow through bubbles and unstable luxury consumption by the rich. Finally, none of these difficulties could come to pass in a non-exploitative economic framework where resource utilization is targeted toward human well-being, income inequality is strictly limited, and businesses are managed in the interests of their workers.

The most serious challenge to a link between inequality and instability is the lack of clear empirical evidence. While important flaws were found in the research of Bordo and Meissner and Galbraith, both presented empirical evidence casting doubt on the connection. The lack of empirical confirmation is shown most credibly by Atkinson and Morelli. In the following section I attempt to bring progress toward resolution of this impasse with a new empirical approach which shows that inequality is related to the severity of economic disasters.

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2 Empirical Project: Linking Inequality with the Severity of Economic Crises

In this research I attempt to determine whether economic inequality contributes to the severity of economic downturns. The work will expand on the thorough report by Atkinson and Morelli's (2011) "Economic Crises and Inequality." The authors conduct a 100 year survey of 25 countries to determine whether inequality was linked to banking crises, as well as major falls in GDP and consumption. (This study will be restricted to the impact on GDP and consumption, as those variables are most closely related to human impacts.) While they found that some economic disasters were indeed preceded by rising inequality, they determined no consistent pattern. In some countries inequality rose after, rather than before the event and some countries saw no significant change. This study will go a step further to examine whether inequality can play a role in increasing the severity of a consumption or GDP disaster.

The question is consistent with a goal of this dissertation to introduce the PROUT perspective to economic thought. PROUT's founder P. R. Sarkar (1992) identified wealth concentration as a major cause of depressions. His close student, Southern Methodist University economist Ravi Batra (1985, p. 125) has noted that most pre-WWII U.S. recessions involved financial crises, perverse monetary policy, and pro-cyclical fiscal policy, but they did not result in depressions. The new parameter for the Great Depression, he writes, was concentration of wealth, which peaked in 1929 with the top one percent owning 36.3% of the nation's wealth. Wealth concentration was also historically high before the Panic of 1873 (Batra, 1985, p. 130).

Unfortunately historical wealth concentration data is not available for many countries. This study will use income inequality as a substitute. Income inequality generally moves in the same direction as wealth inequality, although certainly not perfectly. Notably, in recent years income concentration has risen much faster in the U.S. than wealth concentration (Atkinson & Morelli, 2012, p. 59).

The Data

I will use the inequality data set assembled by Atkinson and Morelli (2012) and used in their 2011 report mentioned above. The data set includes time series by country on inequality indicators reaching back to 1911, including

- Overall Income Inequality, indicated with GINI scores.
- Top income shares at the .1% and 1% level, taken from the World Top Income Database.
- Poverty rates, with poverty defined as 60% of the median income.

In "Economic Crises and Inequality" the authors mainly use Gini scores to document changes in inequality. However, where those were not available they used, in order of preference, top 1% income shares and poverty rates. In this study, however, different measures of inequality are tested separately. Therefore, for example, I omit incidents where Gini is the independent variable but Gini information is not available. Other inequality measures are treated the same way.

Atkinson and Morelli (2011, pp. 13-14) note that their inequality measures are each more sensitive to impacts on different segments of the population. The poverty rate affects the lowest-income households the most. While this is of great economic concern since the affected people experience the most harm from a lack of resources, it is not included in this study which is focused more on the impact of wider measures of inequality. While it is not possible to tell precisely what segment of the population is contributing to inequality the most from the Gini alone, Atkinson and Morelli maintain that it is a measure that is more sensitive to the middle-income group (i.e. "the middle class") becoming more distant from the extremes of income dispersion. As the term suggests, top income shares clearly focuses on inequality coming from increased concentration in the highest income group.

These distinctions are important for testing the various theories of how inequality contributes to instability. Finding top income shares to be significant will give credibility to claims that a growing income share for the rich destabilizes the economy by increasing the number of risky investments. On

the other hand, if growing Gini coefficients are found to be major contributors theories of underconsumption by the working population are given credence.

Atkinson and Morelli identify crises primarily as was done by Barro and Ursúa (Barro & Ursúa, 2008). They also used the raw data compiled by Barro and Ursúa (2010), annual GDP data for 37 countries and consumption (C) data for 24 countries. The data is organized into indices for GDP and C beginning in 1790 and ending in 2009, with values set at 100 in 2006. Atkinson and Morelli accept the definition of a crisis chosen by Barro and Ursúa, a drop in GDP or C of at least 10% (rounded from 9.5%). However, having found unexplained omissions when reviewing the original data, they added several crises to their own list. Moreover, they reasoned that in the calmer post-WW II economic climate expectations are such that even a 5% drop in GDP or C would be as disruptive as much larger drops in the earlier period. (Atkinson & Morelli, 2011, p. 59) Therefore they enlarged the list of crises to 100 GDP disasters and 101 consumption drops. As is appropriate for a study searching for a link between economic instability and inequality, they omit GDP and C declines associated with wars.

I take a different approach in order to test the impact of inequality on varying levels of disaster severity. I used Barro and Ursúa's 2010 database to determine both GDP and consumption declines of 5%, 10%, and 15%. All of these thresholds have precedents as definitions for severe disasters. As has been noted, Barro and Ursúa as well as Atkinson and Morelli have used the 10% threshold. However, in a previous study Barro (2006) uses 15%. Atkinson and Morelli considered 5% drops to be severe in the post WWII era.[1] Since there is some controversy regarding the calculation for which crises to include, I made my own calculations from the raw data to determine which events to include. Like Atkinson and Morelli, I omitted crises clearly related to wars because inequality is unlikely to be a significant factor. In

[1] Atkinson and Morelli's determination that post-WWII declines of 5% should be considered severe disasters is reasonable. It is an indicator that 5% is indeed a strict standard that the 2007-2009 recession in the U.S. falls just short of qualifying, even though it is universally considered a severe and disruptive event. The U.S. recession is not included in any of the regression calculations included here.

another major departure from Atkinson and Morelli, I include all recessions and consumption declines in my regressions in order to test what factors bring about the most severe declines as opposed to ordinary ones.

2.1 Procedure

The empirical procedure is in four parts, testing the following questions:

- Can a statistically significant link be found between inequality and declines in GDP or consumption?
- Are output and consumption disasters sensitive to both high inequality thresholds and sudden increases in inequality, as measured by the Gini and top income shares?
- Are the conclusions consistent using different statistical estimation methods?
- Are the conclusions stable when tested with other variables considered important for instability or economic growth?

2.2 The basic model

In this first part a basic model is introduced and tested using the ordinary least squares (OLS) method. Percent GDP Decline and Percent Consumption Decline are regressed separately against Gini coefficients and top 1% income shares (TI_{t-1}), along with control variables commonly associated with economic crises.

$Gini_{t-1}$ in the equation below is the Gini coefficient measured usually in the year of the peak before the observed consumption or GDP fall. If the Gini coefficient was not available in the year of the peak preceding the GDP or consumption decline, the Gini from up to two years before or after was used if available. Occasionally a Gini from a year more distant from the desired date was used if the values did not seem to change much in the observed period. The lag subscript is attached to clarify that the usual procedure was to take the measure from the year before the year in which annual GDP or consumption showed decline.

There are some difficulties in comparing Gini coefficients across countries. First, it measures different kinds of inequality in different countries. For example one country might measure the Gini for individual incomes while only household income Ginis are available for another country. Both were accepted for this study. Also, some countries use disposable income for their measure while only gross income is available in others. Such inconsistencies had to be accepted to include as many countries as possible to get the best sample of economic crises

TI_{t-1} is the top income share in the year of the peak preceding a GDP or consumption decline. If the data was not available for the desired years alternative years were chosen as for the Gini.

The control variables were taken from the data compiled for Reinhart and Rogoff's (2009; 2010) encyclopedic study of the history of financial crises *This Time is Different.* The crisis variables were included if they occurred the year before the peak of a business or consumption cycle, the year of the peak, or the year after. Crises that occurred later in the period of decline were not included, even though they may have worsened or prolonged that GDP or consumption drop. Reinhart and Rogoff categorized crises into five major varieties, which may overlap. These categories are presented as dummy variables in the model as follows.

B represents a banking crisis which is systemic. One is given if a banking crisis is present, 0 if not.

Cu is for currency crisis, valued at 1 if present and 0 if not. Following Reinhart and Rogoff this is identified as a drop in the international value of the currency of 15% or more.

D, for debt crisis, includes both domestic and external sovereign defaults. One is given if the crisis is present, 0 if not.

I stands for an inflation crisis, defined per Reinhart and Rogoff as a rate of 25% or more. One is given if the crisis is present, 0 if not.

SMC stands for a stock market crash of 25% or more, again as classified by Reinhart and Rogoff. One is given if the crisis is present, 0 if not.

The regression equations are:

$$\Delta GDP = \beta_0 c + \beta_1 Gini_{t-1} + \beta_2 B + \beta_3 Cu + \beta_4 D + \beta_5 I + \beta_6 SMC + e$$

$$\Delta GDP = \beta_0 c + \beta_1 TI_{t-1} + \beta_2 B + \beta_3 Cu + \beta_4 D + \beta_5 I + \beta_6 SMC + e$$

$$\Delta C = \beta_0 c + \beta_1 Gini_{t-1} + \beta_2 B + \beta_3 Cu + \beta_4 D + \beta_5 I + \beta_6 SMC + e$$

$$\Delta C = \beta_0 c + \beta_1 TI_{t-1} + \beta_2 B + \beta_3 Cu + \beta_4 D + \beta_5 I + \beta_6 SMC + e$$

OLS results are shown here:

Table 2-1 OLS results, basic model

Percent GDP Decline					Percent Consumption Decline			
Gini	1	TI Share	2		Gini	3	TI Share	4
c	-0.0003	*c*	0.0090		*c*	0.0174	*c*	-0.0187
	(-0.0148)		(0.4644)			(0.7939)		(-1.2937)
$Gini_{t-1}$	-0.0010*	TI_{t-1}	-0.0067***		$Gini_{t-1}$	-0.0014**	TI_{t-1}	-0.0026**
	(-1.8579)		(-4.8377)			(-2.4069)		(-2.2271)
B	-0.0146	*B*	-0.0059		*B*	-0.0253*	*B*	-0.0208*
	(-1.3525)		(-0.4049)			(-1.9226)		(-1.6624)
Cu	-0.0223*	*Cu*	0.0015		*Cu*	-0.0084	*Cu*	0.0020
	(-1.8986)		(0.1035)			(-0.7264)		(0.1830)
D	-0.0044	*D*	0.0028		*D*	0.0224	*D*	-0.0042
	(-0.2008)		(0.0921)			(1.0776)		(-0.1759)
I	-0.0289*	*I*	-0.0522***		*I*	-0.0238	*I*	-0.0102
	(-1.8442)		(-2.8316)			(-1.5293)		(-0.6053)
SMC	0.0010	*SMC*	0.0121		*SMC*	0.0058	*SMC*	0.0053
	(-0.0947)		(0.9248)			(0.5383)		(0.5695)
Adj. R^2	0.1299	Adj. R^2	0.1872		Adj. R^2	0.0990	Adj. R^2	0.0199
F-stat	3.3895	F-stat	6.2972		F-stat	2.7764	F-stat	1.5273
Prob	0.0046	Prob	0.0000		Prob	0.0159	Prob	0.1729
Obs	97/98	Obs	139/139		Obs	98/98	Obs	157/159

T-statistic values in parentheses. "Obs" stands for included observations/total observations.
*significant at 90%,**significant at 95%, ***significant at 99%

The OLS approach is useful here to determine the general tendency for recessions and consumption declines to worsen with increased inequality, as measured by the Gini coefficient and the income share of the top 1%. According to this initial test that inverse relationship is statistically significant and consistent across both inequality measures and both kinds of economic crises. According to the first column the coefficient for Gini is statistically significant at least at the 90% level, and indicates that a one point increase in the Gini score will worsen a GDP drop by 1/1000 of a percentage point. While that number is very small it is still informative once put into perspective. The coefficients for the control variables for occurrences commonly associated with economic disasters are also quite small. However, it will be shown that the link between GDP and consumption disasters and inequality remains statistically significant for different levels of severity of major GDP and consumption declines,

and for different measures of inequality. On the other hand, for the control variables that show statistical significance the result is not as robust, as the significance is highly sensitive to changes to the regression model. In model 1 currency crisis and inflation crisis are also statistically significant at the 90% level. While the remaining control variables are not individually statistically significant, the model as a whole is highly statistically significant with an F-statistic probability of about 0.005. The adjusted R^2 is quite low, indicating that there are many more variables to be discovered that contribute to the severity of economic disasters. Overall, the results of this model confirm that severe economic disasters are complex phenomena, requiring multiple factors to bring them about. Nonetheless, inequality as measured by the Gini is shown to be a contributing factor.

In model 2 the income share of the top one percent is shown to be highly statistically significant, indicating that concentration of income at the top also tends to worsen recessions. While concentration at the top will also increase the Gini, the top income share is a more specific indicator of a top-heavy economy. Notice that currency crisis is no longer statistically significant, but inflation crisis becomes more significant. Among control variables in the various models presented here inflation crisis appears frequently as statistically significant. It is reasonable that severe bouts of inflation may reduce output and consumption. The model as a whole is highly statistically significant, with a p-value for the F-statistic near zero.

In regressions three and four both $Gini_{t-1}$ and TI_{t-1} are shown to be statistically significant at the 5% level in increasing the severity of a consumption drop. The magnitudes of the coefficients are similar to those for percent GDP drops. Bank crisis is the only control variable that proves statistically significant in both models three and four. In model four the adjusted R^2 falls and the F-statistic also drops to the extent that the model as a whole can no longer be considered statistically significant. Overall, the Reinhart-Rogoff control variables cannot be said to contribute to the severity of consumption drops in combination with *TI*.

2.3 The basic probit model at 10% GDP and consumption drops

In the next set of regressions I use the probit estimation method to test the contribution of various measures of inequality in bringing about a severe GDP or consumption drop of 10%. The probit method is appropriate for a binary dependent variable as used here where I test for a certain threshold of severity.[2] One was assigned for incidents of GDP or consumption drops of 9.5% or greater, 0 for incidents of lesser severity. As mentioned earlier, the 10% threshold was used to define severe economic disasters in previous research by Barro and Ursúa (2008) and Atkinson and Morelli (2011).

The basic probit model will be tested with the following measures of inequality:

$Gini_{t-1}$ is defined as it was for the previous set of regressions.

Gini40 is a threshold for high inequality, used to determine whether a high threshold of inequality creates instability. One is given if a Gini coefficient of at least 40 was present at the beginning of the crisis, 0 if not. The threshold gini score of 40 was determined somewhat arbitrarily; it is the level of inequality reached in the U.S. in the early 1980s when growing inequality was appearing as a widely discussed concern. It was noted that in Atkinson and Morelli's study of inequality and crises a threshold for high inequality was intentionally placed beyond the scope of the study, although it's potential importance as a research question was acknowledged. Its inclusion here is an attempt to further this research.

Gini Rising is the designation for an increase in the Gini coefficient of two or more in the six years preceding a GDP or consumption event; 1 is assigned if the Gini increase occurred, 0 if not. If the Gini

[2] All of the following regression results were also estimated using the logit method. As expected, the results were consistently similar to those obtained using probit. As such it will not be useful to present the logit results here. The probit method was preferred because results were more easily obtained given the covariance problem that came from using several dummy variables.

coefficient for T-6 was not available but was available up to two years before or after T-6, that Gini coefficient was used.

TI_{t-1} is the top income share in the year of the peak preceding a GDP or consumption decline, applied as was previously described.

TI 15% Share is for a high concentration of income of at least 15% in the year of the peak before the GDP or consumption decline. If the information was not available in the desired year adjustments were made as described above.

TI Up 3pts was assigned a 1 if the top 1% income share rose by 3 percentage points in the previous six years. This measure is intended to gauge the impact of a rapid increase in the top income share. Adjustments were made for missing data as described for *Gini Rising.*

TI Pt Change is the percentage point change in the top 1% income share over the six years before the GDP or consumption incident.

The results of the basic probit model are given in tables 2-2 and 2-3.

Not all of the inequality measures prove statistically significant in contributing to a GDP fall of greater than 10%. Surprising given the strong results of the OLS regressions, none of the Gini-related measures qualified, not Gini itself, the threshold of Gini at 40%, or a sudden increase in the Gini. However, the whole models are strong, with statistically significant likelihood ratios. Among the control variables currency crisis is again shown to be statistically significant combined with Gini and the Gini threshold of 40%. Stock market crash is statistically significant with the Gini and Gini rising measures.

However, the whole models are strong, with statistically significant likelihood ratios. Among the control variables currency crisis is again shown to be statistically significant combined with Gini and the Gini threshold of 40%. Stock market crash is statistically significant with the Gini and Gini rising measures.

Table 2-2 Basic probit model, GDP drop at least 10%

GDP Drop at Least 10%: Probit Meas.	5. $Gini_{t-1}$	6. *Gini40*	7. *Gini Rising*	8. TI_{t-1}	9. *TI 15% Share*	10. *TI Up 3pts*	11. *TI Pt Change*
Coef.	0.0202	0.5364	0.5280	0.1545***	1.1848***	0.4706	0.015769
	(-1.0267)	(1.3377)	(1.0726)	(4.7444)	(3.9992)	(1.1593)	(0.3375)
c	-2.1511**	-1.5676***	-1.3717***	-2.754805***	-1.1339***	-0.9356***	-0.8862***
	(-2.5358)	(-4.0403)	(-3.9742)	(-5.7074)	(-4.7508)	(-4.0011)	(-3.8936)
BC	0.4611	0.3800	0.229326	0.134757	0.0432	0.2135	0.275521
	(-1.1635)	(0.9682)	(0.5519)	(0.4180)	(0.1376)	(0.6389)	(0.8283)
CC	0.821583**	0.8758**	0.708078	0.234837	0.1537	0.2548	0.258737
	(-1.9784)	(2.0986)	(1.6021)	(0.7251)	(0.5019)	(0.8379)	(0.8533)
DC	0.3147	0.2521	0.393731	0.364667	0.4718	-0.0149	-0.003153
	(-0.5222)	(0.4057)	(0.6651)	(0.6013)	(0.7923)	(-0.0236)	(-0.0051)
IC	0.4262	0.3673	0.43908	0.263266	0.4223	0.6463*	0.6705*
	(-0.8408)	(0.7158)	(0.8542)	(0.6607)	(1.1580)	(1.6692)	(1.7439)
SMC	-0.6673*	-0.6424	-0.6636*	-0.083361	-0.1386	-0.2265	-0.25274
	(-1.7267)	(-1.6405)	(-1.7240)	(-0.2860)	(-0.5005)	(-0.7817)	(-0.8697)
LR	16.3794	17.0897	16.4312	31.1737	20.4736	7.1056	5.9044
Prob	0.0119	0.0089	0.0116	0.00002	0.0023	0.3111	0.4340
Obs.	97/98	97/98	97/98	139/139	139/139	124/139	124/139
Obs=1	12	12	12	30	30	26	26

Table 2-3 Basic probit model, consumption drop at least 10%

Consumption Drop at Least 10%: Probit Meas.	12. $Gini_{t-1}$	13. *Gini40*	14. *Gini Rising*	15. TI_{t-1}	16. *TI 15% Share*	17. *TI Up 3pts*	18. *TI Pt Chg*
Coef.	0.0376*	0.7946**	1.8548**	0.0519	0.0346	0.3801	0.0227
	(1.8944)	(2.0081)	2.2173	(1.6155)	(0.1056)	(0.6909)	(0.3416)
C	-2.8110***	-1.6639***	-3.8109**	-1.6815***	-1.1019***	-1.2271***	-1.2067***
	(-3.5233)	(-4.6513)	-2.9223	(-4.0022)	(-5.3531)	(-5.2085)	(-5.3025)
BC	0.7105	0.7547*	1.4989**	0.4136	0.4611	0.6197*	0.6463
	(1.5698)	(1.6513)	2.0246	(1.2773)	(1.4200)	(1.6696)	(1.7522)
CC	0.1093	0.1572	0.2158	-0.1959	-0.2181	-0.0986	-0.1736
	(0.2483)	(0.3575)	0.3113	(-0.6062)	(-0.6788)	(-0.2756)	(-0.4705)
DC	-1.0564	-0.9753	-9.5812	-0.0541	-0.0133	-0.0231	0.0510
	(-1.2726)	(-1.2008)	-0.0000	(-0.0798)	(-0.0196)	(-0.0332)	(0.0748)
IC	1.0661**	1.1393**	2.4612**	0.6315	0.7154*	0.8297*	0.7250
	(2.1976)	(2.3459)	2.4297	(1.4869)	(1.6882)	(1.8621)	(1.5538)
SMC	-0.2823	-0.4346	1.0136	-0.0506	-0.0924	-0.115401	-0.0841
	(-0.6977)	(-1.0332)	1.0950	(-0.1951)	(-0.3593)	(-0.3987)	(-0.2908)
LR	15.0729	15.4720	22.5780	6.6937	4.0757	6.3292	4.5950
Prob	0.0197	0.0169	0.0010	0.3501	0.6664	0.3873	0.5967
Obs.	98/98	98/98	61/98	157/159	157/159	132/159	131/159
Obs=1	12	12	7	24	24	19	18

Meas. is for the inequality measure used in the model. Coef. Is the regression coefficient for the measure. Z-statistic values in parentheses. LR stands for likelihood ratio. "Obs" stands for included observations/total observations. Obs.=1 is the number of GDP or consumption incidents designated with 1 for drops of 10% or more. *significant at 10%,**significant at 5%, ***significant at 1%

On the other hand, top shares and the threshold of 15% of income going to the top 1% were both highly statistically significant, at the 99% level. While none of the control variables are statistically significant in either model, the models taken as a whole are, with highly significant likelihood ratios. It is not immediately clear why income concentration at the top shows such a strong result while the more general measure of inequality, the Gini, does not. It supports the PROUT view that wealth concentration can contribute to severe contractions. It should be noted that Atkinson and Moreli were able to find more countries with top income date available than with Gini coefficients. A stronger model seems to emerge with a larger sample. The probit coefficient for TI_{t-1} and TI 15% Share may be interpreted as a follows: A one percentage point increase in the income share of the top 1% will make a GDP fall of at least 10% 1.3 times more likely. However, if the income concentration at the top reaches 15% a severe GDP crash of at least 10% becomes three times more likely.

The measures of change in top income shares, including both the count of the percentage point change preceding the downturn and the threshold of an increase of three percentage points of income share, were not shown to be statistically significant. Neither are all of the included variables jointly significant, as is seen in the low likelihood ratios. According to this evidence, while high income concentration at the top can be considered an important contributor to a severe GDP downturn, a sudden change in income share cannot. The fact of high income concentration is the critical factor. This is an important discovery since the Atkinson/Morelli study only considered changes in inequality as contributors to crises, not thresholds.

The results for a 10% drop in consumption are nearly opposite that of the GDP drop. All three variations of the Gini measure proved statistically significant, with Gini≥40 and Gini Rising significant at the 95% level. Among the control variables inflation crisis is consistently significant with the Gini measures, while bank crisis is statistically significant for two of the three. The *Gini* coefficient suggests that a one point increase in the Gini will increase the likelihood of a large consumption drop by a factor

of approximately 1.08, while a high threshold for the Gini coefficient of 40% will make the consumption fall over four times more likely. According to model 14 an increase of at least two points of the Gini coefficient over the past six year makes it a whopping 46 times more likely that a severe consumption downturn will occur. However, none of the variants of the top incomes measure proved statistically significant. Moreover, with the independent variables assessed together the top income models were not statistically significant, as shown with low likelihood ratio statistics.

Without further research one can only speculate why the results are so different for the severe GDP drops and the consumption drops. Using the Atkinson and Morelli (2011, p. 14) suggestion that the Gini coefficient is more sensitive than the TI measure to losses at the middle of the income distribution, it is reasonable that a period of income loss or stagnation for the middle class would force them to reduce their consumption. If consumption is maintained with credit a potential drop in consumption may be masked. But when the flow of credit reaches its limit, as occurred before the Great Depression and the recent crisis, overleverage would magnify a drop in consumption. But one would assume that a steep drop in consumption would eventually impact GDP unless output was offset by some other factor. That is the thinking behind the underconsumption theories for transmitting inequality to instability. On the other hand, that high top income concentration contributes to severe GDP drops supports the theories of increased demand for financial products and falling risk aversion contributing to instability. However, if this causes a financial crisis that spills over into the "real" economy with a severe drop in output, one would think that would affect consumption as well.

Table 2-4 Severe GDP and consumption declines categorized

Total 10% C drop incidents	10% GDP and C falls concurrent	C falls before GDP	C falls after GDP	C not associated with GDP fall
50	18	8	9	15

Analyzing the data with a "counting" approach similar to that of Atkinson and Morelli (2011) does not fully solve the puzzle, but may provide clues. Table 4 shows a breakdown of the 50 consumption drops of 10 percent or more that were found. (Not all were used in the regressions because inequality data or control variable data may not have been available for that period.) Most of the severe consumption drops overlapped a severe GDP incident, either entirely or partly. Where they are not associated it was usually due to war, where output commonly rises while civilian consumption drops. (War-related incidents were excluded from the regressions.) Otherwise the GDP drop occurred but may not have reached the 10% threshold. Eighteen of the consumption drops began in the same year as a GDP fall of at least 10%. Eight overlapped a GDP incident but began before. For nine the consumption drop followed the beginning of the GDP incident. A consumption drop occurring before a GDP drop suggests that the consumption fall contributed to the GDP fall, consistent with an underconsumption hypothesis. Gini coefficients may be more sensitive to this kind of disaster. However, when the GPD drop occurs first, that suggests the fall in output causes the decline in consumption. The sequence would be consistent with a financial crisis leading to a depression. That scenario may be more sensitive to a high top income share. The data shows that both kinds of crises occur. Where GDP and consumption declines begin in the same year it is not apparent which came first. The incidents would have to be studied individually in order to determine the causes.

Part of the discrepancy is also likely due to the weaknesses in the overall models and the characteristics of the estimation methods. While models 5-18 above indicate that top income concentration plays a stronger role in severe GDP falls than the Gini coefficient, and that the Gini has as stronger impact on severe consumption drops, they may not fully reflect the importance of the Gini in the GDP falls or the role of top shares in consumption falls. It is telling that both the Gini coefficient and top income shares are statistically significant for both GDP drops and consumption drops in models 1-4, estimated with OLS. It is known that the logit and probit approaches are more sensitive to

misspecification than least squares (Kennedy, 2003). It is not claimed that the models are complete or that all of the control variables are correct. The control variables were chosen because of their common association with severe economic crises of various kinds, and it was decided to use them consistently in order to better compare the models.

This initial exploration clearly demonstrates a link between income concentration at the top and GDP disasters, and between general inequality as measured by the Gini coefficient and severe consumption declines. The results also show that research is needed to determine why both kinds of measures are not shown to have as consistent an impact for both kinds of disasters. Future work may find it fruitful to disaggregate the data more, as well as to pursue case studies. Future statistical analysis may introduce lags for the independent variables to study delayed impacts of top incomes on consumption disasters, and also to see if there are delayed effects of high Gini coefficients on severe GDP declines. As will be shown with the next set of models, adjusting for disaster severity partially overcomes the difficulties presented in this section.

2.4 The basic probit model with varying thresholds of GDP and consumption drops

Here GDP drops of 5%, 10%, and 15% are regressed on the same measures of inequality given in the previous set of models. The same is done for three thresholds of severe consumption drops. As mentioned before, Atkinson and Morelli (2011) consider a 5% drop to be the appropriate criterion for a GDP or consumption disaster in the post-WWII era while they used a 10% level to identify earlier disasters. Barro (2006; 2009) has used both 10% and 15 percent. The intention is to determine whether the inequality-instability relationships found previously at the 10% level of decrease change at different thresholds. Disasters at the 5% level of decrease will be more common. Probit estimation is used except as noted.

Table 2-5 Comparing thresholds of GDP drops with Gini-related measures

Comparing Thresholds: GDP Drop

	Gini$_{t-1}$			*Gini Rising*			*Gini40*		*(OLS)*
	18	19	20	21	22	23	24	25	26
	GDP ↓ 5%	GDP↓10%	GDP↓15%	GDP ↓ 5%	GDP↓10%	GDP↓15%	GDP ↓ 5%	GDP↓10%	GDP↓15%
C	-1.2010**	-2.1511**	-3.5664***	-0.7132**	-1.3717***	-2.1784***	-0.8547	-1.5676***	-0.0429
	(-1.9679)	(-2.5358)	(-2.8628)	(-2.5537)	(-3.9742)	(-4.2539)	(-2.9190)	(-4.0403)	(-0.9519)
Inequ Meas	0.0145	0.0202	0.0363	1.3010***	0.5280	1.1452**	0.6441	0.5364	0.1663***
	(0.9989)	(-1.0267)	(1.4039)	(3.1998)	(1.0726)	(2.0006)	(-2.117)	(1.3377)	(3.3948)
BC	0.3340	0.4611	0.2736	0.0970	0.2293	-0.2138	0.2771	0.3800	0.0116
	(1.1092)	(-1.1635)	(0.5355)	(0.3066)	(0.5519)	(-0.3722)	(-0.9246)	(0.9682)	(0.2471)
CC	0.3516	0.8216**	0.3766	0.1081	0.7080	0.2126	0.4094	0.8758**	0.0556
	(1.086)	(-1.9784)	(0.6945)	(0.3047)	(1.6021)	(0.3734)	(-1.2418)	(2.0986)	(1.0817)
DC	0.2856	0.3147	-0.0758	0.1844	0.3937	-0.2656	0.3094	0.2521	-0.0190
	(0.4928)	(-0.5222)	(-0.0983)	(0.3123)	(0.6651)	(-0.2956)	(-0.3094)	(0.4057)	(-0.1996)
IC	0.2434	0.4262	0.4513	0.3093	0.4391	0.6098	0.1341	0.3673	0.0335
	(0.5710)	(-0.8408)	(0.7311)	(0.6960)	(0.8542)	(0.9124)	(-0.3057)	(0.7158)	(0.4824)
SMC	-0.2134	-0.6673*	0.1722	-0.2528	-0.6636*	0.0702	-0.2013	-0.6424	0.0303
	(-0.7079)	(-1.7267)	(0.3214)	(-0.8138)	(-1.7240)	(0.1303)	-(0.6575)	(-1.6405)	(0.6380)
LR	6.904212	16.3794	5.2018	16.75646	16.4312	7.2616	10.3982	17.0897	F-stat 2.68
Prob	0.329797	0.0119	0.5182	0.010221	0.0116	0.2973	0.1089	0.0089	0.0194
Obs.	97/98	97/98	97/98	68/97	97/98	97/98	97/98	97/98	97/98
Obs=1	29	12	5	29	12	5	29	12	

Inequ Meas. stands for the respective inequality measure; Gini, Gini Rising, or Gini40. Z-statistic in parentheses. T-values are given for Model 26.

Recall that in the previous set of regressions the inequality measures using the Gini coefficient were consistently found to be statistically not significant with respect to GDP. However, with greater severity the statistical significance generally increases. In the first case (models 18-20) the Gini coefficient is never found to reach even the 90% level of statistical significance. However, it is notable that the Z-statistic rises with severity, until at a 15% GDP drop the probability of a null hypothesis for Gini falls to 16%. It should be noted that the likelihood ratio for the model falls, raising the probability of a null hypothesis for all the variables together to 52%. For cases where the Gini coefficient rises at least two percentage points in six years, we see as before it is not statistically significant at a 10% GDP drop. However, it is highly significant (at the 99% level) with more common 5% GDP drops, and also significant

at the 95% level with a 15% drop. Again, it is again found that the variables taken together are no longer statistically significant with a 15% GDP drop as the likelihood ratio drops. In model 26 a high Gini coefficient of 40 or more was found to be highly statistically significant (at the 99% level) with the most severe 15% GDP drop. While that outcome is consistent with what was found with the other Gini-related measures, one should view comparisons with caution since model 26 was estimated using OLS because it was not possible with probit due to the covariance problem. Nonetheless, a pattern emerges that supports the hypothesis that inequality contributes to the most severe depressions.

Table 2-6 Comparing thresholds of GDP drops with top income-related measures

Comparing Thresholds: GDP Drop									
	TI_{t-1}			*TI 15*			*TI Up 3 pts*		
	27	28	29	30	31	32	33	34	35
	GDP ↓ 5%	GDP↓10%	GDP↓15%	GDP ↓ 5%	GDP↓10%	GDP↓15%	GDP ↓ 5%	GDP↓10%	GDP↓15%
C	-1.2009***	-2.7548***	-3.0710***	-0.2729	-1.1339***	-1.5392***	-0.2487	-0.9356***	-1.4671***
	(-3.2012)	(-5.7074)	(-4.9222)	(-1.3503)	(-4.7509)	(-5.3356)	(-1.2020)	(-4.0011)	(-5.0517)
Inequ meas	0.0927***	0.1545***	0.1378***	0.7134**	1.1848***	0.8587**	0.1673	0.4706	0.9526**
	(3.3663)	(4.7444)	(3.3991)	(2.451)	(3.9992)	(2.5003)	(0.4336)	(1.1593)	(2.1291)
BC	0.3556	0.134757	-0.0058	0.3045	0.0432	-0.0631	0.4071	0.2135	0.0325
	(1.3312)	(0.4180)	(-0.0134)	(1.1416)	(0.1376)	(-0.1528)	(1.3848)	(0.6389)	(0.0734)
CC	-0.1342	0.234837	-0.5044	-0.1761	0.1537	-0.4273	-0.1176	0.2548	-0.4207
	(-0.4819)	(0.7251)	(-1.0742)	(-0.6437)	(0.5019)	(-0.9952)	(-0.4217)	(0.8379)	(-0.9331)
DC	0.5169	0.364667	0.3035	0.5579	0.4719	0.3843	0.5120	-0.0149	-0.1229
	(0.8588)	(0.6013)	(0.4060)	(0.9658)	(0.7923)	(0.5399)	(0.8787)	(-0.0236)	(-0.1500)
IC	0.4805	0.263266	0.9868**	0.5424	0.4223	1.0400**	0.3302	0.6463*	1.1873***
	(1.3614)	(0.6607)	(2.1961)	(1.5710)	(1.1581)	(2.5618)	(0.8946)	(1.6692)	(2.6763)
SMC	-0.1146	-0.083361	-0.0568	-0.1392	-0.1386	-0.1037	-0.0921	-0.2265	-0.1231
	(-0.4737)	(-0.2860)	(-0.1559)	(-0.5831)	(-0.5005)	(-0.3053)	(-0.3607)	(-0.7817)	(-0.3388)
LR	18.17907	31.1737	23.2836	12.2348	20.47358	15.14099	4.38253	7.1056	12.40883
Prob	0.0058	0.00002	0.0007	0.0570	0.00228	0.019188	0.625057	0.3111	0.053446
Obs.	139/139	139	139/139	139/139	139/139	139/139	124/139	124/139	124/139
Obs=1	64	30	15	64	30	15	54	26	13

Inequ Meas. stands for the respective inequality measure.

Table 2-6 shows that the statistical significance of inequality measures related to top income concentration remain robust through the different thresholds of GDP disasters. Where that has not been the case, with the "*TI Up 3 Pts"* variable, it is seen in model 35 that a rapid increase in top income

share becomes statistically significant for a 15% GDP drop. The Proutist hypothesis of increased severity of downturns with greater wealth concentration is supported. Sudden increases in income concentration seem to make a difference as well.

The impacts of selected inequality variables on different levels of consumption drops are presented in the following table.

Table 2-7 Comparing thresholds of consumption drops with Gini-related measures

Comparing Thresholds: Consumption Drop

Gini-related Measures

	$Gini_{t-1}$			*Gini Rising*			*Gini 40*		
	36	37	38	39	40	41	42	43	44
	C↓5%	C↓10%	C↓15%	C↓5%	C↓10%	C↓15%	C↓5%	C↓10%	C↓15%
C	-1.8853***	-2.8110***	-4.2528***	-2.1070***	-3.8109**	-2.4173	-1.3311***	-1.6639***	-1.8240***
	(-3.0356)	(-3.5233)	(-3.4746)	(-3.4203)	(-2.9223)	(-2.7935)	(-4.4909)	(-4.6513)	(-4.3482)
Ineq Meas	0.0217	0.0376*	0.0748**	0.8012	1.8548**	0.7703	0.9152***	0.7946**	1.2685**
	(1.3478)	(1.8944)	(2.5433)	(1.6031)	(2.2173)	(1.1834)	(2.7784)	(2.0081)	(2.3701)
BC	0.6324*	0.7105	1.1182*	0.5809	1.4989**	1.0902	0.6330*	0.7547*	1.0670*
	(1.7751)	(1.5698)	(1.8424)	(1.2834)	(2.0246)	(1.7367)	(1.7300)	(1.6513)	(1.8190)
CC	0.1644	0.1093	-0.3875	0.2612	0.2158	-0.1216	0.2010	0.1572	-0.2588
	(0.4873)	(0.2483)	(-0.6240)	(0.5856)	(0.3113)	(-0.1785)	(0.5788)	(0.3575)	(-0.4428)
DC	-0.1924	-1.0564	-0.4757	0.3947	-9.5812	-7.0239	-0.3836	-0.9753	-0.1710
	(-0.3378)	(-1.2726)	(-0.5124)	(0.5956)	(-0.0000)	(-0.0000)	(-0.6652)	(-1.2008)	(-0.1981)
IC	0.7058*	1.0661**	0.3667	0.7861	2.4612**	0.6410	0.6651	1.1393**	0.4633
	(1.7150)	(2.1976)	(0.5510)	(1.3503)	(2.4297)	(0.7546)	(1.5904)	(2.3459)	(0.7042)
SMC	0.1840	-0.2823	-0.9348*	0.9448*	1.0136	0.1753	0.0693	-0.4346	-1.1067*
	(0.5895)	(-0.6977)	(-1.7017)	(1.6561)	(1.0950)	(0.2263)	(0.2145)	(-1.0332)	(-1.8900)
LR	11.9240	15.0729	13.4745	12.2838	22.5780	7.1518	17.9407	15.4720	11.9083
Prob	0.0637	0.0197	0.0361	0.0559	0.0010	-0.307	0.0064	0.0169	0.0640
Obs.	98/98	98/98	98/98	61/98	61/98	61/98	98/98	98/98	98/98
Obs=1	25	12	7	14	7	4	25	12	7

Z-statistics are in parentheses. Ineq Meas is the respective inequality measure.

While the Gini coefficient was previously shown to be statistically significant in bringing about a GDP drop of at least 10% (model 37), here it is shown to be statistically significant at the higher 95% level for a GDP drop of 15% or more. However, the Gini coefficient does not retain statistical significance for the smaller GDP drop of 5% (model 36).

Although jump in the Gini score of at least 2 points was previously shown to be statistically significant for a 10% drop in consumption, that did not prove to be the case for consumption drops of 5% or 15%. However, at the 5% level *Gini Rising* comes close, with the probability of a null hypothesis of just under 11%. That statistical significance could not be established with a 15% drop in consumption is likely due to the few (only four) observations of such a severe consumption drop available where data was also available to track a high increase in the Gini coefficient over six years.

Results for a high Gini coefficient of at least 40 (Gini40) were the most consistent, remaining at least at the 95% level of statistical significance for all three thresholds of severity. Of the Gini-related measures, a high Gini coefficient is shown to be the most robust precursor of a severe consumption drop. This reinforces the observation made above, that this discovery significantly furthers knowledge in this area since the Atkinson-Morelli study (2011) considered changes in inequality but not the impact of inequality thresholds.

The results for the top income share-related measures at different levels of consumption drop severity are shown in Table 2-8.

We see again that there is not as strong a link between the top income-related measures and severe consumption drops as there is with the Gini-related measures. However, we also see generally strengthened statistical significance with increasing severity. Foremost, *Top Share* becomes statistically significant at the 90% level for a 15% drop in consumption. A rapid increase in top income share (*TI Up 3 Pts)* breaks the trend somewhat, showing statistical significance with a 5% consumption drop but not at 10%. However, it is notable that the Z-statistic rises again for the 15% level, indicating increasing statistical significance although not up to the 90% level. The weakest of these variables is top share of 15% or more, which does not show statistical significance for any of the three levels of consumption drop severity.

Table 2-8 Comparing thresholds of consumption drops with top income-related measures

Top Incomes-related Measures

	TI_{t-1}			TI Up 3 Pts			TI 15% Share		
	45	46	47	48	49	50	51	52	53
	C↓5%	C↓10%	C↓15%	C↓5%	C↓10%	C↓15%	C↓5%	C↓10%	C↓15%
C	-0.818**	-1.6815***	-2.1057***	-1.0128***	-1.2271***	-1.4909***	-0.7467***	-1.1019***	-1.2593***
	(-2.3259)	(-4.0022)	(-3.9494)	(-4.7865)	(-5.2085)	(-5.3674)	(-4.1508)	(-5.3531)	(-5.4567)
Ineq Meas	0.0031	0.0519	0.0735*	0.9438*	0.3801	0.7704	-0.2631	0.0346	0.0669
	(0.1095)	(1.6155)	(1.8289)	(1.8371)	(0.6909)	(1.3371)	(-0.8678)	(0.1056)	(0.1737)
BC	0.4478	0.4136	0.5491	0.5680*	0.6197*	0.6963	0.4873*	0.4611	0.6158
	(1.5563)	(1.2773)	(1.4522)	(1.7059)	(1.6696)	(1.5334)	-1.6799	(1.4200)	(1.6187)
CC	0.0571	-0.1959	-0.3891	0.2004	-0.0986	-0.1758	0.0613	-0.2181	-0.4330
	(0.2166)	(-0.6062)	(-0.8925)	(0.6792)	(-0.2756)	(-0.3638)	(0.2318)	(-0.6788)	(-1.0042)
DC	1.0740*	-0.0541	-6.5000	1.2055**	-0.0231	-6.9446	1.0267*	-0.0133	-6.4101
	(1.9225)	(-0.0798)	(-0.0000)	(2.1138)	(-0.0332)	(-0.0000)	(1.8250)	(-0.0196)	(-0.0000)
IC	0.2621	0.6315	0.2335	0.3419	0.8297*	0.3785	0.3274	0.7154*	0.3079
	(0.6632)	(1.4869)	(0.3865)	(0.8112)	(1.8621)	(0.5936)	(0.8215)	(1.6882)	0.51601)
SMC	0.0643	-0.0506	-0.3633	0.1370	-0.115401	-0.4309	0.0512	-0.0924	-0.4168
	(0.2870)	(-0.1951)	(-1.1266)	(0.5422)	(-0.3987)	(-1.1397)	(0.2285)	(-0.3593)	(-1.3081)
LR	7.372596	6.693691	8.886506	13.39145	6.3292	7.148936	8.129997	4.0757	5.4875
Prob	0.2878	0.3501	0.1801	0.0372	0.3873	0.3073	0.228733	0.6664	0.4830
Obs.	157/159	157/159	157/159	132/159	132/159	132/159	157/159	157/159	157/159
Obs=1	44	24	13	35	19	9	44	24	13

Z-statistics are in parentheses. Ineq Meas is the respective inequality measure.

2.5 Further variations in the model

In order to further test the robustness of the link between inequality measures and severe downturns the strongest version of the basic model for a GDP drop was expanded to include additional variables which are commonly associated with either economic growth or instability. The impact of the top one percent income share on a GDP drop of 10% or greater was tested with the new variations. Further insights may also be gained into the importance of the new variables themselves in bringing about severe GDP or consumption disasters.

The newly included variables are categorized as general control variables, human development factors, and neo-classical growth variables. The general control variables were selected as factors that

may reasonably affect the severity of crises. Human development variables are quality of life indicators emphasized in social economics and capability-based economic development views as important supplemental indicators of economic development. The selected variables are among those reported in the U.N.'s Human Development Report, used to measure global progress on Millennium quality of life goals. It is the contention in social economics views, including that of PROUT, that attention to human development leads in multiple ways to healthier economies. Here the human development variables are included to test whether they lessen severe economic instability, as well as to test whether they affect the stability of the conclusion that income inequality contributes to severe GDP drops. Also included as controls are variables categorized here as neo-classical. These are consistent with what may loosely be viewed as a pro-market, Washington Consensus view of factors important for economic development. The neo-classical variables, along with years of schooling and life expectancy from the human development variables, were found to be among the most consistently statistically significant for economic growth by Barro and Sala-i-Martin (2004).

General Control Variables

Multination Crisis tells the number of countries in recession during a crisis year, intended to indicate the severity of crisis contagion. The count was made from the Barro-Ursúa (2010) database previously used to find cross-country GDP and consumption data.

OECD is a dummy variable with 1 designated for OECD membership. The variable is included to test whether relatively wealthy nations are more prone to severe downturns.

Human Development Variables

IHDI2012 is the inequality-adjusted human development index for 2012, compiled by the U. N. Development Program (International Human Development Indicators, 2013). The IHDI was chosen over the Human Development Index (HDI) as a better indicator of the dispersion of human development progress throughout a population, as the HDI presents an average that can mask the presence of

significant subgroups not benefitting from development (Inequality-adjusted Human Development Index, 2014). The year 2012 was the only year available in the annually-compiled database at the time the data was downloaded. As with all of the human development variables, the measure in a specific year is used consistently for all countries rather than the measure for a country in the year of its crisis. This avoids the effect of the passage of time. It was assumed that human development measures usually improve with time but that rankings are fairly stable.

Life2000 stands for life expectancy at birth in 2000, as provided by the United Nations Development Program (International Human Development Indicators, 2013).

School2000 is for mean years of schooling in 2000. The source is the same as for *Life2000.* Both of these are components of the Human Development Index (HDI).

Neo-classical Growth Variables

Data for both of the following come from the Penn World Tables (Heston, Summers, & Aten, 2012).

Openness 2000 denotes imports plus exports as a percentage of GDP in the year 2000, in constant 2005 prices. As in the previous set of variables, the degree of openness in 2000 was used for each country through all of their crisis incidents in order to avoid the impact of time. This is not entirely satisfactory since an increase in openness can occur due to a change in policy as well as from the trend of increasing globalization over time. However, the data showed a fairly consistent increase in openness over time for most countries.

GovExp is the government consumption share of per capita GDP in constant 2005 prices at the time of a crisis.

Table 2-9 Variations on the basic model

Variations on the Basic Model

Dependent variable: GDP Drop of at Least 10% Estimation by Probit

	Topshare only	Additions	Human Development Variables			Neo-classical	
	55	56	57	58	59	60	61
C	-2.6622***	-2.5263***	-5.2234***	5.3628	0.6215	1.6197	2.1168
	-6.4217	-4.6399	-3.6168	0.8240	0.2841	0.6303	0.3401
TI_{t-1}	0.1552***	0.1530***	0.1610***	0.1912***	0.1348***	0.1415***	0.0558
	(4.8991)	(4.5329)	(4.2783)	(4.1656)	(3.8676)	(3.8849)	(0.5741)
BC		0.1963	0.2018	0.1270	0.3139	0.3215	1.1518*
		(0.5955)	(0.5602)	(0.3305)	(0.9021)	(0.9217)	(1.6543)
CC		0.2443	-0.0242	-0.0753	0.0841	0.0797	1.5778*
		(0.7418)	(-0.0632)	(-0.1871)	(0.2442)	(0.2303)	(2.1793)
DC		0.1897	-0.1789	0.2530	-0.1465	-0.0774	0.8046
		(0.2978)	(-0.2118)	(0.2882)	(-0.2143)	(-0.1113)	(0.6334)
IC		0.1911	0.2900	0.2848	0.4495	0.4937	-1.4453
		(0.4637)	(0.5971)	(0.5351)	(1.0095)	(1.0865)	(-1.0456)
SMC		3.67E-05	0.3236	0.2608	-0.0672	-0.1211	0.2142
		(0.0001)	(0.8984)	(0.7019)	(-0.2162)	(-0.3821)	(0.2966)
Multination Crisis		-0.0156	-0.0082	-0.0085	-0.0053	-0.0085	-0.0812
		(-0.5950)	(-0.2975)	(-0.2955)	(-0.1962)	(-0.3092)	(-1.1096)
OECD		-0.2623	-1.2442*	0.0643	-0.4452	-0.0864	-0.7836
		(-0.8308)	(-1.8524)	(0.0656)	(-0.7561)	(-0.1170)	(-0.4774)
IHDI2012			3.9680**	10.2042**			
			(1.9972)	(2.4397)			
Life2000				-0.2082*	-0.0584*	-0.0777*	-0.0244
				(-1.6733)	(-1.7943)	(-1.8736)	(-0.2481)
School2000				-0.1004	0.1663*	0.1648*	0.0446
				(-0.7704)	(1.7296)	(1.6995)	(0.2690)
Openness 2000						0.0026	-0.0137
						(0.7983)	(-1.0744)
GovExp							-0.2856
							(-1.3787)
LR	28.6786	32.42794	29.71456	32.7888	37.3554	37.9786	21.4356
Prob	8.54E-08	7.81E-05	0.0005	0.0006	4.91E-05	7.89E-05	0.0444
Obs.	139/139	139/139	125/139	125/139	139/139	139/139	79/139
Obs=1	30	30	23	23	30	30	7

Top income share passed the robustness test well, staying significant at a very high level through all variations of the model except one. Moreover, the coefficients for top income share change little with the variations. The exception occurs when government expenditures (*GovExp)* is added, as TI_{t-1} loses its statistical significance. The discrepancy is likely explained by the large drop in observations which was necessary to include *GovExp.* The number of included observations drops by nearly half because of the fewer available data points where the government expenditure figures were available. Furthermore, the number of severe GDP crises included dropped to 7. This certainly reduces the validity of the conclusions which can be drawn from the model. While the overall model with *GovExp* included is still statistically significant as shown by the likelihood ratio, the likelihood ratio is much smaller compared with the other variations, and the associated probability of a null hypothesis is much higher.

The other variables added to the basic model provide interesting, if inconsistent results. Surprisingly, evidence of contagion as indicated by *Multination Crisis* never proves statistically significant as a causal variable for severe GDP downturns. OECD membership is statistically significant only in model 57 when *IHDI2012* is added. It loses its significance when the education and life expectancy variables are added, probably because there is high degree of correlation between all of these. Nonetheless, OECD membership stays consistently negative, suggesting that the more developed countries are less prone to extreme GDP declines.

Results for the human development variables are inconsistent, and somewhat odd. IHDI is significant at the 95% level in both of the models where it is included, but the sign is different from what is expected. Its positive sign indicates that the likelihood of a severe GDP crisis will increase with improved human development indicators. Since OEDC membership has a negative sign the IHDI result may come from middle income countries, which may be more prone to large business cycle swings than very poor countries. It is notable that the inclusion of IHDI requires dropping some observations. Dropping IHDI in favor of two of its components, life expectancy and years of schooling, causes the latter

two to become statistically significant, and the overall model is improved as well, as indicated by the considerably higher likelihood ratio and a lower associated p-value. On the other hand, the Akaike information criterion and the Schwarz criterion (both not included in the table) are both increased, suggesting a somewhat worse fit. Life expectancy remains statistically significant in all of the models in which it is included, and it has the expected negative sign (from a social economics perspective) indicating that lower public health will be associated with greater severe economic instability. However, the education variable changes signs when *IHDI2012* is not included, which would suggest improbably that an increase in educational attainment increases severe instability. Again, this may be due to the influence of middle income countries where educational attainment increases considerably compared with very poor countries, and also the fact that older observations from the pre-WWII era when severe contractions were more common are more available for developed countries with a high standard for educational attainment. In conclusion, it seems that there is an important association between the human development variables and severe instability, but more research will be required to sort out the relationships.

Of the neo-classical variables, openness to trade is not statistically significant with respect to a severe GDP drop and does not have a large effect on the other explanatory variables. The impact of government share of GDP has already been discussed. While the variable is not statistically significant, its sign may be disappointing to adherents of a neo-liberal perspective, as it suggests a lower level of government spending is associated with a greater likelihood of severe instability.

Other variations were attempted that were not reported here. A robustness test of the threshold inequality variable *TI15* (income concentration by the top one percent of at least 15%) adding the same new independent variables to the basic model produced very similar results. Also, squaring TI_{t-1} and $Gini_{t-1}$ was attempted to see if a non-linear variable would produce a better fit. The results were not markedly different from those obtained from TI_{t-1} and $Gini_{t-1}$.

2.6 Inequality and the Great Recession

It was the recent global recession that brought the issue of inequality and instability to the attention many researchers. The global crisis was preceded by a global trend of rising inequality. Unfortunately the crisis was not included in Atkinson and Morelli's descriptive historical study of whether a consistent link could be found. With the help of updated databases the Great Recession's impact was included in my analysis provided above. The updated data can also enable a focus on the extent that inequality played a role in the recent crisis. The small number of countries (15) and incidents related to the Great Recession found in the database limit the usefulness of econometric techniques. Nonetheless a simple regression linking the percentage point change in the income share of the top one percent over the six years prior to the crisis with the percent fall in GDP for the countries effected produces interesting results:

Table 2-10 Regression results, change in top income shares and recession severity in the recent global crisis

Dependent Variable: *PCTGDPFALL*
Estimation by OLS

Variable	Coefficient
C	4.7073***
	(8.2855)
TI Pt Change	0.5107***
	(3.0573)
Adjusted R^2	0.3735
Sample size: 15	Included observations: 15

T-statistics in parentheses. ***significant at 1%

Although the results are suspect with such a small sample, the change in top share (*TI Pt Change*) is shown to be highly significant as a factor that increased the severity of the recessions. As seen in the bar graph of the data below, the large effect of Iceland likely skewed the results.

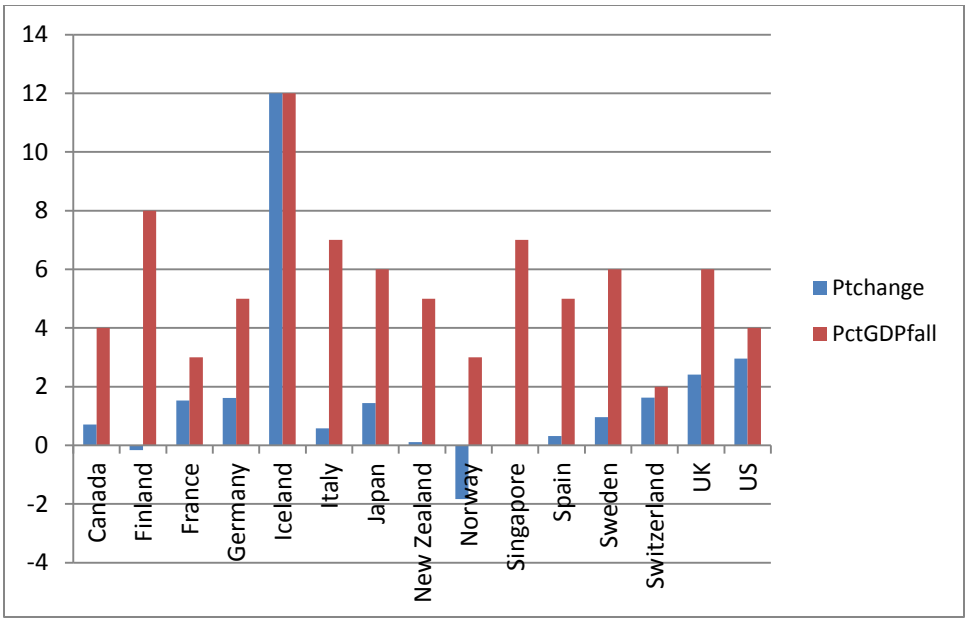

Figure 2.1 Change in top income share and recession severity in the recent global crisis

A few observations may be made:

- Twelve of the 15 countries experienced rising inequality in the form of increased top income share before their recessions. Inequality fell in Norway and Finland.
- Four had a top income percentage point change of one or more (Sweden was almost at 1 at .96).
- Two countries, the U.S. and U.K., had a top income point change greater than 2. They each had a major recession. (With a 4% GDP drop the recession in the U.S. did not meet the criteria for a severe GDP event as defined in the sections above.)
- The most extreme increase in top share was in Iceland at 12. Iceland also had the most extreme crisis with a 12% drop in GDP.

It bears repeating that conclusions reached from such a small sample must be approached with caution. Nonetheless, nothing in this cursory view of the nations caught in the global crisis provides a reason to doubt that inequality contributes to instability.

2.7 Conclusion

This research provides new evidence linking inequality with macro-instability. More specifically, this study sought to find whether inequality by various measures increases the severity of economic downturns. On the whole the evidence points to an affirmative conclusion. The strongest evidence shows that top income concentration increases the severity of recessions and makes the most severe GDP drops more likely. Furthermore, the evidence is also strong that consumption declines are worsened as inequality increases as measured by the Gini Coefficient, and also that the most severe consumption drops are made more likely by high Gini scores. Sudden increases in top income share could not be shown to play an important role in producing GDP declines. However, both a high Gini coefficient and a sudden increase were shown to be important factors contributing to severe falls in consumption.

These conclusions were found to robust, holding in various modifications of the regression models. Both the Gini and top income shares were found to be significant for contributing to both GDP and consumption drops when employing OLS estimation. The probit models did not confirm a link between high Gini coefficients and recessions with at least a 10% GDP drop, and also did not confirm a similar link between high top income shares and 10% consumption drops. However some evidence was found even for these links at other levels of downturn severity. Finally, the conclusion of the strongest model, which showed the significant impact of top income shares on increasing the likelihood of severe GDP drops, was not altered by several additions to the model.

It was further shown, although not decisively, that inequality could have played a role in the recent global crisis. The initial informal findings should provide motivation for additional research into the topic. The number of countries involved in the Great Recession is not so large that a case-by-case study to find the importance of inequality in each country's crisis would not be an unreasonably large undertaking. The literature review from the first part of this chapter provides ample reason to consider

inequality to be an important contributor to severe contractions and in particular to the Great Recession in the U.S..

Growing inequality within the major countries of the world provides them with ethical challenges, as well as economic harm in various forms. This study shows that severe economic instability resulting in large drops in output and consumption can be added to the list of potential harms. Policy makers should consider adding reductions in inequality to their chest of macro-stabilization tools.

2.8 Forward to the Third Chapter

The first two chapters of this dissertation bring attention to the potential for inequality to bring economic harm in the form of instability. In the second chapter evidence was presented that inequality makes the worst manifestations of instability more likely, deep depressions and consumption declines, with all of their devastating human costs. However, the third chapter focuses on a kind of economic harm that is ongoing and does not wait for the downturn of the business cycle to manifest. An argument is presented that excessive inequality saps efficiency from an economy, reducing output continually, not just at the bottom of a business cycle. It is shown that where inequality is excessive upper incomes will lose their connection to productivity and create a waste of society's resources. This ultimately also has a high human cost. An alternative can be found: inequality can be optimized at a level that is considerably lower than is prevalent today by better understanding contributors to human productivity. Building on principles from humanistic psychology and PROUT, it is argued that a more egalitarian distribution in a progressive and humanistic social context can not only be more economically efficient, but can support a more fulfilling life for people in that economy.

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3 Living Wage and Optimal Inequality in a Sarkarian Framework

For the past three decades, many have watched with growing unease as economic inequality in the USA and the world has risen steadily. Nonetheless, economists have not agreed on how to respond. Given that it is deeply imbedded in mainstream neo-classical economic theory that there is an unavoidable trade-off between equity and efficiency, economists have been cautious in their response for fear that imposing measures to halt the growth of inequality will cause greater economic harm. Social economists have generally agreed that the so-called conflict between equity and efficiency is a false dichotomy. However, they also have not come to a consensus regarding remedies.

In this section, I will show that an equitable distribution does coincide with efficiency, given an appropriate social and economic framework. The argument will further extend ideas incorporated in PROUT, the social-economic theory developed by the Indian social philosopher P.R. Sarkar introduced in Chapter 1. It is an efficiency argument that employs the simple idea that the primary justification for inequality is to provide incentives, and that the value of those incentives should not exceed the economic contributions they are intended to produce. I will demonstrate that this kind of efficient limit to inequality exists. Furthermore, at this limit, a reasonably defined just distribution coincides with an efficient one, that is one that maximizes output available for distribution.

Inherent in this theory is the assumption that human productivity will respond to material incentives. While the assumption is reasonable, the importance of material incentives can be exaggerated if other motivators for human productivity are not also accounted for. Focusing only on material incentives will be seen as inadequate particularly in the context of social economics, which will not accept that human satisfaction results only from material rewards to the exclusion of social and

other values. Therefore, I develop a humanistic theory of human productivity that includes a wide variety of determinants. I am aided by a previous productivity model developed by John Tomer based on the psychological theories of Abraham Maslow.

The argument will be presented in the following sequence. First, I will present an introduction to Sarkarian social thought, since Sarkar's work is still unfamiliar in many parts of the world. To provide some orientation, I compare his thought with that of other social economists, and then point out the aspects of PROUT that are most relevant to the present discussion. While the argument for optimal inequality rests primarily on the ideas of Sarkar, it is also influenced by the theories of Abraham Maslow. I therefore have also included a short summary of Maslow's ideas that are most relevant. There are close parallels between Maslovian psychology and Sarkarian thought, particularly in Maslow's emphasis on the importance of meeting basic needs to develop psychologically healthy people. Maslow's views on human motivation and productivity are summarized since they also play an important role in developing the humanistic model of productivity. I then introduce the Sarkarian individual productivity curve, a productivity function based on the productivity model. The curve is used to diagrammatically demonstrate that a rational limit to inequality must exist. Two real-world applications of the Sarkarian productivity curve are presented in the final section.

3.1 The Sarkarian framework

The social and economic thought of the Indian philosopher P.R. Sarkar (1924-1990) holds a rich potential to contribute to economic theory, although it has not yet received the attention it deserves. Sarkar was primarily recognized as a yoga master and spiritual teacher. In addition to his social thought, he has made significant contributions to the study of Indian religions and philosophies, history, and music. As his primary interest was the development of the spiritual potentialities of human beings, the focus of his economic system is to maximize human potential in all spheres, which he defined as the physical, psychic (i.e. mental), and spiritual. Underlying all aspects of his theory is the recognition that

human beings are much less likely to achieve their higher potentialities when denied access to basic material and social requirements.

Sarkar is not alone in incorporating spiritual values into economic thought. Monsignor John Ryan (1906) is but one Western example, along with economists E.F. Schumacher (Schumacher, 1974) and Herman Daly (Daly H. E., 1989). Ryan concluded that a living wage would be a powerful way to achieve universal economic security. However, Sarkar goes further in PROUT to advocate a maximum wage, as is explained below. Daly (1991, pp. 53-56) has made a similar proposal, although he advocated a maximum and minimum income rather that wage. Despite these scholars' commitments to different traditions, they were all guided by their spiritual outlooks to conclude that the distribution of society's resources should be prioritized to ensure that all human beings are guaranteed access to the basic requirements of a decent life.

There are other parallels to Sarkarian thought in contemporary economics. Sarkar's emphasis on developing a social framework that fosters the development of human potentialities is compatible with the welfare criterion more recently advocated by Amartya Sen (1999), that individual social, political, and economic capabilities are the best determinants of human welfare. There area also close parallels to Sarkarian thought in the humanistic economics expounded by Mark Lutz and Kenneth Lux (1979). They employed the humanistic psychology of Abraham Maslow to argue that an economy should satisfy basic requirements such as physical needs as a prerequisite to allowing humans to satisfy higher needs and achieving self-actualization.

Sarkar summarized his philosophy in a short book called *Ananda Sutram*, first published in English in 1961. The outline of his social-economic system PROUT is found in the fifth chapter (reproduced in Sarkar, 1992). The book, written in the traditional Indian Sanskrit *sutra* form, consists of concise aphorisms followed by explanatory commentaries. The ninth and tenth sutras, listed and discussed below, are most relevant for our purpose of developing of a theory of optimal inequality.

The ninth sutra is:

“The minimum requirements of an age should be guaranteed to all.” (Sarkar P. R., 1992, p. 4)

This is seen as the primary function and duty of any economy. Without the necessities of life—food, clothing, medical care, housing, and education—human beings cannot progress to achieve individual potentialities or develop a high level of culture. Nor can they undertake rigorous spiritual disciplines that can lift their minds to the supreme bliss of union with the “Infinite Consciousness,” which Sarkar would regard as the ultimate goal of individuals and society.

The reasoning here is not unlike that developed by Abraham Maslow, whose humanistic psychology will be further elaborated below. Maslow established a hierarchy of human needs. From lower to higher, they are physiological, safety, belongingness and love, esteem, and self-actualization. Lower needs must be met in order to progress to meeting higher needs. At the level of self-actualization individuals have most physical and psychological needs met and are free to be altruistic and to develop their higher potentialities. Above this level is what Maslow called the transpersonal. Activity here is purely spiritual, characterized by meditative introspection, perfect contentment, complete unselfishness, feelings of harmony and oneness with the universe, and experience of higher states of consciousness. According to Maslow, using this model it is possible to determine "better" or "poorer" cultures, the better ones gratifying all basic human needs and permitting self-actualization (Maslow, 1968, p. 211).

Sarkar stressed that a healthy economy and society require that the basic necessities not be distributed directly by any official agency. Rather, they should be purchased in the marketplace with income earned in useful employment. He further advocated a government policy of one hundred percent employment, with a minimum wage set at a level adequate to purchase necessities. The standard for minimum necessities will change with time and place, but should be continually improving.

The tenth sutra is:

"The surplus wealth should be distributed among meritorious people according to the degree of their merit." (Sarkar P. R., 1992, p. 5).

After people in an economy are able to provide the minimum necessities to all, they will have to decide how to distribute the remaining surplus. Sarkar (1992, p. 4) opposes dividing the surplus equally, seeing it as a violation of the diversity of nature. Sarkar also does not endorse the communist ideal, "From each according to his abilities, to each according to his needs." Under PROUT, incentives do matter and it is not considered unjust for the worker who is more productive to earn more, once each member of society has access to the basic necessities. (See the previous chapter for a mathematical treatment of a Sarkarian distribution.)

The guiding principle is that the surplus is to be used specifically as an incentive to coax greater service to society from the especially capable. This sort of incentive is known in Proutist economics by the Sanskrit word *atiriktum*. *Atiriktum* may be given in the form of salary, but that is not its only form. Since its purpose is to increase the capacity of those with high potential to benefit society, *atiriktum* can take the form of special task-related privileges. For example, a talented researcher may be given access to expensive specialized equipment, such as an electron microscope, or a particularly effective and selfless social worker may be offered more staff.

In the article "Minimum Necessities and Maximum Amenities," published shortly before his death in 1990, Sarkar (1989, p. 31) expanded on the relationship between minimum necessities and amenities offered the meritorious. He stressed that even with the minimum necessity rule, people should not be left with a bare-bones existence. While amenities need to be provided to the meritorious elite, common people should be assured of a living standard that is appropriate for that time and place and allows what most consider to be a reasonably dignified and stress-free life. Furthermore, continuous efforts should be made to raise the minimum standard.

A Sarkarian Distribution with Comparisons

To see the intent of the distributive framework envisioned by Sarkar it may be helpful to contrast it with other egalitarian distribution schemes that are commonly recognized in economics. A PROUT distribution may be summarized as follows: A minimum wage (acquired through constitutionally guaranteed employment) is set at the level required to meet minimum necessities as well as a dignified level of consumption according to the current social standard. Any surplus (called in PROUT *atiriktum*) is used to reward meritorious work in ways that will encourage greater contribution to the well-being of society. As is shown below, that reward in the form of additional income should not exceed the value of service that the additional income encourages. A maximum wage caps wages to prevent excessive salary, and to limit the pay gap.

Proutist economist Ravi Batra (1979) has devised the following system for distributing income, based on the principle of *atiriktum*. In the following formula A stands for *atiriktum*, NNP for net national product, L for labor force, and w for the real wage required for the minimum standard of living. Recall that *atiriktum* has been defined as the surplus remaining available to society after at least the minimum wage, or the minimum standard of living, has been supplied to all. Then

$$A = NNP - wL$$

If TP_j is the total product of the jth individual who contributes more to the economy than the minimum wage, then the incentive income for that person could be given by the formula

$$I_j = (NNP - wL)\frac{TP_j}{\sum_{j=1}^{n} TP_j} = A\frac{TP_j}{\sum_{j=1}^{n} TP_j}$$

where n is the number of individuals producing more than w.

Batra offers as an example a simple economy with a labor force composed of five people (L = 5). Their current monthly income in rupees is 100, 200, 300, 1000, and 1500. (That brings NNP to 3100.) But 500 is require to purchase the minimum necessities. The summed TP of those earning above the

minimum is 1000 + 1500 = 2500, and n = 2. A = 3100 - 2500 = 600. The incentive income for the person now earning 1000 would be 600 x (1000/2500) = 240. The income distribution would go from (100, 200, 300, 1000, 1500) to (500, 500, 500, 740, 860).

Batra's scheme assumes that the two wealthiest earners were earning at first according to their real marginal productivity, an assumption he admits may not be valid. Relative market power, institutional structures, and power relations also shape earnings, and their role or absence should be specified in wage determination models. However, this should be seen as a simple preliminary attempt to demonstrate how a Proutist distribution would look. Batra emphasizes here that maintaining an acceptable minimum wage is prioritized.[1]

That outcome may be contrasted with a Rawlsian distribution that satisfies the welfare function

$$W = min[u^1, \ldots, u^N]$$

where *W* is the welfare function and u^n is the utility of the nth person (Jehle & Reny, 2001).

Under this system proposed by Rawls (1971), a just distribution would result if due to a "veil of ignorance" the nth person could not predict their economic rank. Therefore the preferences of the worse-off person would be binding on the society, as is described by the welfare function above, because anyone could arrive at that position. Logically, under such a system inequality would be allowed to the extent that it makes everyone better off. This is similar to the principle developed in chapter 2 that any *atiriktum* income provided an individual should not exceed the value of their marginal contribution to society, as any more income going to that person would be at the expense of a

[1] This simple model notably does not contain the feature of a Proutist distribution developed below, that incentive income is limited to what is required to attract the necessary talent. Attempts would be made to eliminate excess rents from salaries.

less-well off person to whom that extra income could be distributed, without the compensation to society of more services from the higher-paid individual. As Rawls puts it, "…social and economic inequalities are to be arranged so that they are (a) reasonably expected to be to everyone's advantage, and (b) attached to positions and offices open to all." (Rawls, 1971, p. 60)

A difference in PROUT is that certain necessary outcomes are made explicit. An adequate minimum wage is defined and is prioritized. Growth that "lifts all boats" but causes upper incomes to grow faster than the lowest incomes would meet a Rawlsian criterion, but not a Proutist one, as growth would first be used to increase the minimum wage. Furthermore, it is conceivable that wages for critical services could be bid up to where they exceeded what was required to obtain the services and still meet a Rawlsian criterion. However, under PROUT any such rents would be eliminated with a legally-defined maximum wage.

The welfare function most commonly used in economics takes the utilitarian form (Jehle & Reny, 2001, p. 255) which can be described mathematically

$$W = \sum_{i=1}^{N} u^i$$

Under such a function individual utilities are simply added up. That which increases total utility increases social welfare. John Stuart Mill called it "the Greatest Happiness Principle." (Mill, 1961, p. 194) Under this welfare function the Pareto principle will hold; someone made better off without making someone else worse off will improve total utility. However, total utility will also be satisfactorily increased if someone is made more well-off than another person is made worse off. If diminishing marginal utility is assumed and if interpersonal utility comparisons are also assumed to be meaningful as measured in common units the effort to maximize welfare will lead toward greater equality.

PROUT is also intended to maximize happiness. Sarkar ended *Ananda Sutram* with "This is the Progressive Utilization Theory, propounded for the happiness and all-round welfare of all." (Sarkar P. R., 1992, p. 11) However, the difference is in the specificity of the Proutist distribution. Again, PROUT

specifies that the minimum wage be guaranteed and that income growth at the low end be prioritized. Furthermore, resources are to be utilized according to the Five Fundamental Principles of PROUT to foster human potentialities. These principles call for the more subtle qualities of human and material resources to prioritized when making social choices regarding how a resource should be used. Mill had a more sophisticated concept of utility than was seen in the previous generation of utilitarians. He called for prioritizing more refined and altruistic utility calculations by an educated sensibility. Someone operating under his guidance might come close to the resource utilization choices called for in the Five Fundamental Principles, but the values underlying forms of utilization under PROUT are fully spelled out.

In this section introducing the social thought of P.R. Sarkar, I have summarized his views on how the output of society should be distributed. In order to facilitate human development, meeting minimum needs should take priority, and then more amenities may be made available to the meritorious as an incentive to provide more service to society. As we use these elements of the Sarkarian framework to develop our theory of optimal inequality, it becomes necessary to understand the relationship between incentives and productivity in healthy human beings and in a healthy society. Insights from the humanistic psychology of Abraham Maslow are particularly helpful to this end.

3.2 Maslow and eupsychian management

It is not controversial that some disparity of income can encourage the most talented to be more productive and to accept jobs that are more challenging. We have also noted that in the Sarkarian view some income inequality can be beneficial to society if it actually provides an incentive for greater productivity. However, it must be recognized that human motivation is complex; there are many reasons why humans choose to be productive, only one of which is income. It is critically important to the present argument that there are rational limits to inequality because the more that non-income motivators contribute to productivity, the need to rely on income incentives alone is diminished. From the standpoint of society, the justification for extreme inequality is weakened. It is therefore necessary

for a theory of optimal inequality to be based on a well-rounded understanding of the motivation behind human productivity. The insights from the psychologist Abraham Maslow are of considerable help.

Maslow has explored the motivation to be productive at length. He found that healthy, self-actualizing people become devoted to their work because of their interest in the work itself, not because of external rewards. He reverses the usual assumption of the disutility of work prevalent in neoclassical economics, which demand explanations for exerting effort in work. Maslow asks "Why do people *not* create or work? Rather than, why *do* they create?" (Maslow, 1965, p. 8) He asserts that it can be assumed that everyone has the motivation to create and work; it is the inhibitions to these motivations which must be explained.

Maslow's explanation points to negative aspects of the work environment. On the other hand, a well-managed, positive work environment can greatly enhance the natural desire to do good work. Eupsychian management, Maslow's term for employing strategies to foster such a positive environment, can spread benefits throughout society. A virtuous cycle develops wherein a good organization improves the people working in it, who in turn improve the industry, and eventually society as a whole. Good management, Maslow asserts, can be "a utopian or revolutionary technique." (Maslow, 1965, p. 1) Maslow found it counter-productive to assume people will avoid work if given the chance. Most "are for good workmanship, are against wasting time and inefficiency, and want to do a good job, etc..." (Maslow, 1965, p. 17)

These positive findings are dependent on psychologically healthy individuals working in a healthy environment. According to Maslow, where these are lacking, coercive management and material incentives must play a larger role (Maslow, 1965, p. 17). By Maslow's thinking then, excessive reliance on material incentives may indicate systemic breakdown. It is not surprising that Maslow is highly critical of conventional economics, with its stress on money as a motivator.

Still, Maslow (1965, p. 11) acknowledges a place for healthy competition, writing, “A boxer needs a good sparring partner or he will deteriorate”. Some income disparity can also be beneficial: “... then it is very desirable (and perhaps even theoretically necessary), that cream be able to rise to the top of the milk. The best product should be bought, the best man should be rewarded more.” (Maslow, 1965, p. 212)

We see that in the Maslovian view human productivity and creativity are innate, and can be encouraged with a healthy, humane, and well-managed environment. Still, as he suggests in the previous paragraph, incentives and even the pressure of market competition can be beneficial. The important implication for income disparity is this: If inequality will be accepted to the extent that it increases productivity to the benefit of all, the effect of income incentives cannot be understood in isolation. Non-material incentives and both environmental and innate considerations will have to be included in a complete theory of human productivity. In the next section, a holistic model of human productivity that does account for these factors will be developed, informed by the concepts of Maslovian psychology. It will be an important step in developing the theory of optimal inequality.

3.3 Elements of productivity

Below I extend John F. Tomer’s (1981) work on motivation in a business environment. To explain motivation, Tomer’s model is:

$$U = f(E,P^*,DO,WE, FG)$$

The Tomer model was developed as a response to the X-efficiency theory developed by Harvey Leibenstein (1975), which Tomer regarded to be inadequate in its explanation of human motivation. U here stands for an individual’s utility from work effort. E is the amount of directed work effort. (If graphed with U on the vertical axis, the UE curve would at first slope upward and then downward.) P*, standing for personality, is starred to distinguish it from the similar factor offered in Leibenstein’s model based on what Leibenstein called constraint concern, the willingness to comply with the requirements,

norms, and responsibilities associated with job, even if they vary from a worker's own liking.[2] With greater constraint concern, a worker will constrain his or her behavior to conform to the interests of the firm in the absence of external pressure. To this Tomer adds individual drive and maturity or psychic health. Here Tomer cites Maslow to assert that a healthy individual is self-actualizing, and therefore more self-motivated and less dependent on external motivators.

DO stands for the demands of the organization, along with its accompanying pressure. WE, or work environment, can be broken down into distinct, though interacting elements that can increase U. First to be considered is whether there is a match between the individual and the job or organization. A person can be more or less suited for the nature of a job (i.e., whether it involves social interaction or is solitary, uses literary or mechanical skills, etc.) or to the management style of an organization (competitive, or cooperative and consensus-oriented). Second is the structure and supervision of a job. The third factor is whether both the organization and the job encompass meaningful goals. Finally, there are implicit contracts, the unwritten standards of fairness which govern employer-employee relations. FG represents future growth, the potential perceived by the employee to grow and learn in the present job. Presumably, such potential will increase self-esteem, enhancing job satisfaction while providing motivation for a higher level of performance.

Tomer's model shows a trade-off from supervisory pressure for performance. Short-term productivity may rise, but at the cost of long-term productivity, as employee satisfaction erodes. Further, Tomer's model emphasizes that long-term motivation, resulting in higher productivity, comes

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[2]Tomer argues that his model is an improvement over Leibenstein (1975) because the older model implies that the only way to improve productivity is to increase pressure from the boss. Leibenstein (1982) disputes this point. For a detailed critique of Tomer's model and a related defense of Leibenstein's theories, see Frantz (1982).

from a high-quality, humanistic work environment. Development of such an environment requires investment in what Tomer calls organizational capital.

I present a model that is similar, yet has important differences. To begin, I replace "U" for utility with "Pr" for productivity. Whereas Tomer's model seeks to identify those factors that affect an individual's utility to expend effort on a job, my approach looks at productivity directly. There are causal factors important to creating ultimate productivity, such as talent, that are not related to any conscious or even unconscious utility calculation. Let us then look closely at the model that will be developed through the rest of this paper:

$$Pr = f(A, P, DO, Ed, Ex, WE, SC, MI)$$

"A" stands for individual ability. I assume that there are innate differences in abilities and talents that affect one's productive capacities. P for personality is the same as in Tomer's model, with his expansion of the personality concept to include individual drive and psychic health according to Maslovian self-actualizing criteria. Self-actualizing people are considered likely to be more productive, ceteris paribus. Work ethic should also be considered a personality trait, related to psychic health, yet distinct. Ed is education and Ex is experience. Also included is Tomer's WE for work environment and DO for the demands of the organization.

A new element introduced in this model, SC, is service culture. This refers to the degree to which service and self-sacrifice are encouraged in the culture. Assuming the organizational objective is worthwhile, a person more acculturated in a service ethic would be more motivated to expend effort toward that objective in his or her organizational role without expectation of personal reward. This is particularly important to consider in a Sarkarian model, since Sarkar (1988, p. 29) asserts in his philosophy that the altruistic impulse, or the desire to serve others selflessly, is a defining human characteristic. In his terminology, it is part of the *dharma,* or intrinsic nature, of human life. Finally, MI is material incentive. As can be seen, this is only one of several factors involved in achieving productivity,

and should not be overemphasized. However, it is this factor which must be viewed separately in our discussion of optimal income inequality.

All of the variables can be assumed to interact. For example, those with greater ability are likely to pursue more education, and more education may enhance abilities. Experience will reinforce the effects of education as well as enhance ability, while both ability and education will open doors to gain experience. The quality and organization of the work environment can also reinforce or detract from the effects of the other variables, as does the quantity and nature of compensation.

In the following section, we will be most concerned with the effect of MI in the equation above, or in mathematical terms, ∂Pr/∂MI. The other factors are held constant, but are assumed to be set at very high or optimal levels. We are assuming a progressive society where a quality work environment, high educational standard, etc. are demanded, and as a result productivity is raised all the more.

3.4 Toward an optimal level of inequality

Now that we have discussed some of the elements of human productivity, we can proceed to the next step in our sequence of logic. To review, first it was seen that in the normative framework guiding Sarkarian distribution, meeting basic human needs takes economic priority, after which additional amenities are distributed according to their potential to generate greater benefit to society. In other words, material incentives are provided in order to stimulate productivity. Having accepted this operating principle, we then examined the nature of material incentives, and found them to be only one of a number of factors which contribute to productivity. Nonetheless it was acknowledged that material incentive can make a difference in individual productivity, a difference that varies from person to person.

Our next step is to use this understanding to create a model for finding the theoretically optimal level of inequality. In *The Economics of Welfare*, A.C. Pigou (1962) employed the law of diminishing

marginal utility to argue that redistribution of income in favor of the poor would maximize economic welfare for society as a whole. Since the amount of utility gained from each additional dollar declines, a poor person receives greater utility than a rich one loses if a dollar is taken from the rich person and given to the poor. Such reasoning led early marginalists to conclude that an ideal distribution of income is a perfectly equal one. The weakness of this conclusion soon became apparent. The amount of income available for distribution depends on the incentive to produce income. The incentive is lost when all income is equal (Scitovsky, 1971, p. 288).

Economists were left with a conflict between maximizing social well being and maximizing the output needed by society: the impasse between efficiency and equity. Sarkar's social/economic theory Prout provides the theoretical means to break the impasse: *atiriktum*. The doctrine of atiriktum solves the age-old conflict between efficiency and equity by producing exactly the amount of inequality that is both just and efficient.

Most people would agree that perfect equality is not a just distribution—those who work harder or have invested in acquiring higher-level skills that make them more productive deserve a greater return for their work. But a degree of inequality has an instrumental purpose as well. It provides the incentive for greater efforts that serve society and for individuals in society to conduct their business efficiently. They are confident that if they work hard and well, they will be rewarded appropriately. So a certain degree of inequality is both just for the individual and serves society well: it is efficient.

The question then arises: how much inequality is needed to provide optimal economic efficiency? How much is too much? The answer is that inequality becomes excessive when its cost to society exceeds the value of the increased productivity that results from its incentive. In other words, inequality is only justified as an incentive; any material benefits that are provided an individual beyond what would cause that person to perform at the peak of his or her ability represents a waste to society. Standard concepts and tools of economics can be used to clarify this important point.

The principle of diminishing marginal returns can certainly be applied to atiriktum: there must be diminishing marginal returns to incentives. This fact will allow us to determine an optimal level of inequality in society, which I will demonstrate with what can be called a Sarkarian individual productivity curve.

Figure 1 shows the Sarkarian individual productivity curve, an S-shaped function similar to those seen in all microeconomic texts, demonstrating variable rates of return from the increase of a certain factor of production. Here the changing productivity of a hypothetical individual is plotted as more material incentive is provided. Material incentive here is wage or material compensation in other forms as is considered for the MI variable in the productivity model developed previously, with the other variables held constant. One characteristic of the curve that identifies it as Sarkarian is that the curve begins, or crosses the vertical axis, at a living wage. Put another way, the origin of the horizontal axis at point A is the living wage. (This figure assumes a Proutist economic framework in which the minimum wage is set at a level that allows the minimum necessities of life to be purchased. Therefore, all wages shown in the diagram represent incentives to achieve beyond the minimal level required to retain employment and to live in a dignified manner.) Productivity increases sharply at first, as the individual takes what steps are within his or her power to meet the requirements of receiving a higher wage, such working harder or improving his or her skills. As the individual approaches the limits of his or her capacity the curve levels off. At the peak of the curve, associated with level B, the productivity of the individual has reached its highest potential; he or she cannot possibly do more. No amount of additional incentive will further raise productivity. In fact, further incentive in the form of salary may actually decrease total productivity as an “income effect” sets in, and the individual decides he or she can afford more leisure.

Figure 1

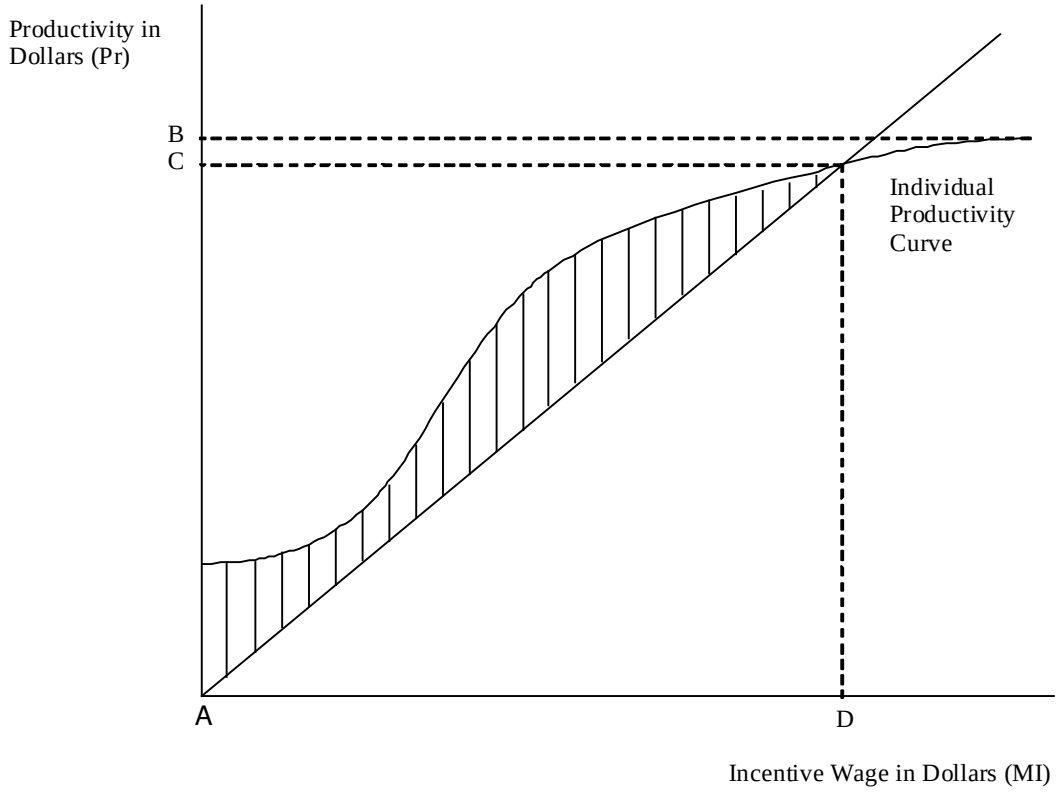

Figure 3.1 The Sarkarian individual productivity curve

If the primary justification for this individual to receive a higher salary than another worker is to provide an incentive to greater productivity, there is no reason for society to provide a salary higher than that which induced the individual to reach point B. Any additional salary is nothing more than a windfall for the individual (that is, economic rent) and a waste, or inefficiency, on the part of society.

We now know that the amount of incentive society will want to pay this person is less than that which induced AB, but we can use diagrammatic analysis to precisely pinpoint the optimal level of incentive from society's point of view. In Figure 1, notice the ray coming from the origin at a 45 degree angle from both axes. This is the “break even line,” upon which every point represents a level of incentive which yields an exactly equal return to society in greater productivity. Where the individual’s productivity curve meets this line, the incentive paid equals his or her increase in productivity. Any

incentive paid beyond this point (shown by segment AD) costs more to society than is justified by the increase in productivity it brings. However, if any amount of incentive is paid that is less than the amount represented by AD, society loses the opportunity to benefit from a value of productivity that exceeds its cost to society. Therefore AD represents the optimal level of incentive for this individual. (That is, at point D the marginal product of incentive equals its marginal cost to society.) The shaded area, between the individual productivity curve and the break even line from the origin to D, represents the net gain enjoyed by society from its investment in incentive. It can be stated mathematically as:

$$\int_A^D [\, f(MI) - MI \,] dMI \; .$$

The advantages to society are many when productivity is so optimized by the proper use of atiriktum. Recall that atiriktum is the part of a worker's wage that is excess over the amount needed to comfortably purchase the minimum necessities of life. So with atiriktum, the worker's basic needs are met (certainly a fundamental function of any economy), and the worker's extra amenities are provided for at a level that is fair and appropriate from the standpoint of society. Moreover, the worker is fulfilled because society shows that it values and recognizes his or her unique contribution. Society benefits from the worker's productivity, which is maintained at a high level. He or she produces a surplus for society, which may be used to raise the minimum wage or to provide incentives which raise the productivity of others. Society may also tax the surplus to provide public goods, or to provide atiriktum to those such as artists, whose skills are valued by society, but not in a way that is clearly reflected in the marketplace. This surplus could also be taxed to subsidize the minimum wage of those whose work is not of sufficient marginal value to equal the minimum wage due to disabilities or other reasons.

The means by which these benefits can be achieved by society depends on the institutional arrangements employed. In a pure Sarkarian or PROUT framework, most production would be done by cooperatives which would distribute income according to the collective decision-making process chosen by the individual firm. The state may intervene by setting an economy-wide minimum wage which

would be raised periodically as economic growth allows. If necessary, that is if wages in the private or public sector exceed what is needed to provide optimal incentives, the state could also impose an economy-wide maximum wage. The state may also tax firms in a PROUT economy to support work programs to provide employment at the minimum wage to disabled or other individuals who are difficult to place in the private market cooperative system.

There is no reason, however, to think that the principle of a rational maximum wage cannot also be beneficially applied in a corporate capitalist system. Rigorous application for executives could free funds within the corporation as well, allowing the funds to be used for things like research and development or to increasing shareholder dividends. These freed resources might also be taxed for public goods.

A consequent question may arise: if AD is the optimal amount paid from the standpoint of society, why is it that in a market economy some may receive salaries vastly greater than this amount? The Sarkarian productivity model can be used to provide basic insights. In the case of excessively high salaries, the invisible hand process fails to secure the best interests of society. To make this case, we can assume usual market dynamics. Both employers and employees want to maximize their earnings, the employer by paying less, and the employee by demanding more.

This interaction is modeled by inverting the axes in Figure 1, so that productivity is shown on the horizontal axis and incentive wages are shown on the vertical axis. This inverted Sarkarian function shown in Figure 2 becomes a supply curve for an individual's productivity. (MI shapes this supply curve; the other variables in the holistic productivity model developed earlier, such as work environment (WE), are "shifters.") Notice that the line becomes nearly vertical toward the right, indicating that there are no further gains in productivity as the material incentive (or wage) increases. Productivity becomes completely inelastic. The solid horizontal lines are demand curves indicating willingness to pay for a certain level of individual productivity. The curve, reflecting both the quality and quantity of the

individual's productivity, would indicate the individual's marginal revenue product. Where the demand and supply curves meet, the market sets the level of the wage and productivity.

Figure 2

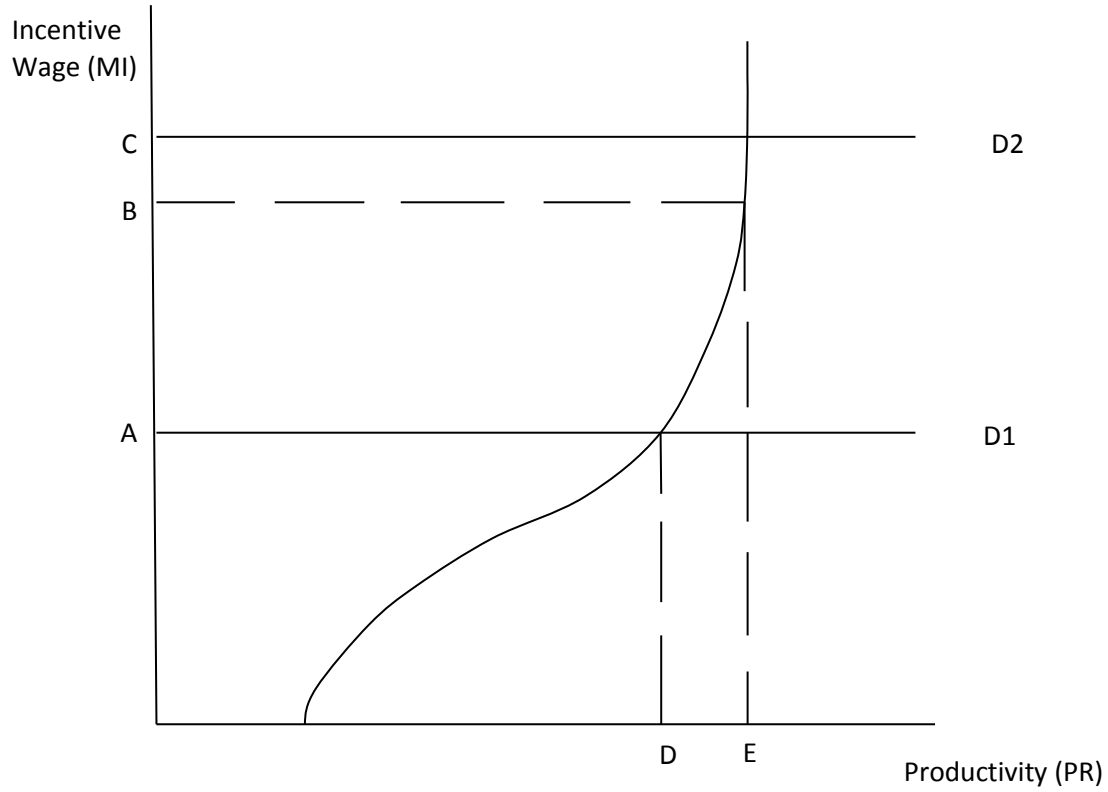

Figure 3.2 Productivity supply Indicated by an inverted Sarkarian productivity curve

The demand curve D1 crosses the supply curve where increases in productivity are still possible. In this case the demand curve serves a useful social function by determining the level of productivity desired by society, as determined by its willingness to pay. However, demand curve D2 meets the supply curve at a wage level far beyond what would induce any further productivity. Segment BC shows a portion of the wage paid that represents a waste on the part of society. Economic efficiency requires that this amount be used by society to increase productivity elsewhere. Note that since the wage level

at B is well beyond what is required to meet the individual's real needs according to the current social standard, and even allows a high amount of amenities, the individual is hurt little by being denied BC.

3.5 The persistence of unjustifiably high wages

What would cause so high a demand curve as described above? An individual could have a rare skill that is in high demand, such as a professional football player's abilities or an inventor's genius. This gives the individual the economic equivalent of a monopoly for that skill, allowing him or her to demand very high wages. Nations with even the most laissez faire economies recognize the need to regulate the monopoly power of firms for the public interest, but nowhere is this applied to individuals.

Below are two examples of markets in which high productivity demand curves cause wages to be inefficiently high from the standpoint of society. While they are taken from the American economy, other examples could be found in most economies of the world. First, extremely high salaries are prominent in American major league professional baseball. Before 1976, salaries of baseball players were held down by restrictive contracts that forced players to remain on the teams they joined. However, that year players won free agency, the right to join the team that bid the highest salary. While the public was amazed to see salaries quickly double or even quadruple, economists argued that the new salaries were more fair, and more accurately reflected the players' revenue contributions to their teams (McConnell, Brue, & Macpherson, 2006, p. 186). As of 2012, the average salary in major league baseball is over $3.4 million (MLB Salaries). While the economists' arguments of fairness have some merit, and while many fans would prefer that the difference between the old and new salaries go to the players rather than into the owner's pocket, it cannot be demonstrated that the quality of play in baseball has improved. In other words, the higher salaries have had no incentive effect. Furthermore, it is unlikely that players would be lured to other careers if salaries fell to a tenth of their current levels or less. From society's standpoint, the higher post-free-agency salaries had little justification.

Other extremely high salaries in American society cannot be so easily explained in economic terms. Scandalously high U.S. corporate CEO salaries are now so routine that we have become desensitized to them. After a lull in the rate of increase in their salaries, average compensation rose an astounding 30 percent in 2005 (Colvin, 2005). It is normally assumed that such high salaries can only be rewards for leading corporations to extraordinary success, but that is often not the case. High salaries often find their way to heads of corporations with mediocre earnings or even consistent losses. Let us consider one more example. Suppose the 30 percent CEO salary increase cited above was not allowed, and that any pay increase would be outlawed for the coming year. Does anyone believe we would see mass resignations of CEOs from their jobs for which they are already paid in the many multi-millions? Would they work less than what is expected and demanded of their position? Would they start to make intentionally bad decisions? And finally, would the supply of applicants to these positions suddenly dry up? Although it would be difficult to construct an empirical test for these questions, a reasonable person would answer them all "no."

The academic economic and business literature that attempts to explain CEO salaries is rich but inconclusive. It is not within the purpose of this paper to review it. However, for whatever reason, top executive salaries do seem to be on a high demand curve of the type shown in Figure 2. As such, the Sarkarian productivity curve predicts that measures of executive productivity such as corporate performance will be unresponsive to marginal incentive salary. Without economy-wide salary caps to prevent salaries from being bid up, executive compensation will be in excess of what is required to fill these positions with able and willing people, an inefficient and socially costly outcome.

3.6 Conclusion

In the context of the Sarkarian framework presented here, it has been acknowledged that a degree of economic inequality is needed to provide the incentives that encourage the high volume and quality of human effort needed to produce a level of material abundance consistent with a high

standard of human welfare. However, there is a point where the incentives cease to make economic sense, and have high opportunity costs in terms of other economic priorities, such as improving the well-being of the lowest-income workers and providing incentives where they have a greater impact on productivity. Analysis was used to demonstrate that such a point must exist. Developing methods to determine that optimal point on the Sarkarian productivity curve could provide the basis for a rich and useful research program. The Sarkarian framework can be especially fruitful in social economics, where excessive inequality has been a perennial concern but a means of defining what is excessive has not been found.

There are many who will insist that any attempts to limit incomes will cause market distortions with grave welfare consequences. Advocates of this view will need to show that these costs outweigh the opportunity costs of excessive inequality. On the other hand, the Sarkarian framework will help those concerned with excessive inequality to demonstrate the burdens imposed on society when too much of the income society produces flows to a few. For example, the opportunity cost of channeling income to wealthy people for whom it cannot provide a productivity incentive can and should be quantified. Furthermore, the Sarkarian individual productivity curve suggests that the social costs of limiting high incomes, especially at the extreme end of the spectrum, will not be large. This should also be tested empirically.

Another part of this research program would be to quantify the importance of the elements of productivity proposed in the humanistic model of productivity. Measurable proxies should be found for the elements (A, P, DO, Ed, Ex, WE, SC, and MI), and they should be tested in real work environments. For example, for the work environment variable, productivity in workplaces that rank highly in published "Best Places to Work" listings can be compared with workplaces that rank poorly. It will not only be useful to empirically determine the average impacts of the variables, but also to what extent the impacts vary from person to person. Research stemming from this model may make a real difference in

optimizing productivity within firms as well as contribute to a more livable society. The research would also be a necessary component of attempts to determine the ideal wage gap within firms as well as for society, since monetary incentives to productivity work in conjunction with the other variables.

Sarkar suggests that there should be a set gap or ratio between the minimum wage and the highest wage allowed. Some PROUT advocates argue that this should be arbitrarily set at a reasonable level because an ideal gap is empirically difficult to determine and also because there will otherwise be a tendency for the gap to gradually widen at the upper end, as we see occurring in the corporate CEO market. Economist Ravi Batra (1979), a close student of P.R. Sarkar, has advocated the "ten times rule:" For the sake expediency, a ratio of ten to one should be established between the lowest and highest salaries. It is simple, and should provide adequate room for incentives. Others argue that an optimal ratio can be found empirically, and that it will likely vary in different settings. Theoretical and empirical research can further this discussion.

Welfare economics has sought a social welfare function that provides guidance for redistribution. However, a significant body of literature demonstrates high efficiency costs associated with redistribution (Ballard, 1988; Browning, 1993). The Sarkarian approach advocates optimal distribution rather than corrective redistribution. Future work should demonstrate which approach best accomplishes the socially desired level of inequality with the fewest efficiency costs.

Finally, economic democracy is a concern for many social economists, and is also central to Sarkarian thought. It should be fruitful to study whether in conditions of greater workplace democracy natural limits to inequality emerge as workers develop rules for rewarding different labor contributions to the firm in ways that best benefit all. In particular, different compensation patterns may emerge for managers. Where worker consent is required to set manager salaries, they may naturally be set at the Sarkarian optimum since workers would only increase a manager's salary if it would also cause their own salaries to increase. This should also be tested empirically.

The Sarkarian individual productivity curve, in conjunction with a holistic theory of productivity, can provide a useful new context for studying inequality. It can also provide a normative foundation for evaluating the social desirability of different states of inequality. This chapter has been an initial attempt to incorporate ideas from the Sarkarian framework into economic theory so that these advances can be realized.

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