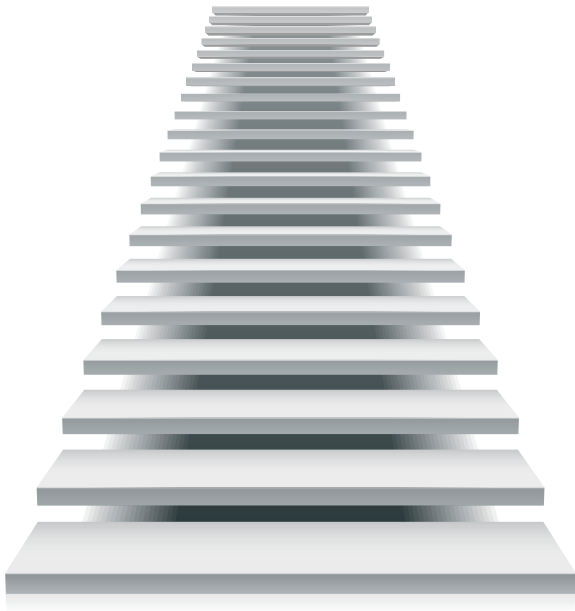


Opportunity for All



How to Think about Income Inequality



AMERICAN ENTERPRISE INSTITUTE

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How to Think about
Income Inequality



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Introduction

Washington is abuzz with talk of income inequality. President Barack Obama calls it “the defining challenge of our time.” Senator Harry Reid says there is “no greater challenge” facing America. The media declares the issue will dominate the debates and elections that lie ahead.

The conventional wisdom on inequality is built on three assumptions: (1) Income inequality is inherently unjust; (2) it is bad for the economy; and (3) government redistribution is the best way to remedy it. According to this narrative, narrowing the gap between what wealthy and working-class Americans earn should be our top political priority, and policies such as raising taxes or increasing the minimum wage are the answer.

This conventional wisdom is incorrect. A free enterprise society is not a zero-sum game in which citizens fight over resources. It should be a shared journey that empowers everyone to improve their station and earn their own success. Income differences are inevitable, and they are not inherently problematic as long as the opportunity to rise is available to everyone. Survey data show that the American people agree: narrowing the income gap is an afterthought for people who believe everyone has a shot at success, but it ranks as a top priority among those who feel the game is rigged.

While fixating on the distribution of income per se is misguided, the free enterprise movement must not neglect the reason for the debate. Mobility and opportunity are indeed falling in low-income America. And as the policy failures of the past half-decade have made painfully clear, outdated policies actually exacerbate the problematic trends they are intended to reverse.

Fighting to lift up vulnerable people is a mission with universal resonance. It is time for advocates of free enterprise to join the

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conversation, explain the truth about inequality and redistribution, and articulate the principles that will restore opportunity for all.

—Arthur C. Brooks, AEI President

Consumption and the Myths of Inequality

KEVIN A. HASSETT AND APARNA MATHUR

In multiple campaign speeches over the past week, President Obama has emphasized a theme central to Democratic campaigns across the country this year: inequality.

Blasting a caricature of his opponent's economic policies, Mr. Obama has said, "it's the same philosophy that's been squeezing the middle class for more than a decade." Massachusetts Senate candidate Elizabeth Warren made inequality a theme in her speech at the Democratic National Convention in September. "The system is rigged," Ms. Warren said, "for many years now, our middle class has been chipped, squeezed and hammered."

These statements echo a standard left-wing critique of capitalism: Economic growth does not serve all classes of society. In the mid-19th century, socialists of various stripes asserted that capitalists grow richer while exploiting workers, who grow poorer. Today we hear that the gains from economic growth accrue to the highest-income earners while the standard of living of the poor and middle America stagnates and the gap between the richest and the poorest grows ever wider. That portrait of the country is wrong.

To be sure, there are studies of income inequality—most prominently by Thomas Piketty of the Paris School of Economics and Emmanuel Saez of the University of California at Berkeley—that report that the share of income of the wealthiest Americans has grown over the past few decades while the share of income at the bottom has not. The studies have problems. Some omit worker compensation in the form of benefits. And economist Alan Reynolds has noted that changes to US tax rules cause more income to be reported at the top and less at the bottom. But even if the studies are accepted

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at face value, as a read on the evolution of inequality, they leave out too much.

In the first place, studies that measure income inequality largely focus on pretax incomes while ignoring the transfer payments and spending from unemployment insurance, food stamps, Medicaid and other safety-net programs. Politicians who rest their demands for more redistribution on studies of income inequality but leave out the existing safety net are putting their thumb on the scale.

Second and more important, it is well known that people's earnings in general rise over their working lifetime. And so, for example, a person who decides to invest more in education may experience a lengthy period of low income while studying, followed by significantly higher income later on. Snapshot measures of income inequality can be misleading.

Another way to look at people's standard of living over time is by their consumption. Consumption is an even more relevant metric of overall welfare than pre-tax cash income, and it will be set by consumers with an eye on their lifetime incomes. Economists, including Dirk Krueger and Fabrizio Perri of the University of Pennsylvania, have begun to explore consumption patterns, which show a different picture than research on income.

Our recent study, "A New Measure of Consumption Inequality," found that the consumption gap across income groups has remained remarkably stable over time. According to data from the Bureau of Labor Statistics' Consumer Expenditure Survey, if you sort households according to their pretax income, in 2010 the bottom fifth accounted for 8.7 percent of overall consumption, the middle fifth for 17.1 percent, and the top fifth for about 38.6 percent. Go back 10 years to 2000—before two recessions, the Bush tax cuts, and continuing expansions of globalization and computerization—and the numbers are similar. The bottom fifth accounted for 8.9 percent of consumption, the middle fifth for 17.3 percent, and the top fifth for 37.3 percent.

While this stability is something to applaud, surely more important are the real gains in consumption by income groups over the past decade. From 2000 to 2010, consumption has climbed 14 percent

for individuals in the bottom fifth of households, 6 percent for individuals in the middle fifth, and 14.3 percent for individuals in the top fifth when we account for changes in US population and the size of households. This despite the dire economy at the end of the decade.

What about the standard of living over those years? The Department of Energy regularly surveys Americans and asks them to report on the characteristics of their homes, including the types of devices and appliances they have. If the standard left-wing narrative is correct, then a typical poor American would trade his current circumstances for those of the past in a heartbeat.

Yet the access of low-income Americans—those earning less than \$20,000 in real 2009 dollars—to devices that are part of the “good life” has increased. The percentage of low-income households with a computer rose to 47.7 percent from 19.8 percent in 2001. The percentage of low-income homes with six or more rooms (excluding bathrooms) rose to 30 percent from 21.9 percent over the same period.

Appliances? The percentage of low-income homes with air-conditioning equipment rose to 83.5 percent from 65.8 percent, with dishwashers to 30.8 percent from 17.6 percent, with a washing machine to 62.4 percent from 57.2 percent, and with a clothes dryer to 56.5 percent from 44.9 percent.

The percentage of low-income households with microwave ovens grew to 92.4 percent from 74.9 percent between 2001 and 2009. Fully 75.5 percent of low-income Americans now have a cell phone, and over a quarter of those have access to the Internet through their phones.

We would hazard a guess that if you were to ask a typical low-income American in 2009 if he would like to trade his house for its 2001 version, he would tell you to take a hike. How then is he worse off in 2009?

The data suggest the following picture. Over time, Americans have constructed a vast safety net that has adequately served the poor and helped them—as well as the middle class—to maintain significant consumption growth despite the apparent stagnation of cash incomes. The notion that a society that has accomplished such a feat is rigged or fundamentally unjust is ludicrous.

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It is true that the growth of the safety net has contributed to massive government deficits—and a larger government that likely undermines economic growth and job creation. It is an open question whether the nation will be able to reshape the net in order to sustain it, but reshape it we must. We might make significant progress in that regard if those on the left would stop seeking political gain by inflaming class hatreds with misleading statistics.

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If You Really Care about Ending Poverty, Stop Talking about Inequality

W. BRADFORD WILCOX

Economic inequality is the “defining challenge of our time,” President Barack Obama declared in a speech last month to the Center for American Progress. Inequality is dangerous, he argued, not merely because it’s unseemly to have a large gap between the rich and the poor, but because inequality, itself, destroys upward mobility, making it harder for the poor to escape from poverty. “Increased inequality and decreasing mobility pose a fundamental threat to the American Dream,” he said.

Obama is only the most prominent public figure to declare inequality Public Enemy #1 and the greatest threat to reducing poverty in America. CAP’s new Washington Center for Equitable Growth, Princeton economist Alan Krueger, and economist Miles Corak (with his famous Great Gatsby Curve) have all argued that it’s harder for the poor to climb the economic ladder today because the rungs in that ladder have grown farther apart. In Krueger’s words, countries like the United States with high inequality tend to have less upward mobility “for children from low-income families.”

But for all the new attention devoted to the 1 percent, a new dataset from the Equality of Opportunity Project at Harvard and Berkeley suggests that, if we care about upward mobility overall, we’re vastly exaggerating the dangers of the rich-poor gap. Inequality itself is not a particularly potent predictor of economic mobility, as sociologist Scott Winship noted in a recent article with his colleague Donald Schneider based on their analysis of this data.

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Why do we care so much about inequality? Is it to help the poor get ahead? If so, we should care much more about other factors.

So what factors, at the community level, do predict if poor children will move up the economic ladder as adults? What explains, for instance, why the Salt Lake City metro area is one of the 100 largest metropolitan areas most likely to lift the fortunes of the poor and the Atlanta metro area is one of the least likely?

Harvard economist Raj Chetty, a principal investigator at the Equality of Opportunity Project, has pointed to economic and racial segregation, community density, the size of a community's middle class, the quality of schools, community religiosity, and family structure, which he calls the "single strongest correlate of upward mobility." Chetty finds that communities like Salt Lake City, with high levels of two-parent families and religiosity, are much more likely to see poor children get ahead than communities like Atlanta, with high levels of racial and economic segregation.

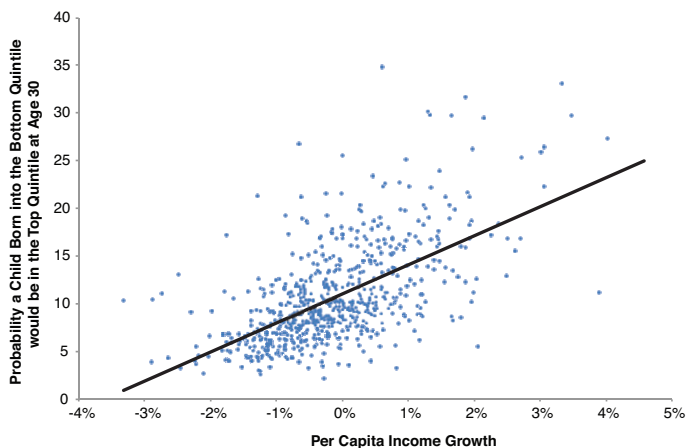
Chetty has not yet issued a multivariate analysis of the project's data that compares the relative predictive power of each of these factors. Based on my OLS regression analyses of the data, of the factors that Chetty has highlighted, the following three seem to be most predictive of rags-to-riches mobility in a given community:

- Per-capita income growth
- Prevalence of single mothers (where correlation is strong, but negative)
- Per-capita local government spending

In other words, communities with high levels of per-capita income growth, high percentages of two-parent families, and high local government spending—which may be a proxy for good schools—are the most likely to help poor children relive the Horatio Alger story. The following figures illustrate the relationship between each of these three factors and rags-to-riches mobility in the United States.

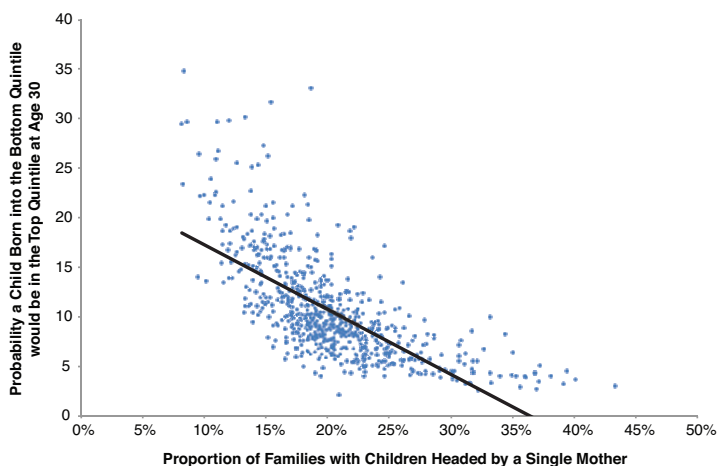
Judging by my analyses, factors like racial and economic segregation also appear to play an important role here, as they are almost as

FIGURE 1
LOCAL INCOME GROWTH VS. UPWARD MOBILITY



Source: Data from The Equality of Opportunity Project.

FIGURE 2
SHARE OF SINGLE MOTHERS VS. UPWARD MOBILITY



Source: Data from The Equality of Opportunity Project.

FIGURE 3
LOCAL GOVERNMENT SPENDING VS. UPWARD MOBILITY



Source: Data from The Equality of Opportunity Project.

closely correlated with economic mobility for the poor as are family structure and local government spending. Children from communities marked by high levels of racial and economic segregation are less likely to rise up the income ladder.

But many measures directly related to income inequality—such as the size of the middle class in a community, or the gap between the richest and poorest middle-class households in communities—seem far less important than local growth, two-parent households, and local spending.

Still, we don't know which way causation runs. High economic mobility might lead to more marriages, creating dual-earner households that would, in turn, facilitate more mobility. Periods of economic growth might make local governments richer, which would lead to more local spending on schools, which better prepare low-income students for college. These are knotty and interlocking variables. The upshot is that income inequality, itself, might be a tertiary issue for academics and politicians who are

concerned, above all, about providing poorer children the opportunity to get ahead.

As the nation marks the 50th anniversary of the War on Poverty this week, it's worth considering that our attention to income inequality, although well-meaning, is distracting us from the most important pieces in the poverty puzzle. Growth, marriages, and local governments are three issues deserving more attention in our efforts to renew the American Dream for the nation's poorest citizens.

W. Bradford Wilcox is a visiting scholar at AEI, where he directs the Home Economics Project. This essay is from his January 8, 2014, Atlantic article titled "If You Really Care about Ending Poverty, Stop Talking about Inequality." Copyright 2014 the Atlantic Media Co., as first published in the Atlantic magazine. Distributed by Tribune Media Services.

The Inequality Illusion

APARNA MATHUR

“As we acquire more knowledge, things do not become more comprehensible, but more complex and more mysterious.” —Albert Schweitzer

The state of debate on income inequality has reached exactly this juncture. To see why, consider the following. A recent co-authored paper by economists Thomas Piketty and Emmanuel Saez finds that the share of income going to the top 1 percent of the population has more than doubled from 9 percent in 1976 to 20 percent in 2011. In other words, the top tail of the distribution now enjoys an ever-larger slice of the pie than it has historically done so. In a 2013 paper, however, economist Richard Burkhauser and his co-authors counter that by some measures, the growth in incomes at the top has been significantly lower than in incomes at the middle and bottom, such that the income share of the top quintile has in fact declined since the 1980s. The Congressional Budget Office’s (CBO) analysis shows that incomes of the top 1 percent grew by more than 250 percent between 1979 and 2007. In another recent paper, Greg Mankiw posits that perhaps inequality is not a problem as long as the compensation of the top 1 percent reflects their contribution to society—the “just deserts” principle.

Clearly, the more we know, the more elusive the real answer becomes.

One of the problems that plagues the research on income inequality is the lack of a common definition of income. Piketty and Saez use pre-tax pre-transfer income data from the tax records of filers and include realized capital gains. Thus, they fail to account for transfers and payments like Social Security, Medicare, food stamps

etc. In addition, it is also worth noting that by focusing on reported taxable incomes, their data are biased by the fact that taxable incomes respond to changes in tax rates. There is a plethora of literature studying the taxable income elasticity. Essentially, when tax rates are high, reported incomes are lower since people engage in tax avoidance or tax evasion. Burkhauser, on the other hand, argues that the true measure of income should focus on the Haig-Simons definition of income. In other words, we need to include accrued capital gains on housing and other wealth along with earnings and transfer incomes to get at what people actually think of as income. The CBO provides a post-tax and post-transfers definition of income, but does not include accrued capital gains.

So after decades of research on income inequality, do we really know where we stand?

At the heart of this debate, the real conversation is about living standards. Are people enjoying better lives today than they did twenty to thirty years ago? In popular perception, income inequality is bad to the extent that it reflects a general worsening of conditions for the common man. When politicians pitch the top 1 percent against the middle income classes, it engenders a belief that somehow the wealthier families are enjoying their comforts at the expense of the middle and lower class families. But is that the truth? Or is it simply the case that the size of the economic pie has grown over time, and while everyone is enjoying the benefits, a larger share of the benefits are going to the top?

To study this issue further, my colleague Kevin Hassett and I conducted a study to track changes in consumption inequality over time. Why did we use consumption instead of income to track inequality? One thing economists agree upon is that consumption is a better measure of well-being than income. What we buy and consume with our income directly adds to our utility and happiness, and also has a direct impact on our standard of living. Individuals are also better able to smooth consumption rather than income over their lifecycle. While a retired, older individual has low levels of current income, he can still enjoy a high standard of living due to lifetime savings and other forms of wealth. A student with low current incomes can

borrow to finance education and household expenses in the hope of earning high incomes in the future from a relatively well-paying job. So one reason why income and consumption are de-linked is the possibility of borrowing and saving. In fact, it is probably rational to assume that at least some part of a poor or low-income family's consumption is being sustained by indebtedness. However, another reason for the mismatch between income and consumption is likely the tax and transfer system. Many redistributive policies support consumption for low income households and provide transfer payments to them. As we discussed previously, most studies of income inequality are unable to get at these transfer payments.

Before I get to the main findings from our study, I would like to point out that consumption inequality has also been extensively studied in the literature, though perhaps not as much as income inequality. Results from these papers are also mixed. Krueger and Perri find that while income inequality increased during the period 1980-2003, consumption inequality did not. However, Blundell and colleagues show that income and consumption inequality diverged between the 1970s and the 1990s. Other papers find that income and consumption inequality have tracked each other closely since the 1980s. In general, the data used in these studies comes from either the Consumer Expenditure Survey (CEX) or the Panel Study of Income Dynamics. There are two problems with using the CEX to measure consumption inequality, however: measurement errors and a lack of information on the consumption of durable goods. Several authors, including Attanasio et al. and Aguiar and Bils, have attempted to account for the measurement errors in this data, by using techniques that enable them to predict expenditures for the less well-measured items by using information on better-measured items. While we do not criticize or applaud their approach, it does imply that in order to get anything meaningful from the CEX data for measurement of inequality, authors need to rely heavily on modeling assumptions and non-standard approaches, as opposed to simply using the raw data.

Precisely for these reasons, in our study, not only do we work with the CEX data but we also supplement our analysis with the use of

the Residential Energy Consumption Survey (RECS) data. The CEX provides a good overview of nondurables' consumption by American households. In 1984, households in the top income quintile accounted for 37 percent of total expenditures, while households in the bottom quintile accounted for 10 percent. Hence the ratio of top to bottom consumption was 3.7. In 2010, that ratio increased to 4.4. The gap was widest in 2005 when the share of consumption for the top was 39 percent relative to 8 percent at the bottom. In the most recent recession, it appears that households at the bottom increased their share by 1 percentage point while the share at the top either declined or remained steady. In the 2001 recession, the ratio declined as well, suggesting that recessions work towards a more even distribution. On average, over the entire period, the ratio is 4.3 with a standard deviation of 0.22. Therefore, using this measure, we find that consumption inequality has increased only marginally over time.

If we compare these trends in consumption to trends in income using the Current Population Survey data, which is widely used for research on income inequality, we find that the story is strikingly different. As per our analysis, in 1984, pre-tax incomes at the top were more than 11 times incomes in the bottom quintile. In 2010, that ratio rose to 15.4. The average for the entire period is 13.5. Clearly, inequality using annual incomes is significantly higher than when we use consumption, and it has tended to widen over time.

As mentioned earlier, the CEX is not a good source of data on durable goods consumption. Therefore, we worked with the RECS data as well. This survey has questions on household use of appliances such as microwaves, dishwashers, computers, printers and other data. What we find is that the access of low-income Americans—those earning less than \$20,000 in real 2009 dollars—to these devices that are part of the “good life” has increased. The percentage of low-income households with a computer rose to 47.7 percent from 19.8 percent in 2001. The percentage of low-income homes with six or more rooms (excluding bathrooms) rose to 30 percent from 21.9 percent over the same period. Similar increases can be documented for appliances like air-conditioners, dishwashers, microwaves, cell phones and other household items.

In general, we find that people at all income levels now have access to many more material possessions than they did in the 1980s. Moreover, there has been a narrowing of the gap between high and low income classes in terms of ownership of these items. It is hard to argue against the improvement in the standard of living that has accompanied these trends.

Hence, the standard narrative that rising income inequality has somehow hurt the middle and lower income classes is not supported by data. Policies aimed at redistributing incomes from the top to the lower income classes have certainly been responsible for part of this trend. However, we would caution against using this argument for raising marginal tax rates at the top to levels seen in the 1970s. In another co-authored piece, my colleagues and I argue that the Diamond and Saez solution to inequality—a marginal tax rate of 73 percent—is based on unrealistic assumptions relating to how individuals would respond to high tax rates. Their modeling of the optimal rate assumes a “more equality is better” social welfare function and assigns no social value to the marginal dollar of consumption for the rich. Most importantly, it ignores the long-run behavioral responses and consequences of having marginal tax rates that are over 50 percent. In the article, we show that while these assumptions work well in theoretical models that are aimed at catering to an audience of professional economists, these should not be used as the basis of real world public policy formulation.

Whether the explanation for improvement in living standards lies in redistribution policies and the growth of the safety net, or technological improvements that allowed prices of electronics and other durable goods to drop, or real improvements in productivity and wages, the bottom line is: people are better off today than they were twenty or thirty years ago. Households are consuming more and the typical low income household possesses many more appliances and gadgets that have traditionally been considered the preserve of the rich, than at any time in history. Judging by these criteria, inequality is much less of a predicament than most politicians would have you believe.

To conclude, the debate about inequality is also a debate about equality of opportunity. If the problem is disparities in income

between the rich and the poor, is there a way that economic and social mobility can at least enable people at the bottom to aspire to be the next Bill Gates? Is equality of opportunity the answer to income inequality? I believe the answer is yes. In a recent column, Arthur Brooks states that 70 percent of Americans believe that everyone should get a chance to succeed or fail, on his or her own merits. But 30 percent prefer a world in which everyone ends up in roughly the same place regardless of abilities and efforts. Like most Americans, I believe in equality of opportunity and not equality of outcome, which is clearly neither desirable nor attainable. By providing the right framework for growth and free enterprise, so that people can aspire to work, earn and make a good living, we can ensure that America remains a land of opportunity for everyone in society. But to penalize the success of the rich for some strange notion of fairness is to aim for a fundamentally different kind of equality than most Americans care about.

Aparna Mathur is a resident scholar at AEI who specializes in income inequality, taxes, and wages. This essay is from her Fall 2013 Dialogue article titled "The Inequality Illusion." See <http://issuu.com/kclpolitics/docs/autumn2013final>.

Define Income Inequality

JONAH GOLDBERG

Democrats are revving up for a huge national “conversation” on income inequality. This is in no small part because the Obama administration and congressional Democrats would rather talk about anything other than Obamacare.

But it would be unfair to say this is all a cynical effort to gain partisan advantage. For instance, New York City Mayor Bill de Blasio is certainly sincere in his desire to take “dead aim at the Tale of Two Cities” in the Big Apple. He and his team want to fix the distribution of income in New York by distributing it differently.

This in itself points to the different perspectives on the left and right when it comes to income inequality, perspectives worth keeping in mind if you’re going to try to follow the conversation to come.

As a broad generalization, liberals see income as a public good that is distributed, like crayons in a kindergarten class. If so-and-so didn’t get his or her fair share of income, it’s because someone or something—government, the system—didn’t distribute income properly. To the extent conservatives see income inequality as a problem, it is as an indication of more concrete problems. If the poor and middle class are falling behind the wealthy, it might be a sign of declining or stagnating wages or lackluster job creation. In other words, liberals tend to see income inequality as the disease, and conservatives tend to see it as a symptom.

Also, income inequality can be a benign symptom. For instance, if everyone is getting richer, who cares if the rich are getting richer faster? New York City’s inequality, for instance, is partly a function

of the fact that it is so attractive to poor immigrants who start at the bottom of the ladder but with the ambition to climb it rapidly.

Non-Economic Issues

This raises the most delicate aspect of income inequality, the extent to which it can be driven by non-economic issues. New York City's new public advocate, Letitia James, delivered her inaugural address while holding hands with Dasani Coates, a 12-year-old girl who until recently lived in a grimy homeless shelter with her parents. She was profiled in a nearly 30,000-word *New York Times* series that aimed to highlight the Dickensian nature of the city and succeeded in anointing Dasani as the living symbol of income inequality in New York.

James held Dasani's hand aloft for emphasis when she proclaimed, "If working people aren't getting their fair share . . . you better believe Dasani and I will stand up—that all of us will stand up—and call out anyone and anything that stands in the way of our progress!"

But she also said something interesting about herself. James said her parents were smiling down from heaven as they watched her swearing-in, adding that her mother and father were "without credentials, humbled individuals more accustomed to backbreaking work than dinner parties." Later, at a reception, she said of her parents, "I made them proud. I just want to inspire others. That's why I had Dasani with me."

Victim of System?

One has to wonder whether James missed the irony. According to liberals like James and *The Times* (to the extent that's a distinction with a difference), Dasani is a victim of a system that tolerates so much economic inequality.

Dasani is certainly a victim, but is the system really to blame? Dasani's biological father is utterly absent. Her mother, Chanel, a drug addict and daughter of a drug addict, has a long criminal record and has children from three men. It doesn't appear that she has ever had a job, and often ignores her parental chores because she's strung

out on methadone. As Kay Hymowitz notes in a brilliant (New York) *City Journal* examination of Dasani's story, *The Times* can't distinguish between the plight of hard-working New Yorkers like James' late parents and people like Dasani's parents. "The reason for this confusion is clear: In the progressive mind, there is only one kind of poverty. It is always an impersonal force wrought by capitalism, with no way out that doesn't involve massive government help."

The data say something else. Family structure and the values that go into successful child rearing have a stronger correlation with economic mobility than income inequality. America's system is hardly flawless. But if Dasani were born to the same parents in a socialist country, she'd still be a victim—of bad parents.

Jonah Goldberg is a fellow at AEI, bestselling author, and columnist. This essay is from his January 6, 2014, USA Today article titled "Define Income Inequality." From USA Today, January 6, 2014 © 2014 Gannett-USA Today. All rights reserved. Used by permission and protected by the copyright laws of the United States. The printing, copying, redistribution, or retransmission of this content without express written permission is prohibited.

More Than the Minimum Wage

MICHAEL R. STRAIN

Minimum-wage fever is gripping the nation—again. President Obama proposed an increase in the minimum wage from its current level, \$7.25 per hour, to \$9 per hour in his 2013 State of the Union address, and in his December 4 speech on economic mobility he pledged “to keep pushing until we get a higher minimum wage for hard-working Americans across the entire country.”

The president supports the bill sponsored by Senator Tom Harkin of Iowa and Representative George Miller of California, Democrats both, to raise the federal minimum wage to \$10.10 per hour. The day after the president’s recent speech, striking fast-food workers in over 100 cities across the country protested their low wages, demanding an increase in the minimum wage to \$15 per hour.

It is easy to understand the frustration of (some of) these workers. Conservatives should not be glib about the fact that \$7.25 per hour may buy you the bootstraps you’ll need to pull yourself up, but not much more. Average hourly wages of workers in the retail and leisure-and-hospitality industries have had a rough 5 or 10 years.

And there is a widespread feeling throughout the country that, since the Great Recession, financiers on Wall Street have done well and the top 1 percent of earners have done great while hard-working families have been left with stagnant wages, higher tuition, and more expensive health care. It’s no surprise, then, that a Gallup poll conducted last month found that 76 percent of respondents would vote to increase the minimum wage to \$9 per hour.

Perhaps there’s wisdom in crowds, but not this time. Those 76 percent of Americans are wrong. Conservatives should definitely

support government action to help the working poor, but increasing the minimum wage isn't the answer.

* * *

Research published in 2010 by economists Joseph J. Sabia and Richard V. Burkhauser found that minimum-wage increases (state and federal) between 2003 and 2007 “had no effect on state poverty rates.” They found that only 11 percent of workers who would gain from raising the federal minimum wage from \$7.25 to \$9.50 per hour live in poor households, while 42 percent live in households with incomes 3 times the poverty line or more — considerably above America's median household income. Only about 1 in 4 workers who would be affected by increasing the minimum wage to \$9 per hour are in families making less than \$20,000 per year, according to the left-leaning Economic Policy Institute.

How can giving a raise to minimum-wage workers help so many higher-income households? After all, if you earn the federal minimum wage and work full-time, you're bringing in less than \$15,000 per year. But many minimum-wage workers are young, and they are usually not the primary breadwinner in their family. Although teenagers make up only 5.4 percent of workers who are paid hourly wages, they are 24.1 percent of minimum-wage workers. Less than 3 percent of hourly-wage earners over the age of 24 earn at or below the federal minimum.

Many on the right argue that increasing the minimum wage is bad policy because it would kill jobs by decreasing the number available to low-skill workers. It's natural to expect economists to confirm or deny this. But, in this case as in many, economists disappoint by answering: Honestly, we don't know.

The 101-level theory is clear. When a wage floor above the market wage is instituted, firms will want to hire fewer workers. In addition, more people will want to become workers because the wage they will earn from working has gone up. The combination of firms wanting fewer workers and more people wanting to work increases unemployment.

Increasing the minimum wage lowers the cost of investing in a

machine relative to employing a low-skill worker. Applebee's intends to put tablet computers at every table to facilitate food and drink ordering. Customers at fast-food restaurants often serve themselves their own drinks through dispensers. At grocery stores and pharmacies it is now common for customers to pay for their items at self-checkout machines. Why is this happening? Because investing in tablets, drink dispensers, and self-checkout machines is cheaper than employing human beings. And part of the reason human beings are relatively expensive is because of the minimum wage.

Do the data back this logic up? Is there evidence that raising the minimum wage lowers employment?

The old consensus was that a 10 percent increase in the minimum wage would lower low-skill employment by between 1 and 3 percent. There are currently 4.5 million teenagers working in the United States. If we increased the federal minimum to \$10.10 per hour—a 39 percent increase—then the old estimates suggest that teen employment would drop by between 4 and 12 percent. In levels, that's a loss of around 175,000 to 525,000 jobs. That ain't nothing. A little under 10 million high-school dropouts over the age of 24 currently have jobs. The old estimates suggest that a good chunk of these jobs could go, too.

But are the old estimates correct? For the past 20 years or so economists have studied minimum-wage increases using new statistical methods, and many—through certainly not all—of the more prominent studies show that raising the minimum wage does not lower employment. How could that be? Businesses could pass the cost of the increase on to their customers in the form of higher prices. (Though that would not benefit the low-skill workers who shop at businesses that heavily employ minimum-wage workers.) Or workers could work harder and would be less likely to quit because they like getting paid more, increasing the firm's profits and allowing the firm to keep employment at pre-increase levels.

That said, despite the newer estimates, many economists continue to believe that raising the minimum wage lowers employment. The University of Chicago Booth School of Business polled some top academic economists in February and asked them whether “raising

the federal minimum wage to \$9 per hour would make it noticeably harder for low-skill workers to find employment.” Thirty-four percent agreed, 32 percent disagreed, and 24 percent were uncertain. I am a credentialed economist, and based on my reading of the evidence I would have been in the one-third who agreed.

* * *

But an important reality that gets lost in translating the academic literature into the public debate is that no one argues that raising the minimum wage will increase employment.

And today, shouldn't that be the point?

The labor market for young and low-skill workers is in terrible shape. More than 14 percent of workers aged 16–24 are unemployed. The situation is even worse if you look only at teenagers, over 1 in 5 of whom are unemployed. The unemployment rate for high-school dropouts over the age of 24 is 10.8 percent—a two-decade high—and only 4 people out of every 10 in that group have jobs. And there are still a staggering 4.1 million unemployed workers who have been looking for a job for six months or longer, many of whom are young or low-skill.

Hundreds of thousands of low-skill workers are trying to find a job but can't. Is it really the right time to raise the cost of hiring and make it harder for businesses to hire them? Some studies say a higher minimum wage will lower employment; some say employment will remain unchanged. Shouldn't we err on the side of caution?

Young workers need to get their start in life. Many young workers will use their first job to gain invaluable experience—learning for the first time how to deal with a boss, coworkers, and customers; developing professional skills like punctuality, respect for authority, and courtesy; simply learning how to be a worker.

Society owes these unemployed young and low-skill workers the best shot it can give them at earning their own success in the labor market. Government should not place an obstacle in their paths. Especially with a low-skill labor market as bad as ours, the minimum wage would be exactly that.

* * *

Many conservatives will be tempted to leave it there. But just as society should not erect barriers in the paths of young and low-skill workers, so too should it be helping to support the working poor—the stated goal of minimum-wage advocates—and to bring more people into the workforce. Households headed by a full-time worker should not live in poverty. Conservatives, who champion work and earned success, should be the first to agree that more can be done to encourage these goals.

They have a very simple option: Expand the Earned-Income Tax Credit.

The EITC is a federal income-transfer program—structured as a refundable tax credit—for working-class families. It rewards work by supplementing earned income. For a single worker with two children in 2013, the EITC paid 40 cents for every dollar of earned income up to \$13,430, providing a maximum subsidy of \$5,372. (The subsidy phases out as income rises above a certain level to ensure that higher-income households are not eligible.)

The credit is a very effective anti-poverty tool because it supplements earnings and incentivizes employment. Expansions of the EITC have been very successful at encouraging work, particularly among single mothers during the 1990s. The Tax Policy Center estimates that nearly 26 million households will receive \$60 billion from the EITC in 2013. The IRS estimates that in 2009 nearly 7 million people—including over 3 million children—were lifted out of poverty by the EITC.

It's a more effective anti-poverty tool than the minimum wage because it is targeted at working-class households. Households that earn above a maximum amount do not qualify for the subsidy. The minimum wage, in contrast, is uninterested in the household income of the minimum-wage worker. A millionaire's 16-year-old daughter qualifies, despite her family's wealth.

Despite its obvious appeal, the EITC has some shortcomings. It can impose significant marriage penalties, and it gives very little help to childless workers. It is also true that the IRS makes a troublingly large share of improper EITC payments, most likely due to the complexity of the EITC's rules.

These problems can be fixed, of course, and are not a good enough reason to oppose expanding the EITC to help the working poor. The program could be amended easily to offer more support to childless workers and to mitigate the marriage penalties. And IRS errors should not stand in the way of attempting to ensure that no American who works full-time and heads a household lives in poverty.

The EITC could also easily be supplemented with a more straightforward wage subsidy—to full-time head-of-household workers who work a minimum number of hours per week, for instance, and, say, earned a low enough amount in the previous year. If you earn \$7.25 per hour, for every hour you work the government would cut you a check for 3 bucks. Easy as pie. Around 1.8 million hourly-wage workers over the age of 24 earned at or below the federal minimum wage in 2012. Let's take the most generous case and assume that all of them worked full-time and lived in working-class households. With a wage subsidy of \$3 per hour, we're talking an annual federal expenditure of \$11 billion.

Many conservatives will argue that given terrifying long-run debt projections, now is not the time to add billions of dollars per year to federal outlays. This prudence is commendable, but outlays and revenue are not immovable objects. Conservatives should couple an EITC expansion or direct wage subsidy with a reduction in other tax expenditures: the \$70 billion in federal spending on the mortgage-interest deduction, say, or the \$77 billion deduction for state and local taxes.

Gains from the mortgage-interest and state- and local-tax deductions are overwhelmingly enjoyed by the top 20 percent of households by income. Government assistance should be directed at those who need it most, and modest curtailments of these tax expenditures could provide more than enough revenue to supplement the earnings of the working poor.

* * *

But is that really the government's job?

Liberals have argued that programs like the EITC represent a subsidy from government to business. Despite their large profits, the

liberal logic goes, businesses are choosing not to pay their workers enough money to escape poverty, forcing government to provide things like the EITC and food stamps. These provisions subsidize businesses that “should” be paying “living wages” and allow them “to get away with” paying less.

This misunderstands how wages work. If a low-skill worker can only contribute \$7 per hour in revenue to a firm, then the firm will not employ the worker at \$10 per hour. If it did, the firm would lose three bucks for every hour the worker was on the job. We can sentimentalize businesses all we want, but they simply aren’t going to pay workers more than they’re worth.

The argument is also wrong on a deeper level. Liberals, in supporting minimum-wage increases, implicitly argue that the employers of low-skill workers, together with consumers of the products and services the workers help provide, should bear the burden of ensuring that low-skill workers don’t live in poverty. Conservatives should reject this argument, insisting that all of society is responsible for helping the working poor—to escape poverty, to earn their own success, to flourish.

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2014's Real Economic Challenge

JAMES PETHOKOUKIS

No, the worst economic idea of the year wasn't Obamacare. First of all, that was the worst idea of 2010 (though it's still around, so perhaps the Worst Economic Idea of the Year Award should just be renamed the Obamacare Award and given to the second-worst idea of each year). Second, the Affordable Care Act is just one policy manifestation of what really is the worst economic idea of the year: that America's "defining challenge"—both morally and economically—is income inequality. So President Obama has declared, and it's an opinion that seems almost universally shared by the American Left, including New York City's incoming mayor.

It's interesting to note all the economic problems that Obama apparently views as less important challenges than income inequality. Take, for instance, chronically weak economic growth. On average, the US economy has grown by just 1 percent a year, adjusted for inflation, since 2000. Over those 14 years, the American economy has notched just six quarters of real GDP growth of 4 percent or higher, versus 18 quarters of such rapid growth in each of the two preceding decades (the 1980s and 1990s). And the president's own economic team has declared, "in the 21st century, real GDP growth in the United States is likely to be permanently slower" than in the past.

Or how about the long emergency that is the US labor market? If the share of adults with any sort of employment were back to pre-Great Recession levels, there would be 12 million more Americans with jobs. Just as bad, that employment rate hasn't budged much from recession lows. And the jobs that have been created aren't as good as the ones lost during the downturn, continuing a 20-year

trend of recessions' generating weak job recoveries. More than half of the jobs that vanished during the downturn were middle-income positions, and less than a quarter of the new ones are. Analysis by Goldman Sachs found that the "hollowing out in the middle is real" and "not unique to the post-crisis period."

Another great candidate for America's "defining challenge" would be dealing with the continued decline, particularly in working-class America, of intact families where children live with both biological parents. Researchers on the left and right have found that kids who grew up in such old-fashioned nuclear families fare better educationally, emotionally, and financially than those who did not. It's pretty hard to ignore the crisis of family breakdown when talking about inequality, but that's just what Obama is doing.

Obamacrats counter that these other problems are to a great degree caused by income inequality that stems from an unfair economic system, one rigged by the top 1 percent and their minions in Washington. And there is evidence that income inequality, at least between the very rich and the rest, has increased. After-tax income for the top 1 percent of households rose 201 percent from 1979 through 2010, according to the Congressional Budget Office calculations, vs. 40 percent growth for the middle three-fifths of earners.

There is far less persuasive evidence, however, that higher top-end income inequality has slowed economic growth, pinched middle-class incomes, or reduced economic mobility from the bottom to the top. A focus on income inequality as a causal factor distracts from how technology and globalization are transforming the American economy—and boosting inequality. Those macro forces, according to economists Steven Kaplan and Joshua Rauh, have enabled highly talented and educated individuals to manage or perform on a larger scale, "applying their talent to greater pools of resources and reaching larger numbers of people, thus becoming more productive and higher paid."

Supporting that conclusion is a study out this month from researchers Eric Hanushek, Guido Schwerdt, Simon Wiederhold, and Ludger Woessmann finding that the US offers higher returns to skills than any other advanced economy. The problem, then, is that America is

not producing enough workers with the skills to succeed in today's globalized, information-driven economy. If Obama is looking for a "defining challenge" in 2014, rather than a political wedge issue, that just might be it.

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Income Inequality in the United States

APARNA MATHUR

I. Introduction

Simply defined, income inequality is the gap between the incomes or earnings of individuals at different levels of the income distribution. A typical way to measure income inequality is to first define how we measure income for a particular household, and then divide households into equal sized groups to compare households at the top of the distribution with households at the bottom or middle of the distribution. Several reports and papers in recent times have argued that there has been an increase in income inequality over the last two to three decades, while others counter that inequality is in fact narrowing by some measures. What is often lost in this back and forth is the focus on the poor, because a change in the income distribution across all households says little about how people are faring in absolute terms at the bottom of the distribution.

The first point made by this testimony is that the issue of income inequality is often complicated by the fact that different studies often provide vastly differing results on the magnitude of the problem since income is not consistently measured across these studies. Second, the testimony questions whether income is in fact the best way to measure increases in inequality. Most economists would agree that consumption is a better measure than income of household welfare since individuals are better able to smooth consumption over their lifetimes than incomes. This happens because while incomes may be low in the extremes of the age distribution and high in the prime working years, individuals can smooth consumption by borrowing in the low-income years and saving in the high-income years.

In addition, many redistributive policies support consumption for low-income households and provide transfer payments to them. As a result, consumption is both a better predictor of lifetime or permanent incomes and reflects the impact of government transfer programs on household welfare.

While one can argue endlessly about the exact magnitude of the problem, the real issue is not whether the top of the income distribution has incomes that are ten times higher than the bottom, but whether low and middle income people in America are enjoying a decent standard of living. The unfortunate reality is that millions of people in America are living in poverty and facing the very harsh consequences of the worst recession in recent history. As per the latest report from the Census Bureau, 15 to 16 percent of the population can be defined as living in poverty in 2012. That translates to more than 47 million people.¹ We are now in the fifth year of an economic recovery that does not seem like a recovery to most people in the labor market. There are 10.4 million unemployed workers, of which 3.9 million have been jobless for longer than 27 weeks.² In addition, there are another 10 million who are either in involuntary part-time jobs, or discouraged workers. Further, youth and teenage unemployment rates are above 16 percent. Therefore, the focus on income inequality is somewhat misplaced. Fundamentally, this is a problem of poverty.

When high rates of poverty exist in an economy with low economic mobility, the problem is exacerbated. The purpose of this testimony is to summarize some ideas that might help policymakers address the current economic crisis facing families and provide them opportunities to be productive participants in the labor market and rebuild their lives. This testimony however argues that while trying to equalize outcomes for families by attempting to equalize incomes may be an impossible goal, equalizing opportunities for individuals by providing access to good schools and good jobs may be more attainable and realistic.

In the next section, I describe the studies and data on income inequality trends. In Section III, I focus on consumption inequality. In section IV, I discuss economic mobility issues. Section V puts forth some policy suggestions and Section VI concludes.

II. Income Inequality Data and Research

In a recent December 2013 report, the Congressional Budget Office divided all US households into five groups of equal size (quintiles), on the basis of their before-tax income.³ The CBO definition of before-tax income is composed of labor income, business income, capital gains, capita income (excluding capital gains), income received in retirement for past services and other sources of income. It also includes government transfers to these households. Government transfers are cash payments and in-kind benefits from social insurance and other government assistance programs. As per this report, in 2010, households in the lowest quintile (bottom 20 percent) received 5.1 percent of all before-tax income, or about \$24,100 per household. Those in the middle fifth received 14.2 percent or \$65,400 per household. Households in the top quintile received 51.9 percent or about \$239,100 per household. In other words, households in the top income quintile received an income share that was ten times that for the lower income quintiles.

The corresponding numbers for after-tax income are 6.2 percent for the bottom quintile, 15.4 percent for the middle quintile and 48.1 percent for the top quintile.

It is important to note that both the tax code and the transfer system work towards increasing the share of income earned by the lower income groups. As per the same CBO report, households in the lowest quintile received 36.2 percent of the total benefits from Social Security and Medicare (averaging \$14,200 per household), households in the middle quintile received 16.7 percent of those benefits and those in the highest quintile received 11.4 percent of the benefits. Other transfers-including unemployment benefits, payments from Supplemental Nutrition Assistance Programs, and benefits from Medicaid and Children's Health Insurance Program-go even more disproportionately to households in the lower portion of the income distribution. Households in the bottom quintile received 47 percent of benefits from other transfers, households in the middle quintile received 13.3 percent of those benefits and those in the highest quintile received 6.2 percent.

The federal tax system is also progressive. Households in the top quintile paid 68.8 percent of all federal taxes, households in the middle quintile paid 9.1 percent and those in the bottom quintile paid 0.4 percent of federal taxes.

When we consider trends from 1979, households in the bottom quintile experienced an increase of 49 percent in real after-tax income between 1979 and 2010. After-tax incomes for the middle three quintiles in 2010 averaged 40 percent higher than in 1979. For the 81st to 99th percentile, the growth was 65 percent and for the top 1 percent, household income grew 201 percent above 1979 levels.

While the CBO data are reliable and unbiased, one question that plagues the research on income inequality is the lack of a common definition of income. A recent co-authored paper by economists Thomas Piketty and Emmanuel Saez (2013) finds trends similar to the CBO.⁴ They claim that the share of income going to the top 1 percent of the population has more than doubled from 9 percent in 1976 to 20 percent in 2011. In other words, the top tail of the distribution now enjoys an ever-larger slice of the pie than it has historically done so. Piketty and Saez (2012, 2013) use pre-tax pre-transfer income data from the tax records of filers and include realized capital gains.⁵ Thus, they fail to account for transfer payments like Social Security, Medicare, food stamps etc. In addition, it is also worth noting that by focusing on reported taxable incomes, their data are biased by the fact that taxable incomes respond to changes in tax rates.

Other economists however counter these results by using a different definition of income. In a 2013 paper, economists Philip Armour, Richard Burkhauser and Jeff Larrimore contend that by some measures, the growth in incomes at the top has been significantly lower than in incomes at the middle and bottom, such that the income share of the top quintile declined between 1989–2007 while the share of the bottom quintiles increased.⁶ These economists argue that the true measure of income should focus on the Haig-Simons definition of income. In other words, we need to include accrued capital gains on which are defined as increases or decreases in the value of capital assets every year, irrespective of whether the capital gains are realized or not. Neither the Piketty and Saez paper, nor

the CBO, include accrued capital gains though they do account for realized taxable capital gains.

In a recent paper, economist Greg Mankiw (2013) posits that perhaps inequality is not a problem as long as the compensation of the top 1 percent reflects their contribution to society—the “just deserts” principle.⁷ If returns to high income individuals reflect largely their economic contributions to society, then taxing high incomes in a confiscatory fashion may be equally unjust.

Hence it would appear that after decades of research on income inequality, we are still unsure of the extent of income inequality, and even whether to view it as a problem, due to the lack of a consistent definition of what constitutes income and what that income represents.

I believe that the real focus of inequality research is not so much about whether the rich are doing better than the poor, but about how low income households are faring and have fared over the last few decades. In the next section, I discuss an alternative approach to measuring inequality that focuses on trends in consumption rather than income.

III. Consumption Inequality

One thing economists agree upon is that consumption is a better measure of well-being than income. What we buy and consume with our income directly adds to our utility and happiness, and also has a direct impact on our standard of living. Individuals are also better able to smooth consumption rather than income over their lifecycle. While a retired, older individual has low levels of current income, he can still enjoy a high standard of living due to lifetime savings and other forms of wealth. A student with low current incomes can borrow to finance education and household expenses in the hope of earning high incomes in the future from a relatively well-paying job. So one reason why income and consumption are de-linked is the possibility of borrowing and saving. In fact, it is probably rational to assume that at least some part of a poor or low-income family's consumption is being sustained by indebtedness. However, another reason for the mismatch between income and consumption is likely

the tax and transfer system. Many redistributive policies support consumption for low income households and provide transfer payments to them. As we discussed previously, most studies of income inequality are unable to get at these transfer payments.

Consumption inequality has also been extensively studied in the literature, though perhaps not as much as income inequality. Results from these papers are also mixed. Krueger and Perri (2005) find that while income inequality increased during the period 1980–2003, consumption inequality did not.⁸ However, Blundell and colleagues (2008) show that income and consumption inequality diverged between the 1970s and the 1990s.⁹ Other papers find that income and consumption inequality have tracked each other closely since the 1980s.¹⁰ In general, the data used in these studies comes from either the Consumer Expenditure Survey (CEX) or the Panel Study of Income Dynamics. There are two problems with using the CEX to measure consumption inequality, however: measurement errors and a lack of information on the consumption of durable goods. Several authors, including Attanasio et al (2012)¹¹ and Aguiar and Bils (2011)¹², have attempted to account for the measurement errors in this data, by using techniques that enable them to predict expenditures for the less well-measured items by using information on better-measured items. While we do not criticize or applaud their approach, it does imply that in order to get anything meaningful from the CEX data for measurement of inequality, authors need to rely heavily on modeling assumptions and non-standard approaches, as opposed to simply using the raw data.

Precisely for these reasons, in a study that I co-authored with Kevin Hassett, not only did we work with the CEX data but we also supplemented our analysis with the use of the Residential Energy Consumption Survey (RECS) data.¹³ The CEX provides a good overview of nondurables' consumption by American households. In 1984, households in the top income quintile accounted for 37 percent of total expenditures, while households in the bottom quintile accounted for 10 percent. Hence the ratio of top to bottom consumption was 3.7. In 2010, that ratio increased to 4.4. The gap was widest in 2005 when the share of consumption for the top was 39

percent relative to 8 percent at the bottom. In the most recent recession, it appears that households at the bottom increased their share by 1 percentage point while the share at the top either declined or remained steady. In the 2001 recession, the ratio declined as well, suggesting that recessions work towards a more even distribution. On average, over the entire period, the ratio is 4.3 with a standard deviation of 0.22. Therefore, using this measure, we find that consumption inequality has increased only marginally over time.

If we compare these trends in consumption to trends in income using the Current Population Survey data, which is widely used for research on income inequality, we find that the story is strikingly different. As per our analysis, in 1984, pre-tax incomes at the top were more than 11 times incomes in the bottom quintile. In 2010, that ratio rose to 15.4. The average for the entire period is 13.5. Clearly, inequality using annual incomes is significantly higher than when we use consumption, and it has tended to widen over time.

As mentioned earlier, the CEX is not a good source of data on durable goods consumption. Therefore, we worked with the RECS data as well. This survey has questions on household use of appliances such as microwaves, dishwashers, computers, printers and other data. What we find is that the access of low-income Americans—those earning less than \$20,000 in real 2009 dollars—to these devices has increased. The percentage of low-income households with a computer rose to 47.7 percent from 19.8 percent in 2001. The percentage of low-income homes with six or more rooms (excluding bathrooms) rose to 30 percent from 21.9 percent over the same period. Similar increases can be documented for appliances like air-conditioners, dishwashers, microwaves, cell phones and other household items.

In general, we find that people at all income levels now have access to many more material possessions than they did in the 1980s. Moreover, there has been a narrowing of the gap between high and low income classes in terms of ownership of these items. It is hard to argue against the improvement in the standard of living that has accompanied these trends.

Hence, the standard narrative that rising income inequality has somehow hurt the middle and lower income classes is not supported

by data. Policies aimed at redistributing incomes from the top to the lower income classes have certainly been responsible for part of this trend. However, we would caution against using this argument for raising marginal tax rates at the top to levels seen in the 1970s. In another co-authored piece,¹⁴ my colleagues and I argue that the Diamond and Saez solution to inequality¹⁵—a marginal tax rate of 73 percent—is based on unrealistic assumptions relating to how individuals would respond to high tax rates. Their modeling of the optimal rate assumes a “more equality is better” social welfare function and assigns no social value to the marginal dollar of consumption for the rich. Most importantly, it ignores the long-run behavioral responses and consequences of having marginal tax rates that are over 50 percent. In the article, we show that while these assumptions work well in theoretical models that are aimed at catering to an audience of professional economists, these should not be used as the basis of real world public policy formulation.

Whether the explanation for improvement in living standards lies in redistribution policies and the growth of the safety net, or technological improvements that allowed prices of electronics and other durable goods to drop, or real improvements in productivity and wages, the bottom line is: people are better off today than they were twenty or thirty years ago. Households are consuming more and the typical low income household possesses many more appliances and gadgets that have traditionally been considered the preserve of the rich, than at any time in history.

Hence consumption data paint a strikingly different picture of household welfare than income inequality studies would suggest. Again, the studies in this section do not attempt to suggest that poverty does not exist—only that the magnitude of the problem may be overstated if we only focus on income data.

IV. Income Mobility

Another issue that frequently comes up in discussions relating to income inequality is income mobility. The idea is that the problems associated with income inequality may be partly offset if there is

sufficient economic mobility. In a 2011 public opinion poll, the Pew Charitable Trusts found that 80 percent of Americans identified factors such as hard work, personal ambition and access to education as key drivers of upward mobility. However, most studies suggest that economic mobility i.e. the movement of individuals from lower to higher quintiles is fairly low.

Bradbury and Katz (2002) study transitions between income quintiles across successive one decade intervals and find that a worker in the top or bottom 20 percent of the income distribution has a 50 percent chance of remaining in that quintile one decade later.¹⁶ On the other hand, there is only a 3 percent chance somebody will move from the bottom to the top or from the top to the bottom. In contrast, they find a large amount of churning among the middle three quintiles, which is to be expected given the year-to-year volatility in earnings. Gottschalk and Danziger (1997) find similar results looking at two-decade spans.¹⁷ They also find no upward trend in mobility that would mitigate increased cross-sectional inequality. If anything, they find that mobility has decreased in the last 20 years.

Another interesting issue is that of intergenerational mobility. In a completely egalitarian society, one might expect there to be little connection between a parent's income and that of their children. On the other hand, if human capital is transmitted strongly from parents to their children, then income might be persistent across generations. The literature on income mobility generally cannot distinguish these effects. It can only quantify mobility across generations. Solon (1999)¹⁸ and Bowles and Gintis (2002)¹⁹ provide extensive reviews of the literature on intergenerational mobility. Hertz (2005) studies mobility among income quintiles across generations.²⁰ He confirms the results from Solon and Bowles and Gintis that the intergenerational correlation in income is approximately 0.4. Moreover, he finds that this result is largely driven by black families. In general, the literature suggests that a person who begins life with a low income is likely to stay that way, and this has changed little over the years.

More recent research for the Pew Foundation suggests that the truth is that 70 percent of Americans raised in the bottom two quintiles will never make it even to the middle quintile.²¹ However, there

are certain factors that do enable people at the bottom to be upwardly mobile. The first is human capital. College-graduates, dual-earner families and people who did not experience unemployment, were more likely to move up. In particular, 86 percent of college graduates, 84 percent of dual-earner families and 64 percent of people who were continuously employed left the bottom income quintile. By contrast, only 55 percent of non-college graduates, 49 percent of single earner families and 34 percent of people who experienced unemployment moved up from the bottom quintile.

Another important mobility factor highlighted by the study is higher savings, wealth and home equity. Those who left the bottom of the income ladder had six times higher median liquid savings, 8 times higher median wealth and 21 times higher median home equity than those who remained stuck at the bottom. This suggests that families with savings, for example, may be better able to make human capital investments that promote economic mobility, such as higher education or job training, and those experiencing income gains may have more flexibility to save and build wealth, which in turn can support economic security.

This is true across generations as well. Pew research also shows that parental savings can have a significant impact on upward mobility. The parents of those who moved up from the bottom quintile had almost doubled the median wealth of the parents of those who remained at the bottom.

Another factor highlighted by the Pew study is the importance of location.²² In many American communities, families with relatively high incomes tend to live in more affluent neighborhoods while those with relatively low incomes tend to live in less affluent neighborhoods. Across America there is substantial variation in the degree to which the high and low income neighborhoods are segregated from each other. In the New York Metro area for example, there is a much higher degree of segregation resulting in concentrated pockets of wealth and poverty, relative to Bedford, MA which has fewer neighborhoods of concentrated wealth or poverty. Between 1970 and 1990, there has been steady growth in the degree of neighborhood segregation in a majority of metropolitan areas. The Pew

study finds that the more economically segregated a metro area is, the less economically mobile its residents are. This is a new finding in the area of economic mobility and this analysis is one of the first empirical tests of the theory that, in highly unequal areas, there is additional mechanism aside from family background or resources, by which economic advantage and disadvantage can be transmitted from parents to children, leading to lower overall levels of economic mobility. For example, Boston has lower economic segregation relative to other metro areas and higher economic mobility, while New York has high segregation and low mobility.

The findings of this research on economic mobility as well as our earlier discussion on income inequality have important policy implications, which we discuss in the next section.

V. Policy Suggestions

Rising income inequality has been attributed to a number of factors. In a recent review of the papers on this topic, Dew-Becker and Gordon (2008) ascribe a relatively small role to the decline of unionization in the increase in inequality starting in the 1970s. This is particularly true for females.²³ They similarly ascribe a small role to trade and immigration. While minimum wages have often been offered as the single biggest explanation for rising inequality, the authors contend that this is unlikely to be true. While there is some correlation between the real minimum wages for women and income inequality for women, there is hardly any response in this inequality measure to an increase in the minimum wage over the period 1989 to 1997 and its subsequent decline in 2005. Further minimum wage changes are hard to disentangle from other institutional factors such as unionization.

The authors do find an important role for skill-biased technical change. In other words, the idea is that with the increasing use of computers and computing technologies in the workplace, there was an increasing wage premium associated with college graduates who were able to use these technologies easily. This widened income inequality starting in the 1980s (Claudia Goldin and Lawrence

Katz, 2008) as the demand for skilled college graduates increased.²⁴ Therefore, one policy implication from this is that we need to invest more in college education, skills training and vocational programs for people who lack these skills and therefore are unable to find jobs.

Access to high quality education and schools is extremely important as an investment into children's futures. Poor quality schooling can limit an individual's earning ability.²⁵ Research by some economists has shown that the quality of local public education is improved in areas where there is more competition due to a large number of school districts or a greater availability of nonpublic education.

The labor market poses serious concerns about the future livelihoods of the millions of unemployed workers, particularly those who are long-term unemployed and those who are fresh out of college hoping to get their first job and pay off their student loans. One solution that is being proposed is the extension of unemployment benefits to the long-term unemployed. I believe that the unemployment benefit programs have to be supplemented by skills training and greater help with matching workers to jobs. It is simply not enough to keep extending benefits if at the end of the benefit period, the worker is still unemployed. The goal of any such program should be to train the worker to transition to a new job, rather than to simply provide cash benefits to allow them to meet their basic needs. For a worker who stays unemployed for more than 6 months, the likelihood of finding a job is extremely low and is unlikely to improve without active help. Towards this end, workers who have been long-term unemployed should be provided training and then placed in jobs through wage-subsidy programs that allow some share of the wages to be paid by the employer and the rest to be paid by the unemployment insurance program. This would allow employers to test and see if the match with the prospective employee is a good one, while at the same time it would allow workers to receive on the job training and gain experience with the likelihood that they will be able to keep the job.

Katz (1998) presents some evidence indicating that the Targeted Jobs Tax Credit, the major wage-subsidy program for the economically disadvantaged between 1979 and 1994, did boost employment

of disadvantaged youths, and discusses evidence indicating positive and persistent program impacts from Jobs Training Partnership Act when the training was combined with job search assistance, especially for adult female welfare recipients.^{26, 27} This leads him to conclude that wage subsidies combined with training and job development assistance can help disadvantaged adults, but based on the evidence on stigma and low utilization, to express more skepticism (while still suggesting modest benefits) of other narrowly-targeted, stand-alone programs. Coupling such programs with training and job search assistance may reduce problems associated with stigma and hence increase the benefits of wage subsidies.

Another idea along the same lines is work-sharing.²⁸ Work sharing arrangements whereby workers continue to be employed for a few hours at their job while claiming unemployment benefits for the remaining hours could work as well.

Raising minimum wages is a particularly bad idea when we think of high youth and teenage unemployment rates.²⁹ Workers under age 25 make up half of those paid the federal minimum wage (or less). Among employed teenagers paid by the hour, about 21 percent earned the minimum wage or less.³⁰ One option is encouraging vocational training and apprenticeship programs for youth, as happens in Germany. Neumark (2009) reviews different school-to-work programs and finds that internship/apprenticeship programs encourage employment and also boost college attendance.³¹

Minimum wages are also not a tool to fight poverty. By some estimates, less than 25 percent of minimum wage workers live below the poverty line based on family cash income.³² An alternative to the minimum wage is the Earned Income Tax Credit program. The EITC arguably is one of the federal government's most efficient means of encouraging work and fighting poverty. As per the Census Bureau, the EITC lifted 5.4 million people above the poverty line in 2010. The \$60 billion program pays low-income workers a wage supplement in the form of a tax credit that can be worth more than \$5000 a year to a family with two children. However, the EITC also has some significant disadvantages. One, the program is not particularly well run. As a new report by the IRS inspector general notes, at least one

of every five EITC dollars in 2012 was improperly awarded. That's \$11.6 billion. This does not account for those who got less than they were entitled to, or those who did not apply because they did not know that they were eligible for the EITC.³³ Another issue is that the phase-out range of the EITC imposes significant tax penalties on earners. However, it has been shown to encourage labor force participation for single mothers, and has proven to be an effective anti-poverty program.

VI. Conclusion

The purpose of this testimony is to highlight issue of income inequality. Economists have tended to measure income inequality in different ways leading to a mixed picture of what has been happening to the gap between the rich and the poor over the last couple of decades. A review of these papers finds that some authors contend that income inequality has grown, while others find that income inequality may in fact have narrowed down over time. Another set of papers has focused on consumption as a measure of economic well-being and documented trends in consumption inequality. These papers again yield differing conclusions about consumption for the rich has fared relative to consumption of the poor. My own research finds that consumption inequality has remained fairly constant over the last few decades. Further, it documents an increase in standards of living for people at the very bottom of the income distribution. These improvements in living standards are likely a consequence of the tax and transfer system, wherein low income households have been the beneficiaries of redistribution efforts. However, it is also a consequence of significant price declines in technology items like computers and printers, driven by market competition and research and development efforts.

Despite these improvements in living standards, it is well documented that more than 47 million people live in poverty today in America. Moreover, the recent recession has further caused a decline in employment rates and earning potential of families. Towards the end of this testimony, I provide some policy suggestions that might

help alleviate some of these issues. The testimony argues that while minimum wages and unemployment benefits may be the preferred strategies currently employed by policy makers, these may not be the most effective means. Unemployment benefits combined with job and skills training programs as well as wage subsidies to get the long-term unemployed back in the labor market may be more efficient. At the same time, improving the targeting and efficiency of programs such as the EITC, which create the right incentives, in terms of encouraging work, may be extremely important as well. For youth, school-to-work programs that encourage apprenticeships and internships have been shown to be successful as well.

Aparna Mathur is a resident scholar at AEI who specializes in income inequality, taxes, and wages. This essay is from her testimony before the US Congress Joint Economic Committee on January 16, 2014.

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29. Further, there is substantial evidence to suggest that there are negative employment effects, particularly for low-skilled workers of raising minimum wages. A recent 2009 paper by David Neumark suggests that employers often take back the increases that come with higher minimum wages in future years by forgoing the usual nominal wage increases that would have happened.

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A New Measure of Consumption Inequality

KEVIN A. HASSETT AND APARNA MATHUR

FOREWORD

As the election draws closer, the buzz about inequality and middle-class welfare is reaching a crescendo. The perception of a rapidly growing gap between the nation's wealthiest and poorest citizens has created fervent discussion in the media, along with outrage in some circles. For example, in a recent *New York Times* article, economist Thomas Piketty states that the "United States is becoming like Old Europe" with extreme levels of income inequality.¹ Coauthor Emmanuel Saez adds, "Absent drastic policy changes, I doubt that income inequality will decline on its own."² Their proposed solution to the growing income gap is to dramatically raise taxes on the wealthy by setting top marginal tax rates at 70–90 percent, significantly higher than the current top rate of 35 percent. In this study, Kevin A. Hassett and I set out to refute the common claim that inequality has grown to the extent suggested in Piketty and Saez's work.

Economists have widely acknowledged that consumption is a better measure of economic welfare than income. In general, individuals are better able to smooth consumption rather than income over their lifetimes, making consumption a more informative indicator in the study of inequality. Unlike income, consumption remains relatively steady throughout life since individuals borrow during years with low income and save in high-income years. Using consumption as the relevant measure of inequality, most studies conclude that, contrary to popular belief, inequality has remained fairly steady over

the past thirty years. Our study retains the focus on consumption inequality and arrives at a similar conclusion.

We use two sources of data to assess changes in consumption inequality. The Consumer Expenditure (CEX) Survey shows aggregated changes in consumption expenditures for households at all levels of the income distribution. Using this data, we find that consumption inequality has increased only marginally since the 1980s. Further, consumption inequality narrows in periods of recessions such as the recent recession of 2007–2009. The second data source we use is the Residential Energy Consumption Survey (RECS), which allows us to assess consumption inequality in durable goods. To our knowledge, the RECS has not been used in the economic literature assessing inequality.

The RECS survey includes questions on household use of appliances such as microwaves, dishwashers, computers, and printers. Simple tabulations of these data across years suggest that a higher percentage of low-income households is able to afford and possess these items. Our analysis suggests that the conditions of the low-income households are improving. To see if these differences are statistically significant, we calculate the change in the likelihood that a household owns any of these items. Our results suggest that the consumption of durable goods can be divided into three categories. First, the gap between low-income and other households has narrowed significantly for certain durable goods. In other items, the gap was small to begin with but widened as usage became more widespread. For a third category of items, the gap has tended to be fairly stable over time.

Overall, our analysis reveals a trend toward narrowing of the consumption gap between low-income and other households, contrary to the popular perception of the issue. Public discourse can often become skewed in one direction; therefore, it is especially valuable to explore new methodologies in evaluating important issues such as the inequality gap. Our conclusion in this study debunks the claim of widening inequality. I hope that studies such as this one will introduce a new perspective and create a more informed and thoughtful debate on the issue.

—Aparna Mathur, *AEI Economic Studies* Editor

EXECUTIVE SUMMARY

In recent times, the debate surrounding middle-class welfare has tended to focus on the issue of income inequality. In a popular 2006 paper, economists Thomas Piketty and Emmanuel Saez use tax return data from the Internal Revenue Service to suggest that income inequality has widened significantly over the period 1913 to 2010.³ Another frequently cited statistic is that in 2010, approximately half of all reported income went to the top 10 percent of earners.

We argue in this paper that income data are not the best measure of overall welfare. What matters for household well-being is consumption, since households are better able to smooth consumption rather than income over their lifetime. To that end, we use two alternative sources of data to assess changes in consumption inequality.

Our first source, the Consumer Expenditure (CEX) Survey, shows aggregated changes in consumption expenditures for households at all levels of the income distribution. Using these data, we find that consumption inequality has increased only marginally since the 1980s. Further, consumption inequality narrows in periods of recessions, such as during the 2007–2009 recession. We also construct Gini coefficients from the CEX data and find that they have remained relatively stable over time, suggesting that the inequality has not widened significantly.

The second data source we use is the Residential Energy Consumption Survey (RECS), which allows us to assess consumption inequality in durable goods. Consumption of durable goods is recorded less well in the CEX data but is important in thoroughly assessing consumption inequality. The RECS survey includes questions on household use of appliances such as microwaves, dishwashers, computers, and printers. Simple tabulations of these data across years suggest that a higher percentage of low-income households is able to afford and possess these items. In addition, the quality of dwelling spaces has improved and more low-income households have heating and air conditioning today than at any time in the past.

To see if these differences are statistically significant, we present regression tables showing the likelihood that a household owns any

of these items. The results suggest a significant narrowing of the gap between low-income and other households in certain durable-goods items, such as color televisions, microwaves, refrigerators, and air conditioners. In other items, like computers and printers, the gap was small to begin with but widened as usage of these items became more widespread and cost of these items declined. However, in recent times, even this gap has narrowed. For a third category of items, including clothes washers, clothes dryers, and dishwashers, the gap has tended to be fairly stable over time. Even in a statistical sense, there is a trend toward narrowing the consumption gap between low-income and other households.

A New Measure of Consumption Inequality

It is widely acknowledged that consumption is a better measure of household welfare than annual income. The reason consumption may be more informative than income when studying inequality is because, in general, individuals are better able to smooth consumption rather than income over their life cycle. While incomes may be low in the extremes of the age distribution and high in the prime working years, individuals are generally assumed to be able to smooth consumption by borrowing in the low-income years and saving in the high-income years. In addition, many redistributive policies support consumption for low-income individuals and provide transfer payments to them. Studies of income distribution alone often exclude these factors. Both because it is a better indicator of permanent income and because it will reflect the impact on welfare of transfer programs, consumption is a better predictor than income of lifetime well-being. Income inequality measured using a household's annual wage and salary income may not provide a true picture of economic inequality, since households experiencing temporary negative income shocks would bias the inequality measures upwards.

In this paper, we measure inequality using consumption data for income earners from the Consumer Expenditure (CEX) Survey. In addition, we track changes in the material possessions of households

using a relatively new application of data from the Department of Energy, the Residential Energy Consumption Survey (RECS). The RECS focuses on consumption of energy by household. It tracks the use of durables, such as refrigerators, air-conditioning units, telephones, and home-heating appliances. We can divide the sample of households into different income groups, which enables us to make inferences about the relative use of these durables across income classes. While the data from RECS are available from the 1980s, to our knowledge these data have not been used in the literature on consumption and income inequality. An advantage of these data is the focus on the consumption of durables, an element less well measured in the CEX data. These data, in combination with the more detailed nondurable food-consumption data from the CEX Survey, provide a more complete overall picture of the differences in consumption habits between the top and the bottom of the income distribution.

Much of the literature in economics has tracked changes in consumption and income inequality for households using aggregate expenditures and income data from household-level surveys such as CEX Survey and the Panel Study of Income Dynamics (PSID). For example, a recent paper by Blundell and colleagues shows that between the end of the 1970s and the early 1990s, income and consumption inequality diverged.⁴ The authors use a self-constructed panel-data series on consumption that combines panel data from the PSID and cross-section data from the CEX Survey. They impute expenditures on food, nondurables and durables for the PSID data using the CEX data. By definition, the data are in terms of expenditures rather than quantities of various durable and nondurable goods. In contrast, Krueger and Perri conclude that while income inequality increased during the period 1980–2003, consumption inequality did not.⁵ They use expenditure data from the CEX Survey for this analysis. Other papers use the PSID data to study trends in income and consumption inequality.⁶

A new National Bureau of Economic Research (NBER) working paper by Attanasio and colleagues uses the diary component of the CEX Survey, along with other measures such as the value of vehicles

owned, and finds that consumption inequality has increased as much as income inequality.⁷ While the use of the diary survey may avoid some of the measurement issues, this component of the CEX focuses mainly on nondurables. Also, as far as the value of vehicles owned is a proxy for durable-goods consumption, the value itself does not capture qualitative changes in the nature of durable goods. For example, with the price of electronic items dropping, consumers may be able to afford better-equipped cars for the same price that they may have paid for a similar car without the gadgets. Therefore, while there might still be inequality in consumption of vehicles, in real terms, consumers at the lower end of the income scale may still be better off than they were before this decade.

In general, most papers use either the CEX Survey or the PSID since these data sets have the best questions on consumption, income, and household demographics. The disadvantage of these data is that aside from detailed questions on food expenditures, there is little disaggregated information on the consumption of durables such as home appliances, type of housing, and use of home heating. This paper fills this gap in the literature.⁸

One of the more popular papers on the topic of income inequality is the 2006 paper by economists Thomas Piketty and Emmanuel Saez.⁹ This paper uses tax return data from the Internal Revenue Service (IRS) to assess changes in inequality over the period 1913 to 2010.¹⁰ It finds a marked rise in income shares at the top of the income distribution. In particular, for 2010, the authors find that the top 10 percent of earners account for more than half of all reported income. Aside from the issue that this paper deals only with income and not consumption, a far more serious drawback is that it fails to account for transfer payments at the bottom end of the income scale that do not show up in the IRS data. These include Social Security, Medicare, food stamps, and other low-income programs. More importantly, tax return data are responsive to changes in tax rates. When tax rates are high, tax evasion and tax avoidance could lead to lower reported taxable incomes, biasing the results from the study. For example, the personal tax rate reductions of the 1980s and the early 2000s caused businesses to shift income out of the corporate

form and into the personal tax, thus raising reported incomes at the top. Reynolds reviews why the Piketty and Saez estimates might misrepresent and mismeasure income inequality.¹¹

Consumption data is less subject to these biases. If households are better off as a result of the tax and transfer system, they can consume more, which provides a better measure of welfare.

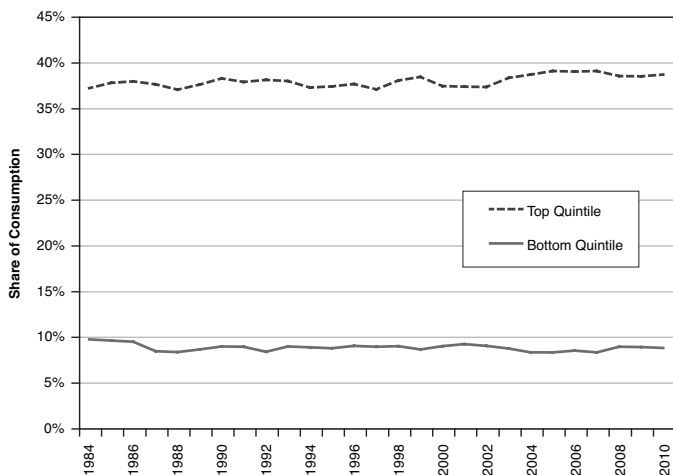
Data

As we mention above, our analysis uses two sources of data. The first is the CEX data collected by the Bureau of Labor Statistics, and the second is RECS data provided by the US Energy Information Administration.

Consumer Expenditure Survey. The CEX provides a continuous and comprehensive flow of data on the buying habits of American consumers. The data are based on two components: the diary survey and the interview survey. The diary survey interviews households for two consecutive weeks and is designed to obtain detailed expenditures data on small and frequently purchased items, such as food items. The interview sample follows survey households for a maximum of five quarters. The database covers about 95 percent of all expenditures. In addition, the CEX collects information on a variety of sociodemographic variables and income. The CEX data are available from 1984 to 2010, though for some variables, such as housing, the data are available starting from 1990. The CEX better reports nondurable expenditures than durables. In the analysis that follows, we report how the share of consumption has changed over time for households at the bottom and top income quintiles.

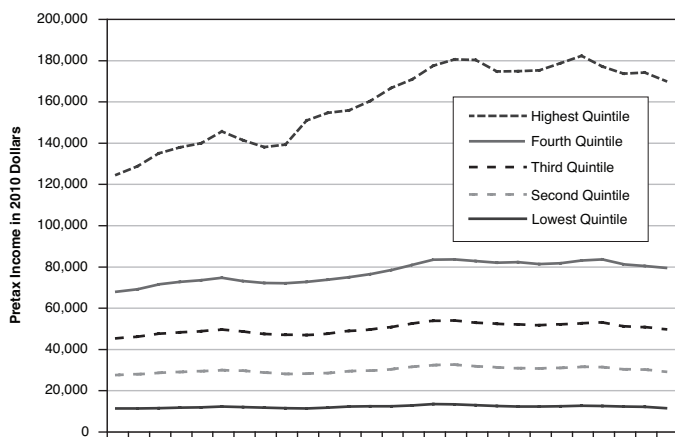
Figure 1 shows the share of total expenditures for households (or consumer units) in each income quintile. In 1984, the first year of our analysis, households in the top income quintile accounted for 37 percent of total expenditures. Households in the bottom quintile accounted for only 10 percent of total reported expenditures. Hence the ratio of top to bottom consumption was approximately 3.8. In 2010, that ratio increased to 4.4. The gap was widest in

FIGURE 1
HOUSEHOLD SHARE OF TOTAL EXPENDITURES



Source: Authors' calculations using the Consumption Expenditure Survey.

FIGURE 2
REAL PRETAX MEAN INCOMES FOR CURRENT POPULATION SURVEYS



Source: Current Population Survey.

2005, when the share of consumption for the top was approximately 39 percent while the share at the bottom was only 8 percent. However, in the most recent recession (December 2007–June 2009), it appears that the households at the bottom increased their share by 1 percentage point, while the share of consumption at the top either decreased or remained steady. In the 2001 recession, the ratio declined to 4.08, its lowest level since the mid-1980s, following a drop in the share of the top from 38 percent in 1999 to 37 percent in 2001 while the share at the bottom remained relatively steady. On average, the ratio of shares is 4.3 with a standard deviation of 0.22. As measured by this ratio, consumption inequality has increased marginally over time, averaging 4.21 between 1984 and 1990, 4.29 between 1991 and 2000, and 4.46 between 2000 and 2010. The ratio in the period 2000–2010 was driven primarily by the spikes in 2005 and 2007.

If we compare the trends in consumption to the trends in income using the Current Population Survey (CPS) data, we see a strikingly different story. The CPS income data is top-coded each year. Typically the top-coding value is close to \$100,000. The data are top-coded because some high values are too sparse and specific to be recorded as they were reported to the CPS without the possibility of identifying the respondents. In these cases, the CPS puts numerous high-value cases together under one particular high value to protect respondent anonymity. This could bias our estimates of income inequality downward as the actual high income of earners is not used in the calculation. In particular, this would be an issue if we simply used data on the top income decile. In our analysis, we compare the top quintile to the bottom quintile. While this does not do away with the problem entirely, to the extent that only a few high-income earners are top-coded, the relative mismeasurement should be minimal. Figure 2 shows real pretax mean incomes (in 2010 dollars) for households at the bottom and the top. In 1984, incomes at the top were more than eleven times higher than those in the bottom quintile. In 2010, that difference rose by nearly four points to 15.37. The average for the entire period is 13.55 with a standard deviation of 1.16. Inequality using annual incomes is clearly higher

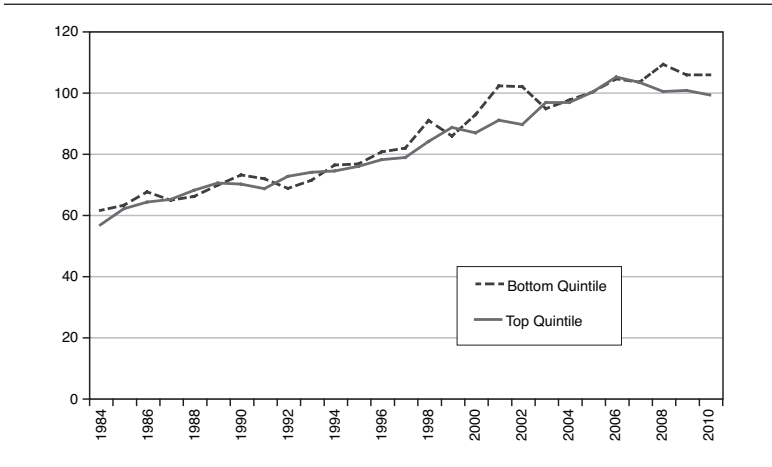
in each period and tended to widen over time relative to consumption inequality. In contrast, the income data in the CEX Survey do not show this trend, but the CEX data are known to underreport income. Therefore we do not rely on the CEX data for measurement of income inequality.¹²

There are a couple of issues with using the CEX data to measure consumption inequality. First, while the CEX survey is the best available for measuring consumption at the household level, it still underreports consumption. For instance, when compared to the national income and product accounts (NIPA) data from the Bureau of Economic Analysis, the underreporting is almost 35 percent. Also, the CEX data are not per capita, which makes it difficult to compare consumption data over time. The consumption data are reported for each consumer unit. However, changes in the number of people within each consumer unit over time make it difficult to assess whether consumption inequality, measured in per-capita terms, is increasing or decreasing. To correct these issues, we use the following methodology.

To obtain per-capita real consumption by income quintile, we use CEX data to determine the proper per-capita shares of consumption by income quintile. Then, we apply these shares to the NIPA aggregate consumption levels to obtain the correct trends in overall consumption. We also choose to control for population growth using International Monetary Fund overall US population data rather than using the growth of the number of consumer units in the CEX data, since their movement is somewhat variable from sample to sample.

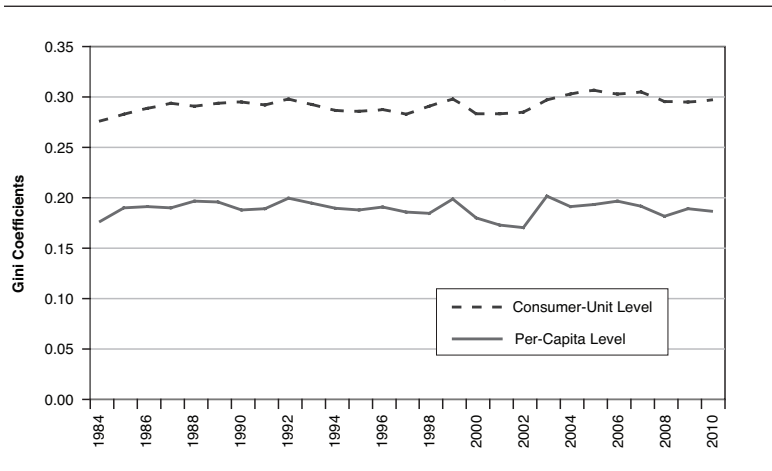
First, we divide the CEX consumption share per quintile by the number of consumer units per quintile. Second, we take the per-quintile share to eliminate intertemporal changes in the number of consumer units. Third, we multiply these perquintile shares by the NIPA quantity indexed real consumption levels. Fourth, we divide the number of people per consumer unit to get consumption per capita (we did not do this in step two because that would have eliminated the effect of shrinking family sizes). Fifth, we control for population growth by dividing the value in each year by US

FIGURE 3
CONSUMPTION EXPENDITURES PER CAPITA FOR TOP AND
BOTTOM QUINTILES (2005=100)



Source: Authors' calculations based on data from the Bureau of Labor Statistics's Current Employment Statistics, Bureau of Economic Analysis's NIPA tables, and International Monetary Fund's US population statistics.

FIGURE 4
GINI COEFFICIENTS OF CONSUMPTION INEQUALITY (1984–2010)



Source: Authors' calculations using the Consumer Expenditure Survey.

population. Last, we index to 100 in 2005 to make trends comparable across income quintiles.

Figure 3 shows real consumption expenditures per capita for the top and bottom quintiles. As the data show, per-capita real consumption for both the bottom and top income quintiles has been trending up over the period of study. The gap between the two lines has been fairly narrow for most years in our sample period. The years when the gap has been widest tend to be the recessionary periods of the beginning of the previous decade (2001) and the most recent recession of 2007–2009. In fact, during these recessions, consumption growth of the bottom quintile exceeded that of the top quintile, perhaps because of the large and negative wealth impacts of these crises. Particularly in the latest episode, households at the top may have been more severely affected by the housing crisis and the meltdown in the financial markets than households in the bottom quintile that had less invested in these markets. If we focus on relative inequality, then in times of economic downturns the lowest-income households experience smaller wealth shocks and have smaller reductions in consumption, which narrows inequality.

Figure 4 shows Gini coefficients constructed from the CEX quintile data at both the consumer-unit level and the per-capita level, derived using the methodology previously described. To obtain an integral of the Lorenz curve, we use the quintile rule Gerber proposed for the Gini coefficient.¹³ Gerber's quintile rule is exact for fifth-degree polynomials, so it avoids the problems of integration with the trapezoidal rule or Simpson's rule: the trapezoidal rule underestimates the Gini coefficient because the Lorenz curve is concave upward, and Simpson's rule requires an even number of intervals.

As figure 4 shows, the Gini coefficients have been relatively steady over time, except for slight dips during recent recessions that parallel the trends apparent in figure 3. The average from 1984 for the per-capita level Gini was 0.187. At the consumer-unit level, the average was 0.291. The levels of Gini coefficients reported here are somewhat smaller than those found by Krueger and Perri, who find an average Gini coefficient of 0.31 for nondurable consumption

expenditures plus imputed service flows from consumer durables over the period 1980–97.¹⁴

In addition to some methodological differences—for example, Krueger and Perri use the CEX microdata—we suspect the lower Gini coefficient we find is due to the fact that we do not exclude people above sixty-five years of age, whereas they do. Since people in this demographic make up a larger portion of low-income households than of high-income households and some of them likely have substantial wealth from previous years of high incomes, their inclusion could make the Gini coefficient appear lower. That said, the number of people above sixty-five years old in low quintiles stays roughly steady across time and the number of people above sixty-five years old in top quintiles actually increases slightly over time, so the trends in Gini coefficients should not be affected much by their presence in the data.

Residential Energy Consumption Survey: Cross-Sectional Analysis. To get more detailed information on durable goods consumption, we turn to the RECS. The US Energy Information Administration administers the RECS to a nationally representative sample of housing units. Specially trained interviewers collect energy characteristics on the housing unit, usage patterns, and household demographics. First conducted in 1978, the thirteenth RECS was conducted in 2009. The 2009 survey collected data from 12,083 households in housing units statistically selected to represent the 113.6 million housing units occupied as primary residences.

We begin with an analysis of the 2009 RECS data. Table 1A shows the demographic distribution of households across income groups. For example, while the weighted sample represents 113.6 million households, there are 23.7 million households in the bottom income group (those with less than \$20,000 in annual income). At the top end (above \$120,000) are approximately 12 million households. The distribution across the middle-income groups is approximately 49 million households in the income range \$20,000–\$60,000 and another 29 million in the range \$60,000–\$120,000. Therefore, the sample is skewed toward the lower- to middle-income groups. The

majority of the households, more than 77 percent, are located in urban areas. This distribution is similar across all income groups.

Table 1A also shows the housing characteristics for households in each income group. Nearly 86 percent of high-income families (more than \$120,000) owned a detached single-family home (10.3 million out of 12 million), while only 39 percent of low-income families (less than \$20,000) did (9.3 million out of 23.7 million). These low-income families were more likely to be in apartments. They were also more likely to be in mobile homes. About 61 percent of households in the middle-income range (\$20,000–\$60,000) owned homes. If we include single-family attached homes, the numbers change only marginally. Surprisingly, homeownership is not negligible, even for families below the poverty line. In 2009, more than 40 percent of households below the poverty line owned a single-family home.

The next set of statistics shows the age and size of housing units. Approximately 14 percent of households in the lowest-income group and 11 percent of households in the highest-income groups lived in houses constructed before 1940. This difference is not large and may reflect the fact that even in good urban areas inhabited by higher-income households it is not unusual for the average house to have been constructed before the 1950s. The differences are starker when we consider newer construction and housing. In 2009, about 23 percent of high-income households lived in homes constructed between 2000 and 2009, while only 9 percent of the lowest-income households lived in these newer homes. If we look at homes built between 1990 and 1999, about 17 percent of the highest-income households and 11 percent of the lowest-income households lived in these homes. For households below the poverty line, the distribution is similar to that of the lowest-income households. They were more likely to live in older constructions rather than newly built homes.

In terms of the number of rooms, the lowest-income households were more concentrated in homes with three to five rooms, excluding bathrooms. The highest-income households were more likely to live in homes with more than six rooms. In fact, more than 36 percent

of these households lived in homes with nine or more rooms. Again, the distribution for households below the poverty line looked very similar to that of the lowest-income households. The majority of households lived in homes with three to six rooms. In terms of the number of bedrooms, the low-income households were more likely to live in houses with two to three bedrooms, while the highest-income households were more likely to live in homes with three to four bedrooms. Finally, when respondents were asked if their homes had a garage, nearly 29 percent of the lowest-income households and 82 percent of the highest-income households responded yes. Even for those below the poverty line, nearly 28 percent owned a garage. Approximately 9 percent of respondents among the highest-income households and 6 percent in the lowest, owned a one-car attached garage. Nearly 44 percent among the highest and 8 percent among the lowest-income households, as well as 8 percent of households below the poverty line, owned a two-car attached garage.

To summarize the results from this table, while we do find large differences in the housing characteristics of high- and low-income households, the overall picture is not one of abject poverty. Large single-family homes with garages are not absolutely unaffordable for these low-income groups, even for those below the poverty line.

Table 1B focuses on the use and presence of televisions and computers in homes owned by these income groups. When respondents were asked about the number of televisions in their homes, nearly 34 percent of the lowest-income respondents reported having one television, while 10 percent of the highest-income respondents reported owning one television. Sixty-two percent of the lowest-income respondents had two to four televisions and only 3 percent had five or more. For the highest-income group, 21 percent had 5 or more televisions and 68 percent had two to four. Among households below the poverty line, nearly 65 percent reported owning two to four televisions.

Respondents were also asked about the size and type of television(s) they owned. Almost 56 percent of the lowest-income households owned televisions with display sizes of 21–36 inches, and

nearly 22 percent reported displays of 37 inches or more. For the highest-income group, the corresponding numbers were 31 percent and 64 percent. Even for those below the poverty line, nearly 53 percent reported owning a 21–36-inch television, while 26 percent reported owning a 37-inch or larger television. Within display type, 54 percent of the highest-income group and 27 percent of the lowest-income group owned an LCD television, while 15 percent and 5 percent, respectively, owned a plasma screen television. For households below the poverty line, 6 percent reported owning a plasma television and 28 percent an LCD.

The survey also asks whether households own peripherals such as DVD players, home theater systems, and so forth. Within the lowest-income households, 47 percent reported owning a separate cable box or a combo DVR/cable box, 62 percent a separate DVD player or a combo VCR/DVD player, 18 percent a video-game console, and 22 percent a digital converter box. Almost 8 percent also owned a home theater system. Within the top income group, 66 percent owned a separate cable box or a combo DVR/cable box, 88 percent a separate DVD player or a combo VCR/DVD player, and 31 percent a videogame console. For those below the poverty line, the distribution looks similar to that of the lowest-income households. In other words, many electronic devices that may have been out of reach for those with low incomes in the past appear affordable now. While the percentage of households with these devices may vary across the different income groups, on average there were at least 10–15 percent of households that responded yes in each category.

Table 1C describes the use of computers and the Internet by households at different income levels. In terms of the number of computers in each household, the biggest disparity emerges at the bottom end, where more than 50 percent of households reported no computers in 2009. About 35 percent owned one computer, 9 percent owned two computers, and less than 1 percent owned five or more computers. In contrast, among the highest-income households, only 2.5 percent reported no computers. Nearly 23 percent reported owning one, 38 percent owned two, and nearly 6 percent owned five

or more. Nearly 18 percent of the low-income households reported having a flat-panel LCD monitor desktop as the most used computer in the house, and 9 percent reported a standard monitor. Also, 20 percent reported owning a laptop. In the top income category, 50 percent owned a laptop, 43 percent a flat-panel LCD monitor, and only 4 percent owned a standard monitor.

Only 41 percent of households at the bottom had access to the Internet in their homes, while nearly 97 percent of households at the top did. Among high-income households, 50 percent reported receiving Internet access through cable and 40 percent through DSL or a fiber-optic network. Low-income households also received access mainly through these two channels, though only 16 percent of households reported having either. About 81 percent of high-income households had wireless Internet access, while only 20 percent of low-income households did.

Ownership of printers and telephones also varied across income categories. Among high-income households, 67 percent had one printer and 24 percent had two or more. In the bottom income category, only 27 percent had one printer, and less than 4 percent had two or more.

Most households owned a cordless telephone, though a much higher proportion of high-income households had one. Nearly 60 percent of high-income households had an answering machine, while only 35 percent of low-income households did. Nearly 18 percent of high-income households owned a separate fax machine, and nearly 13 percent owned a separate photocopier. At the lower end, only about 5 percent of households owned either.

Next, we note the use of household appliances such as microwave ovens, coffee makers, toaster ovens, and refrigerators. Table 1D shows that more than 90 percent of households in each income category reported owning a microwave oven. Nearly 100 percent of households at the top owned a microwave. Fifty percent of households at the bottom and below the poverty line reported owning a coffee maker. About 75 percent at the top reported owning one. For toaster ovens, the numbers were 35 percent at the bottom and 41 percent at the top. About 48 percent of households at the top

reported owning two or more refrigerators. About 90 percent at the bottom owned one, and 10 percent owned two or more. Across all income categories, at least 99 percent owned at least one refrigerator.

In terms of the quality of the refrigerator used, there seem to be minor differences across income groups that may be driven more by tastes rather than income. Most households now own two-door refrigerators, though 56 percent of higher-income households reported two side-by-side doors, while 62 percent of lower-income households reported a separate top freezer door. The other statistics in the table show whether households owned a dishwasher, a clothes washer and dryer, and a separate freezer. In general, even households at the bottom appear to own all these appliances; differences are in the degree of usage and maybe brands.

The final set of statistics (table 1E) relate to households' use of heating and cooling equipment. In the 2009 survey, nearly 77 percent of households at the bottom and 87 percent at the top owned an air-conditioning unit. More than 95 percent of all households used some type of heating equipment.

Residential Energy Consumption Survey: Time Series Analysis. In this section, we evaluate whether the living conditions of the poor, measured in terms of their material assets, have improved or worsened over the period of study. The RECS data are available from the early 1980s. However, the earliest publicly available microdata are from 1987. We use these microdata to compare trends in consumption inequality between the bottom and the top income groups over time. An issue with the time-series comparison is the lack of consistency in the questionnaires for each year. For instance, in 2005 and 2001, the question on usage of televisions refers specifically to color televisions, while in 2009, it asks about televisions in general. It is likely that the use of black-and-white televisions was so minimal in 2009 that the difference may not be of any significance. An additional issue is how we define the low-income households for each year. For purposes of this paper, we use an income classification that uses the same income cutoff in real terms for each year. For instance, in 2009, all households with an income of less than

or equal to \$20,000 were included in the sample. This corresponds to approximately \$15,000 in 1997, \$13,600 in 1993, \$12,500 in 1990, and \$11,000 in 1987. For 2005 and 2001, the corresponding numbers were \$18,000 and \$16,500. The RECS data do not report a household's income in continuous terms. Instead, the variable is a categorical variable in which households are assigned to a category depending upon where their income lies within a range of values. The typical income range for each category is \$1,000. In other words, households can belong to an income range of \$2000–\$2,999, \$3000–\$3,999, and so on. However, some categories have income ranges larger than \$1,000. We define low-income households using the closest income category that corresponds to the real income cutoff for that year.

Table 2 shows the trends in material poverty for low-income households between 1987 and 2009. The data show that by most accounts, households in this low-income group have improved their standard of living as measured by their possession of material objects. The percentage of low-income households without a color television has decreased from 17.7 percent in 1987 to 2.1 percent in 2009. In 1990, 95 percent of households had no computers. In 2009, only 52.3 percent of households did not own a computer. The question on computer usage was first asked in the 1990 survey, suggesting that was the time period when computers first started becoming a common household item. After fifteen years, almost 50 percent of low-income households owned a computer. The use of printers shows an even more dramatic increase in adoption. In 1993, the first year that a question on printer usage was included in the RECS survey, 98.3 percent of low-income households did not have a printer. By 2009, only 17.7 percent of low-income households did not own a printer. We have also seen an improvement in household living quarters over this time period. In 1987, a higher proportion of households lived in homes with four rooms (excluding bathrooms). In 2009, there was a distributional shift, and more households lived in homes with six or more rooms. Further, the number of households without air conditioning dropped from more than 44 percent to about 16.5 percent, and more than 30 percent of households

used dishwashers, clothes washers, and clothes dryers. Finally, only 8 percent of households reported not using a microwave oven, as opposed to 64 percent in 1987.

Regression Analysis

In the final section, we develop a simple probit model to calculate the change in the probability of owning different durable goods for low-income households over the period 1987–2009. A statistical model controlling for other demographic changes is an improvement over simple statistical tabulations for assessing consumption inequality. The model specification is

$$\Pr(Y_{it} = 1) = \beta * \text{low-income}_{it} + \gamma * X_{it} + \alpha + \varepsilon_{it}$$

where Y equals 1 if a household owns a durable good like microwaves, refrigerators, computers, printers, and so forth. The model is run separately for each year to see changes in trends. The coefficient of interest is β , associated with the dummy variable for whether the household is a low-income household. Our definition of low income follows the description in the previous section. X refers to other explanatory variables. These are demographic variables capturing the age and sex of the respondent; where available we include a dummy for whether the household head is college educated, the race of the head, and whether the head has a full-time job. We also include region fixed effects and a dummy for urban or rural.

Table 3 shows how the probability of owning different durable goods has changed over the period of our study. The results report the marginal effects from the probit regression. The reference group is all middle-income and high-income households.

Row 1 of the table reports the likelihood of a low-income household owning a color television in 1987 as 13.6 percentage points less than the reference group, that is, than the group of middle- and high-income households. However, across years, the probability of owning color televisions for low-income households is almost as

high as for other income households. By 2009, low-income households are only 1.2 percentage points less likely to own a color television than other households. This is clear from the statistics presented in table 1B as well, where only 2 percent of low-income households lacked a television in 2009, as compared to 1 percent of high-income households.

These trends are replicated in the results for other appliances such as microwaves, refrigerators, and air conditioners. Computers show an interesting trend. In the early years of the 1990s when computers were less widespread in the population, low-income households were only 8–13 percentage points less likely to own a computer relative to other households. By 2001, that number reached its peak at 39.2 percentage points. Since then, the gap has narrowed somewhat, and in 2009, low-income households were only 25 percentage points less likely to own a computer than other households. A similar trend shows up for printers, with the gap widening in the 1990s and narrowing in the first decade of the twenty-first century.

Other interesting housing characteristics that we study include home heating and the use of clothes washers and dryers. The gap for home heating is negligible across all years. For clothes washers, clothes dryers, and dishwashers, the gap has tended to be fairly stable across years with a slight narrowing in the 2000s.

In general, results from this section suggest that there has been a great narrowing of the gap between low income and other households in certain durable goods items, such as color televisions, microwaves, refrigerators, and air conditioners. In other items, like computers and printers, the gap was small to begin with but widened as use of these items became more widespread and the cost of these items declined. In recent years, even this gap has narrowed. For a third category of items, the gap has tended to be fairly stable over time. There is a trend toward a narrowing of the consumption gap between low-income and other households.

Conclusion

In this paper, we use two alternative sources of data to assess changes in consumption inequality. The CEX Survey shows aggregated changes in consumption expenditures for households at all levels of the income distribution. Using this data, we find that consumption inequality narrows in periods of recession such as the recent recession of 2007–2009. This is possibly because higher-income households that have more invested in the economy are harder hit by business-cycle shocks and suffer negative income and wealth effects that affect their ability to smooth consumption. In contrast, income-inequality measures (using data from the Current Population Survey) show that inequality is relatively higher, even in times of recession.

In addition to the CEX data, we use data from the RECS. This survey has questions on household use of appliances such as microwaves, dishwashers, computers, printers, and other items. Simple tabulations of these data across years suggest that low-income households are increasingly able to afford and possess these items. In addition, dwelling spaces have improved over time, and more households have heating and air-conditioning than at any time in the past. To see if these differences are statistically significant, we present regression tables showing the likelihood that a household owns any of these items. Results suggest that there has been a greater narrowing of the gap between low-income and other households in certain durable goods items, such as color televisions, microwaves, refrigerators, and air conditioners. In other items, like computers and printers, the gap was small to begin with but widened as the use of these items became more widespread and the cost of these items declined. However, in recent times, even this gap has narrowed. For a third category of items, the gap has tended to be fairly stable over time. Even in a statistical sense, on average, there is a trend toward narrowing the consumption gap between low income and other households.

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TABLE 1A
DEMOGRAPHIC AND HOUSING CHARACTERISTICS, RECS 2009

	Total Homes (millions)	Less than \$20,000 (%)	\$20,000– \$39,999 (%)	\$40,000– \$59,999 (%)	\$60,000– \$79,999 (%)	\$80,000– \$99,999 (%)	\$100,000– \$119,999 (%)	\$120,000 or More (%)	Below Poverty Line (%)
Total Homes (millions)	113.6	23.7	27.5	21.2	14.2	9.3	5.7	12	6.9
Urban and Rural									
Urban	88.1	79	77	78	75	77	79	77	78
Rural	25.5	21	23	22	25	23	21	23	22
Housing Unit Type									
Single Family, Detached	71.8	39	56	67	71	78	86	86	41
Single Family, Attached	6.7	5	7	6	6	6	5	5	5
Apartments in 2–4 Unit Buildings	9.0	15	9	7	6	3	4	3	16
Apartments in 5+ Unit Buildings	19.1	30	19	15	13	10	5	7	27
Mobile Homes	6.9	11	9	5	4	2	NA	NA	11
Year of Construction									
Before 1940	14.4	14	13	12	13	10	12	11	14
1940–1949	5.2	7	5	4	4	3	2	3	6
1950–1959	13.5	13	13	13	11	11	11	10	12
1960–1969	13.3	13	12	12	12	11	09	8	13
1970–1979	18.3	18	18	15	17	14	12	12	18
1980–1989	17.0	16	15	15	13	15	16	15	15
1990–1999	16.4	11	14	15	13	17	21	17	11
2000–2009	15.6	9	10	14	16	18	18	23	9

Total Number of Rooms (excluding bathrooms)										
1 or 2	4.1	9	4	2	2	NA	NA	1	7	
3	8.7	17	8	6	5	2	2	2	14	
4	16.9	23	20	14	11	8	5	5	24	
5	21.1	22	24	20	17	14	9	8	21	
6	22.0	15	21	23	23	19	18	15	17	
7	16.4	8	12	16	18	22	19	18	9	
8	11.8	4	7	11	13	17	21	18	5	
9 or More	12.8	3	4	9	12	17	25	36	4	
Bedrooms										
None (Studio/Efficiency)	2.4	6	2	1	1	NA	NA	NA	5	
1	11.5	22	12	7	7	4	NA	3	17	
2	28.6	34	33	26	20	15	12	9	33	
3	45.5	30	40	44	46	47	42	38	33	
4	19.9	8	10	17	20	27	33	36	10	
5 or More	5.7	1	2	4	6	6	11	15	2	
Garage										
Attached	63.0	29	47	59	66	73	82	82	28	
1 Car	42.8	15	26	39	46	57	65	68	14	
2 Car	9.8	6	9	9	9	10	9	9	5	
3 or More Car	28.7	8	16	27	32	42	47	44	8	
	4.3	1	1	2	4	5	11	15	1	

SOURCE: Residential Energy Consumption Survey.
 NOTE: Numbers may not sum to 100 because of rounding.

TABLE 1B
TELEVISION AND INCOME CHARACTERISTICS, RECS 2009

	Total Homes (millions)	Less than \$20,000 (%)	\$20,000– \$39,999 (%)	\$40,000– \$59,999 (%)	\$60,000– \$79,999 (%)	\$80,000– \$99,999 (%)	\$100,000– \$119,999 (%)	\$120,000 or More (%)	Below Poverty Line (%)
Total Homes (millions)	113.6	23.7	27.5	21.2	14.2	9.3	5.7	12	6.9
Televisions									
0	1.5	2	1	1	1	NA	NA	1	2
1	24.2	34	23	20	18	12	12	10	28
2	37.5	37	37	32	32	29	25	26	35
3	26.6	18	23	25	25	28	28	24	21
4	14.2	7	11	13	15	18	16	18	9
5 or More	9.7	3	4	8	9	12	18	21	4
Display Size									
Less than 21 Inches	12.5	20	13	8	7	5	5	5	20
21–36 Inches	53.6	56	53	48	46	38	35	31	53
37 Inches or More	46.0	22	32	42	46	56	60	64	26
No Televisions	1.5	2	1	1	1	NA	NA	1	2

Display Type										
Standard Tube	50.2	63	51	42	37	31	32	22	62	
LCD	46.0	27	36	42	46	51	49	54	28	
Plasma	9.7	5	7	9	9	11	11	15	6	
Projection	5.0	2	4	5	5	5	7	6	2	
LED	1.2	NA	1	1	1	2	NA	3	NA	
No Televisions	1.5	2	1	1	1	NA	NA	1	2	
Peripherals Connected (more than one may apply)										
Combo DVR/Cable Box	20.9	9	13	17	22	25	30	35	09	
Combo DVR/Satellite Box	13.5	6	8	15	16	16	16	17	7	
Separate DVR	11.2	8	9	11	11	11	11	11	7	
Separate Cable Box	41.1	38	38	36	35	35	35	31	36	
Separate Satellite Box	14.7	11	15	15	12	13	9	10	11	
Digital-Converter Box	26.0	22	23	22	23	25	23	23	23	
Video-Game Console	29.1	18	23	27	30	32	35	31	23	
Combo VCR/DVD Player	29.9	21	27	30	28	27	28	26	21	
Separate VCR	19.6	19	17	17	18	16	18	16	16	
Separate DVD Player	57.5	41	48	50	56	57	58	62	42	
Home Theater System	20.7	8	13	19	22	28	28	34	8	
Other Set-Top Box	3.2	2	2	2	4	4	7	5	1	
No Televisions	1.5	2	1	1	1	NA	NA	1	2	

SOURCE: Residential Energy Consumption Survey.

NOTE: Numbers may not sum to 100 because of rounding or because more than one option may apply to each household.

TABLE 1C
COMPUTERS AND INCOME CHARACTERISTICS, RECS 2009

	Total Homes (millions)	Less than \$20,000 (%)	\$20,000– \$39,999 (%)	\$40,000– \$59,999 (%)	\$60,000– \$79,999 (%)	\$80,000– \$99,999 (%)	\$100,000– \$119,999 (%)	\$120,000 or More (%)	Below Poverty Line (%)
Total Homes (millions)	113.6	23.7	27.5	21.2	14.2	9.3	5.7	12	6.9
Number of Computers									
0	27.4	52	33	17	11	4	2	3	50
1	46.9	35	47	50	47	30	32	23	34
2	24.3	9	15	22	26	31	39	38	11
3	9.5	3	4	8	11	17	18	19	3
4	3.6	1	1	2	3	4	7	11	2
5 or More	2.0	NA	NA	1	1	3	4	6	1
Computer Type									
Desktop	48.3	27	40	48	52	48	53	48	28
Flat-Panel LCD Monitor	38.3	18	29	38	44	42	46	43	20
Standard Monitor	10.0	9	11	10	8	8	7	4	8
Laptop	37.9	20	27	35	37	46	46	50	22
No Computers	27.4	52	33	17	11	4	2	3	50

Have Internet Access?										
Yes	81.1	41	60	79	86	95	96	97	43	
No	5.2	7	7	4	3	1	NA	1	8	
Yes, Wireless Access	51.9	20	33	46	56	69	74	81	22	
Type of Internet Access										
Cable	36.5	16	26	33	39	43	49	50	16	
Satellite	2.7	1	2	3	4	2	2	3	1	
DSL/Fiber Optic	33.7	16	24	34	36	41	42	40	18	
Dial-up	5.4	4	5	6	5	4	4	3	4	
Not Specified	4.5	3	4	5	5	5	2	3	4	
Number of Printers										
0	17.8	18	19	18	15	12	9	7	20	
1	58.7	27	44	58	65	71	75	67	27	
2 or More	9.8	3	4	8	9	14	16	24	4	
Telephone and Office Equipment										
Cordless Telephone	71.1	49	56	63	68	72	77	83	47	
Telephone Answering Machines	52.6	35	40	48	54	55	58	60	31	
Separate Fax Machine	10.2	5	5	9	11	14	12	18	5	
Separate Photocopier	9.7	5	6	8	11	14	12	13	5	

SOURCE: Residential Energy Consumption Survey.
NOTE: Numbers may not sum to 100 because of rounding or because more than one option may apply to each household.

TABLE 1D
HOUSEHOLD APPLIANCES AND INCOME, RECS 2009

	Total Homes (millions)	Less than \$20,000 (%)	\$20,000– \$39,999 (%)	\$40,000– \$59,999 (%)	\$60,000– \$79,999 (%)	\$80,000– \$99,999 (%)	\$100,000– \$119,999 (%)	\$120,000 or More (%)	Below Poverty Line (%)
Total Homes (millions)	113.6	23.7	27.5	21.2	14.2	9.3	5.7	12	6.9
Microwave Oven									
Use a Microwave Oven	109.0	92	95	97	98	99	96	98	92
Do Not Use a Microwave Oven	4.6	8	5	3	2	1	4	2	8
Coffee Maker									
Yes	72.0	53	60	65	68	69	72	75	51
No	41.6	47	40	35	31	31	28	25	49
Toaster Oven									
Yes	42.1	35	35	37	39	40	42	41	33
No	71.5	66	65	63	61	60	58	59	67
Refrigerators									
Use a Refrigerator	113.4	100	100	100	99	100	100	100	99
1	87.4	91	84	78	72	67	63	52	89
2 or More	26.0	9	15	22	27	33	37	48	11
Do Not Use a Refrigerator	0.2	NA	NA	NA	NA	NA	NA	NA	NA

Types of Refrigerators										
Single Door	9.3	13	10	8	6	4	4	3	13	
2 Doors (top freezer)	55.8	62	59	50	44	35	32	24	63	
2 Doors (bottom freezer)	7.7	3	4	7	7	10	12	15	2	
2 Doors (side by side)	38.5	18	26	35	40	48	49	56	19	
3 or More Doors	0.9	NA	NA	NA	1	1	2	2	NA	
Half-Size/Other	1.3	3	1	1	NA	NA	NA	1	2	
Separate Freezer										
Use a Separate Freezer	34.7	22	29	32	35	35	39	33	23	
Do Not Use a Separate Freezer	79.0	78	71	67	64	65	61	67	77	
Dishwashers										
Use a Dishwasher	67.4	31	48	64	71	80	88	90	28	
Do Not Use a Dishwasher	46.2	69	52	36	29	20	12	10	71	
Clothes Washer and Dryer										
Use a Clothes Washer	93.2	62	79	86	89	92	96	97	64	
Do Not Use a Clothes Washer	20.4	38	21	14	11	6	4	3	35	
Use a Clothes Dryer	90.2	57	76	84	88	92	95	96	57	
Do Not Use a Clothes Dryer	23.4	43	24	16	12	8	5	4	43	

SOURCE: Residential Energy Consumption Survey.

NOTE: Numbers may not sum to 100 because of rounding or because more than one option may apply to each household.

TABLE 1E
HEATING AND COOLING CHARACTERISTICS, RECS 2009

	Total Homes (millions)	Less than \$20,000 (%)	\$20,000– \$39,999 (%)	\$40,000– \$59,999 (%)	\$60,000– \$79,999 (%)	\$80,000– \$99,999 (%)	\$100,000– \$119,999 (%)	\$120,000 or More (%)	Below Poverty Line (%)
Total Homes (millions)	113.6	23.7	27.5	21.2	14.2	9.3	5.7	12	6.9
Cooling									
Use Air-Conditioning Equipment	94.0	77	81	84	84	87	89	87	76
Do Not Use Air-Conditioning Equipment	4.9	6	5	4	4	2	2	3	6
Do Not Have Air-Conditioning Equipment	14.7	16	14	11	13	10	9	10	18
Space Heating									
Use Space Heating Equipment	110.1	96	96	97	97	98	98	98	95
Do Not Use Space Heating Equipment	2.4	3	3	2	1	2	2	1	3
Do Not Have Space Heating Equipment	1.2	1	1	1	1	NA	NA	NA	2

SOURCE: Residential Energy Consumption Survey.

NOTE: Numbers may not sum to 100 because of rounding or because more than one option may apply to each household.

TABLE 2
RESIDENTIAL ENERGY CONSUMPTION SURVEY: TIME SERIES ANALYSIS

	1987	1990	1993	1997	2001	2005	2009
Total Low-Income Households (millions)	21.1	21.6	23.5	23.6	18.7	26.7	23.7
Low-Income Home Technology							
Homes with No Color Televisions (%)	17.7	9.5	6.2	2.9	3.2	2.2	2.1
Homes with No Computers (%)	-	95.2	93.0	89.3	80.2	64.0	52.3
Homes with No Printers (%)	-	-	98.3	97.3	67.9	73.4	17.7
Low-Income Household Characteristics							
Households with 4 Rooms in House (excluding bathrooms) (%)	29.4	26.6	29.5	25.4	28.3	25.1	22.8
Households with 5 Rooms in House (excluding bathrooms) (%)	22.7	25.7	24.1	23.6	21.4	26.6	21.5
Households with 6 or More Rooms in House (excluding bathrooms) (%)	21.4	25.1	24.2	24.5	21.9	24.7	30.0
Low-Income Household Appliances							
Households with No Air-Conditioning Equipment (%)	-	44.1	39.8	38.5	34.2	19.9	16.5
Households That Do Not Use a Dishwasher (%)	86.1	83.7	83.4	78.9	82.4	73.0	69.2
Households That Do Not Use a Clothes Washer	45.2	41.6	42.5	43.3	42.8	35.6	37.6
Households That Do Not Use a Clothes Dryer	66.6	64.0	62.9	56.5	55.1	43.8	43.5
Households That Do Not Use a Microwave Oven	64.4	40.0	32.0	32.9	25.1	18.0	7.6

SOURCE: Residential Energy Consumption Survey.

TABLE 3
EFFECT OF LOW-INCOME STATUS ON PROBABILITY OF OWNING DURABLE GOODS

	1987	1990	1993	1997	2001	2005	2009
Color TV	-0.136 (-.0114)***	-0.0612 (-.0958)***	-0.0491 (-.00734)***	-0.0192 (-.00485)***	-0.0234 (-.00711)***	-0.0119 (-.00443)**	-0.0117 (-.00342)***
Microwave	-0.309 (-.0156)***	-0.207 (-.0169)***	-0.162 (-.0132)***	-0.2004 (.0145)***	-0.1296 (-.0168)***	-0.0642 (-.0133)***	-0.0388 (-.00614)***
Refrigerator	-0.00154 (-.00129)	-0.008297 (-.00524)***	-0.00114 (-.00851)**	-0.00156 (.000991)**	-0.00966 (-.00627)**	-0.001698 (-.00265)	-0.000484 (-.000508)
Air Conditioning		-0.1604 (-.0191)***	-0.112 (-.0159)***	-0.194 (.0169)***	-0.182 (-.0207)***	-0.0932 (-.0152)***	-0.0835 (-.0102)***
Computer		-0.0805 (-.0104)***	-0.139 (-.0111)***	-0.266 (.01204)***	-0.392 (-.0184)***	-0.351 (-.0178)***	-0.254 (-.0121)***
Printer				-0.111 (.00691)***	-0.362 (-.0173)***	-0.369 (-.0172)***	-0.269 (-.0119)***
Home Heat	-0.00124 (-.00122)	-0.000181 (-.000443)	-0.0000143 (-.00816)	-0.00294 (.00136)**	-0.00433 (-.00228)**	—	-0.01427 (.0038)***

Microwave	-0.305 (-0.0156)***	-0.203 (-0.0169)***	-0.159 (-0.0131)***	-0.2 (0.0145)***	-0.129 (-0.0167)***	-0.0642 (-0.0133)***	-0.0388 (-0.00614)***
Clothes Washer	-0.275 (-0.0157)***	-0.263 (-0.0179)***	-0.285 (-0.0152)***	-0.315 (0.0158)***	-0.292 (-0.02004)***	-0.231 (-0.0167)***	-0.256 (-0.0119)***
Six Rooms or More	-0.317 (-0.0134)***	-0.282 (-0.0167)***	-0.296 (-0.0143)***	-0.354 (0.0141)***	-0.353 (-0.0173)***	-0.373 (-0.0166)***	-0.314 (-0.0119)***
Clothes Dryer	-0.242 (-0.0154)***	-0.208 (-0.0182)***	-0.285 (-0.0156)***	-0.397 (0.0158)***	-0.3601 (-0.02006)***	-0.284 (-0.0176)***	-0.293 (-0.0123)***
Dishwasher	-0.365 (-0.0117)***	-0.331 (-0.0154)***	-0.342 (-0.0138)***	-0.371 (0.0135)***	-0.4096 (-0.0163)***	-0.379 (0.0170)***	-0.303 (0.0124)***

SOURCE: Authors' calculations.

NOTE: Standard errors in parentheses: ***, significant at 1 percent; **, significant at 5 percent; *, significant at 10 percent. The table shows the marginal effects from a probit regression. We report only the coefficients on the low-income household dummy. All regressions control for demographics such as the age, sex, and employment of the household head, as well as the size of the household. We also control for regional differences, as well as urban-rural differences. For some years, information on the educational qualification of the head is available and we include it as a regressor. For 2005, the regression for home heating is not estimated since the outcome does not vary. Both low-income and other households had home heating. The missing coefficients relating to computers, printers, and air conditioners for the earlier years are a result of these questions not being asked in those years.

NOTES

1. Emmanuel Saez and Thomas Piketty, "For Two Economists, the Buffett Rule Is Just a Start," *New York Times*, April 16, 2012.

2. Ibid.

3. Thomas Piketty and Emmanuel Saez, "The Evolution of Top Incomes: A Historical and International Perspective," *AEA Papers and Proceedings: Measuring and Interpreting Trends in Economic Inequality* 96, no. 2 (May 2006): 200–205, <http://elsa.berkeley.edu/~saez/piketty-saezAEAPP06.pdf> (accessed June 6, 2012). For updated data, see Emmanuel Saez, "Striking It Richer: The Evolution of Top Incomes in the United States" (working paper, University of California–Berkeley, March 2, 2012), <http://elsa.berkeley.edu/~saez/saez-UStopincomes-2010.pdf> (accessed June 6, 2012).

4. Richard Blundell, Luigi Pistaferri, and Ian Preston, "Consumption Inequality and Partial Insurance," *The American Economic Review* 98 (2008): 1887–1921.

5. Dirk Krueger and Fabrizio Perri, "Does Income Inequality Lead to Consumption Inequality?" *Review of Economic Studies* 73 (2006): 163–93, www.jstor.org/stable/3700621 (accessed June 6, 2012).

6. See Jonathan Heathcote and Morris A. Davis, "The Price and Quantity of Residential Land in the United States," *Journal of Monetary Economics* 54 (2007): 2595–2620; Robert E. Hall and Frederic S. Mishkin, "The Sensitivity of Consumption to Transitory Income: Estimates from Panel Data on Households" (National Bureau of Economic Research Working Paper No. 505, Cambridge, MA, May 1982); Joseph G. Altonji, Ana Paula Martins, and Aloysius Siow, "Dynamic Factor Models of Consumption, Hours and Income," *Research in Economics* 56 (2002): 3–59; and Robert Moffitt and Peter Gottschalk, "The Growth of Earnings Instability in the U.S. Labor Market," *Brookings Papers on Economic Activity* (1994): 217–72, www.jstor.org/stable/2534657 (accessed June 6, 2012).

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8. A recent analysis by the Heritage Foundation tabulates the CEX data to study poverty and inequality. For this study, see Robert Rector

and Rachel Sheffield, "Air Conditioning, Cable TV, and an Xbox: What Is Poverty in the United States Today?" (Backgrounder no. 2575, Heritage Foundation, Washington, DC, July 19, 2011), www.heritage.org/research/reports/2011/07/what-is-poverty (accessed June 6, 2012).

9. Piketty and Saez, "The Evolution of Top Incomes."

10. They updated the data since the 2006 publication; see Saez, "Striking It Richer."

11. Alan Reynolds, "Has U.S. Income Inequality *Really* Increased?" *Cato Policy Analysis*, no. 586 (January 8, 2007), www.cato.org/pubs/pas/pa586.pdf (accessed June 6, 2012).

12. For a useful overview of many studies on income inequality measurement, see Kip Hagopian and Lee Ohanian, "Income Equality and Prosperity for All: The Facts about Income Inequality, the Middle Class, and Paying a 'Fair Share,'" *Policy Review* (forthcoming).

13. Leon Gerber, "A Quintile Rule for the Gini Coefficient," *Mathematics Magazine* 80 (2007): 133–35.

14. Dirk Krueger and Fabrizio Perri, "Does Income Inequality Lead to Consumption Inequality? Evidence and Theory" (Centre for Economic Policy Research working paper, London, UK, November 2001), www.cepr.org/meets/wkcn/6/696/papers/krueger.pdf.

Should the Top Marginal Income Tax Rate Be 73 Percent?

APARNA MATHUR, SITA SLAVOV,
AND MICHAEL R. STRAIN

In this article, Mathur, Slavov, and Strain respond to the argument by Peter Diamond and Emmanuel Saez that the socially optimal top marginal income tax rate is around 73 percent, with a range from 54 to 80 percent. The authors argue that Diamond and Saez's analysis underestimates the distortive effect of a higher tax rate on real economic choices and embodies judgments about fairness that many Americans may find unacceptable. They also assert that Diamond and Saez's underlying economic model cannot prudently be used as the basis for specific, real-world policy recommendations.

When they won the 2011 Nobel Prize in economics for their research on the causes and effects of government policy on the macroeconomy, Thomas Sargent and Christopher Sims were given a unique opportunity to connect their academic work to actual government action. They had spent their professional lives studying macroeconomic policy, and here we were in the middle of a macroeconomic crisis with the entire policymaking world anxious to hear what they had to say. How do tax cuts affect GDP? How should the government respond to sluggish growth and a terrible labor market? Might we experience serious inflation? Is fiscal stimulus effective? Everyone was listening—now was Sargent and Sims's chance to let the world know their policy prescriptions.

The first questions the press asked the new laureates went right to the heart of the matter: Had the US government responded

appropriately to the Great Recession and what should it do to create jobs and support the economy?

Sims's answer was fascinating:

I think part of the point of this prize in the area that we work in is that answers to questions like that require careful thinking, a lot of data analysis, and that the answers are not likely to be simple. So that asking Tom [Sargent] and me for answers off the top of our heads to these questions—you shouldn't expect much from us. My own view is that what we ought to do is the kind of thing that Chairman Ben Bernanke has urged the US government to do: make good long-run plans for resolving our budget difficulties without imposing severe fiscal stringency in the short-run and that accommodative monetary policy is a good idea. But these are not very original ideas. I think eighty percent of the economics profession would agree with this. The problem is to figure out how in the real world to get these things done.¹

His answer echoed his response in another interview, quoted in *The New York Times*: “The methods that I’ve used and that Tom [Sargent] has developed are central for finding our way out of this mess,’ [Sims] said. But asked for specific policy conclusions of his research, he responded, ‘If I had a simple answer, I would have been spreading it around the world.’”²

Those answers are a model of how academic economists should behave when facing questions about specific policy. It is extremely difficult to take the results in an academic journal article and apply them to real-world policy questions because the method used in much of economics research is to start with assumptions and to derive conclusions from them. Much of economics research is a series of if-then statements. But as economists readily admit, the ifs are often wildly incorrect. That is not a problem for academic research, in which all results come with a long list of caveats and in which readers are professional economists who spend years in PhD programs learning the caveats. But it does present a problem for economists who try to base specific real-world policy prescriptions on highly stylized models.

Peter Diamond, also a Nobel laureate, and Emmanuel Saez, both eminent and widely respected economists, agree. In a 2011 essay on tax policy they wrote, “When done well, moving from mathematical results, theorems, or calculated examples to policy recommendations is a subtle process.”³ Diamond and Saez have outlined three conditions under which “a theoretical result can be fruitfully used as part of forming a policy recommendation”:

First, the result should be based on an economic mechanism that is empirically relevant and of first order to the problem at hand. Second, the result should be reasonably robust to changes in the modeling assumptions. . . . Third, the tax policy prescription needs to be implementable—that is, the tax policy needs to be socially acceptable and not too complex relative to the modeling of tax administration and individual responses to tax law. By socially acceptable, we do not mean to limit the choice to currently politically plausible policy options. Rather, we mean there should not be very widely held normative views that make such policies seem implausible and inappropriate at pretty much all times.

Having established those conditions, they then argue that their policy recommendation of significantly higher income taxes on the country’s top earners—summarized in an influential *The Wall Street Journal* op-ed essay—satisfies them.⁴

We disagree. We do not believe that their model can be used prudently as the basis for the real-world public policy problem of determining the socially optimal top marginal income tax rate.⁵

A. Diamond and Saez’s Arguments

In their 2011 essay, Diamond and Saez lay out an elegant theory of the optimal top marginal income tax rate based on a 2001 paper by Saez.⁶

1. Two Key Concepts. There are two economic concepts to keep in mind in order to understand Diamond and Saez’s argument. The first is the concept of a social welfare function, which can be

thought of as a tool to determine the level of social well-being in different situations. That is a similar concept to the individual's utility function, which measures an individual's well-being in different situations. Indeed, a social welfare function can be thought of as the aggregation of all individual utility functions in a society. This concept is obviously important here because a substantial increase in the top marginal income tax rate produces both winners and losers at the individual level. The question pursued by Diamond and Saez is whether society as a whole will be better off if the top marginal income tax rate is raised significantly.

The second concept is the law of diminishing marginal utility, which states that the more of something you have, the less value you receive from an additional unit of it. As a simple example, think of pizza: You gain a lot more utility from your second slice of pizza than from your 12th. This concept is applicable to the debate over the top marginal rate because it tells you that people are likely to value an additional dollar of consumption more when they are poor than when they are wealthy. Under the assumption that we can compare one person's utility to another's (more on that later), we can also say that a wealthy person values an additional dollar of consumption less than a poor person does.

Looking at an extreme example helps clarify the point. Imagine that Warren Buffett spends a dollar at McDonald's. Eating the food he buys makes him better off (that is, increases his utility) and society is better off because social welfare is determined by individual welfare. But now imagine that the government takes the dollar away from Buffett and gives it to a starving person. The starving person buys exactly the same item, but because he is starving, his welfare will be significantly improved after he eats — his welfare will increase much more than Buffett's. The extra utility the starving man receives from the food is greater than the extra utility Buffett receives, so society is made better off when the government takes the dollar from Buffett and redistributes it to the starving man.

As explained below, the concepts of a social welfare function and diminishing marginal utility are necessary to understand Diamond and Saez's argument.

2. Setup. Imagine an increase in the top marginal tax rate from t to t^* for incomes above the income level z^* . For example, t might be 40 percent, t^* might be 50 percent, and z^* might be \$400,000. Those paying higher taxes obviously will be worse off as a result of the change, but the revenue collected will be redistributed to others, making them better off.

With the rich worse off and the non-rich better off, the key question considered by Diamond and Saez is whether *society as a whole* is better off when the top marginal income tax rate is increased. More generally, Diamond and Saez want to find the top rate at which social welfare is maximized—the top marginal income tax rate at which society is as well off as possible. That social-welfare-maximizing rate is called the optimal rate.

3. Two Effects: Mechanical and Behavioral. The tax change will have two effects. The first is the mechanical effect of additional revenue flowing to the government as a consequence of the higher tax rate. Holding all else constant, a higher tax rate results in more money going to the government. The second is the behavioral effect. Holding all else constant, the higher tax rate lowers taxable income for several reasons, which reduces the revenue flowing to the government.

The mechanical effect is easy to understand. In our example, the government collects 10 percent more of every dollar of income earned in excess of \$400,000 from every person who earns that much. So mechanically, the government will see its revenue rise. If the government redistributes the additional revenue, then middle- and low-income earners will see their consumption increase as a result of the tax change.

The behavioral effect captures how the behavior of top earners changes in response to the new tax regime. When faced with higher taxes, some wealthy people may work less, some may substitute earnings for other forms of income that are taxed at lower rates (like capital gains), some may move activities overseas, and some may engage in tax evasion.⁷ Because all those behavioral changes reduce the amount of taxable income that wealthy people report to

the government, they can be summarized by looking at how much taxable income varies with the top tax rate.

To get a bit more technical, if t is the marginal tax rate, then $(1 - t)$ is known as the net-of-tax rate—the fraction of every dollar earned that a person can keep for himself. The behavioral response can be summarized by a parameter called the elasticity of taxable income with respect to the net-of-tax rate, which is defined as the percent increase in taxable income that follows from a 1 percent increase in $(1 - t)$.

Raising the tax rate, t , from 40 to 50 percent means the net-of-tax rate, $(1 - t)$, falls by 10 percentage points, or by $0.1/(1 - 0.4) = 16.7$ percent. If the elasticity is 0.5, then that tax change causes taxable income to fall by $(0.5 * 16.7) = 8.3$ percent. If the elasticity is higher, the change causes taxable income to fall by more than 8.3 percent—a higher value for the elasticity implies that the amount of taxable income is relatively more responsive to changes in the tax rate. The converse is also true. The elasticity measures how responsive taxable income is to changes in the net-of-tax rate.

Those two effects pull in competing directions. Holding all else constant, the mechanical effect of an increase in the top marginal rate increases the revenue received by the government, whereas the behavioral effect decreases the revenue the government collects.

4. Determining the Optimal Rate. Diamond and Saez use those two effects to find the socially optimal top marginal income tax rate. In their model, raising taxes on the rich makes them worse off. And if the behavioral effect outweighs the mechanical effect—if raising taxes results in less tax revenue—then middle- and low-income individuals also are worse off because the tax increase results in less money (consumption) being redistributed to them. However, provided that the mechanical effect offsets the behavioral effect, raising taxes on those with high incomes makes the non-rich better off. In that case, how should we weigh the gain to the non-rich against the losses to the rich? Recall that the goal is to set the top rate so that society as a whole is as well-off as possible. How do Diamond and Saez determine what is socially optimal, given that some individuals are worse off and others are better off?

Diamond and Saez argue that because of diminishing marginal utility, the decrease in utility experienced by the rich under the new tax regime will be much less than the increase in utility experienced by the non-rich when the government redistributes the new tax revenue to them. In fact, Diamond and Saez argue that the loss to the rich is so small relative to the gain to the non-rich that we might as well assume it is zero.

Because the social loss from taking money from the rich is assumed to be zero and the social gain from giving money to the non-rich is greater than zero, society's goal is clear: The government should take as much money as possible from the rich and redistribute it to the non-rich. In other words, the government should raise taxes on the rich until the behavioral effect just barely offsets the mechanical effect—that is, until the government maximizes the revenue collected from the rich.⁸

Diamond and Saez show that given the considerations outlined above, a simple and elegant formula with only two parameters determines the socially optimal top income tax rate: $1/(1 + a * e)$. The parameter a is simply a statistic that describes a feature of the income distribution and for the United States is equal to about 1.5.⁹ (We can consider that a fact and not something to be estimated.) The parameter e is the behavioral effect discussed above: the elasticity of taxable income with respect to the net-of-tax rate. Diamond and Saez argue that that e is equal to about 0.25, what they describe as “a mid-range estimate from the empirical literature.” That estimate implies that when the tax rate increases by 1 percent, causing $(1 - t)$ to fall, taxable incomes fall by 0.25 percent. If that is correct, then the socially optimal top marginal income tax rate is easy to find. Just plug the numbers into their formula: $1/(1 + 1.5 * 0.25) = 0.727$. That is, the rich should face a marginal tax rate of approximately 73 percent.

Diamond and Saez readily admit there is controversy over the exact value of e and they discuss other estimates of e . They argue that 0.57 “is a conservative upper bound estimate” and imply that 0.17 is a good lower bound. Using those two elasticities, they argue that the optimal total top marginal income tax rate is somewhere between 54

and 80 percent. After netting out state and payroll taxes, that puts the socially optimal top federal marginal income tax rate somewhere between 48 and 76 percent.

Diamond and Saez took their findings into the public square with an op-ed in *The Wall Street Journal*, offering the following policy recommendation:

According to our analysis of current tax rates and their elasticity, the revenue-maximizing top federal marginal income tax rate would be in or near the range of 50 percent to 70 percent (taking into account that individuals face additional taxes from Medicare and state and local taxes). Thus we conclude that raising the top tax rate is very likely to result in revenue increases at least until we reach the 50 percent rate that held during the first Reagan administration, and possibly until the 70 percent rate of the 1970s. To reduce tax avoidance opportunities, tax rates on capital gains and dividends should increase along with the basic rate. Closing loopholes and stepping up enforcement would further limit tax avoidance and evasion.¹⁰

The current top federal marginal income tax rate is 35 percent. So at a minimum, Diamond and Saez are recommending publicly that the top federal rate be raised by 15 percentage points.

B. Our Response

Saez's work on determining the optimal top marginal income tax rate is very elegant and an example of the best type of applied theoretical research in public economics. And Diamond and Saez apply that work in a way that is interesting and informative to professional economists. There is no question that their *Journal of Economic Perspectives* paper and their computation of the optimal top rate of 73 percent provides a valuable perspective to economists who think about taxes and, more specifically, the distance between the current and optimal tax regimes.

But we believe that sufficient issues—some unavoidable—with

their estimate prevent it from being usable as the basis for a real-world policy recommendation.

1. The Long-Run Behavior Response. Diamond and Saez implicitly assume that the only behavioral response (elasticity) that matters is the short-run effect of a small increase in the top marginal income tax rate. In other words, if we raise tax rates now, what impact will it have on revenue within a few years? But is that all that matters? They wrote:

Perhaps most critically, does an estimate based on a single period model still apply when recognizing that people earn and pay income taxes year after year? First, earlier decisions such as education and career choices affect later earnings opportunities. It is conceivable that a more progressive tax system could reduce incentives to accumulate human capital in the first place. The logic of the equity-efficiency tradeoff would still carry through, but the elasticity e should reflect not only short-run labor supply responses but also long-run responses through education and career choices. While there is a sizable multi-period optimal tax literature using life-cycle models and generating insights, we unfortunately have little compelling empirical evidence to assess whether taxes affect earnings through those long-run channels.¹¹

Diamond and Saez have evidently thought about our objection and acknowledge its importance.

Why is that important? Imagine a high school student who graduates in a world where the top marginal income tax rate is more than 70 percent. He may decide not to pursue his dream of becoming a college-educated engineer because the government will take a large share of the returns to his college investment—that is, much of the extra money he will earn because he is a college-educated engineer will be seized by the government, so he may conclude that going to college isn't worth it. He is worse off because of the high top income tax rate. And so is society, because we now have one less engineer.

Or imagine a medical school student. She may decide to become

a pediatrician instead of a heart surgeon because a large share of the extra money she would earn being a surgeon would be taken by the government. There is nothing wrong with pediatricians, but the problem is that the government is distorting this medical student's decision—that is, she isn't making the choice based on her preferences and market prices alone. If enough people made that choice, there wouldn't be enough surgeons (an economist would say there is an inefficient allocation of human resources).

Or imagine a small business owner. His business is growing and he has the opportunity to expand it over the next decade. But because expanding it will require a lot of work—not to mention that the payoff is risky—he chooses not to. He decides that it's just not worth it given that the potential rewards from his hard work will largely go to the government.

Those issues—investment in schooling, occupational choice, and business creation and development—are critically important when thinking about the real-world top tax rate. To quote from Diamond and Saez's three conditions, they are clearly of “first order to the problem at hand.” All US citizens benefit greatly from people who take risks and make career choices in the hope of becoming extremely wealthy. Significantly reducing that possibility by hitting those individuals with extremely high income taxes is of first-order importance in determining the optimal top tax rate.

Yet Diamond and Saez's short-run estimate completely ignores the effects an increase in the top marginal income tax rate has on choice of schooling, occupation, entrepreneurship, and business development. They argue that they “unfortunately have little compelling empirical evidence to assess whether taxes affect earnings through those long-run channels.”

We agree with Diamond and Saez that the economics literature does not have good estimates of the long-run effects of high top marginal tax rates on human capital accumulation, career, entrepreneurship, and business development choices. But most economists would agree that those effects exist and may be important. We do not have estimates of their magnitude only because we lack appropriate data. Indeed, the most important questions in economics are often

the hardest to answer because of data limitations. This is certainly one of those cases.

In the absence of good empirical estimates, Diamond and Saez have picked an estimate that is clearly bad: They have effectively assumed that the long-run effects are zero. While that assumption might be fine in a caveat-filled academic journal article, it is obviously not a reasonable assumption to employ when making a specific real-world policy recommendation. At the very least, the vast uncertainty surrounding those long-run effects should have led Diamond and Saez to conclude that the plausible range of optimal top tax rates is much wider than 50 to 70 percent, or that the range of plausible estimates may be so wide that their optimal tax model—while very useful in helping professional economists think about taxes—is not useful for generating specific real-world policy recommendations. It's the difference between an academic paper written for an audience of economists and public advocacy for a specific policy to be adopted in the real world. And it suggests that Diamond and Saez do not satisfy their own criteria for using a theoretical result as part of forming a policy recommendation.

2. The Value of the Behavioral Elasticity. The short-term elasticity of taxable income with respect to the net-of-tax rate, the effect that is included in Diamond and Saez's model, is denoted by e in the optimal tax rate formula. In solving for the optimal tax rate, Diamond and Saez set e equal to 0.25, describing that number as a midrange estimate from the empirical literature. We do not consider 0.25 a midrange estimate for this parameter.

When tax rates go up, people can change their behavior in many ways. First and most obviously, they can work less. Early studies assumed that to be the main behavioral effect of taxes. The idea is that as tax rates increase the number of hours worked by a given individual would decrease and thus dampen the revenue effects from increased taxation. Arnold Harberger's seminal analysis of the efficiency costs of income taxation focused on the distortionary effects of personal income taxes on labor supply.¹² Following his analysis, labor supply elasticity became a key policy guideline

to measure the behavioral response to taxes. Richard Blundell and Thomas MaCurdy reviewed that body of research and found that men don't change their work decisions much in response to the tax rate.¹³ According to the study, women—and more generally, secondary earners—exhibit more responsiveness to income tax rates.

The balance of the literature suggests that labor supply decisions made by primary earners aren't particularly responsive to changes in the top tax rate, which argues for a low estimate of Diamond and Saez's behavioral effect. However, there are many other ways people can change their behavior to avoid taxes.

For example, people can shift income into nontaxable forms, such as employer-sponsored health insurance and other untaxed fringe benefits, or they can engage in tax evasion by underreporting income. Martin Feldstein has argued that the labor supply elasticity greatly underestimates the total deadweight loss of income taxation because it ignores those types of behavioral effects.¹⁴ His principal message is that taxation distorts the relative price of goods and activities that are not taxed. Hence, even if all income is labor income, as long as individuals have some discretion over what portion of their income is taxed or reported to the tax authorities, the elasticity of taxable income may be larger than the elasticity of total labor income.

Lawrence Lindsey was one of the first to estimate how taxable income responds to changes in tax rates.¹⁵ He used cross-sectional data from the Economic Recovery Tax Act of 1981 (ERTA) and estimated elasticities of adjusted gross income relative to tax rates in the range of 1.05 to 2.75, with a central estimate of 1.6. However, the use of cross-sectional data forces the assumption that taxpayers are in the same relative place in the income distribution before and after the tax changes.

Longitudinal data avoid many of the problems of cross-sectional data because they permit comparison of each taxpayer's situation before and after a tax change. Feldstein used panel data on individual tax returns from the Tax Reform Act of 1986 and estimated elasticities in the range of 1.1 to 3.05, with a central estimate around 2.¹⁶ Gerald Auten and Robert Carroll used the same regression method,

but with a much larger panel of data available from Treasury, and found a significantly lower central estimate of 0.6.¹⁷ John Navratil used a slightly different approach and estimated elasticities as high as 1 for the top 3 percent of earners, and much smaller elasticities for other groups.¹⁸

Contemporaneous, non-tax-related trends of rising income inequality could bias elasticity estimates upward in studies of tax cuts, particularly those from the 1980s. According to Joel Slemrod¹⁹ and Austan Goolsbee²⁰, for example, those trends may account for most of the measured behavioral responses to ERTA and TRA 1986.²¹ It is therefore useful to consider tax increases; the 1990 and 1993 Omnibus Budget Reconciliation acts (OBRA) are natural choices.²² Carroll used panel data from 1989-1995 and estimated an elasticity around 0.4.²³

Bradley Heim²⁴ and Auten, Carroll, and Geoffrey Gee²⁵ examined data from the period around the Economic Growth Tax Relief Reconciliation Act of 2001 (EGTRRA) and Jobs and Growth Tax Relief Reconciliation Act of 2003 (JGTRRA), and they estimated ETIs of 0.32 and 0.39. Their estimates are much higher for high-income individuals than for low-income individuals. However, the rate changes of EGTRRA and JGTRRA are much smaller than those from the 1980s and 1990s.

To control for trends in income inequality, Jon Gruber and Saez used state and federal tax return data from 1979 to 1990.²⁶ During that time, each income group underwent multiple tax changes. In addition to being able to control for the trend of rising income inequality, the multiple tax changes allowed them to study the variation of elasticities within the income distribution and propose an optimal nonlinear tax schedule. They reached greatly differing estimates for the overall elasticity of broad income, 0.12, and the overall elasticity of taxable income, 0.4.²⁷ In their analysis, the difference is mostly because tax preferences, such as the use of exemptions, deductions, and exclusions, are influenced greatly by tax rates. Seth Giertz used an approach similar to Gruber and Saez's, but with data from 1979 to 2001.²⁸ He found an overall elasticity of 0.3 and estimated an elasticity of 0.2 for the 1990s, which is half of Gruber

and Saez's result of 0.4 for the 1980s. But Gieritz estimated a broad income elasticity of 0.15, which is only slightly different from the 1980s' result of 0.12.

Several studies have examined the effect of unlegislated changes in tax rates. Saez used data to study the behavioral effects of taxpayers shifting into a higher tax bracket as the result of inflation.²⁹ He found fairly small elasticities for the average taxpayer, although elasticities were 0.65 for married itemizers, which was significantly higher than for non-itemizers.

The studies examined the size of the behavioral elasticity for all earners, but the behavioral response elasticity that is relevant in Diamond and Saez's calculation of the optimal tax rate is the one that applies to high-income individuals. What does the literature say about high earners?

It appears that studies focusing on high-income individuals tend to find much higher estimates of the short-term elasticity than ones that include mainly lower-income households. For instance, Auten and David Joulfaian estimated the value of that elasticity at 1.3.³⁰ Goolsbee used data on executive compensation from 1991 to 1995 to study the responsiveness of executives' taxable income to OBRA 1993.³¹ He calculated very high, short-term elasticities of more than 1, which he attributed to the exercise of options in anticipation of tax rate increases. Robert Moffitt and Mark Wilhelm found a range of estimates from 0.35 to 1.99.³²

It seems clear that 0.25 is not, as Diamond and Saez argue, "a mid-range estimate from the empirical literature" for high-income earners. Empirical studies have not produced a consensus as to the magnitude of the elasticity of income relative to the marginal tax rates for high earners—Diamond and Saez's behavioral effect. In the appendix, we have provided a table showing the estimates from different studies as well as the samples used. Given the range of estimates, assuming a median value of the short-term elasticity of 0.25 as Diamond and Saez do does not seem prudent, especially when making a specific real-world policy recommendation.

Diamond and Saez seem to implicitly acknowledge that. They argue that the "behavioral elasticity is due to real economic responses

such as labor supply, business creation, or savings decisions, but also tax avoidance and evasion responses” and that “when a tax system offers tax avoidance or evasion opportunities, the tax base in a given year is quite sensitive to tax rates, so the elasticity e is large, and the optimal top tax rate is correspondingly low. . . . Most important, the tax avoidance or evasion component of the elasticity e is not an immutable parameter and can be reduced through base broadening and tax enforcement. Thus, the distinction between real responses and tax avoidance responses is critical for tax policy.” Diamond and Saez offer a range of estimates for e , arguing that 0.57 “is a conservative upper bound estimate” and consequently that the top federal income tax rate should be at least 48 percent.

We agree that there is an important difference between the real economic response of taxable income to the top tax rate and the tax avoidance and evasion response. However, we do not believe that in the real world the top tax rate should be set under the assumption that tax avoidance and evasion behavior can be dramatically changed. In the messy world of public policy it is important not to put the cart before the horse.³³

3. The Right Social Welfare Function? The goal as Diamond and Saez describe it is to get as much money from the rich as possible and to transfer it to the non-rich, who, because of diminishing marginal utility, value it more. That goal follows from a social welfare function that aggregates the utility functions of all individuals in society. An implication of that social welfare function is that ideally, we would like income to be distributed evenly across all people. As Diamond and Saez put it, “social welfare is larger when resources are more equally distributed.”³⁴

Nearly all economists who study optimal tax theory use the social welfare function approach, along with the “more equality is better” social welfare criterion that it implies. So there is nothing unusual about the setup of Diamond and Saez’s model, and its result—that we should maximize the revenue we collect from high earners—is useful to professional economists in thinking about taxes in the context of an academic journal article. It answers an interesting research

question: If we generally think that more income equality is better, then what is the right tax system?

But is it appropriate to use that result as the basis for making specific, real-world policy recommendations? It is, but only if most citizens accept the more equality is better criterion—Diamond and Saez’s third criterion of social acceptability. That criterion does not pass the social acceptability test because it focuses entirely on outcomes and totally ignores process. In other words, social welfare in those models does not depend on how the rich got rich. Did the rich invent products that most of us can’t imagine living without? Or did they get rich by lobbying for favorable regulations for their industries? We suspect those questions are important to most citizens and that they are OK with Bill Gates being rich, but Jack Abramoff, not so much. Consistent with that, poll results suggest many US citizens view inequality as “an acceptable part of our economic system.”³⁵

We also suspect that most US citizens would not accept a social welfare criterion whose ideal outcome is a completely equal distribution of income. Most of us would agree, at least on some level, with the notion of diminishing marginal utility: A person who cannot afford basic necessities would value a dollar more than a person who can. And the overwhelming majority of Americans surely support policies to give food to the starving and shelter to the homeless, and to ensure a basic standard of living for those who face hard times. But the reality is that most tax dollars do not fund government programs targeted to low-income individuals. They fund entitlement programs like Social Security and Medicare, whose main beneficiaries is middle income earners, a group that is very rich by world standards.³⁶ Supporting a strong social safety net for low-income individuals and some redistribution from the wealthy to those in the middle is a far cry from supporting complete equality. So a social welfare criterion that argues that the best social outcome is complete equality is suspect when used to formulate real-world policy recommendations.

And while many US citizens may value a more equal distribution of wealth, many would probably also value the opportunity to increase their own wealth through hard work. The satisfaction that comes from improving one’s life through hard work can’t be found in

a world where everyone has the same amount of wealth. Along those lines, there is some evidence to suggest that the happiest individuals are those who believe they can improve their lives.³⁷

The question of what makes US citizens happy—or what they believe is fair—is complex. We certainly don't want to claim that hard work and the opportunity to strive for success are the only relevant factors, and we readily acknowledge that many Americans think the US income distribution needs to be more equal.³⁸ Our point is that the Diamond and Saez social welfare function criterion of more equality is better is far too simplistic to capture the preferences of most people and that, when taken to its logical conclusion, it is likely contrary to the average taxpayer's preferences.

Finally, even if we ignore what most US people believe is fair, it is still not clear how seriously we should take the social welfare function approach in general as the basis for policy. Utility is a subjective concept, essentially a preference ranking using index numbers. While those arbitrary numbers can be used to rank alternatives for an individual (for example, an alternative that gives someone 10 units of utility is better than an alternative that gives someone five units of utility), it is not clear whether units of utility can be compared across individuals. For example, suppose we ask you to tell us, on a scale of one to 10, how happy an ice-cream cone would make you? Let's say you respond with a five. Now suppose we ask your friend, and she responds with a seven. Do we have any idea whether the ice-cream cone would make you happier than it would make your friend? No—and therein lies the problem with interpersonal comparisons of utility.

That criticism of the social welfare function approach is found in standard PhD microeconomic theory textbooks, which urge extreme caution in comparing utility across individuals. Economists who study optimal taxation routinely ignore that advice and use the social welfare function approach with impunity. Again, that is fine in a caveat-filled journal article intended for economists who have sat through the standard microeconomic theory courses and know the approach's limitations. But are we willing to go beyond academic research and make specific, bold policy recommendations based on

comparing units of utility across people who may place radically different values on the consumption of material goods?

We are not the only economists to question the social welfare function approach to tax policy. N. Gregory Mankiw, a Harvard economist and former senior economic adviser to President George W. Bush, has said:

My sense is that people are rarely outraged when high incomes go to those who obviously earned them. When we see Steven Spielberg make blockbuster movies, Steve Jobs introduce the iPod, David Letterman crack funny jokes, and J.K. Rowling excite countless young readers with her Harry Potter books, we don't object to the many millions of dollars they earn in the process. The high incomes that generate anger are those that come from manipulating the system. The CEO who pads the corporate board with his cronies and the banker whose firm survives only by virtue of a government bailout do not seem to deserve their multimillion dollar bonuses. The public perceives them (correctly or incorrectly) as getting more than they contributed to society.

A better criterion, according to Mankiw, would be: "People should get what they deserve."³⁹

C. Conclusion

What is the socially optimal top marginal income tax rate? Economists don't know. We don't have a formula that spits out a reasonably tight range of values for the socially optimal top marginal income tax rate—at least, we don't have a formula that can be prudently used to make a specific, real-world policy recommendation.

We don't have a precise and reliable estimate of the long-run effect of high top marginal tax rates. To what degree will high rates discourage educational investment or distort occupational choice, business creation, and business expansion? We're sure the effect exists, but in a very real sense we don't know how important it is.

What about the short-run response? Again, we're pretty sure that it's larger than Diamond and Saez's estimate of 0.25, but estimates span a large range. Ignoring the long-run effect and using Diamond and Saez's formula, that corresponds to an extremely wide range of possible values for the socially optimal top rate. A range of that width isn't helpful for policy; we don't need economists to tell us that the optimal top rate is either the same, less than, or greater than the current rate.

Perhaps we have stumbled on a better algorithm than Diamond and Saez's formula? We think so. In a real-world policy setting, the optimal top rate should be determined by taking the status quo seriously and deciding how to deviate from it in a way that will be welcomed by society and implementable by the president and Congress. Advocates for particular policies should not allow the pursuit of the perfect to become the enemy of the good.

The academic literature in economics—and especially the seminal papers by Diamond and Saez—should unquestionably be used to inform the debate. Economics is at its best when it clarifies and quantifies trade-offs between different scenarios, and the research by Diamond and Saez does that well.

But there is more to public policy than economics. There are value judgments and moral considerations. We don't know what to do about the fact that economists haven't credibly and precisely estimated many effects that are of first-order importance in policy, but we're pretty sure that the solution isn't to pretend the effects don't matter. We don't know what social welfare criterion we should use to decide the socially optimal top rate, but it's not obvious to us that we should use the same criterion that professional economists use in journal articles.

The vast majority of academic papers on this topic use the social welfare function to justify assigning zero weight to the marginal utility of those at the very top, regardless of how they earned their incomes. We are sympathetic to Feldstein's reaction to that:

What kind of nation places no value on the welfare of those with income in the top bracket, treating them only as the revenue

producing property of the state? Many non-economists would find the . . . suggestion that a society could disregard the welfare of any group of taxpayers repugnant.⁴⁰

So what is the socially optimal top marginal income tax rate? Diamond and Saez ignore long-term behavioral responses, assume a more equality is better social welfare function, assign no social value to the marginal dollar of consumption for the rich, and use a short-run behavioral response predicated in part on less evasion and more enforcement to compute an answer of 73 percent. Consequently, we can be pretty sure that the answer is significantly less than that. Further, we find the suggestion that the government should take more than half of a citizen's income in taxes to be unpalatable. But do we have a specific answer to the question? Do we have a concrete number to throw out in response? To borrow from Sims, if we had a simple answer, then we would be spreading it around the world.

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Appendix Table. Taxable Income Elasticities From Different Studies					
	Central Estimates	Elasticity Studied	Sample	Tax Change	Data Description
Lindsey (1987)	1.6	Taxable income	AGI exceeding \$5,000	ERTA 1981	SOI cross-sectional data 1980-1984
Feldstein (1995)	1.1-3.1	Taxable income	Married, income exceeding \$30,000	TRA 1986	NBER tax panel 1985-1983
	0.7-1.3	AGI			
Navratil (1995)	0.8	Taxable income	Married, income exceeding \$25,000	ERTA 1981	NBER tax panel 1980-1983
Auten and Carroll (1999)	0.6	AGI	Single and married, ages 25-55, income exceeding \$15,000	TRA 1986	Treasury tax panel 1985-1989
Caroll (1998)	0.5	Taxable income	Married, ages 25-55, income exceeding \$50,000	OBRA 1993	Treasury tax panel 1987-1996
Moffitt and Wilhelm (2000)	0-2.1	AGI	High incomes oversampled	TRA 1986	SCF panel 1983-1989
Goolsbee (1999)	-1.3-2.1	Taxable income	Income exceeding \$30,000	Various reforms	Tax statistics tables 1922-1989

Goolsbee (2000)	1.3 SR, 0.4 LR	Wages, bonuses, and options	Corporate executives, real permanent income exceeding \$275,000	OBRA 1993	Panel of corporate executives 1991-1994
Gruber and Saez (2002)	0.4	Taxable income	Income exceeding \$10,000	Various reforms	NBER tax panel 1979-1990
	0.1	Broad income			
Saez (2003)	0.4	Taxable income	Married and singles	Bracket creep	NBER tax panel 1979-1981
	0.3	AGI			
Giertz (2007)	0.4	Taxable income	Income exceeding \$10,000	Various reforms	SOI and CWHs 1979-2001
	0.2	Broad income			
Auten, Carroll, and Gee (2008)	0.4	Taxable income	Agas 21-61, gross income exceeding \$50,000	EGTRRA 2001, JGTRRA 2003	SOI 1999-2005
Heim (2009)	0.3	Taxable income	Age over 25, gross income exceeding \$10,000	EGTRRA 2001, JGTRRA 2003	1999 edited panel 1999-2005
	0.2	AGI			
Auten and Joulfaian (2009)	1.3 SR, 0.6 LR	Taxable income	Top 1 percent income	Various reforms	Panel of federal income tax returns 1979-1995
	0.8 SR, 0.5 LR	AGI			

Notes

1. YouTube, "Princeton News Conference With Nobel Prize in Economics Winners," uploaded Oct. 10, 2011, available at <http://www.youtube.com/watch?v=bVIOClT4Rws>.

2. Catherine Rampell, "2 American Professors Awarded Nobel in Economic Science," *The New York Times*, Oct. 10, 2011.

3. Peter Diamond and Emmanuel Saez, "The Case for a Progressive Tax: From Basic Research to Policy Recommendations," 25 *J. Econ. Persp.* 165 (2011).

4. Diamond and Saez, "High Tax Rates Won't Slow Growth," *The Wall Street Journal*, Apr. 23, 2012.

5. We focus on the taxation of labor income. In their *Journal of Economic Perspectives* 2011 essay and *Wall Street Journal* op-ed, Diamond and Saez called for increasing tax rates on capital income as a way to reduce tax avoidance opportunities. While there are many arguments against higher taxes on capital, they are outside the scope of this essay, as capital taxation is of secondary importance in Diamond's and Saez's recommendation.

6. Saez, "Using Elasticities to Derive Optimal Income Tax Rates," 68 *Rev. Econ. Stud.* 205 (2001).

7. Individuals can choose to realize income at different times in order to face lower tax rates. For instance, Austan Goolsbee has shown that the timing of income realization depends on expectations about tax rates. See "What Happens When You Tax the Rich? Evidence From Executive Compensation," 108 *J. Pol. Econ.* 353 (2000).

8. In other words, the goal is to set the top tax rate at the peak of the Laffer curve.

9. It is an empirical fact that high incomes in the United States approximate a Pareto distribution, in which the ratio of any income level z^* to the average income above z^* (denoted by zm) is constant. The parameter a is then defined as $zm/(zm - z^*)$. According to Diamond and Saez, the average income above \$400,000 (their cutoff for high income) is around \$1.2 million, which means $a = 1,200,000/(1,200,000 - 400,000) = 1.5$.

10. *Supra* note 4.

11. *Supra* note 3.

12. Harberger, "Taxation, Resource Allocation, and Welfare," in *The Role*

of *Direct and Indirect Taxes in the Federal Revenue System* 25 (1964).

13. Blundell and MaCurdy, "Labor Supply: A Review of Alternative Approaches," in *Handbook of Labor Economics* 3 (1999).

14. Feldstein, "Tax Avoidance and the Deadweight Loss of the Income Tax," 81 *Rev. Econ. & Stat.* 674 (1999).

15. Lindsey, "Individual Taxpayer Response to Tax Cuts: 1982- 1984, With Implications for the Revenue Maximizing Tax Rate," 33 *J. Pub. Econ.* 173 (1987).

16. Feldstein (1995), "Behavioral Responses to Tax Rates: Evidence From the Tax Reform Act of 1986," 85 *Am. Econ. Rev.* 170 (1995).

17. Auten and Carroll, "The Effect of Income Taxes on Household Income," 81 *Rev. Econ. & Stat.* 681 (1999).

18. Navratil, "Essays on the Impact of Marginal Tax Rate Reductions on the Reporting of Taxable Income on Individual Tax Returns," PhD dissertation, Harvard University (1995).

19. Slemrod, "High-Income Families and the Tax Changes of the 1980s: The Anatomy of Behavioral Response," in *Empirical Foundations of Household Taxation* 169 (1996).

20. Goolsbee, *supra* note 7.

21. Auten and Carroll, *supra* note 17, have examined the contribution of behavioral responses to the tax cuts of the 1980s to rising measured income inequality.

22. In "The Elasticity of Taxable Income During the 1990s: A Sensitivity Analysis," MRA Paper 17603 (2006), Seth Giertz provided a sensitivity analysis for estimates from the 1990s.

23. Carroll, "Do Taxpayers Really Respond to Changes in Tax Rates? Evidence From the 1993 Act," Treasury Office of Tax Analysis Working Paper 78 (1998).

24. Heim, "The Effect of Recent Tax Changes on Taxable Income: Evidence From a New Panel of Tax Returns," 28 *J. Pol'y Analysis & Mgmt* 147 (2009).

25. Auten et al., "The 2001 and 2003 Tax Rate Reductions: An Overview and Estimate of the Taxable Income Increase," 61 *Nat'l Tax J.* 345 (2008).

26. Gruber and Saez, "The Elasticity of Taxable Income: Evidence and Implications," 84 *J. Pub. Econ.* 1 (2002).

27. Broad income includes wages, salaries, tips, interest income,

dividends, alimony received, business income, total IRA distributions, total pensions and annuities, income reported on Schedule E, farm income, full unemployment compensation, and other income.

28. Giertz, "The Elasticity of Taxable Income Over the 1980s and 1990s," MRA Paper 18313 (2007).

29. Saez, "The Effect of Marginal Tax Rates on Income: A Panel Study of 'Bracket Creep,'" 87 *J. Pub. Econ.* 1231 (2003).

30. Auten and Joulfaian, "The Taxable Income Elasticity of High-Income Taxpayers: Evidence From a Long Panel," Social Science Research Network-Working Paper Series 1406641 (2009).

31. Goolsbee, *supra* note 7.

32. Assume Diamond and Saez have the right formula. Let's use a value for the behavioral elasticity for high earners of 1.3, as estimated both by Goolsbee, *supra* note 7, and Auten and Joulfaian, *supra* note 30. Using their model, the optimal top tax rate is 34 percent. For Moffitt and Wilhelm's article, see "Taxation and the Labor Supply: Decisions of the Affluent," National Bureau of Economic Research Working Paper Series 6621 (2000).

33. A comprehensive reform policy including base broadening and efforts to crack down on tax evasion when combined with a higher top rate is intriguing and worth considering. But Diamond and Saez offer little more on that topic than the sentences quoted.

34. Perfect equality is unattainable because (as discussed above) the behavioral effect will eventually outweigh the mechanical effect and society will be worse off because the government will not be receiving the maximum amount of tax revenue possible from the wealthy. That will occur before incomes are fully equalized throughout the population, which is why Diamond and Saez do not argue that the top marginal income tax rate should be 100 percent.

35. Gallup, "Americans Prioritize Economy Over Reducing Wealth Gap" (Dec. 16, 2011).

36. Indeed, some economists have pointed out that taking the more-equality-is-better approach to its logical extreme would require massive redistribution from U.S. citizens to individuals in poorer countries. See N. Gregory Mankiw, "Spreading the Wealth Around: Reflections Inspired by Joe the Plumber," 36 *E. Econ. J.* 285 (2010).

37. See Arthur C. Brooks, "What Really Buys Happiness?" 17 *City J.* 59 (2007).

38. For example, only 28 percent of respondents to a recent Gallup poll stated that it was not important to “reduce the income gap between the rich and the poor,” *supra* note 35. The remainder believed it was at least somewhat important.

39. *Supra* note 36.

40. Feldstein, “The Mirrlees Review,” 50 *J. Econ. Lit.* 781 (2012).

