



## **GDP and Beyond: Measuring Economic Progress and Sustainability**

**J. Steven Landefeld, Director, BEA**  
**Shaunda M. Villones, Economist, BEA**

Bureau of Economic Analysis  
U.S. Department of Commerce  
Washington D.C. 20230  
Phone: (202) 606-9600

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*The views expressed in this paper are solely those of the authors and not necessarily of the U.S. Bureau of Economic Analysis or the U.S. Department of Commerce.*

The United States possesses some of the most highly developed sets of gross domestic product (GDP) accounts in the world. These accounts—which are collectively known as the national income product and wealth accounts or national accounts—have been regularly updated over the years and have well served researchers, the business community, and policymakers alike. However, since their inception in the 1930s, the economy has continuously evolved, and issues have been raised about the scope and structure of the national accounts. Simon Kuznets (1941), one of the early architects of the accounts, recognized the limitations of focusing on market activities and excluding household production and a broad range of other nonmarket activities and assets that have productive value or yield satisfaction. Further, the need to better understand the sources of economic growth in the postwar era led to the development (much of it by academic researchers) of various supplemental series, such as the contributions of investments in human capital and natural resources to economic growth.

More recently, concerns have been raised about the adequacy of the national accounts in capturing the differential impact of the current recession across households, industries, and regions of the country. Other concerns include the failure of the existing national accounts to provide adequate warning about the imbalances that developed in housing and financial markets.

This article explores each of these issues and relates them to the need for expanded or supplementary measures for the national accounts, highlighting what such estimates might reveal relative to the conventional statistics presented by GDP and other aggregate statistics from the accounts. In particular, it explores how the accounts might be extended to provide new measures of: a) how growth in incomes are distributed across households, other sectors, and across regions; and b) the sustainability of trends in saving, investment, asset prices, and other key variables important to understanding business cycles and the sources of economic growth.

### **Broad Social Accounts**

Kuznet's concern's about the exclusion of a broader set activities from the national accounts has been echoed over the ages, notably by Robert F. Kennedy in his eloquent critique of GDP (née GNP) as a measure of society's progress:

*"Too much and too long, we seem to have surrendered community excellence and community values in the mere accumulation of material things. Our gross national product, if we should judge America by that, counts air pollution and cigarette advertising, and ambulances to clear our highways of carnage. It counts special locks for our doors... Yet the gross national product does not allow for the health of our children, the quality of their education, or the joy of their play... it measures everything, in short, except that which makes life worthwhile. And it tells us everything about America except why we are proud that we are Americans."*

-- Robert F. Kennedy Address, University of Kansas, Lawrence, Kansas,  
March 18, 1968

This concern has remained an issue, and at his inaugural address, President Obama said:

*“The success of our economy has always depended not just on the size of our gross domestic product, but on the reach of our prosperity; on the ability to extend opportunity to every willing heart— not out of charity, but because it is the surest route to our common good.”*

*-- President Barack Obama, Inaugural Address, Washington D.C.,  
January 20, 2009*

The recent *Report on the Measurement of Economic Performance and Social Progress* (Stiglitz, Sen, Fitoussi, 2009) addressed these issues. The Chair of the Commission that produced the report, Joseph Stiglitz, summarized the conclusions as follows:

*“The big question concerns whether GDP provides a good measure of living standards. In many cases, GDP statistics seem to suggest that the economy is doing far better than most citizens' own perceptions. Moreover, the focus on GDP creates conflicts: political leaders are told to maximize it, but citizens also demand that attention be paid to enhancing security, reducing pollution, and so forth - all of which might lower GDP growth.*

*“The fact that GDP may be a poor measure of well-being, or even of market activity, has, of course, long been recognized. But changes in society and the economy may have heightened the problems, at the same time that advances in economics and statistical techniques may have provided opportunities to improve our metrics.”*

*-- Joseph Stiglitz, The Economist's Voice, September, 2009*

Work by Alan Krueger, Daniel Kahneman et al. are the most recent comprehensive attempt to develop a broader measure of social welfare. Their “Time-Use Accounts” develop a measure of happiness based on survey data on time use and happiness in different activities.<sup>1</sup> Their accounts represent a significant step forward in the long quest to develop a broader measure of social welfare. It illustrates the progress that can be made by having such research conducted by a multidisciplinary team of independent researchers from academia. It also is an example of the problems that can be avoided by developing an entirely new measure with its own framework, concepts, and methods rather than trying to expand GDP.

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<sup>1</sup> Kruger, Kahneman, Schkade, Schwartz, and Stone (forthcoming National Bureau of Economic Research volume). The volume also includes analyses and critiques of the time use accounts, including one comparing the time use accounts to existing national accounts, see chapter: National Time Accounting and National Economic Accounting by J. Steven Landefeld.

Past efforts to expand conventional GDP have foundered on the inevitable problems of subjectivity and uncertainty inherent in measuring health, happiness, and the environment.<sup>2</sup> Critics feared that the inclusion of such uncertain and subjective values in GDP would seriously diminish the essential role of the national accounts to financial markets, the Federal Reserve Board, the Treasury, and the Congress in measuring and managing the market economy.

In recognition of these difficulties, several National Academy of Sciences studies on accounting for the environment and nonmarket production and the System of National Accounts (1993) guidelines for compiling GDP have all concluded that an expansion of the GDP accounts should take place in supplemental, or satellite, accounts that extend the scope of the accounts without reducing the usefulness of the core GDP accounts.<sup>3</sup> They also conclude that such an expansion should focus on economic aspects of nonmarket and near-market activities—such as energy and the economy’s use of natural resources, the impact of investments in research and development (R&D), health care, or education—and not attempt to measure the welfare effect of such interactions.

Finally, such an expansion of work would require interdisciplinary research between economists and such subject area experts as epidemiologists, physicians, geologists, and engineers in other government agencies to measure the relationship between air pollution and human health and medical expenditures or between petroleum extraction, changes in technology and reserves. It would also require the design, development, and collection of data from new surveys. In an environment of large competing demands on scarce resources, it is critical that such an expansion of the scope of the accounts not occur at the expense of funds needed to maintain, update, and improve the existing GDP accounts.

In recognition of the subjectivity, uncertainty, and resources involved in producing expanded welfare and nonmarket accounts, there is increasing interest in “new” estimates that could be produced with information currently used to produce the existing accounts. For example, the Stiglitz-Sen-Fitoussi Commission (2009), which explored expanded welfare measures, has suggested a number of ways that “classical GDP issues” can be addressed within existing GDP accounts or through an extension and improvement of measures included in existing accounts.

### **What Can Be Done Within the Scope of the Existing Accounts?**

Although BEA has conducted research on a number of nonmarket satellite accounts and is currently at work on several market-related satellite accounts (for health care and R&D), relatively little attention has been paid to what can be done within the scope of the

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<sup>2</sup> Work such as Tobin and Nordhaus (1973), the UN System of Social Accounts, the Genuine Progress Indicator, and the World Bank Development Indicators are examples of the range of efforts to been designed to spur further work on the regular production of broader measures of social welfare.

<sup>3</sup> United Nations, Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development and World Bank (1993), Abraham & Mackie (2005) and Nordhaus and Kokkelenberg, eds. (1999).

existing accounts to produce more relevant statistics.<sup>4</sup> For example, for many households, the performance of GDP over the last decade (1998–2008) does not seem to square with their personal experience. The growth in their take-home pay and bills seems to be very different from the growth of officially reported “real” disposable income. Yet data are readily available from BEA’s national accounts on the breakdown of incomes, taxes, consumer outlays, and the prices households confront. That data can be used to construct an estimate of real “discretionary” income that comes closer to what the average household is experiencing. Further information from Internal Revenue Service (IRS) and other existing data could provide further insights into the distributions of household incomes.

Using existing statistics from BEA’s accounts and data used in their development, it is possible to construct other new measures—and to highlight existing subcomponents of GDP—that would provide better indicators of, among other things, the differential impact of GDP growth across states, the sustainability of U.S. GDP growth, the adequacy of saving and investment, and emerging risks to the economy.

The next section of this paper discuss new measures of the distribution of growth across households, across regions of the country, and across different types of businesses. The last section of the paper discusses new measures of the sustainability of trends in investment, saving, asset values, and finance.

## **The Distribution of the Growth in Incomes Across Households, Regions, and Businesses**

### **Household Income**

The explanations for many of the differences between individual experiences of households and the picture of the economy captured in GDP, personal income and other aggregate statistics can be found by drilling down below the aggregate information in the national accounts and looking at the detailed components and supporting detail.

**Compensation.** Growth in real GDP, real disposable income, and real compensation must be first put on a per capita or per worker basis to reflect something closer to the average worker’s experience. Part of the growth in production and incomes simply reflects the growth in the labor force and that larger wage bill must be distributed across a larger labor force.

Workers and households also confront different prices than producers, and at times, these prices are quite different. For example, between the first quarter of 2007 and the third quarter 2008, rapid increases in energy costs resulted in consumer inflation, as measured

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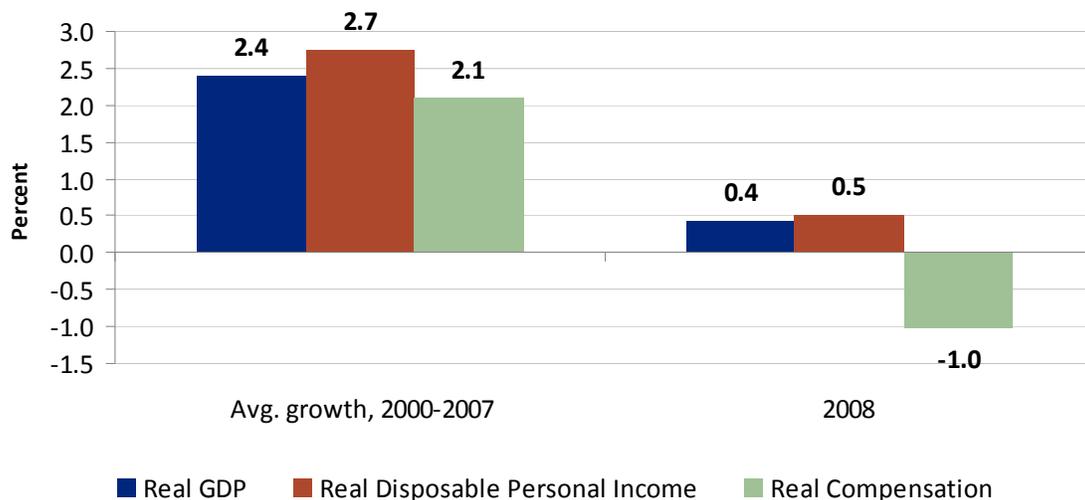
<sup>4</sup> For more information on BEA’s satellite account work see the following; IEEASAs: Landefeld. & Carson (1994), Household Production: Landefeld, Fraumeni and Vojtech (2009) and Landefeld & McCulla (2000), Transportation: Bingsong, Han, Okubo and Lawson (2000), Ownership Balance of Payments: Lowe (2009), R&D: Okubo, Robbins, Moylan, Sliker, Shultz and Mataloni (2006), Health: Aizcorbe, Retus and Smith (2008).

by BEA’s personal consumption expenditures price index, that rose at an average annual rate of 3.9 percent. In contrast, overall GDP inflation, which excludes the price of petroleum and other imports, rose at an average annual rate of 2.3 percent. As a result, growth in real GDP was 1.6 percentage points higher than the growth rate in real disposable income.

Taxes and noncash benefits also drive a wedge between the aggregates and the average workers’ experience. BEA’s measure of disposable income addresses the tax issue by deducting taxes paid by households on their income. However, an alternate cash measure of disposable income would also deduct employer contributions to pension funds and contributions for health insurance and other benefits.<sup>5</sup> These payments by employers are a real cost of production (which must be recorded in the double-entry NIPAs as income) and a real value to the employee. But when constructing a measure of cash income, non-cash payments by employers that are not available for current consumption should probably be deducted along with taxes. Because of the strong growth in employer “supplements,” payments by employers for pensions, health insurance plans, and government social insurance, the difference between total compensation and “take-home pay” can be large. Between 1967 and 2007, supplements, after adjustment for inflation, grew at an average annual rate of 3 percent, while real wages and salaries grew at an average annual rate of 1 percent.

Chart 1 illustrates the different perspectives on the economy that emerges by looking “below” the headline numbers. Between 2000 and 2007, the headline number for real GDP grew at a 2.4 percent annual rate, real compensation grew at a 2.7 percent annual rate, and real disposable personal income grew at a 2.1 percent annual rate.

Chart 1. Real GDP, real disposable personal income and real compensation

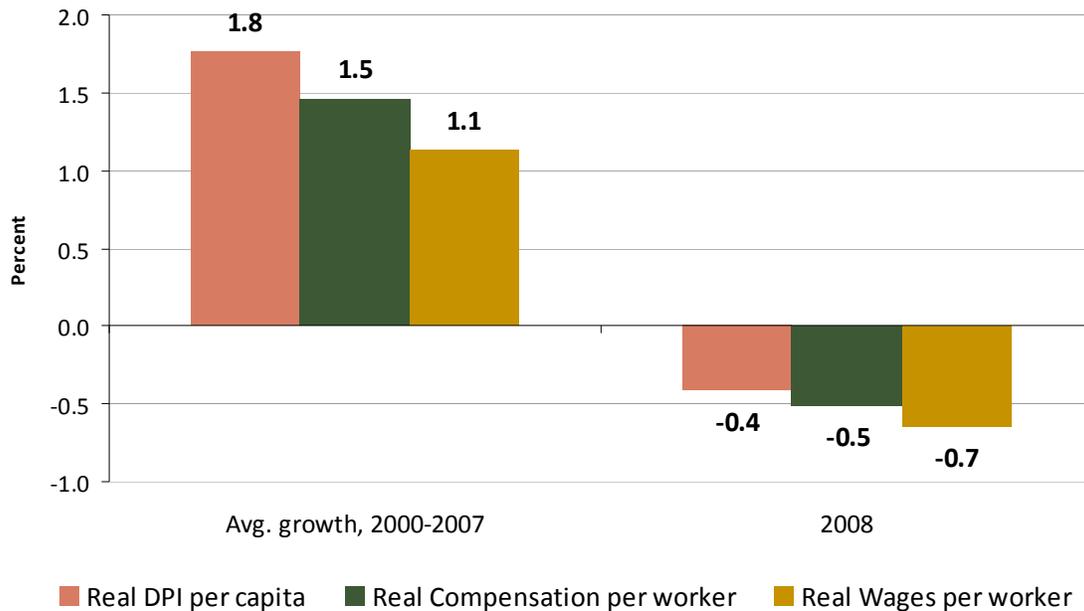


Source: BEA NIPA data

<sup>5</sup> It would also exclude the interest and dividends earned by pension funds earned by pension funds, which are included in personal income as part of personal interest and dividend income.

In comparison, over the same period, below-the-headline numbers grew more slowly, with real compensation per worker growing at an average annual rate of 1.5 percent, real wages per worker at an average annual rate of 1.1 percent, and real disposable personal income per person growing at an average annual rate of 1.8 percent.

Chart 2. Spendable income



Source: BEA NIPA data

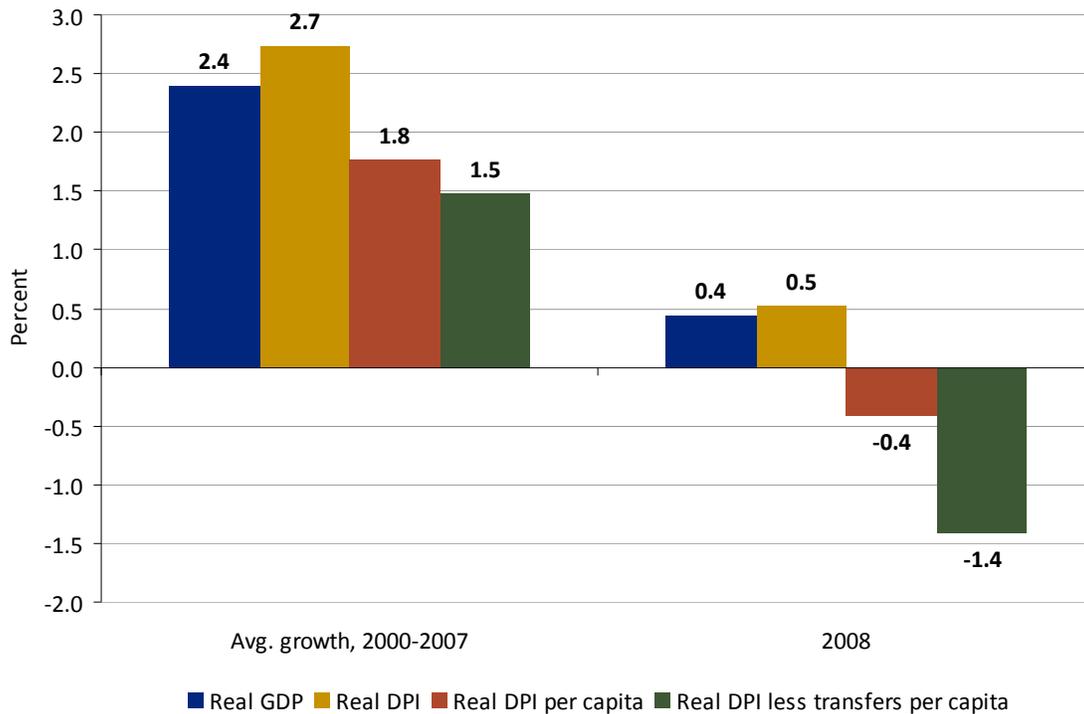
**Personal Income.** Household income, or what BEA calls personal income, is a broader measure than employment income and measures all income to households, including rent, interest income, dividends, and transfer payments. Transfer payments—such as social security, Medicare and Medicaid, unemployment insurance, and other government programs—are important additions to the picture of household income. Because these payments tend to be countercyclical, they have a large effect on growth in household income. The addition of transfer payments and other incomes is an important adjustment in moving from compensation and production to a broader measure of household well being. But what else is needed?

**Disposable income, transfers, and the business cycle.** BEA’s existing accounts provide two adjustments to household income that are good first steps in providing a measure of households’ economic welfare. One adjustment deducts taxes paid by households and provides a measure of disposable personal income, that is, the after-tax income available for consumption or saving. The other adjustment, a relatively new one, deducts transfer payments in order to provide a better picture of the state of the private economy over the course of the business cycle. This measure was introduced in the August 2009 comprehensive revision of the national income and product accounts.

In 2008, transfer payments and lower taxes associated with the economic stimulus acts helped boost real disposable personal income per capita. In 2008, personal transfer payments increased \$157.9 billion. Of that amount, approximately \$30 billion were for rebates to persons under the Economic Stimulus Act of 2008. The same act reduced personal current taxes \$65.7 billion and more than accounted for the overall decrease in personal taxes of \$58.5 billion in 2008. These counter-cyclical transfers can obscure changes in the components of income over the course of the business cycle, and they along with other transfer payments can cause differences across payers and recipients of the transfers that are not reflected in the existing NIPA income aggregates.

As can be seen in Chart 3, real GDP grew at an average annual rate of 2.4 percent over the last decade, and real disposable personal income grew at a 2.7 percent rate. Over the same period, real disposable income per capita grew at 1.8 percent rate, and real disposable personal income less transfers grew at 1.5 percent rate. The counter cyclical effect of government spending in 2008—discouraged elderly workers deciding to “retire” and sign up for social security and Medicare benefits and larger and longer claims for unemployment—is quite evident in the data for 2008; real disposable personal income per capita contracted 0.4 percent; excluding transfers, real disposable personal income fell 1.4 percent.

Chart 3. Household income: Alternative measures



Source: BEA NIPA data.

**Discretionary income.** A useful extension beyond BEA’s disposable income would be a measure of both the economic welfare of the average household and their ability to spend on “big-ticket” items over the course of the business cycles. Discretionary income measures the income left over after paying for “basic” household expenses. Another words, it measures the money that households can use for such items as college educations, autos, vacations, and entertainment or for saving.

In developing such a measure, the main question is what should be deducted as spending on the basics? The poverty literature is instructive in answering this question. The National Academy of Sciences *Report on Measuring Poverty* (1995) and a recent study by Blank and Greenburg (2008) on “Improving the Measurement of Poverty” suggest that thresholds be set in determining how much of spending on a set of necessities should be deducted from after-tax cash income to arrive at what they call “adjusted disposable income.” These thresholds might be set using data from the BLS Consumer Expenditure Spending (CES) survey on spending by lower income households, perhaps households with incomes between the 30<sup>th</sup> and 35<sup>th</sup> percentile, on such necessities as food, shelter, clothing, transportation, utilities, and medical care. These income-adjusted thresholds, which could be used in determining poverty, a measure of economic deprivation, differ from a discretionary income measure, or what Blank and Greenberg describe as a measure of whether the average family is facing “economic stress.”

Discretionary income, which is often confused with disposable income, is also used by investment firms to estimate funds available for saving or investment, by banks and credit card companies to estimate a customers ability to take on mortgages and additional consumer debt, by marketers to identify households with discretionary income to spend on their products, and by individuals and retirement planners to build investment and retirement plans and budgets. The definitions of discretionary income that are used are quite similar to those used in the poverty literature: income after taxes and spending on basic expenses such as rent or mortgage, utilities, insurance, medical, transportation, child care, property maintenance, and food.<sup>6</sup>

Deducting the amount that consumers actually spend on such goods and services as food, shelter, and medical care offers a notion of what households’ have left over to spend on more discretionary items. This measure does not aim to determine how much spending on clothes or houses is necessary. Indeed, if a household bought “too much” house, the fixed mortgage and other expenses for that house would be deducted along with all other households’ spending for housing. That might be seen as appropriate, however, in trying

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<sup>6</sup> For an example of the common definition of discretionary income, see [en.wikipedia.org/wiki/Disposable/Discretionary\\_income](http://en.wikipedia.org/wiki/Disposable/Discretionary_income); for a business definitions, see [www.investorwords.com/1483/discretionary\\_income.html](http://www.investorwords.com/1483/discretionary_income.html), or [www.businessdictionary.com/definition/discretionary-income.html](http://www.businessdictionary.com/definition/discretionary-income.html); or [www.investopedia.com/terms/d/discretionaryincome.asp?&viewed=1](http://www.investopedia.com/terms/d/discretionaryincome.asp?&viewed=1).

An alternative definition, sometimes used in special studies is those individuals with incomes significantly higher than those of households with similar demographic characteristics (Census Bureau and Conference Board, 1989).

to identify the expenses that are, in short-run at least, somewhat fixed, or less discretionary than other goods and services.

Exactly what should be deducted in deriving discretionary income will require further study. The definition will reflect the purpose of the measure. If the purpose is to derive a measure of growth in household income, then the items to be deducted might be defined as a group of basic goods. Such goods account for a smaller share of spending by higher income households than for lower income households. However, if the measure is intended as a measure for business cycle analysis, the definition might focus on goods and services whose share of spending tends to rise during downturns in economic activity as shrinking incomes cause households to reduce their spending on discretionary spending more than their spending on the basics.

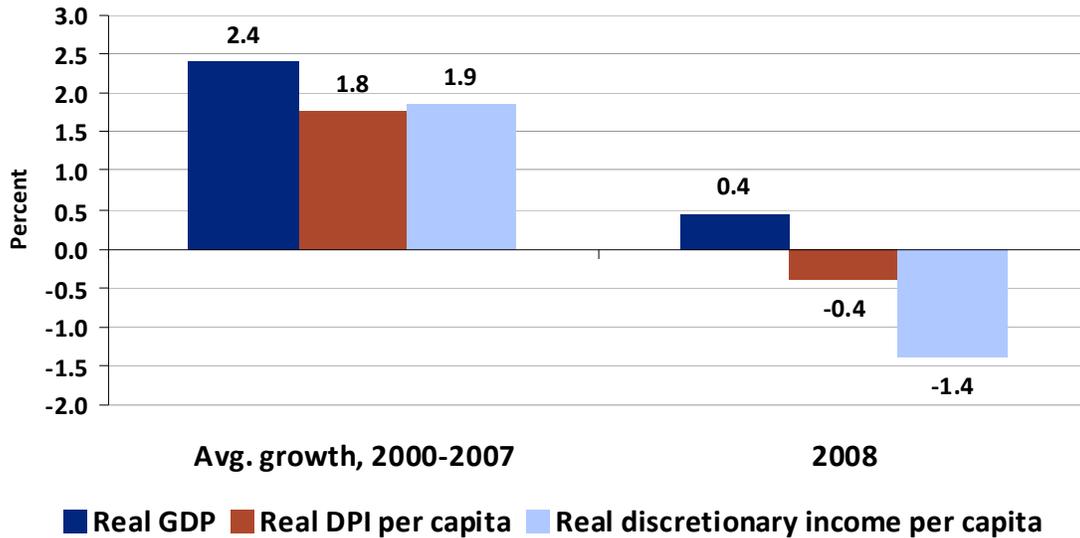
In addition to addressing the issue of the purpose of the measure, the definition of discretionary income will need to take into account the balance among complexity and accuracy and relevance. A simpler formulation that captures most of the desired characteristics and includes a list of what consumers intuitively think of as spending on the basics is more likely to be accepted and used than a complex and difficult to understand measure. Also, a simple indicator has the advantage of using monthly and quarterly data available from the NIPAs and can thus be used to efficiently provide regularly updated and easy to understand estimates of discretionary income.

Chart 4 illustrates what real discretionary income might look like. Over the last business cycle, the aggregate measure of growth, real GDP grew at an average annual rate of 2.4 percent. Real disposable income per capita, however, grew at a 1.8 percent annual rate, and real discretionary income per capita grew at an average annual rate of 1.9 percent. This larger growth rate reflects the lower inflation rate in discretionary income, which excludes energy costs, than in disposable income; in nominal terms, discretionary income grew 4.9 percent, while disposable income grew 5.1 percent. During the economic downturn of 2008, the differences are larger. Real GDP rose 0.4 percent, and real disposable personal income per capita fell 0.4 percent. Real discretionary income per capita fell 1.4 percent.

In addition to the differences in growth rates, there are significant level differences between disposable and discretionary income. Between 2000 and 2007, average real disposable personal income per capita was \$30,770, while average discretionary income was 47 percent or \$14,437 lower.

Discretionary income might prove helpful in assessing the spending that households have available to increase spending and saving over time and over the course of the business cycle. Given the larger differences between the 2008 estimates and those during the last expansion, the larger estimates of discretionary income is likely to be in household purchasing power during downturns and upturns in economic activity. Such estimates would be especially helpful if paired with the type of integrated financial and household statistics described below to analyze changes in saving, debt, and net worth.

Chart 4. Real GDP & real discretionary income<sup>7</sup>



Source: Experimental estimates based on existing BEA NIPA data

**Cash income.** As noted above in the section on employment income, cash income (after the deduction of taxes and noncash income such as supplements) may be seen as a useful measure of resources that households perceive as available for current-period consumption and saving. However, actually calculating such a measure such as discretionary income would be difficult and would require disaggregation and separate estimates for different groups. For example, the discretionary income of working and retired workers might look quite different. Working families' cash incomes would be reduced by taxes and contributions to pensions and health plans, while retired households' cash incomes would be raised by transfer payments and pension payments. Further, working households may have higher spending on housing and other the basics relative to retired households. Such decomposition is possible, but would require income, spending, and transfer payment data from such sources as the Bureau of Labor Statistics (BLS) Survey of Consumer Expenditures, IRS data, Census Bureau CES data, and federal and state and local budget and program information.

**Distribution of Incomes.** Per capita or average measures of income often do not accurately reflect the economic position of the median household. Adding information on the distribution of income to the national income accounts could significantly aid in tracking the distribution of the gains from economic growth. The ability to decompose growth in the context of the national accounts is especially useful because the accounts provide the broadest available picture of incomes. This value of income includes the non-cash value of housing, financial, and other services, as well as noncash employer

<sup>7</sup>Discretionary income refers to income generated from the economy available for discretionary spending by households. This measure of Income excludes spending on such basics as food, shelter, clothing, child care, utilities, out of pocket medical care expenses, transportation and interest payments on consumer debt. Source: BEA NIPA data, deflated using PCE less food and energy price index.

contributions for health pension and other benefits. It also adjusts for underreporting of income and is broader than measures of hourly wages for production or non-supervisory work, tax-based administrative data, or survey-based measures of median household income, which tend to under-represent both noncash income and the incomes of low and high income groups. As a result, national accounts-based estimates of average incomes have led to discussions over the gains from economic growth. The main speculation has been on the extent to which the higher average income growth from national accounts reflected a more complete picture of income or to growth in average income that exceeded that of median income.

In recent years, Emmanuel Saez and Thomas Piketty have extensively used individual income tax data to study the evolution and composition of income and wage inequality in the United States. In examining the income share of the top decile, Saez and Piketty found that a large share of the distributional fluctuations are isolated in the share of income and wages accruing to the top 1 percent of the population. In his most recent calculations, Saez reports that between 1993 and 2006, the average real income per family in the bottom 99 percent grew at about 1.1 percent per year. During the same period, however, average real income growth per family for the top 1 percent was 5.7 percent, meaning that over this 13 year period the top 1 percent of families accounted for about 50 percent of total income growth. In addition, in 2002–2006, Saez reports that the top 1 percent accounted for almost 75 percent of income growth. According to Saez, the enormous growth in the income share of the top 1 percent can be attributed to the concentration of wages and salary growth accruing to the top 1 percent of wage earners, which increased to 12 percent in 2006 from 5.1 percent in 1970.

Using such data to develop estimates of the distribution of personal income in the national accounts is not a new concept. Kuznets recognized the value of distributional measures while working on *National Income and Its Composition, 1919-1938* (1941). Estimating difficulties in large part caused by data limitations delayed the release of his distributional analysis until *Shares of Upper Income Groups in Income and Savings* (1953), in which he developed estimates of the share of income accruing to the top 5 percent of the population. The importance Kuznets placed on the study of the distribution of income was also apparent in his 1955 presidential address to the American Economic Association, which examined income inequality and the factors determining secular trends in income inequality.

In the past BEA produced estimates of the nation's purchasing power according to the size of family income and the distribution of income across families. The first estimates were published in 1953, *Income Distribution in the United States by Size, 1944–1950*. The estimates were useful for marketing studies and to researchers assessing the economic welfare and purchasing power of households. These estimates were periodically updated in articles in the *Survey of Current Business* until they were discontinued in 1965 due to lack of resources to update the estimates.

Increased availability of administrative tax data, technological advances in data storage capacity, and computing power provide the potential to add a distributional element to

existing measures of income in the national accounts. Today, it is increasingly important that we understand not only how income from current production is shared between labor and capital but also how that income, and the purchasing power associated with it, is shared amongst households in the economy and why.

### **Regional income**

Two adjustments would be useful in providing alternative measures of regional income. The first adjustment would be to provide a cash basis measure of income, which would be useful in measuring the cash income available to each region. In BEA's regional accounts, state, metropolitan area, and county personal income from pensions is measured by the expenses of production; personal income includes the contributions of employers to pension funds and the earnings on those investment funds, rather than the income paid to retirees from the fund.<sup>8</sup> Calculating income on a cash basis, which is counting actual money received instead of contributions to a pension, shows that the amount of income varies widely across states. Chart 2 illustrates the effect of recording pension incomes on a cash basis by state. Areas with large pension contributions—such as Washington D.C., Maryland, and Virginia, each with a large number of federal workers—are net losers. States such as Florida and other states with large retirement populations and lots of actual income from retirement funds (and lower wage and salary incomes) tend to be net gainers.

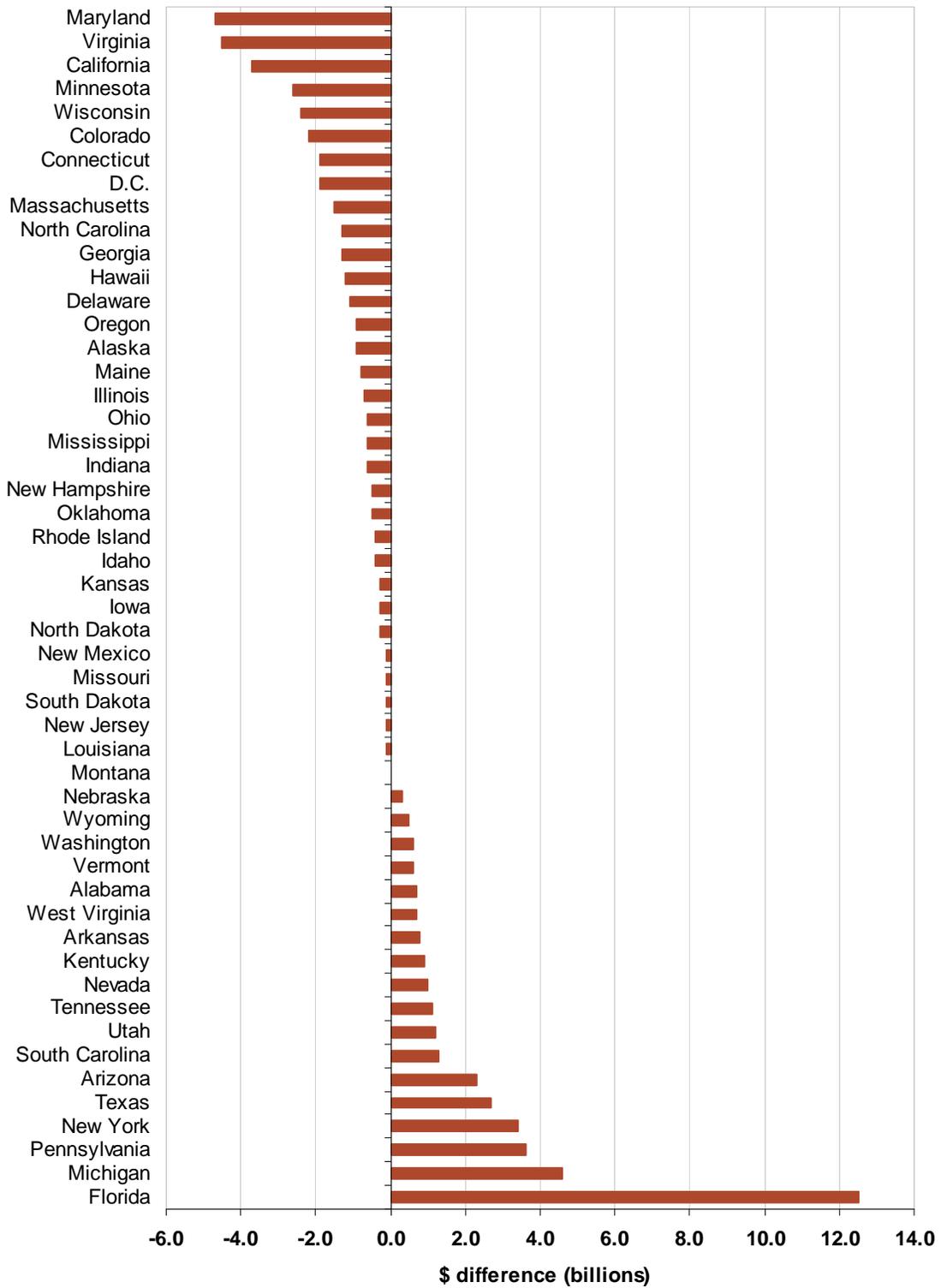
Another adjustment would be to develop estimates of the “real” incomes received by households across regions by adjusting for differences in regional prices. Chart 3 uses experimental work by BEA and BLS on regional prices to develop illustrative real estimates by state.<sup>9</sup> As can be seen, there are significant differences in “real” per capita personal income due to differences in prices across states. More rural, lower cost-of-living states—such as West Virginia, North Dakota, and Missouri—would see their income per capita raised relative to urban and higher cost of living areas such as New York, Washington DC, and Hawaii.

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<sup>8</sup> The pension earnings are recorded as owned by current workers and counted as part of personal interest and dividend income.

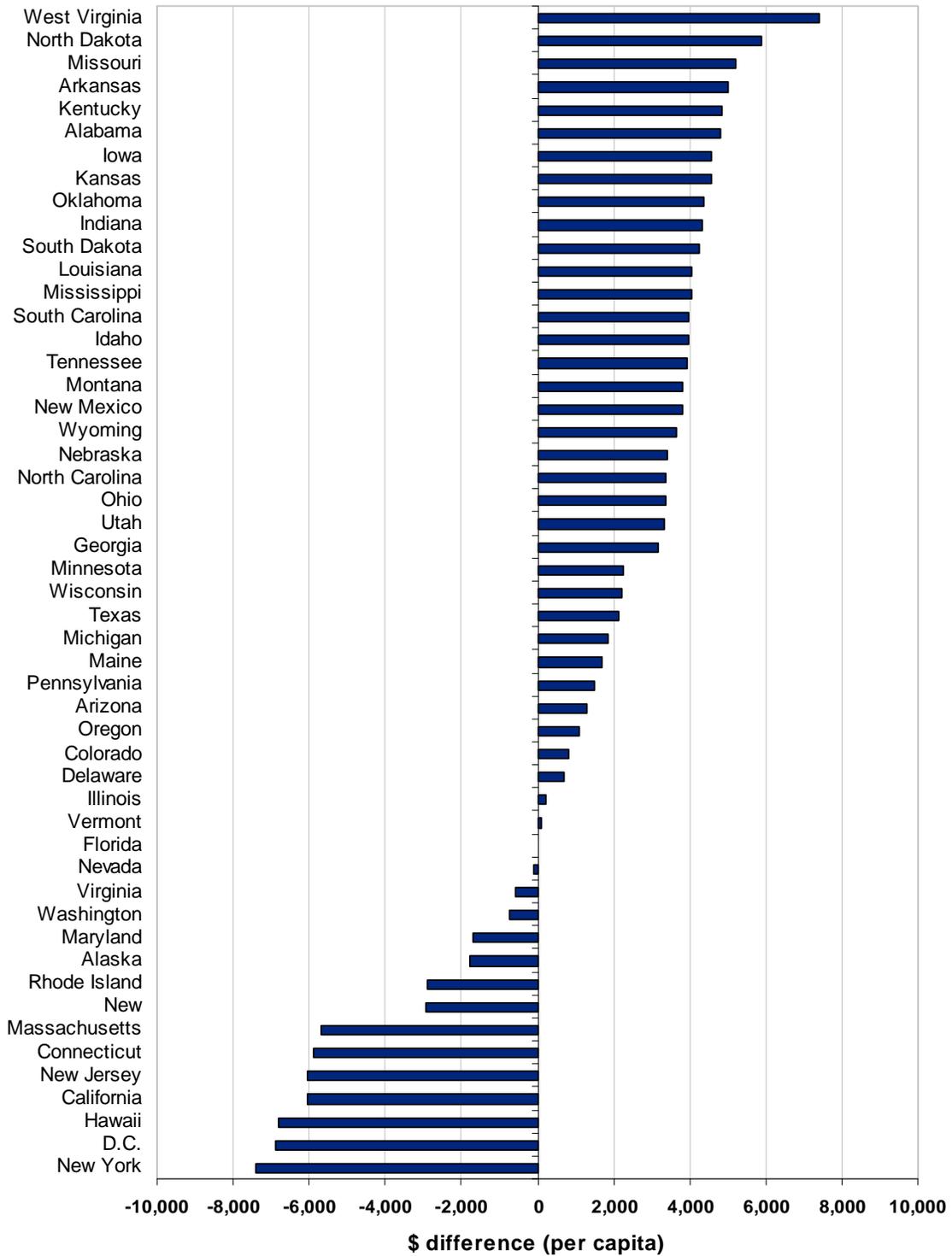
<sup>9</sup> Bettina Aten and Roger D'Souza, “Regional Price Parities: Comparing Price Level Differences Across Geographic Areas, Survey of Current Business, November 2008; and Bettina Aten. Inter-Area Price Levels: An Experimental Methodology, *Monthly Labor Review*, September, 2006.

Chart 5. Difference of including retirement income in state of current residence



Source: Experimental estimates based on existing BEA regional data.

Chart 6. Difference after adjustment for regional prices



Source: Aten & D'Souza, 2008

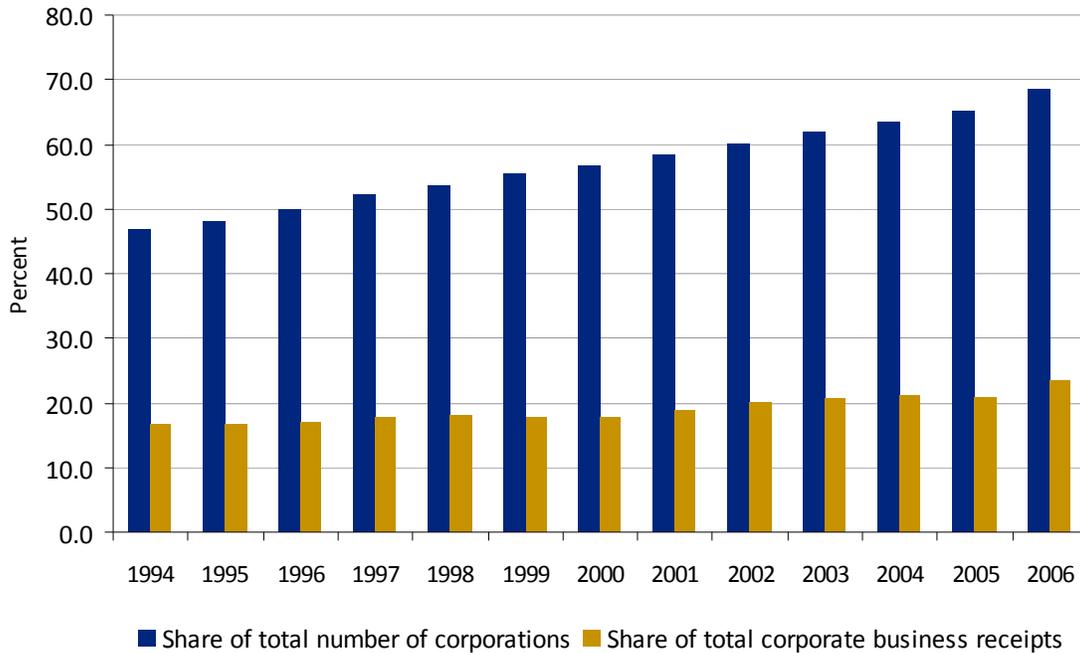
## **Business income**

In addition to wages and salaries, income from sole proprietors, partnerships and other small businesses is an important component of household income and indicator of how well the average household is doing. Despite the importance of this type of income, there is no integrated picture of small business activity in the national accounts, and existing aggregates of business activity and income often obscure the differential change in the condition of small versus large businesses and the change across industries and regions. Business income in the national accounts is split between corporate and noncorporate income; and within noncorporate, between farm and nonfarm income. This limited detail provides little information to aid policy makers in formulating the many programs targeting assistance to small business.

A significant portion of business income in the NIPAs is currently benchmarked to IRS tax return data. In addition to their current importance in measuring aggregate business, tax data can also be a rich source of information for measuring the contributions made to GDP and household income by small businesses. Alternative measures of business income could be considered that ignored organizational form (that is, corporate versus proprietors' income), that better isolated business income more directly passed through to households, or that provided information regarding contributions to business income and its growth by asset size or size of total business receipts.

It could be argued that the current distinction between corporate and noncorporate business income obscures the economic contributions of certain small businesses choosing to be organized as Subchapter S-corporations (S-corps). Unlike generally larger Subchapter C-corporations (C-corps), S-corps do not pay a corporate level income tax and for tax purposes, business income is passed directly through to business owners. In the national accounts, business income and profits of both C-corps and S-corps are aggregated in the measure of corporate profits. This presentation masks the differential growth rates and changing contributions to corporate profits between C-corps and S-corps in recent years. For example, according to IRS data, between 1994 and 2006, S-corps as a share of the number of total corporate businesses increased from 46.7 percent to 68.4 percent. As a share of total business receipts for corporations, the share attributable to S-corps increased from 18.3 percent in 1994 to 26.2 percent in 2006.

Chart 7. S-Corp share of total number of business and total business receipts



Source: IRS Statistics of Income

### Assessing the Sustainability of Trends in the Economy

Public and private decision makers tasked with assessing the sustainability of trends in the economy would also benefit greatly from highlighting various data that are already included in the national accounts or could be derived from the existing national accounts and their underlying source data..

#### Net domestic product and net investment

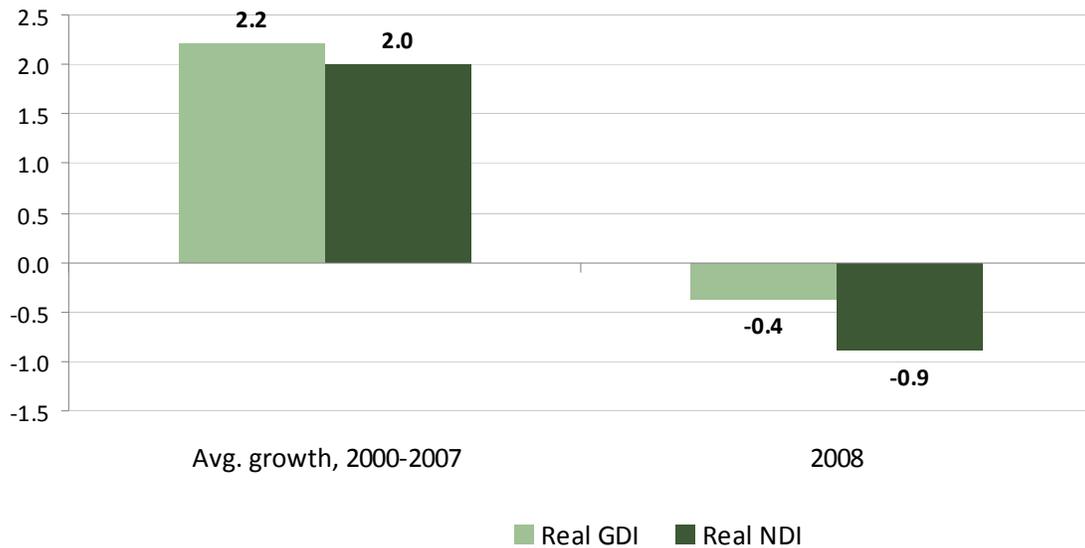
Since the U.S. national accounts were developed in the 1930s by Simon Kuznets and his colleagues, there has been recognition of the need to calculate a measure of income and production that nets out the capital and natural resources used up in production. Similarly, business accounting deducts the cost of depreciation and depletion in calculating profits.

In the national accounts, the “G” in GDP stands for gross to indicate that depreciation has not been subtracted out. Net domestic product is equal to GDP less depreciation, or what BEA calls the consumption of fixed capital. Net domestic product is a rough measure of sustainable income, that is, the amount of consumption that is sustainable after putting aside the amount of resources necessary to replace the productive capital stock used up in production. Alternatively, it can be described as the amount that can be consumed without reducing the consumption of future generations.

BEA has produced estimates of net domestic product and net domestic income, for decades, but they have received little attention. Yet over time, real net domestic product and real net domestic income can produce significantly different estimates than the commonly referenced GDP and GDI estimates. For example, between 2000 and 2007 gross domestic income grew at a 2.2 percent annual rate, and net domestic income grew at a 2.0 percent rate. During the downturn in 2008, gross domestic income declined by 0.4 percent, while net domestic income declined by 0.9 percent.

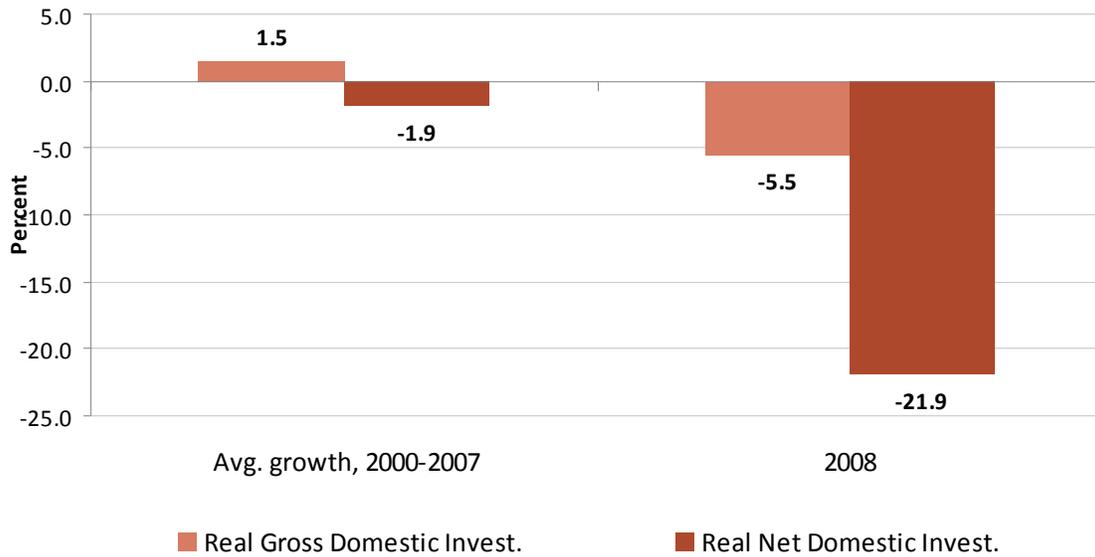
BEA also produces estimates of net domestic investment, which deducts depreciation from gross domestic fixed investment for a measure of net additions to wealth. Like net domestic income, net fixed investment looks quite different from gross investment. For example, between 2000 and 2007, on average, nearly 62 percent of gross business investment simply replaced capital used up in the production process; only \$927 billion of the nearly \$2.4 trillion in gross business fixed investment represented a net addition to the future productive potential of the domestic capital stock. Over time, the two measures also produce quite different results. For example, over the last business cycle, gross investment grew at 1.5 percent, while net domestic investment contracted 1.9 percent.

Chart 8. Real gross domestic income and real net domestic income



Source: BEA NIPA data.

Chart 9. Gross domestic investment and net domestic investment



Source: BEA NIPA data.

### Asset Values, Saving, and Consumption

The notion of sustainability is also relevant to the housing and financial bubbles that the nation experienced over the last decade and their impact on saving, consumption, and overall economic performance.

The business and popular press seem to have decided that few people anticipated the collapse in U.S. housing and equity prices. Even fewer accurately anticipated the suddenness and depth of the drop in housing and stock markets, which spread the problems in U.S. asset markets around the world.

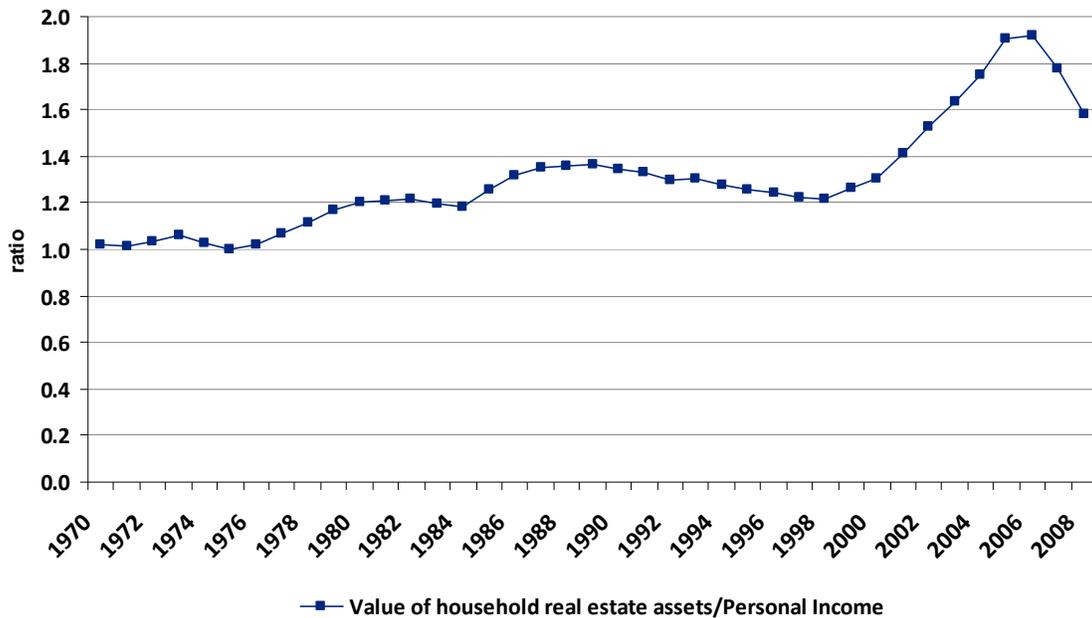
There seemed to be a consensus during the bubble that U.S. housing and stock prices were “too high” to be sustained and that consumers spent “too much” and saved too little. Since the mid-1990s, consumers generally depended on the appreciation of their homes and portfolios to do their saving for them. However, most experts seemed to think that a correction would occur smoothly over time, with a slowing in the rate of increase in house and equity prices below overall growth and inflation, or through a normal (mild) cyclical correction.

Although the existing GDP and related accounts did a good job in measuring the evolving path of the real economy, supplementary data derived from integrated real and financial accounts might have helped policymakers, analysts, and investors by highlighting how out of line housing and equity prices were and how big an adjustment was required. Unfortunately, while much of the information was available, it was not presented in a fashion that attracted attention or affected policy in the way that GDP, inflation, or the unemployment rate affect monetary policy. While some attribute the current downturn to the effect of monetary policy on asset inflation and of regulatory policies that failed to

confront excessive risk taking, good statistics can play a key role in forming public policy by highlighting the magnitude of emerging problems and by aiding in the building of public consensus about policy action.

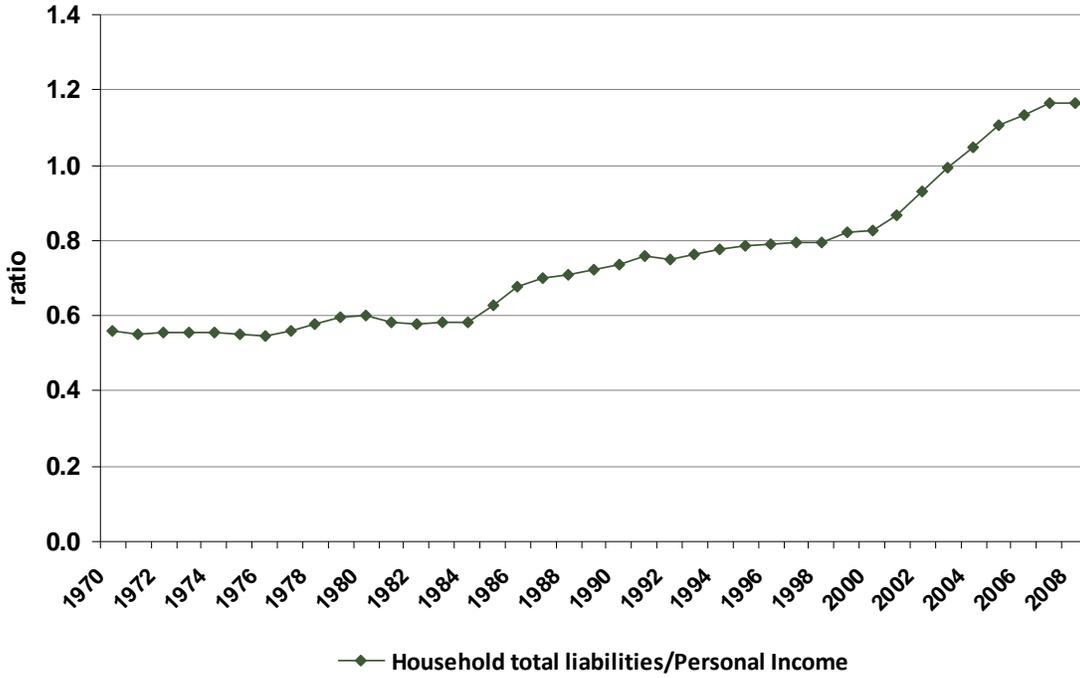
Chart 10 shows the rise in the value of the U.S. housing stock relative to personal income and GDP. Between 2000 and 2007, the value of the U.S. housing stock rose from 1.1 times personal income to 1.4 times personal income, as housing prices rose an average 9.2 percent annually. Meanwhile, personal income rose an average 4.8 percent annually. While part of this increase was driven by a drop in mortgage rates, ultimately housing prices are dependent on personal income or expected further capital gains on housing investment. At some point, the price increase became an unsustainable bubble. The regular publication of ratio data such as the ratio of the value of housing to personal income shown in chart 10 along with data on leveraging in housing markets shown in chart 11 might have been helpful in recognizing the size and extent of that bubble earlier. Additional ratio data in Chart 12 of household net worth to personal income – which was rising over this period – help to understand households’ willingness to take on incremental debt.

Chart 10: Residential fixed assets and personal income



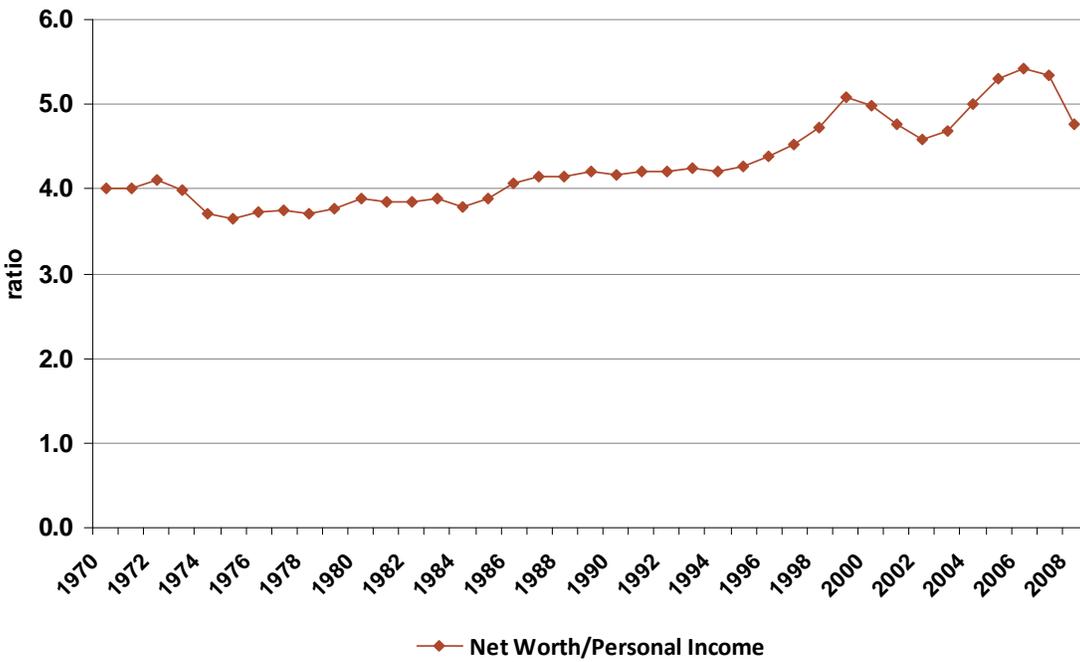
Source: BEA NIPA and Federal Reserve Flow of Funds data.

Chart 11. Household liabilities and personal income



Source: BEA NIPA and Federal Reserve Flow of Funds data.

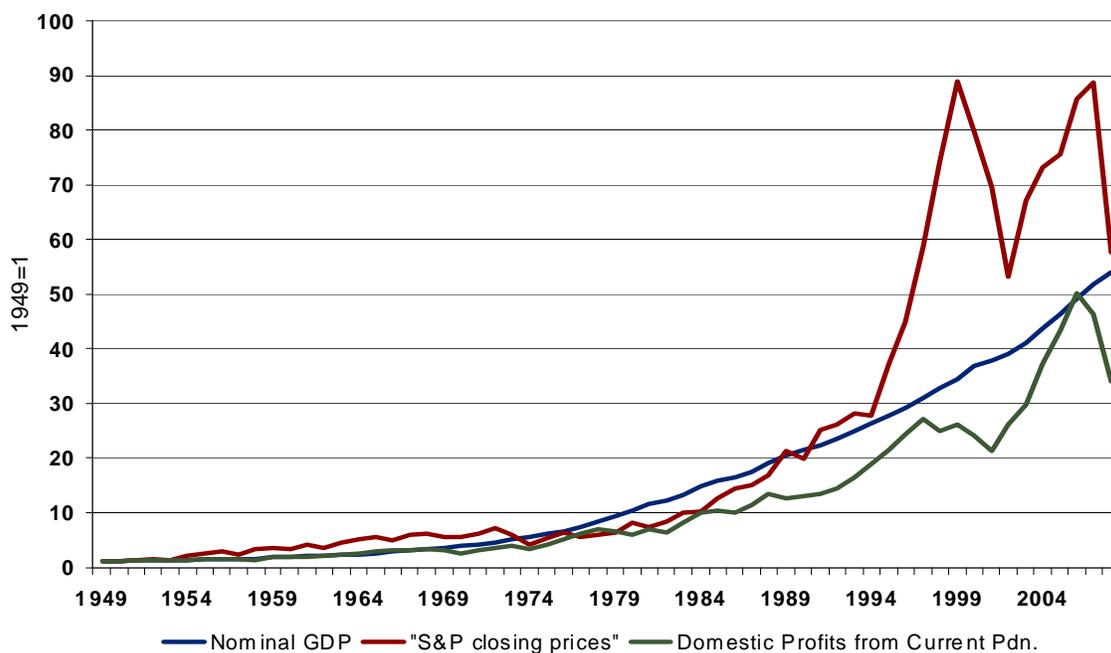
Chart 12. Household net worth and personal income



Source: BEA NIPA and Federal Reserve Flow of Funds data

Chart 13 shows the rise in U.S. equity prices relative to profits and GDP. For most of the post-WWII era, the S&P stock price index rose at roughly the same rate as GDP and corporate profits. This makes sense because over time growth in stock prices must come from growth in the economy or a higher rate of return to capital investments. However, after the mid-1990s, U.S. stock prices—even after accounting for the cyclical drop in profits in 2000—soared relative to GDP and corporate profits. Part of the rise was based on the perception that the United States had entered a period of higher economic growth driven by technology. And as can be seen from chart 13, while there was a bump-up in economic growth above the slower growth experienced since the early 1970s, it was not sufficient to explain “irrational exuberance” seen in financial market expectations, nor was it particularly high in the context of long-term growth

Chart 13: Growth in equity prices relative to GDP & NIPA profits



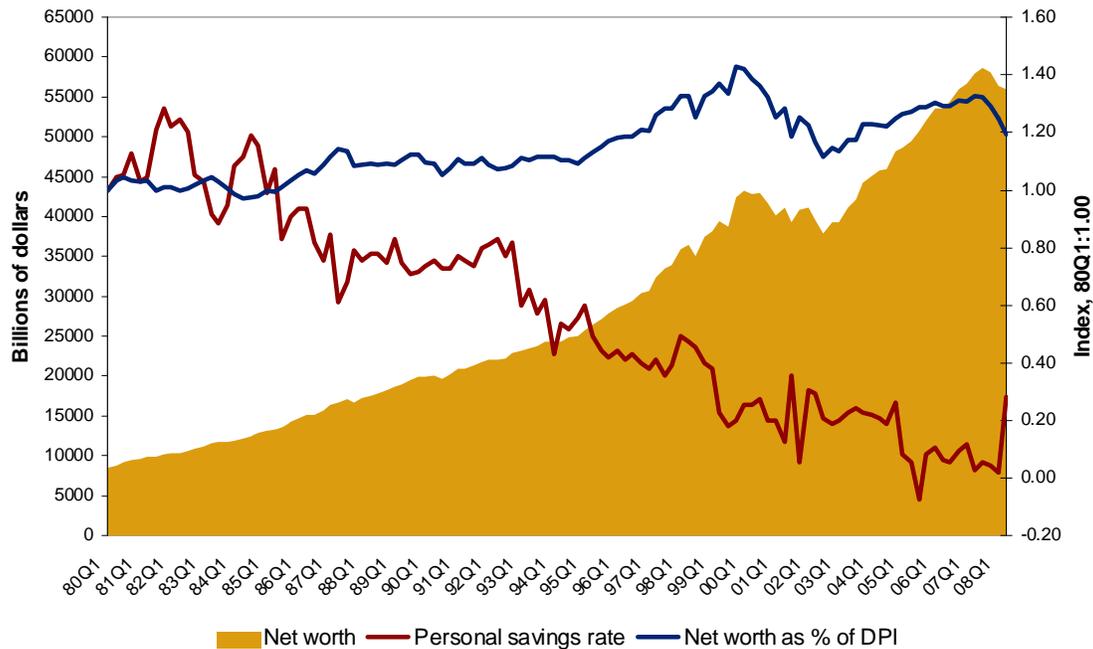
Source: BEA NIPA data, Standard and Poor’s data.

Chart 14 shows the share of the increase in household net worth (saving) that came from saving out of current income as compared with capital gains on homes or investments. Between 2000 and 2007, households saw their net worth rise from \$42.0 trillion to \$62.6 trillion.<sup>10</sup> In response, households saw little need to save out of current income; the personal saving rate dropped from 2.3 percent to 0.6 percent. There seemed to be little need for households to be concerned about the future because “saving” thorough appreciation in their portfolio was more than offsetting the drop in their saving out of current income, and the ratio of net worth to disposable income was actually increasing. These unsustainable trends—based on the unsustainable rise in housing and equity

<sup>10</sup> Federal Reserve Board, Flow of Funds data available: <http://www.federalreserve.gov/econresdata/default.htm>

prices—not only had significant implications for the adequacy of household retirement assets but also significant implications for the U.S. and world economy; U.S. saving out of current income has risen significantly since the recession began, and the share of U.S. GDP accounted for by consumer spending has fallen to below 70 percent.

Chart 14. Household asset values and savings

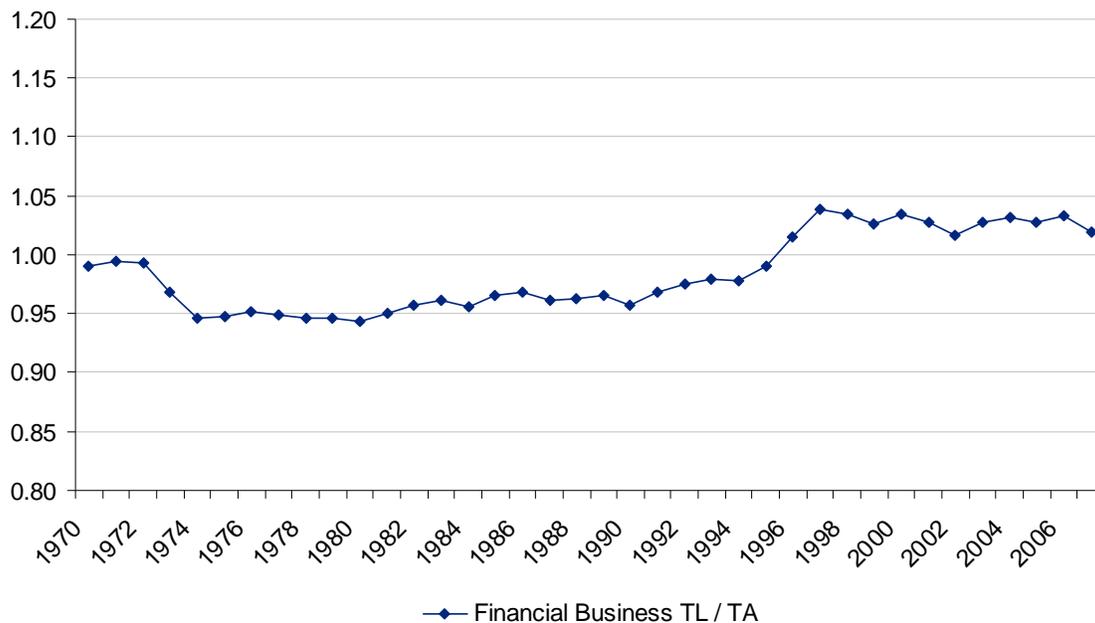


Source: BEA NIPA data and Federal Reserve Flow of Funds data.

These figures, which are based on available data, illustrate how far out-of-line the prices were in housing and stock markets and the extent to which the household saving rate out of current income was unsustainable. Unfortunately, these charts and associated ratios were not produced or highlighted by BEA, which produces the U.S. GDP, personal income, and profits data, or the Federal Reserve Board, which produces the U.S. domestic financial and household balance sheets.

There was also a gap in macroeconomic data to warn of the growing imbalances in credit markets. The available data in chart 15 only show a slight higher average leverage ratio in the financial sector, 1.03 beginning in the late 1990's compared with an average ratio of .97 over the previous two decades, indicating that the U.S. data are too aggregate to isolate the dramatic increase in leveraging that was taking place in mortgage banks, other financial institutions, and special purpose entities.

Chart 15. Financial business sector leverage



Source: BEA/FRB Integrated U.S. Macroeconomic accounts

Because the data were too aggregated, detailed data on maturity to identify misalignment of assets and liabilities—such as detailed data by type of instrument, such as how much of U.S. international bond sales were of collateralized sub-prime loans—were also missed.

A more complete list of data that would be required to address the gaps in the financial data include: 1) more complete data on those institutions that played a large role in the crisis: hedge funds, private equity funds, structured investment vehicles, and 2) more detailed data by type of instrument, by maturity, on valuation by type of instrument, by ultimate owner rather than counterparty and on special purpose entities, and 3) more data on leverage by institution and instrument.

All of this data should be collectible through the existing reporting systems of the Treasury and Federal Reserve Board and should correspond with information required under any new regulatory reporting systems that emerge from the proposals currently before the Congress.

Through new data and the publication of charts and analytic ratios, BEA could provide additional tools for macroeconomic analysts and policymakers. In the past, BEA produced a monthly journal, *Business Conditions Digest*, and a special Cyclical Indicators section of the *Survey of Current Business* that presented analytic information on evolving economic conditions in charts and ratios. The *Business Conditions Digest* and the Cyclical Indicators section were eliminated due to budget constraints. While the

return to the publication of the leading indicators component of those charts and ratios is not consistent with the Bureau's mission and would be duplicative of private sector efforts, the publication of selected ratios and data on sustainability, such as those discussed above, might be an efficient means of providing economists with tools which they could use to address the integration of risk, finance, and the real economy currently being called for by voices within and outside the economic profession.<sup>11</sup>

### **Next Steps**

This paper has presented possible alternative measures of economic activity that could expand the usefulness of the existing national accounts in understanding the distribution of the growth in incomes and the sustainability of trends in the economy and their implications for future growth. Few of the proposals here are completely new, and some of the suggestions are nearly as old as the initial set of national income account developed by Kuznets and others. However, the magnitude of the current downturn and the differences between aggregate growth and growth across households, sectors, and regions of the country suggest the need for a review of the use of the national accounts, which were first developed during the great depression.

The development of such new data will follow the steps that BEA has always taken in the development of new estimates. First, the methods, source data, and experimental estimates will be subjected to an internal and external review to ensure that they meet the bureau's standards for accuracy, reliability, timeliness, and relevance. Second, prototype estimates will be published for public comment by users of the national accounts. Finally, after this period of review and adjustment is completed, BEA will begin regular publication of these new and more detailed data as part of its regular monthly, quarterly, and annual estimates.

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<sup>11</sup> See Coy (2009), The Economist (2009) and Stiglitz (2009).

## References

- Abraham, Katherine G. and Christopher Mackie, eds, (2005). *Beyond the Market: Designing Nonmarket accounts for the United States*, Washington D.C., National Academy Press.
- Aizcorbe, Ana M., Bonnie A. Retus, and Shelly Smith. (2008, May). "Toward a Health Care Satellite Account," *Survey of Current Business* 88: 24-30.
- "What Went Wrong with Economics." (2009, July). *The Economist*. Retrieved from [www.economist.com/opinion/PrinterFriendly.cfm?story\\_id=14031376](http://www.economist.com/opinion/PrinterFriendly.cfm?story_id=14031376)
- Aten, Bettina H. and Roger J. D'Souza (2008, November). "Research Spotlight: Comparing Price Level Differences Across Geographic Areas," *Survey of Current Business* 88: 64-38.
- Blank, Rebecca M. and Mark H. Greenburg (2008, December). "*Improving the Measurement of Poverty*, Discussion Paper 2008-17, The Hamilton Project: The Brookings Institution. Retrieved from: [www.brookings.edu/papers/2008/~media/Files/rc/papers/2008/12\\_poverty\\_measurement\\_blank/12\\_poverty\\_measurement\\_blank.pdf](http://www.brookings.edu/papers/2008/~media/Files/rc/papers/2008/12_poverty_measurement_blank/12_poverty_measurement_blank.pdf)
- Citro, C. and R. Michaels, eds. (1995). *Measuring Poverty: A New Approach*. Washington D.C.: National Academies Press.
- Coy, Peter. 2009. "What Good Are Economists Anyway?" *BusinessWeek*. Retrieved from [www.businessweek.com/magazine/content/09\\_17/b4128026997269.htm](http://www.businessweek.com/magazine/content/09_17/b4128026997269.htm).
- Dickinson, John. 1934. *National Income, 1929-32*, United States Government Printing Office.
- Fang, Bingsong, Xiaoli Han, Sumiye Okubo and Ann M. Lawson. 2000. "U.S. Transportation Satellite Accounts for 1996." *Survey of Current Business* 80 (May): 14-23.
- Kruger, Alan B., Daniel Kahneman, David Schkade, Norbert Schwarz, Aurthur A. Stone. "National Time Accounting: The Currency of Life." In *Measuring the Subjective Well-Being of Nations: National Accounts of Time Use and Well-Being*, edited by Alan B. Krueger. Forthcoming.
- Kuznets, Simon. 1941. *National Income and Its Composition, 1919-1938*. United States Government Printing Office.
- Jorgenson, Dale W., J. Steven Landefeld, and William D. Nordhaus, eds. 2006. *A New Architecture for the U.S. National Accounts*. Chicago: The University of Chicago Press.

Landefeld, Steven J. "National Time Accounting and National Economic Accounting." In *Measuring the Subjective Well-Being of Nations: National Accounts of Time Use and Well-Being*, edited by Alan B. Krueger. Forthcoming.

Landefeld, Steven J., Barbara M. Fraumeni and Cindy M. Vojtech. 2009 "Accounting for Household Production: A Prototype Satellite Account Using the American Time Use Survey," *Review of Income and Wealth* 52:2 (June): 205-255.

Landefeld, Steven J. and Carol S. Carson. 1994 "Integrated Economic and Environmental Satellite Accounts," *Survey of Current Business* 74 (April): 33-49.

Landefeld, Steven J. and Carol S. Carson. 1994 "Accounting for Mineral Resources: Issues and BEA's Initial Estimates," *Survey of Current Business* 74 (April): 50-72.

Landefeld, Steven J. and Stephanie H. McCulla. 2000, "Accounting for Nonmarket Household Production Within a National Accounts Framework," *Review of Income and Wealth* 46:3 (September): 289-307.

Lowe, Jeffery H. 2009. "An Ownership-Based Framework of the U.S. Current Account, 1998-2007," *Survey of Current Business* 89 (January): 62-64.

Nordhaus, William D., and Edward C. Kokkelenberg, eds. 1999. *Natures Numbers: Expanding the National Economic Accounts to Include the Environment*. Washington, DC: National Academy Press.

Nordhaus, William D and James Tobin. 1973. "Is Growth Obsolete." In *The Measurement of Economic and Social Performance*, ed. Milton Moss, 509-534. New York: Columbia University Press.

Okubo, Sumiye, Carol A. Robbins, Carol E. Moylan, Brian K. Sliker, Laura I. Shultz and Lisa S. Mataloni. (2006, December). "BEA's 2006 Research and Development Satellite Account," *Survey of Current Business* 86: 14-27.

Office of Business Economics, U.S. Department of Commerce. 1953. "Income Distribution in the United States by Size, 1944-1950," *Survey of Current Business*, (Supplement).

Palumbo, Michael G., and Jonathan A. Parker. (2009, February). "The Integrated Financial and Real System of National Accounts for the United States: Does It Presage the Financial Crisis?" *American Economic Review* 99: 80-86.

Stiglitz, Joseph E. (2009, September). "GDP Fetishism," *The Economist Voice*. Retrieved from: [www.bepress.com/cgi/viewcontent.cgi?article=1651&context=ev](http://www.bepress.com/cgi/viewcontent.cgi?article=1651&context=ev).

Stiglitz, Joseph E., Amartya Sen, and Jean-Paul Fitoussi. 2009. *Report by the Commission on the Measurement of Economic Performance and Social Progress*.

Retrieved from The Commission on the Measurement of Economic Performance and Social Progress website: <http://www.stiglitz-sen-fitoussi.fr/en/index.htm>.

Picketty, Thomas and Emmanuel Saez. 2009. "Income Inequality in the United States, 1998-2002"

United Nations, Commission of the European Communities, International Monetary Fund, Organisation for Economic Co-operation and Development and World Bank. 1993. *System of National Accounts, 1993*. New York: United Nations.