

Supplementing Per-Capita GDP as Measure of Well-Being

by

Robert H. Frank

Johnson Graduate School of Management

Cornell University

rhf3@cornell.edu

Abstract:

A society whose primary published index of economic well-being is per-capita GDP will inevitably tilt its policies in the direction of promoting growth in this index, even at the expense of other factors known to promote well-being. That per-capita GDP is an imperfect index of economic welfare is not news. The lesson of recent work is that its weaknesses are more serious than many believe. Two particularly important shortcomings are that it takes no account of distributional issues in well-being, nor does it consider how long citizens must work to generate a given level of per-capita GDP. I propose an easily calculated supplement to the traditional per-capita GDP reports that sidesteps both shortcomings.

Presented at the American Economic Association meetings in Denver, Colorado, January 7, 2011.

A society whose primary published index of economic well-being is per-capita GDP will inevitably tilt its policies in the direction of promoting growth in this index, even at the expense of other factors known to promote well-being. That per-capita GDP is an imperfect index of economic welfare is not news. But recent work suggests that its weaknesses are far more serious than many believe.¹

Two particularly important shortcomings are that it takes no account of distributional issues in well-being, nor does it consider how long citizens must work to generate a given level of per-capita GDP. These shortcomings are my focus here. Drawing on the burgeoning literature on the determinants of subjective well-being, I suggest an easily calculated welfare measure to supplement the traditional per-capita GDP reports.

Relative Income and Well-Being

Although traditional economic models assume that utility depends only on absolute consumption, compelling evidence suggests that it also depends heavily on the context in which consumption occurs. In large part, this is because the human brain requires a frame of reference within which to make any evaluative judgment.

Consider, for the example, a consumer who is pondering whether his house is adequate. The answer to that question will almost always depend on the quality and size distributions of houses in the same local environment. Decades ago, I spent two years as a Peace Corps Volunteer in rural Nepal, during which time I lived in a two-room house with no plumbing or electricity and a grass roof that leaked during the heaviest monsoon

¹ For a comprehensive summary of this work, see Joseph E. Stiglitz, Amartya K. Sen, Jean-Paul Fitoussi, [Report by the Commission on the Measurement of Economic Performance and Social Progress](#), 2010.

rains. Yet because it was more spacious and comfortable than most other houses in the village where I lived, I never experienced it as inadequate. If I lived in the same house in Ithaca, New York, however, I would experience it as distressingly substandard. My children would have felt ashamed for their friends to see where they live.

Below is a picture of my house in Ithaca. If my friends and colleagues from Nepal saw it, they would think I'd taken leave of my senses. Why would anyone need such a huge house with so many bathrooms, they'd wonder. But my friends here, many of whom live in significantly larger houses, never have that reaction.



The context in which consumption occurs matters not just for the subjective evaluation of the experience of consumption, but also for people's ability to achieve concrete objectives.² If you're applying for a job, for example, you're advised to look

² Renewed interest in these issues by economists owes almost entirely to Richard Easterlin's 1974 paper, "Does Economic Growth Improve the Human Lot?" in *Nations and Households in Economic Growth*:

good when you go for your interview. But looking good is an inescapably relative concept. It is in your interest to compare favorably with other applicants for the same job. If they all spend more on clothing, your best bet may be to spend more as well, even though if you all spend more, none of you will be more likely to land the job.

Expenditures on housing, too, affect a family's ability to send its children to good schools, for a good school is also an inherently relative concept. It is one that is better than most other schools. In almost every local environment, the good schools tend to be those located in more expensive neighborhoods. In countries like the United States, that is true in part because school budgets are typically funded by local property taxes.

But because of powerful peer effects in the classroom, the same link exists even when school budgets are completely independent of local property taxes. Because the children of high-income parents begin school with many important advantages, the learning environment in the schools they attend tends to foster strong academic performance. But to send its children to those schools, a family must bid for the relatively expensive housing in the neighborhoods they serve. For example, the best schools in Paris, where per-pupil expenditures are the same city-wide, are in the eighth and sixteenth arrondissements, which also have by far the most expensive housing.

In short, absolute income is a highly imperfect measure, not just of a person's ability to enjoy pleasurable consumption experiences, but also to achieve many important life goals.

Essays in Honor of Moses Abramovitz, Paul David and Melvin Reder, eds., New York: Academic Press. For a more recent survey of research findings on the determinants of well-being, see Carol Graham's excellent 2010 book, *Happiness Around the World: The Paradox of Happy peasants and Miserable Millionaires*, New York: Oxford University Press.

How Rising Income Inequality Undercuts the Usefulness of Per-Capita GDP

Although relative income obviously matters in the ways just described, per-capita GDP might still be a highly useful welfare measure if the distribution of income remained relatively stable over time. Such was the case, for example, during the 25-year period that followed the end of World War II. During those years, incomes grew at about the same rate—slightly less than three percent annually—for families at all income levels.

More recently, however, the pattern of income growth has shifted dramatically. Since the early 1970s, almost all significant income gains in the United States have been confined to the top quintile of the earnings distribution, and most of the income growth has been concentrated near the top of that group.

The salaries of CEOs of large American corporations are a case in point. In 1980, they were roughly 40 times those of the average worker, but by 2000 the multiple had risen to more than 500.³ The top one percent of US earners garnered 8.9 percent of total income in 1976, but received 23.5 percent by 2007.⁴

There is no evidence that mere knowledge of rapid income growth at the top of the economic pyramid has caused middle-income consumers to experience envy or other forms of psychological distress. Even so, their well-being has been indirectly affected by the shift, because of a process that Adam Seth Levine, Oege Dijk, and I have called expenditure cascades.⁵ The first step in this process occurred because people at the top have been spending more, which has happened simply because they have so much more

³ United for a Fair Economy, *Executive Excess 2005*, based on annual CEO pay studies conducted by *Business Week* (1990-2004) and the *Wall Street Journal* (2005).

⁴ See Thomas Piketty and Emmanuel Saez, “Income Inequality in the United States, 1913-1998,” *Quarterly Journal of Economics*, 118(1), 2003. Updated to 2007 at <http://emlab.berkeley.edu/users/saez>.

⁵ Robert H. Frank, Adam Seth Levine, and Oege Dijk, “[Expenditure Cascades](#),” SSRN Working Paper, October, 2010.

money. When the very rich build bigger mansions, they shift the frame of reference that shapes demands for those with slightly smaller incomes, who travel in overlapping social circles. The near rich respond by building bigger houses as well, which shifts the frame of reference for others just below them, and so on, all the way down the income ladder.

This cascade is the most parsimonious explanation for the striking fact that the median new single-family house in the United States, which stood at 1,570 square feet in 1970, had grown to more than 2,300 square feet by 2007. That growth cannot be explained by growth in the median wage or median family income, which changed by much smaller amounts during those years.

What changed was the context in which the median family's housing choice was made. Any family that failed to rent or purchase a house near the median of its local price distribution would have to send its children to below-average schools. So a family that was determined not to see its children fall behind had little choice but to keep pace with what others were spending on housing.

A Useful Substitute for Per-Capita GDP

Per-capita GDP is the default measure of economic well-being in mainstream discourse. For the past several hundred years, rising GDP per capita has been interpreted to mean a steady increase in the economic well-being. During the era depicted in Figure 1, for example, GDP per capita has risen steadily and rapidly, leading many to conclude that there have been significant improvements in economic welfare. This measure of well-being, however, is completely insensitive to the kinds of distributional effects just described.

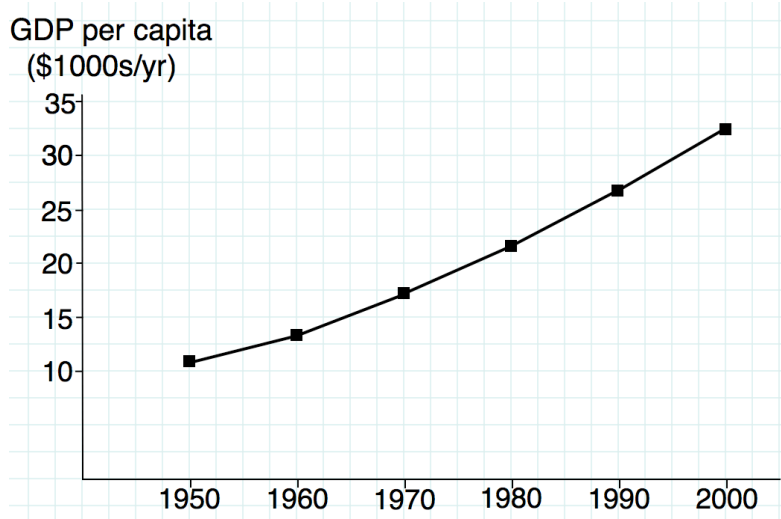


Figure 1. Per-Capita GDP, 1950-2000.

Source: US Census Data

Here I propose an alternative measure that takes account of those effects, one that can be calculated easily with existing data. This measure rests on the positive link between the average price of a house and the quality of its neighborhood school. This link implies that the median family must outbid 50 percent of all parents in order to avoid sending its children to a school of below-average quality.

Figure 2 shows the time profiles of median U.S. house prices and median hourly earnings for American workers in the Census years between 1950 and 2000. As discussed, the years up to roughly 1970 were ones in which the distribution of income was exceptionally stable. Median hourly earnings were rising at a relatively rapid clip, slightly exceeding the rise in median house prices, and incomes elsewhere in the distribution were rising at approximately the same rate. In contrast, most income growth after 1970 accrued to top earners, while at the same time median hourly wages increased only slightly. And yet median house prices grew much more rapidly during the latter

period.

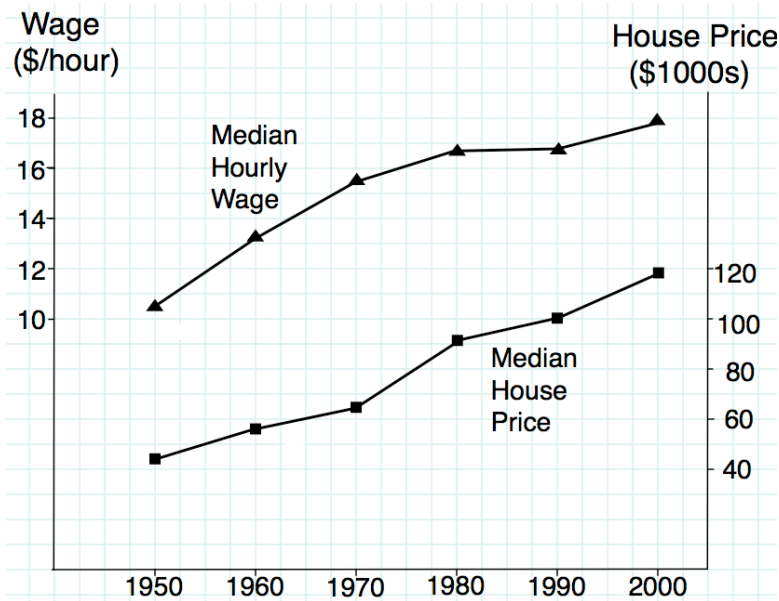


Figure 2. Median Wages and Median House Prices, 1950-2000.

Sources:

Median hourly wage: Economic Policy Institute, http://www.epi.org/resources/datazone_dznational/⁶

Median house price: US Census Data,

<http://www.census.gov/hhes/www/housing/census/historic/values.html>

The upshot is that by the year 2000, the median earner had to work substantially more hours each month than in 1950 in order to gain access to a house at the mid-point of the housing price distribution. For illustrative purposes, I assume that the implicit monthly cost of a given house is one percent of its purchase price. Figure 3 plots how many monthly hours the median worker would have needed to work to meet that cost during the last half of the twentieth century. During the immediate postwar decades, when the income distribution was stable, the median burden of homeownership varied little, and was actually slightly lower in 1970 (41.5 monthly hours of work) than in 1950

⁶ Estimates for 1950, 1960, and 1970 were based on the observation that median hourly earnings grew at approximately the same rate as average hourly earnings.

(42.5 hours). But the burden began rising sharply in 1970, and by 2000, the median worker had to work 67.4 hours a month to put his family into a house of median price.

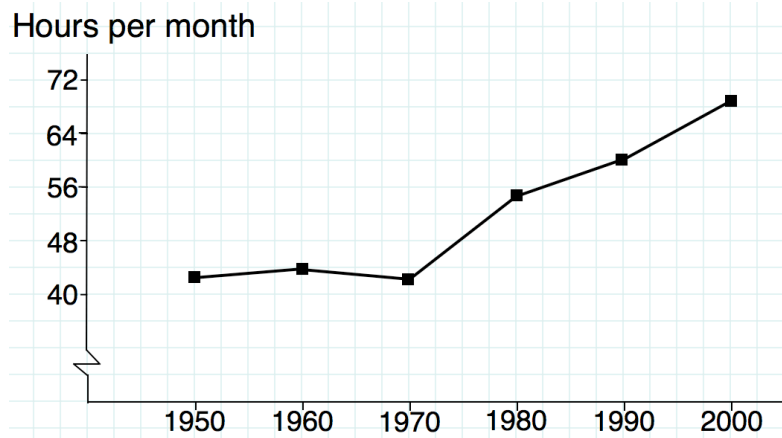


Figure 3. Monthly Hours of Work Required for the Median Earner to Rent the Median House.

Source: Calculated from data in Figure 2.

Housing is of course not the only expenditure that is sensitive to context. Increasing concentration of income at the top has also spawned similar expenditure cascades for items such as clothing, gifts, weddings, and other celebrations to mark special occasions.⁷ In these domains as well, the median earner must spend more than before or else experience significant adverse consequences of one kind or another.

Of course, not all of this extra spending has been purely wasteful. Although the utility conferred by a diamond ring may depend largely on its relative size and quality, for example, even the lone resident of a desert island might take additional pleasure in the way an absolutely larger stone refracts the light. Yet surely much of the extra spending of recent years has been a relatively inefficient source of extra utility.

⁷ Robert H. Frank, "[Post Consumer Prosperity: Finding New Opportunities Amid the Economic Wreckage](#)," *The American Prospect*, March 24, 2009.

Implications for Public Policy

Although additional outlays for many consumption goods—such as houses beyond a certain size—don’t accomplish much, they crowd out other forms of spending that would produce real improvements in the quality of life. If houses grew less rapidly, for example, we could invest in mass transit systems that would yield shorter, less stressful, commutes that would free up more time to spend with friends and family. Or we could support medical research and safety investments that would reduce premature death. The list goes on.

Wasteful “positional arms races” occur because people take too little account of the costs that certain types of consumption impose on others.⁸ When one job applicant spends more on an interview suit, for example, others must spend more as well, or else accept lower odds of getting a callback. Yet when all spend more, no one’s odds of landing the job are any higher than before.

Such waste can be easily curtailed by existing policy instruments. In a world of perfect information, the ideal remedy would be to tax different goods in proportion to the extent to which their use generates negative side effects.⁹ In practice, we lack the detailed information necessary to implement this remedy. But a steeply progressive tax on each family’s total annual consumption would serve almost as well.

First, a brief word about how this tax would work: The amount a family consumes each year is simply the difference between what it earns and what it saves. People would report their income to the IRS as they do now, and also their annual

⁸ See, for example, my 2007 book, *Falling Behind*, Berkeley: University of California Press.

⁹ For a widely-cited early proposal along these lines, see Yew-Kwang Ng’s 1987 paper, “Diamonds Are a Government’s Best Friend: Burden-Free Taxes on Goods Valued for Their Values,” *American Economic Review*, 77: 186-91.

savings, much as they currently document contributions to 401(k) and other retirement accounts. The difference between these two amounts, less a large standard deduction—say, \$30,000 for a family of four—would be the family’s taxable consumption. Rates would start low, perhaps only 10 percent. In this illustration, a family that earned \$50,000 and saved \$5,000 would have taxable consumption of \$15,000 and pay only \$1,500 in tax. By comparison, it would pay about twice that amount under the current income tax.

As taxable consumption rises, the tax rate on additional consumption would also rise. With a progressive income tax, marginal tax rates cannot rise too far without threatening incentives to save and invest. Under a progressive consumption tax, however, higher marginal tax rates actually strengthen those incentives.

For example, consider a family that currently spends \$10 million a year and is debating whether to add a \$2 million wing to its mansion. If the top marginal tax rate on consumption were 100 percent, the project’s cost (including tax) would be \$4 million. Alternatively, the family could scale back, building only a \$1 million addition. Then it would pay \$1 million in additional tax and could deposit \$2 million more than before in savings. Federal revenue would rise by \$1 million, and the additional savings would stimulate investment, promoting growth.

Either way, the nation would come out ahead with no real sacrifice required of the wealthy family. Because the tax would also induce most other wealthy families to scale back their mansion additions, it would lower the bar that defines an acceptable mansion for families in their circle. In effect, it would create real resources out of thin air.

Even more striking gains would result from the tax’s indirect effect on the expenditure cascades that have made life more difficult for middle-income families. If

the rich spent less on housing, gifts, and other things, the near rich would spend less as well, and so on, all the way down. All told, a progressive consumption tax could easily boost the nation's effective income by several trillion dollars a year.

Some may worry that tax incentives for reduced consumption might create or prolong an economic downturn. But it is total spending, not just consumption, that determines output and employment. If a progressive consumption tax were phased in gradually when the economy was at full employment, its main effect would be to shift spending from consumption to investment, causing productivity and incomes to rise faster. And should a downturn occur, it would offer a much more effective policy response. The traditional fiscal remedy for recession—a temporary cut in income taxes—has limited effect because fearful families tend to save their tax cuts as a hedge against becoming unemployed. But a temporary suspension of a consumption tax would yield no advantage unless families spent more right away.

Concluding Remarks

How we measure economic well-being affects the mix of policies we adopt. The current emphasis on per-capita GDP completely ignores the role of context in consumption decisions and takes no account of work effort. Alternative welfare measures like the one I have proposed would help focus attention on the economic forces that bear most heavily on well-being. By so doing, they would strengthen support for policies that make everyone better off.

