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ASSESSING FISCAL SUSTAINABILITY

Laurence Kotlikoff

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ABSTRACT

Every country faces an intertemporal budget constraint, which requires that its government's future expenditures, including servicing its outstanding official debt, be covered by its government's future receipts when measured in present value. The present value difference between a country's future expenditures and its future receipts is its *fiscal gap*. The US fiscal gap now stands at $205 trillion. This is 10.3 percent of the estimated present value of all future US GDP. The United States needs to raise taxes, cut spending, or engage in a combination of these policies by an amount equal to 10.3 percent of annual GDP to close its fiscal gap. Closing the gap via raising taxes would require an immediate and permanent 57 percent increase in all federal taxes. Closing the gap via spending cuts (apart from servicing official debt) would require an immediate and permanent 37 percent reduction in spending. This grave picture of America's fiscal position effectively constitutes a declaration of bankruptcy.

JEL codes: H2, H5, H6

Keywords: fiscal gap, fiscal policy, generational equity, taxes, deficits, federal debt, Social Security, Medicare, Medicaid, generational accounting, deficit delusion, economic growth

INTRODUCTION

A COUNTRY'S FISCAL sustainability matters. It matters to a country's growth path, to its future tax rates, to its saving behavior, to its net domestic investment, to its labor supply, to its inflation rate, to its employment, to its wages, to its returns on capital, to the integrity of its financial markets, to the viability of its political institutions—indeed, it matters to virtually any question one might pose about a country's economic future.

Fiscal sustainability also raises ethical questions. If a country is spending more than it can cover with its current and future taxes, will the unpaid bills be left for today's and tomorrow's children? More precisely, will current adults, particularly current retirees, escape the requisite fiscal adjustment because the adjustment starts when they are at the end of life or, indeed, after they have died?

In order to understand what a generationally fair means of achieving fiscal sustainability would be, we must first understand what overall adjustment is needed and how much more particular generations will pay if other generations pay less. Fiscal gap accounting tells us what overall adjustment is required, and generational accounting examines the impact that achieving fiscal sustainability has on particular generations.

Described in this manner, fiscal gap and generational accounting sound like the analysis of a zero-sum game in which changes in policy that benefit one generation must necessarily hurt another. That's not the case. There may be investments, for example, in education, research, infrastructure, technology, and communications, whose costs are more than offset by future revenues thanks to their positive impact on the economy. But fiscal gap and generational accounting provide frameworks for governments to soberly evaluate whether an investment that generation X is forced to make via the fiscal system will actually pay for itself through time or, instead, represent an added burden that current and future generations must bear.

An example is investment in clean energy financed by borrowing from current generations. If future generations are asked to repay this borrowing but the investment provides sufficient benefits in terms of abating climate change, that future generation may, on balance, end up better off.

THE FISCAL GAP

Every country faces what economists call an intertemporal (across time) budget constraint, which requires that its government's future expenditures, including the servicing of its outstanding official debt, be covered by its government's future receipts when measured in present value. The difference between the present value of a country's future expenditures and its future receipts is called its *fiscal gap*.[1]

No household can continually spend more than it makes. At some point, those who are financing the excess of the household's expenditures over its receipts will declare "game over." The same is true of governments. Eventually they need to change their spending or their revenues or both in order to satisfy their intertemporal budget. The longer the delay in adjusting policy, the bigger and more painful the adjustment will be and the greater will be the burden on the young and future generations.

A country's fiscal gap measures the size of its intertemporal budget imbalance based on its current and intended future course of fiscal policy. Countries whose prevailing policies produce fiscal gaps are running policies that are unsustainable. And the size of the country's fiscal gap indicates the degree to which taxes need to be raised, spending needs to be cut, or a combination of tax hikes and spending cuts needs to be imposed, either immediately or over time, to achieve a sustainable policy.[2]

Using the United States as an example, this article discusses fiscal sustainability and the economic fallout from not running a sustainable fiscal policy. The US fiscal gap now stands at an estimated $205 trillion.[3] This is 10.3 percent of the estimated present value of all future US GDP. Stated differently, the United States needs to either raise taxes or cut spending or engage in a combination of these policies by an amount equal to 10.3 percent of annual GDP to close its fiscal gap. Doing so via taxes would require an immediate and permanent 57 percent increase in all federal

1. The present value of the servicing of official debt equals the current market value of official debt net of financial assets. The federal government does possess significant assets. However, those assets that can easily be sold amount to only a tiny fraction of the fiscal gap. Political considerations are unlikely to result in significant sales of other assets such as mineral rights and national parks.
2. There are some economists who believe the government has no need to pay for what it spends. Some believe the government can spend more and that the increased spending will so stimulate the economy as to pay for itself. Others believe the government can cut taxes and pay for the tax cuts via induced growth. Yet others think the government can print as much money as it wishes to pay for what it spends. Would that these beliefs in economic magic were true. We would never see governments default on their debts or run hyperinflations. But economic history is replete with examples of countries that ran into trouble by pretending their governments had magic wands that could make their fiscal gap disappear.
3. Apportioning the fiscal gap to particular policies, such as Social Security or Medicare or defense, is a hopeless task. A dollar is a dollar, and there is no economic basis for allocating particular taxes to this or that expenditure. For example, the Social Security FICA tax could just as well be described as funding future defense spending as funding future Social Security benefits. State and local governments also have fiscal gaps measured as present value. They are not included in the federal $205 trillion, but my estimate is that they exceed $30 trillion in total.

taxes.[4] Doing so via spending cuts (apart from servicing official debt) would require an immediate and permanent 37 percent reduction in spending.

This startling and grave picture of America's fiscal position could effectively constitute a declaration of bankruptcy. But no one on Pennsylvania Avenue or on Wall Street would openly declare the United States to be broke. The question is, Why not?

OFFICIAL DEBT VS. THE FISCAL GAP

The answer is that the media, Wall Street, the politicians, the general public, and indeed, most economists are looking almost exclusively at the wrong measure of fiscal sustainability, namely the $12 trillion in official debt held by the public. This figure is substantial on its own, but it's not even three-quarters of our $17 trillion GDP. Compared, say, with Greece, which has a debt-to-GDP ratio of 1.7, the US official debt appears to be a problem but not a grave concern. The reality, though, is that the US official debt is just 6 percent of our government's true credit card bill—its fiscal gap.

WHAT MAKES THE US OFFICIAL DEBT "OFFICIAL"?

The official debt only includes what's recorded as official liabilities. But, as shown in my paper with Jerry Green, there is no economic basis—nothing in neoclassical economic theory, that is, in the mathematics of economic models—that tells us what should be recorded as official borrowing and put on the books and what should not be recorded as official borrowing and be left off the books.[5]

Take our contributions to Social Security. The government calls them "FICA taxes" and promises us future "transfer payments" in exchange, which it references as "Social Security benefits." But the government could just as well call our contributions "borrowing" and call our future benefits "return of principal plus interest" on this borrowing.[6]

Had the government used this alternative set of words to classify Social Security receipts and outlays, the official debt today would be $25 trillion larger than currently reported. This is the Social Security system's unfunded liability presented in

4. If the tax hikes eroded the various federal tax bases, marginal and average tax rates would have to rise even further, potentially leaving the United States with the highest tax rates of any developed country.
5. Jerry Green and Laurence Kotlikoff, "On the General Relativity of Fiscal Language," in *Key Issues in Public Finance: A Conference in Memory of David Bradford*, ed. Alan J. Auerbach and Daniel Shaviro (Cambridge, MA: Harvard University Press, 2009).
6. If the benefits exceed (or fall short of) principal plus interest, the difference can be labeled a Social Security bonus (or tax).

table IV.B6 of the 2013 Social Security Trustees Report.[7] Adding $23 trillion to $12 trillion and properly accounting for the $2.6 trillion of Social Security trust fund assets[8] would put our official debt at over $37 trillion or more than twice GDP—higher than Greece's debt-to-GDP ratio![9]

So why not call the US official debt $37 trillion rather than $12 trillion? Ours is a free country. Each of us is free to use his or her own internally consistent labeling convention in describing past and, for that matter, current and future, projected government receipts and payments. But if we can all come up with our own measure of official debt, which one should we use?

The answer is there is no answer. We can construct an infinite number of different official debt numbers and none will be any better than the others in describing our fiscal policy. The reason is simple: The official debt doesn't measure anything economic. It's purely a linguistic construct. The same holds for other conventional fiscal indicators, including the deficit (the annual change in the debt), aggregate taxes, aggregate transfer payments, disposable income, private savings, personal savings, private wealth, and government wealth.

Since these fiscal measures occupy roughly 40 percent of national income accounting—a topic routinely taught in introductory economics courses in college—the economics profession has spent decades teaching people linguistics, not economics.

THE EMPEROR'S NEW CLOTHES

For those accustomed to discussing US fiscal policy with reference to the debt and deficit, this observation that the debt and deficit have no clothes will come as a shock. Many people, broadly speaking, have themselves convinced that something is real when it's not.

Some claim that official liabilities are backed by the full faith and credit of the US government, which is why they are official and that calling something like a claim to future Medicare benefits an official debt does not convey upon it the same certainty of receipt as does designating a government bond an official government IOU.

Unfortunately, the likelihood of the government making a particular payment, in cash or in kind, or collecting a certain receipt does not constitute grounds for

7. Social Security Administration, *The 2013 Annual Report of the Board of Trustees of the Federal Old-Age and Survivors Insurance and Federal Disability Trust Funds,* Washington, DC, May 31, 2013, http://www.ssa.gov/oact/tr/2013/.

8. With this accounting, the Treasury bonds held in the Social Security trust fund are indeed an asset to the Social Security system, but they would also be recorded as additional government debt held by the public.

9. Historically, the government could have set up private pension accounts for workers, required them to deposit their FICA contributions to these accounts, and then borrowed these funds from the pension fund managers. The pension funds would have collected principal plus interest and used it to pay benefits. If the benefits didn't equal exactly what Social Security pays, the government could have provided the difference and called it an old age benefit.

pinning down the labeling of that payment or receipt. Language is very flexible and uncertain future amounts can always be redefined to be the sum of certain amounts plus additional amounts that are uncertain. And the amounts that are defined to be certain can be labeled as official debt repayments.[10]

In point of fact, the repayment of official debt is highly uncertain if we are talking about economic repayment, that is, repayment in real terms, which is the only repayment worth discussing. Take a 30-year Treasury bond. Its real value can easily be wiped out by inflation. Indeed, in the 1970s, as described in the *1982 Economic Report of the President,* the United States reneged on one-half of a trillion dollars of its official debt by running high inflation.[11]

In contrast to the highly risky payment, in real terms, of principal and interest on what's labeled official debt, the payment in real terms of Social Security and Medicare benefits seems much more certain. Social Security benefits are formally indexed to inflation, and Medicare benefits are implicitly indexed to health care costs. Furthermore, these benefits enjoy the backing of over 50 million members of AARP, which is arguably the most powerful lobby in Washington.

There are many other liabilities of the government whose real payments are much more certain than those backed by Uncle Sam's formal pledge to convey pieces of paper of unknown purchasing power, that is, green-and-yellow–colored Treasury checks, in the future. Take staffing our military at a minimal level. That expenditure on defense is a real commitment because one can't hire soldiers for nothing. Or consider the commitment to maintain our interstate highway system. The need to pour asphalt is a real one to which Uncle Sam makes no formal commitment because there is no need to reify economic necessity with words. Indeed, the purely verbal "full faith and credit" nominal repayment commitment extended to government bond repayment could and should be read as a form of false advertising—a means to gin up government bond purchases by those who suffer from money illusion and can't distinguish nominal from real magnitudes.[12]

ECONOMICS' LABELING PROBLEM—THE GENERAL RELATIVITY OF FISCAL LANGUAGE

At its core, economics' labeling problem is similar to physics' labeling problem. Einstein taught us that the mathematics of physics does not provide unique measures of time and distance. Rather there are an infinite number of such measures

10. Suppose, for example, that the government takes $1,000 today from person X and returns either $1,500 or $500 a year from now. Suppose the interest rate is 10 percent. We can describe this policy as the government borrowing $1,000 today and the government making either a transfer payment of $400 or levying a tax of $600 a year from now. Alternatively, we can label this policy as the government taxing person X $1,000 today and making a transfer payment to person X next year of either $1,500 or $500.
11. *Economic Report of the President, February 1982* (Washington, DC: Government Printing Office, 1982).
12. This discussion references nominal bonds, not TIPS (Treasury Inflation-Protected Securities).

or descriptions, depending on one's frame of reference, namely one's direction and speed through space. These frames of reference can be viewed as languages just as a fiscal-labeling convention can be viewed as a language.

Both the math of physics and the math of economics are about real things. But the equations of these sciences don't tell us what labels to attach to their variables. Nor do they tell us what language to use to discuss their properties and implications. In economics, the freedom to label—in an internally consistent manner—the fiscal variables of any and all rational models (by which I mean models in which agents aren't fooled by language) is absolute. And it permits one to say that model X, which can be any rational model, generates time path Y of government deficits or surpluses, where Y can be any path one wants to announce.

Notwithstanding the words one uses to discuss model X and the associated path Y of deficits or surpluses, what the model's actual fiscal policy is doing to the model's economy, including the course of all its real variables, doesn't change. Thus, a *take as you go* fiscal policy, which, over time, takes ever larger amounts of resources from successive young generations and transfers them to the contemporaneous old and drives the economy to a certain doom can be described in a zillion different ways, including entailing a balanced budget.

To understand this position, suppose the only policy in place is called Social Security and that each year the government raises Social Security's payroll tax rate and hands all the payroll taxes collected in that year to the contemporaneous elderly, on a per capita basis, as benefits. Each year's taxes equal each year's transfer payments and the annual deficit is, therefore, zero. This "balanced budget," "fiscally conservative," "prudent" policy will eventually—given the current state of the actual Social Security program—produce a tax rate so high that no one will work. And, in the meantime, since the young will be handing over ever larger shares of their earnings for immediate consumption by the elderly—resources they would otherwise have saved and invested in real capital—this policy will gradually eliminate the economy's capital stock as well as its labor supply.

If one defines fiscal sustainability as running a policy that doesn't kill the economy or as one that delivers at least a minimal living standard to future generations, this policy is clearly unsustainable. But you would never know it by considering the government's deficit, which is always zero. However, with a different set of words, this policy would produce continual deficits and a debt-to-GDP ratio that explodes.

There is nothing, by the way, that prevents a government from changing its labeling conventions through time. Chile, in the early 1980s, chose to relabel its social security system "privatization." This involved having Chilean workers hand monies to private pension funds that they would otherwise have given the government in payroll taxes. The pension funds then lent the money to the government, which needed the funds to pay older social security beneficiaries. Voila, erstwhile "taxes" were instantly being called "borrowing."

A number of other countries, including Hungary, Russia, Kazakhstan, and Argentina, followed Chile's lead and privatized their social security retirement programs. While these "reforms," like the Chilean "reform," did entail some real as opposed to exclusively linguistic changes, they were primarily labeling reforms.[13] In recent years, Hungary, Russia, and Argentina have un-privatized their social security systems, either fully or partially, in yet another primarily linguistic policy "reform" in order to raise "taxes."

THE FISCAL GAP AND GENERATIONAL ACCOUNTING—LANGUAGE-INVARIANT MEASURES OF FISCAL SUSTAINABILITY

Assessing fiscal sustainability necessitates using measures that are language invariant. The fiscal gap has this property. No matter what internally consistent labeling convention one uses, the fiscal gap will remain the same. The infinite-horizon fiscal gap is language invariant for a simple reason. It puts everything on the books.

The sole requirement for a language-invariant assessment is that all government expenditures and receipts, through the infinite horizon, be calculated as present value in forming the fiscal gap. Considering expenditures and receipts out to the infinite horizon is critical. Any finite-horizon fiscal gap will produce another label-dependent fiscal indicator.

The 75-year US fiscal gap is only 40 percent of the true $205 trillion fiscal gap. With different labels than those used by Uncle Sam, the 75-year fiscal gap could be smaller or larger than the true fiscal gap.

Generational accounting also produces language-invariant measures of fiscal sustainability. It shows three things: (1) how much future generations will need to pay in taxes net of transfer payments received if they are left, on their own, to cover the fiscal gap; (2) how lifetime net tax rates differ across generations; and (3) how changes in policy change the remaining lifetime net taxes facing different living generations.

The "balanced budget" policy just described would produce no fiscal gap since taxes equal spending year by year. But under that policy, successive generations face higher lifetime net tax rates defined as the present value at the time of their birth of taxes net of transfer payments received in each future year, all divided by the present value of lifetime pre-tax labor earnings. In other words, the lifetime net tax rate shows what share of their lifetime resources members of a given generation will, on average and on net, hand over to the government over their lifetimes.

13. Arguing, as some do, that the Chilean reform permitted workers to earn higher returns on their savings fails to adjust for the risk of investing in equities and other higher-return assets. The fact that privatization of social security puts workers into the stock market does not imply that the "policy" represents anything other than a relabeling of existing policy.

HOW DID THE US FISCAL GAP GET SO BIG?

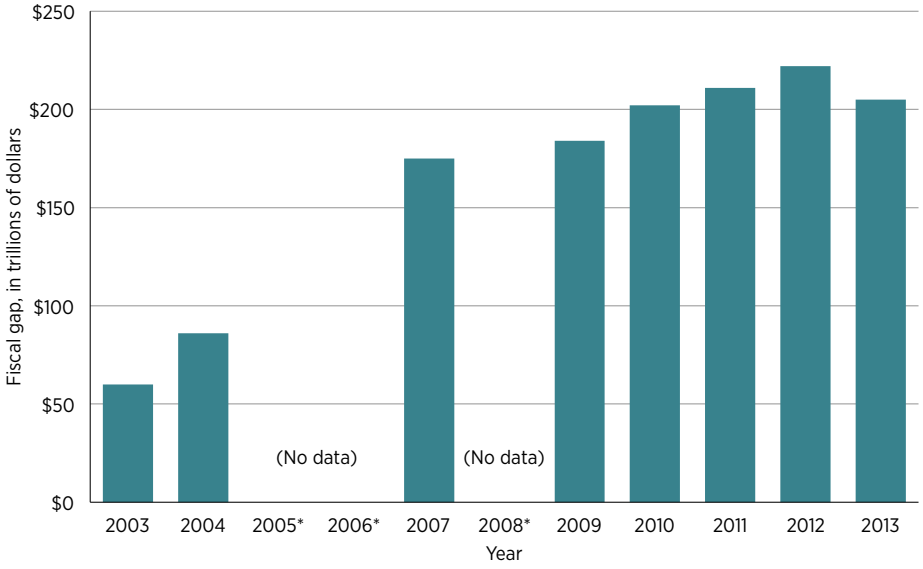
The federal government has spent the last six decades producing its fiscal gap. Every administration has taken money from young workers, called that money "taxes," handed much of it over to older generations in the form of Social Security and Medicare and Medicaid benefits, and then placated the young workers by promising them even larger benefits when they retired. These promises were kept off the books because of the use of the word "taxes." To repeat, had the government labeled the taking from the young as "borrowing," much more of the fiscal gap would now be showing up in the form of official debt. But the fact that only $1 in $20 has been so classified is testimony to the ability of politicians to keep their promises off the books.

In contrast to the measurement of the official debt, which is a matter of linguistics and has no real basis in economics, the fiscal gap is invariant to labeling conventions. It doesn't matter what is put on the books and what is kept off the books for one very simple reason. The fiscal gap adds together both off-the-books and on-the-books liabilities, that is, it leaves neither out and treats both symmetrically. It also includes all on-the-books and off-the-books assets, most of which consist of projected tax receipts in the future.

Unfortunately, the CBO didn't begin providing reliable long-term fiscal projections until 2003, so establishing the fiscal gap before then is not feasible. But figure 1 shows the fiscal gap from 2003 through 2013. It records a huge increase from $60 trillion in 2003 to over $175 trillion at the end of President George W. Bush's term by 2008. The growth in the fiscal gap reflects the Bush administration's major tax cuts, the sharply larger spending on defense and entitlement programs, and the failure to cover even interest on the fiscal gap.

But in President Obama's first term, the gap also rose dramatically, as indicated in figure 1. This increase reflects the fiscal impact of the Great Recession; the ever closer retirement of the baby boomers; the failure to reform Social Security, Medicare, or Medicaid; the introduction of the Affordable Care Act's health exchanges; and the heavy cost of our two wars in Iraq and Afghanistan. The 2013 tax hikes and budgetary sequestration represent significant policy changes. They shaved $17 trillion, in present value, off the fiscal gap, which is not an everyday event. But it's still a drop in the bucket relative to what's needed to eliminate the $205 trillion fiscal gap.

FIGURE 1. US FISCAL GAP IN TRILLIONS OF DOLLARS, 2003–2013



** Missing bars reflect the unavailability of the Congressional Budget Office's fiscal projections for those years.*

Source: Author's calculations.

TABLE 1. FISCAL GAP AS PERCENTAGE OF THE PRESENT VALUE OF GDP

Country	Fiscal gap (percentage of GDP)
United States	10
Greece*	10
Belgium	10
Japan*	10
Finland	7
Germany	5
Italy*	5

** Approximate measure.*

Note: The US fiscal gap is very large compared to that of other developed countries. Many countries, such as Italy and Greece, have relatively large official debts but have smaller implicit debts due to pension reforms and cost controls on government spending for health care.

Source: Author's calculations and assessments.

CLOSING AMERICA'S FISCAL GAP

Coming up with the 10.3 percent of GDP, year in and year out, that is needed to smoothly close the fiscal gap is a tall fiscal order. To do so via spending cuts alone requires an immediate and permanent 37 percent cut in all noninterest spending. To do so via tax hikes alone requires an immediate and permanent 57 percent increase in all federal taxes.

As table 2 shows, the longer Congress waits to either raise taxes or cut spending, the larger the adjustments that will be needed to eliminate the fiscal gap. For example, waiting until 2043 to begin raising taxes will require, starting at that time, a 75.9 percent permanent tax hike. And waiting until that point to make cuts in all spending, apart from debt service, will require a 46.3 percent permanent cut.

TABLE 2. PERCENTAGE REVENUE INCREASES OR SPENDING CUTS NEEDED TO ELIMINATE FISCAL GAP FOR DIFFERENT ADJUSTMENT STARTING YEARS

Start year	Revenue increase (percentage)	All noninterest spending cuts (percentage)
2013	57.0	37.0
2023	63.2	40.2
2033	69.3	43.0
2043	75.9	46.3

Source: Author's calculations.

US GENERATIONAL ACCOUNTS

Table 3 presents US generational accounts for 2013. It shows that, except for people in their twenties and early thirties, all currently living cohorts are on the receiving end of the government's largess. Their projected receipt of transfers exceeds their projected tax payments, with the generational accounts displaying the remaining lifetime tax payments net of transfer payments received, all discounted to the present.

Generational accounting calculates what future generations must pay over their lifetimes, assuming that each future generation's lifetime net tax payment rises in proportion to its labor earnings and that future generations collectively are required to cover the fiscal gap. Stated differently, people born in the future are assigned higher absolute lifetime net tax payments such that their lifetime net tax rate—the ratio of their lifetime net tax payment to their lifetime labor earnings—is the same regardless of when they are born.

The table's next to last row shows the absolute lifetime net tax payment facing those born next year under this scenario. The birthday present Uncle Sam will hand those born next year is a $420,600 net lifetime tax bill, which is $479,900 more than the net lifetime tax bill today's newborn is facing under current policy. These figures indicate an absolutely massive imbalance in the implied treatment of those now

alive and our unborn children *if* the entire fiscal gap is spread over everyone coming in the future in proportion to their earnings capacity; that is, the $420,600 would grow with labor productivity. Expecting future generations to pay vastly more than those now alive is not just generationally immoral, it's also economically infeasible. It would require hitting up future generations for, on average, roughly 60 cents of every dollar they earn in taxes net of transfers received.

TABLE 3. 2013 US GENERATIONAL ACCOUNTS

Age	Lifetime net tax burden, in thousands of dollars
0	–$59.2
5	–$41.9
10	–$26.6
15	–$6.2
20	$14.7
25	$25.8
30	$12.4
35	–$14.4
40	–$49.4
45	–$87.3
50	–$138.1
55	–$209.3
60	–$282.9
65	–$327.4
70	–$302.3
75	–$268.0
80	–$236.3
85	–$205.5
90	–$166.5
95	–$115.8
100	–$30.3
Future generations	$420.6
Difference between future generations and current newborns	$479.9

Source: Calculations by the author and Giovanni Callegari.

WHAT DO WE REALLY MEAN BY FISCAL SUSTAINABILITY?

As Herb Stein, former chair of President Nixon's Council of Economic Advisors, used to say, "If something can't go on forever, it will stop." This was a terribly unfortunate remark, which has been paraphrased innumerable times by those who appear to think that *when* unsustainable policy is changed will have no impact on what the new policy must be or what the state of the economy, particularly the size of the capital stock, will be. But as any decent fiscal simulation model will show, that's not the case. What Stein should have said is that "Policies that can't go on will stop too late."

The United States is clearly running a fiscally unsustainable policy. Its fiscal gap is enormous and will require massive tax hikes or spending cuts (or both) far beyond anything the American public imagines, with the size of these adjustments rising the longer they are put off.

This said, the fiscal gap simply tells us whether the government will come up short in trying to pay its bills. It doesn't tell us whether those being handed its unpaid bills will face lifetime tax rates that are beyond their capacities to pay. Nor does it tell us how the economy has reacted or will react to the policy being run.

Consequently, the fiscal gap by itself can't tell us everything we need to know about fiscal sustainability. Ultimately, we need to assess fiscal sustainability in terms of a policy's impact on successive future generations—both the direct impact on their lifetime net tax rates, as measured by generational accounting, and the indirect impact on their earning capacity.

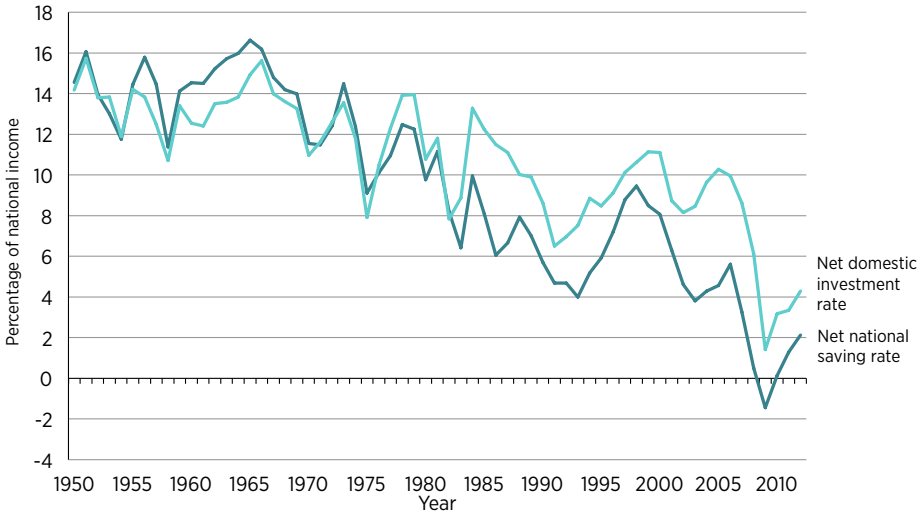
US FISCAL POLICY'S IMPACT ON SAVING, INVESTMENT, AND REAL WAGE GROWTH

As figure 2 shows, the United States has experienced gradual, if not steady, declines in its rates of net national saving and net domestic investment as a percentage of national income since 1950. Last year's net national saving rate was just 2 percent, and the net domestic investment rate was just 4 percent. These rates were both 14 percent in 1950.

The life cycle model of saving tells us that the young are savers and the old are spenders. Why? Because the young need to save for their retirement, and the old are focused on spending their remaining resources over their relatively few remaining years. The life cycle model predicts that taking from young savers and giving to old spenders will reduce national saving as well as domestic investment, assuming foreign investors don't fully make up the difference.

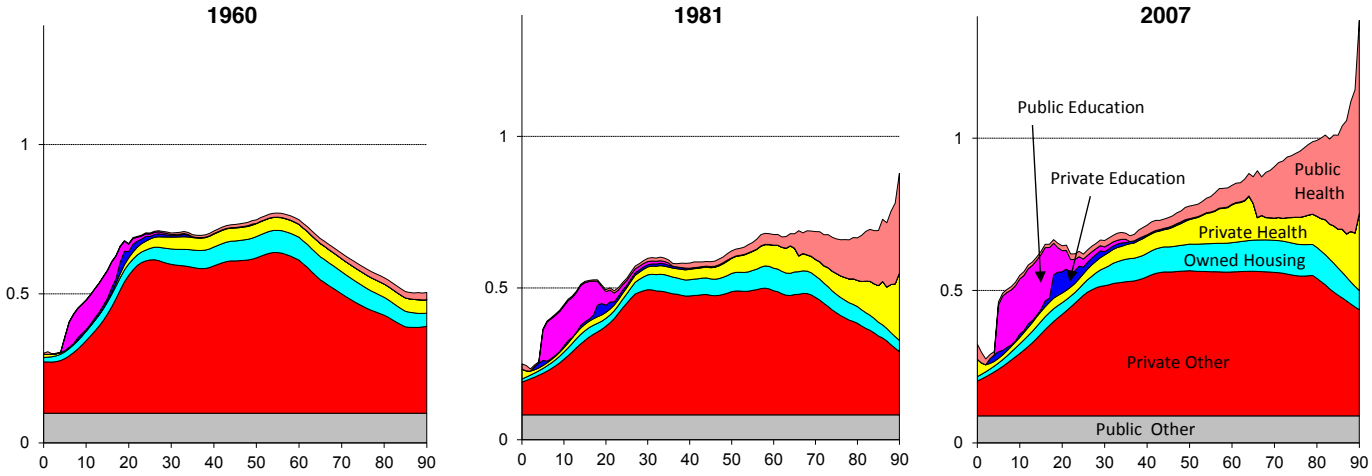
What the life cycle model predicts is what we see in the US data over time. The decline in the US saving rate can be directly traced, not to a dramatically higher rate of government consumption as a share of national income, but to a dramatically higher rate of household consumption. The question then is who has been consuming so much more? The answer is the elderly.

FIGURE 2. NET NATIONAL SAVING RATE AND NET DOMESTIC INVESTMENT RATE, 1950–2012



Source: National Income and Product Accounts, US Department of Commerce, Bureau of Economic Analysis.

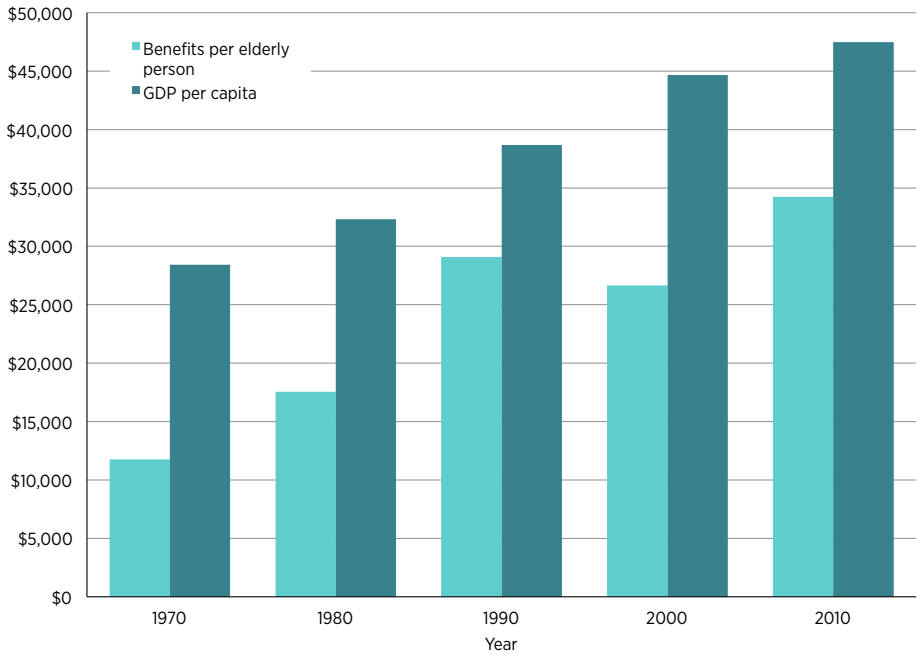
FIGURE 3. US CONSUMPTION PER CAPITA BY AGE, 1960, 1981, AND 2007 (RATIO TO AVERAGE LABOR INCOME, AGES 30–49)



Source: Ronald Lee, "Macroeconomic Implications of Demographic Change: A Global Perspective," presentation for BOJ-IMES Conference "Demographic Changes and Macroeconomic Performance," Tokyo, May 2012, p. 14, http://www.nt accounts.org/doc/repository/Ron%20Lee%20BOJ%20presentation%20May30-2012.pdf.

Consider figures 3 and 4. The first shows a dramatic increase in the relative consumption by the elderly compared to younger generations. The second shows a dramatic increase over time in per capita Social Security, Medicare, and Medicaid benefits paid to the elderly relative to per capita GDP.

FIGURE 4. US REAL YEARLY SOCIAL SECURITY, MEDICARE, AND MEDICAID BENEFITS PER ELDERLY PERSON AND REAL PER CAPITA GDP, 1970–2010



Source: Author's calculations based on data from the Congressional Budget Office and the US Census Bureau.

These transfers to the elderly don't encompass all the postwar redistribution to the elderly. There have been periodic tax cuts as well as a shift in the structure of taxation away from capital income toward wages. These factors also produced a major transfer of resources to the elderly and away from the young.

Another policy that has encouraged the elderly to spend at a higher rate is the annuitization of their resources via the Social Security, Medicare, and Medicaid programs (70 percent of whose benefits are paid to the elderly). These programs provide payments, not in a one-time lump sum, but on an ongoing, inflation-protected basis for as long as the elderly recipient lives. As a result, much of the fear of spending and thereby outliving one's resources is removed. So too is the fear of losing one's resources in volatile asset markets or via inflation.

The life cycle model also predicts that declines in rates of domestic investment will reduce the growth rate of real wages. In the United States there are many causes for low real median wage growth. One can point to outsourcing, competition from

foreign workers, a loss of comparative advantage in manufacturing, worsening primary and secondary education, increasing wage inequality, and competition from smart machines. But having less capital with which to work than would otherwise be the case is surely part of the explanation for stagnant real US wages. Indeed, some of the wage statistics are quite astounding. For example, real take home pay per hour per US worker is essentially the same today as it was in the mid-1960s.

The fact that US fiscal policies appear to be seriously affecting the economy means that analysis of the sustainability of our current policies should take into account these feedback (general equilibrium) effects. If the economy is damaged, the ability of the government to sustain its fiscal policies will be diminished, and the injury to future generations will be exacerbated. Again, if the ultimate desiderata for moving from one policy to another is the extent of the damage it causes future generations, then the damage to the economy needs to be factored into the analysis as discussed in my paper with Hans Fehr.[14]

CHALLENGES TO FISCAL GAP AND GENERATIONAL ACCOUNTING

Fiscal gap and generational accounting pose well-defined economic questions whose answers don't yet depend on labeling conventions. But this doesn't make either fiscal gap or generational accounting easy to implement. The greatest challenge in conducting these analyses is valuing, in the present, future receipts and payments, each dollar of which comes with particular risks.

Economists are working on how this risk-adjusted discounting should be done, but they don't have clear-cut answers.[15] In the meantime, the discounting, in the case of the United States, has been done using the government's preferred 3 percent real discount rate. A higher discount rate would certainly reduce the size of the fiscal gap, but also reduce the present value of GDP with which it is compared, making the requisite policy adjustment needed to close the gap much less sensitive. For example, using a 5 percent real discount rate reduces the fiscal gap to $52 trillion. But as a share of the present value of GDP, the fiscal gap is still enormous at 8 percent.

The techniques for valuation that are being developed assume the existence of financial markets that are sufficiently complete that they can be used to value taxes or transfer payments coming down the road. But this is a strong assumption since there are a very large number of states the economy can occupy in the future.

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14. Hans Fehr and Laurence J. Kotlikoff, "Generational Accounting in General Equilibrium," *FinanzArchiv, Neue Folge*, Band 53, Heft 1 (1996/1997): 1–27.

15. See, for example, Alexander W. Blocker, Laurence J. Kotlikoff, and Stephen A. Ross, "The True Cost of Social Security" (NBER Working Paper No. 14427, National Bureau of Economic Research, October 2008); and John Geanakoplos and Stephen P. Zeldes, "The Market Value of Social Security" (working paper, July 11, 2011), http://www1.gsb.columbia.edu/mygsb/faculty/research/pubfiles/4590/gz_mkt_val_ssec_7_11_11.pdf.

A complete market, called a complete contingent claims market, would permit one to buy or sell today arbitrary amounts of real purchasing power in each future state. With such a market it would be easy to do fiscal gap and generational accounting. For example, to value $20,000 (in today's dollars) of benefits promised by the government to Joe Smith in state X 20 years from now, one would just need to consult the financial pages to see what such a claim would sell for if one bought it today in the market.

The problem is that our prevailing financial products and instruments appear to be far fewer in number than the number of future states the economy can occupy. This puts economists in the position of trying to put a price on things that aren't normally for sale. Doing so requires constructing large-scale computable general equilibrium life-cycle simulation models, with aggregate as well as individual specific shocks (risks), that take into account the incompleteness of markets. Within such a model, one can calculate the value today to any given economic agent in the model of making payments to or receiving payments from the government in any given future state. Such models are now being built based on recent breakthroughs in numerical computation. They should soon provide a better basis for risk adjusting the tax and transfer payment flows in fiscal gap and generational accounting.[16]

These new models can also be used to produce a different measure of fiscal sustainability. Specifically, they can be simulated to show the average time left before the welfare of future generations falls below a critical level. Such intergenerational Monte Carlo studies can eventually replace fiscal gap and generational accounting as the means of studying the implications of maintaining policies that damage our posterity.

THE INFORM ACT

Getting Washington to do proper long-term fiscal accounting is no easy trick. In the last year of President George H. W. Bush's administration and the first year of President Clinton's, the *President's Budget* included fiscal gap and generational accounting analyses prepared by the Office of Management and Budget with the assistance of myself, current U.C. Berkeley economist Alan Auerbach, and current Cato Institute economist Jagadeesh Gokhale.

Although the analysis was buried deep within the appendix to the *President's Budget*, it received considerable press attention. Indeed, Ross Perot used the 1992 analysis in his first run for the presidency.[17]

16. Jasmina Hasanhodzic and Laurence J. Kotlikoff, "Generational Risk—Is It a Big Deal? Simulating an 80-Period OLG Model with Aggregate Shocks" (NBER Working Paper No. 19179, National Bureau of Economic Research, June 2013), http://www.nber.org/papers/w19179.

17. Keith Bradsher, "Large Tax Burden Is Seen for Young," *New York Times*, February 9, 1994, http://www.nytimes.com/1994/02/09/us/large-tax-burden-is-seen-for-young.html.

In the second year of President Clinton's first term, the analysis was censored two days before the *President's Budget* was published, notwithstanding months of work on the analysis by myself, Auerbach, and Gokhale, as well as top staff at the Office of Management and Budget.

Although official deficits declined while President Clinton was in office, the fiscal gap continued to grow, thanks in good part to a more than a 20 percent increase in Medicare and Medicaid spending as a share of GDP during Clinton's eight years in office. This entailed permanent benefit hikes, not just for contemporaneous Medicare and Medicaid beneficiaries, but for all future beneficiaries, including the 78 million baby boomers now starting to retire.

In the first term of President George W. Bush's administration, Treasury Secretary Paul O'Neill decided to reintroduce fiscal gap accounting to the president's budget. He chose current University of Pennsylvania economist Kent Smetters to head up a team that included Jagadeesh Gokhale to prepare this analysis. The team spent the better part of 2002 completing its task. But on December 7, 2002, Secretary O'Neill was fired. Publishing the fiscal gap might have seriously undermined the chances for passage of Medicare Part D, with its undisclosed $15 trillion at present-value cost. Sure enough, two days after O'Neill's firing, the fiscal gap analysis was dropped.

The lesson to be drawn here and from the 17 to 1 ratio of the fiscal gap to the official debt is that our politicians like to keep most of the debts they leave us and our children off the books. They will continue to do so until the public demands they disclose the truth.

The Inform Act, which stands for *The Intergenerational Financial Obligations Reform Act*, is a bipartisan bill recently introduced in the Senate by senators Kaine (D-VA) and Thune (R-SD). Senators Coons (D-DE) and Portman (R-OH) have cosponsored the bill. In the House, the legislation was introduced by representatives Cooper (D-TN) and Schock (R-IL). This act, detailed at www.theinformact.org, would require the Congressional Budget Office, the Government Accountability Office, and the Office of Management and Budget to prepare annual fiscal gap and generational accounting analyses and also, upon a request by Congress, to do such analyses for major pending fiscal legislation.

To date, 12 Nobel laureates, more than 700 additional economists, and thousands of other Americans have endorsed the bill, including many prominent business leaders and distinguished former government officials, most notably George Shultz, who served as OMB director, secretary of the Treasury, and secretary of state.[18]

18. See the full-page ad with endorsements that appeared on page 9 of the print version of the *New York Times*, October 22, 2013.

CONCLUSION

The United States has spent decades playing *take as you go*, in which each generation of elderly takes from the young while promising the young their turn when old to expropriate from their own children. I consider this a Ponzi scheme, or chain letter if you'd prefer, that has been organized by Uncle Sam in such a way that each new generation of retirees can claim to be entitled to the off-the-books benefits that they have been promised. Economists, as a group, have been complicit in this deception. They knew or should have known that the standard fiscal indicator of the fiscal burden being left to our children—the official debt—is a number in search of a concept, a linguistic construct totally devoid of economic content. But like the tailors in "The Emperor's New Clothes," they went along to get along, in this case with the measures that the politicians, media, and general public thought they understood and wanted to talk about.

But things have changed. Today the economics profession is speaking with almost one voice, proclaiming that conventional fiscal accounting needs to be supplemented with, if not totally replaced by, fiscal gap and generational accounting. The over 700 economists who have endorsed the Inform Act at www.theinformact.org include a veritable Who's Who of economists when it comes to academic achievement. All those who have endorsed the bill and all those who will do so in the coming months get the point that misleading, fallacious fiscal accounting, which is not worthy of even Enron or Bernie Madoff, must end.

Fiscal gap and generational accounting are not perfect measures of fiscal sustainability, and their implementation remains challenging. But they do put everything on the books and provide at least a rough answer to the right question rather than a precise answer to the wrong question. They will permit us to adopt policies, such as those laid out at www.thepurpleplans.org, that can close the fiscal gap in a generationally fair manner without pulling the rug out from under anyone.