SPENDING BEYOND OUR MEANS

HOW WE ARE BANKRUPTING FUTURE GENERATIONS

JAGADEESH GOKHALE

JAGADEESH GOKHALE

SPENDING BEYOND OUR MEANS

HOW WE ARE BANKRUPTING FUTURE GENERATIONS

CATO INSTITUTE

Executive Summary

Current U.S. fiscal policy, including the recently concluded "fiscal cliff" debt deal, is placing an enormous financial burden on today's children and on future generations in order to deliver government benefits to current middle-aged workers and their elders. Standard government accounting methods hide that intergenerational transfer from the public and make it difficult to calculate how large the transfer is. Intergenerational resource transfers will grow larger as the composition of budget receipts and expenditures changes with relatively faster growth of age- and gender-related social insurance programs. Intergenerational redistributions through federal government operations could substantially affect different generations' economic expectations and choices and exert powerful long-term effects on economic outcomes.

This paper updates earlier calculations of generational accounts and fiscal and generational imbalance measures based on the Congressional Budget Office's (CBO) March 2012 Budget Outlook Update. It finds that the fiscal imbalance embedded in the federal government's current law (Baseline) policies amounts to 5.4 percent of the present value of future U.S. gross domestic product (GDP), or 11.7 percent of the present value of future payrolls. However, given past precedents, federal current-law policies are unlikely to be implemented.

The CBO's "Alternative Fiscal Scenario," which eliminates several current-law policies so as to be consistent with past congressional practice, would increase the fiscal imbalance to 9.0 percent of the present value of GDP, or 19.7 percent of the present value of payrolls. Generational accounting calculations show that under both Baseline and Alternative policies, today's middle-aged workers would receive such large federal transfers by way of present-valued Social Security and Medicare benefits that their prospective lifetime net tax burdens are almost fully eliminated.

Jagadeesh Gokhale is an internationally recognized expert on entitlement reform, a member of the Social Security Advisory Board, and a senior fellow at the Cato Institute. He has testified before Congress and been adviser to the Federal Reserve Bank of Cleveland, the U.S. Treasury Department, and the Federal Accounting Standards Advisory Board. Gokhale has published papers in refereed economics journals, including the American Economic Review, Journal of Economic Perspectives, Quarterly Journal of Economics, Review of Economics and Statistics, *and the* Journal of Public Economics. *His most recent book is* Social Security: A Fresh Look at Policy Alternatives, *published by the University of Chicago Press (2010).*

Introduction

Official estimates of the financial effects of government policies and proposed policy changes typically only describe the effects of those policies over a short time frame, typically 10 years. Fully characterizing those policies requires a much longer time frame, to comprehend how they will affect citizens beyond the 10-year time horizon and to distinguish those effects for different generations. Such an exercise would fully reveal how those policies affect a nation's long-term fiscal health, which generations of citizens are made "winners" and which are made "losers," and whether the sum total of those effects is equitable.

Such analysis for major developed nations first began to appear more than two decades ago. It follows the theoretical work of Harvard economist Martin Feldstein and others, who pointed out that public pension and health programs, such as Social Security and Medicare, can cause substantial wealth redistributions across generations.[1] Such redistributions occur because initial older generations receive windfall benefits from such programs without a history of having paid payroll taxes when working in the past. If the generosity of pension and health benefits is increased over time by increasing benefits and taxes concurrently—as has occurred in the U.S. Social Security and Medicare systems—subsequent retiree generations may also receive more in lifetime benefits than their lifetime payroll taxes. That is, the pecuniary returns from social insurance benefits could significantly exceed the average returns they would have received had they saved for retirement themselves and invested their savings in private capital markets in the absence of such programs.

The fiscal burden of excess benefits paid to such participants in public pension and health programs—so-called "legacy debt"—must be imposed on subsequent generations once taxing capacity peaks and especially if demographic shocks, such as fertility declines, reduce the size of the working cohort and erode the payroll tax base. Under such conditions, social benefits can no longer be paid as promised and future participants must acquiesce to smaller benefits from national social insurance systems relative to average market returns.

Intergenerational wealth redistributions are also implicit in other government programs through tax and spending policies targeting different population groups by age and gender. How large are such wealth redistributions? Constructing estimates to address this question is very difficult because it involves combining micro-data surveys with budget information to estimate cohort-specific lifetime taxes, transfers, and public benefits on an ongoing basis. However, a limited and partial sense of the magnitudes involved can be obtained via generational accounting metrics developed in the last two decades.[2]

Unfortunately, generational accounting studies—which had argued for complementing official cash-flow deficit and debt measures with generational accounts to indicate the government's fiscal condition—were not successful in persuading policymakers to regularly report and consider intergenerational redistribution effects when deciding on new fiscal policies. Official deficits and debt metrics continue to be used as key indicators and guideposts for fiscal policymaking. Somewhat more successful was the offspring of generational accounting—measurements of fiscal and generational imbalances—in communicating the government's aggregate debt: the sum of its explicit net liabilities plus its "implicit debt" on account of prospective taxes and expenditures under current budget policies and practices.[3] At least these metrics are now regularly reported by Social Security and Medicare trustees in their annual reports to indicate how far from sustainability those programs' finances are under their current tax and benefit policies.

Implicit debt is simply the government's prospective revenue shortfall relative to the government's expenditures on public goods and services, including the provision of pub-

Public pension and health programs, such as Social Security and Medicare, can cause substantial wealth redistributions across generations.

lic pension and health care benefits. If current tax and spending policies together with demographic trends, which are reasonably accurately predictable, imply a shortfall of future revenues, the size of that shortfall should inform current policymaking. Unfortunately, such metrics remain unreported by many agencies that are responsible for estimating the structural condition of the government's current budget policies and practices.

The fiscal and generational imbalance and generational accounting studies also illuminate how standard short-term metrics of fiscal policy—national deficits and annual debt—are potentially misleading. For example, toward the end of the 1990s, official debt and deficit metrics suggested a much improved fiscal condition and induced U.S. policymakers to enact massive increases in public spending, tax cuts, and new pay-as-you-go financed entitlements such as the Medicare prescription drug program. Had policymakers based their decisions on broader fiscal and generational imbalance measures, they might have adopted more conservative fiscal policies.

This study presents updated estimates of fiscal and generational imbalances for the United States. It shows that the U.S. fiscal condition has deteriorated since the last set of updates published in 2006. The study also calculates generational accounts for the United States to show the fiscal burdens that current generations face. The calculations incorporate a quirk about current U.S. fiscal policies: Congress has adopted one set of fiscal policies on its books, but it appears to be following an Alternative set of policies in practice by amending current-law policies just as their implementation becomes imminent. The continual shift away from current-law policies is motivated by political pressure to avoid calamitous economic outcomes that are expected to follow the sharp spending cuts and tax increases built into current-law policies. This study calculates the "give-away" to current generations that such lawmaker behavior would imply.

The results indicate that the Alternative fiscal trajectory—for that matter, even the current-law trajectory—is far from sustainable. Those imbalances must be resolved at some future time through tax increases and/or spending reductions—precisely the policies that Congress is seeking to avoid in the short term. If they are not resolved, the same calamitous economic consequences are likely to occur in the future, probably with even greater intensity.

Public Policy Debates on the U.S. Budget: Caught in a Prisoner's Dilemma

The CBO's March 2012 federal budget projections for years 2013–22[4] show that federal outlays on long-term entitlement programs such as Social Security, Medicare, Medicaid, and other long-term retirement and health programs such as federal civilian and military retirement and veterans benefit programs, already constitute 50 percent of projected gross federal outlays.[5] Congressional Budget Office projections also show that these programs will take up 67 percent of the federal budget by the end of its 10-year budget window.[6] And given that population aging will continue well beyond 2022, these programs' budget share is expected to grow even larger during coming decades.

The growth of social insurance programs that impose a distinct and stable pattern of retirement and other benefits, and the taxes levied to fund them by age and gender, means that the federal government's ability to redirect resources across generations will grow much stronger over time. It is well known that the federal government redistributes income and wealth across economic classes—from high earners and the rich toward low-income and poor groups. During coming decades, however, the federal government's role in redistributing resources from working adults toward other generations, primarily toward retirees, will also grow larger.

The fiscal and generational imbalance and generational accounting studies illuminate how standard short-term metrics of fiscal policy—national deficits and annual debt—are potentially misleading.

Indeed, it could be argued that the chief reason for the government's dire fiscal outlook is its inextricable involvement in intergenerational resource redistribution through programs such as Social Security, Medicare, and others. However, most of the oxygen in the public debate about the role of government in society is exhausted on the government's role in redistributing resources *intra*generationally—from economically well-off citizens toward others. Indeed, the intragenerational discussion provides the distraction that prevents all rational discussion about intergenerational accounting.

The underlying problem is a prisoner's dilemma: if both major political parties could agree to a deal on entitlement reform—to effectively save and invest resources for the future needs of an aging population—and if both were able to faithfully sustain and execute it, the economic benefits to the public in terms of an equitable intergenerational allocation of resources and efficient economic incentives would be immense. But being distrustful of the other party, each believes that agreeing to such a deal would risk loss of political power: too many of their supporters might become disappointed, and the deal would be undercut when the opposing party gains power by squandering those savings on their *current* redistributive priorities. Yet failure to reach a deal before it's too late increases the size of the fiscal imbalance and increases barriers to a deal, making an eventual calamitous economic outcome more likely. The fact that official budget agencies are refusing to report large outstanding implicit debt embedded in entitlement programs—debt that will eventually compel huge resource transfers from future to current generations—only allows the lopsided emphasis on classwarfare in public policy debates to fester.

CBO's Federal Budget Projections

The federal government's fiscal situation is dire. According to the CBO, this fiscal year's difference between tax receipts and federal spending will be a gaping $1.2 trillion, or almost 8 percent of the nation's GDP.[7] The cumulative deficit under the CBO's Baseline projection—wherein currently scheduled laws governing taxes and expenditures are assumed to be fully implemented—is projected at $2.9 trillion over 10 years (2013–22).

But the CBO's 10-year Baseline projection is scarcely to be believed. Congress has consistently enacted exceptions to scheduled tax and spending laws in order to prevent economic harm to particular political interest groups (doctors, middle-class taxpayers, etc.) and will almost certainly do so again. Therefore the CBO also includes an "Alternative" scenario in its budget reports, one that suggests a 10-year cumulative deficit of $10.7 trillion.[8]

The expenditure cuts and tax hikes scheduled under the Baseline policy path would reduce future deficits by $7.8 trillion ($10.7 trillion minus $2.9 trillion) over the next 10 years compared to the Alternative policy path, where those changes are postponed until after 2022. Thus, if Congress continues its past practice of postponing the adoption of current-law fiscal policies, those of us alive during the next 10 years will enjoy a $7.8 trillion boost in public benefits—defense, retirement support, welfare payments, infrastructure construction, and so on—that we won't pay for through higher net taxes. The extra public benefits we will enjoy will have to be paid for by future generations of taxpayers, either through smaller federal benefits or higher federal taxes.

The longer that Congress continues to allow the gap between federal taxes and benefits to persist, the larger it will grow as it accrues interest, at about 3.7 percent per year today as indicated by the interest rate on the government's long-term securities. This means that we will consume $7.8 trillion of the nation's income through extra government "benefits" that we will not "pay" for.[9] The accumulated additional federal debt will then constitute a bill that will be presented to those alive after 2022—to ourselves, exclud-

Congress has consistently enacted exceptions to scheduled tax and spending laws in order to prevent economic harm to particular political interest groups and will almost certainly do so again.

ing those who die before 2022, and including new entrants into the economic system such as young workers and immigrants.

The Trouble with Standard Budget Accounting Metrics

Congress requires the CBO to report standard cash-flow deficit and debt measures, but these measures do not fully capture the federal government's financial condition. Reported in billions and trillions of dollars, their implications at the individual taxpayer level are never communicated to the public. Cash-flow deficit and debt metrics, even when calculated over 10 years into the future as required by law (under the Congressional Budget and Impoundment Control Act of 1974), are essentially backward looking: they predominantly reflect the impact on the budget of past economic and budgetary outcomes. Policy changes, however, are always intended to alter *future* budget and economic outcomes, so it makes little sense to base those choices on backward-oriented metrics.[10]

Although it is standard practice to project budget outcomes 10 years into the future, doing so under today's budget environment appears to be insufficient, especially for guiding future fiscal policy choices. The federal budget is much less flexible today compared to the 1970s, when Congress enacted the reporting requirements that are still in effect. As mandatory programs (entitlements) have increased in size relative to discretionary ones, the portion of the budget over which lawmakers exert direct control on an annual basis has shrunk considerably. Whereas policymakers can condition discretionary programs' funding and expenditures on feasibility, needs, and preferences on a year-by-year basis, entitlement programs' taxes and benefits are expected to treat many generations of participants fairly and equitably and, therefore, are expected to maintain their tax and benefit rules over long periods of time. Only minor and infrequent adjust-

ments with long delays—often longer than 10 years—are usually deemed feasible. This allows affected populations to alter their expectations and adjust their private economic choices appropriately.

Another distinctive and relevant feature of social insurance programs is participation in them by individuals throughout their lifetimes—by paying taxes during their working years and receiving benefits when retired, and as survivors, dependents, disabled, or ill. The intergenerational "chain-letter" funding framework implies a constant renewal of federal obligations to successive young generations as their current payroll taxes extinguish benefit obligations to current retiree generations that were created earlier. Thus, although Congress has prescribed that financial projections looking 75 years ahead should be made for programs such as Social Security and Medicare, even this longer, but finite, horizon generates misleading results and could bias policymaking: Social Security's total fiscal imbalance is severely underestimated even under a 75-year horizon because benefit obligations beyond 75 years—created under current laws by tax payments through the 75th year—remain uncounted.[11] The full characterization of the program's financial condition can be obtained only by calculating its fiscal imbalance in perpetuity.[12]

Thus, the "fiscal imbalance" metric—calculated in perpetuity and encompassing all government programs—consistently and fully reflects the implications of alternative policy choices and is well suited for evaluating the tradeoffs that they involve. These are choices that policymakers won't be able to avoid, given the federal government's worsening financial condition.[13] And the "generational imbalance" metric—calculated for tax-transfer programs such as Social Security and Medicare, which cover participants' entire lifetimes—reveals the intergenerational redistribution those programs bring about, providing important additional information about alternative policy tradeoffs.

Another shortcoming of 10-year debt and deficit measures is that no one knows

what they imply for individual taxpayers and others. After 10 years, most of the baby boomers will be retired, and workers will be competing more intensely in a globalized economy so that they can nurture and educate their children as well as care for their elderly parents. A 10-year budget outlook provides incomplete information about the full extent of taxes and benefits that individual Americans would face under current laws or alternative federal fiscal policies. Lead times considerably longer than 10 years are usually provided when entitlement program rules are adjusted. It appears reasonable, therefore, to provide information on likely budgetary outcomes, especially at the individual level, over much longer than a 10-year time horizon. Generational accounts serve precisely this purpose.

The Generational Implications of CBO's 10-Year Budget Projections: 2013–22

As noted above, Congress has frequently intervened during the last decade to prevent, postpone, or alter the implementation of particular tax and expenditure laws to protect the interests of specific groups. Examples of this include the Medicare "doc fix" for preventing steep cuts to physician reimbursements, the indexation of Alternative Minimum Tax (AMT) rate brackets to protect middle-class taxpayers, and so on. However, as of this writing in early 2013, the stakes are considerably higher than simply preserving the interests of particular citizen groups, although those concerns remain relevant. Beyond concerns with the AMT and Medicare physicians' reimbursements, Americans just avoided a massive "fiscal cliff" created under previous tax laws: the expiration of tax cuts originally adopted under the George W. Bush administration and sizable automatic spending cuts scheduled for early 2013 under the Deficit Control Act of 2011. Most of

those tax cuts have now been extended and spending cuts have been postponed, for fear that their implementation would impose a large fiscal drag on the economy, boosting unemployment and tipping the economy into another recession.

The March 2012 CBO report roughly anticipated those congressional moves, and thus provides two sets of federal budget projections: one under "current laws" (the "Baseline" projection) and another under elimination of certain parts of current tax and spending laws (the "Alternative" projection) that would prevent federal tax increases and spending cuts. Including debt service costs, the Baseline policy projection shows a 10-year cumulative deficit of $2.9 trillion and the Alternative shows a cumulative deficit of $10.7 trillion. Because Alternative policies eliminate tax hikes and spending cuts, the overall impact of shifting from Baseline to the Alternative policies is to increase the disposable resources of today's taxpayers across the board. Table 1 lists the policies under the Baseline that would be removed to shift to Alternative policies. It also shows the direct cumulative change in the debt (in undiscounted nominal dollars excluding debt service reductions) associated with each of Table 1's policies between 2013 and 2022. It shows that the direct effect of postponing or removing the policy items mentioned above from current laws for the next 10 years would be to cumulatively add almost $6.0 trillion to the federal debt by 2022.[14]

The first four columns of Table 2 show the actuarial present value of net taxes (taxes minus transfers) estimated for people of selected ages by gender under Baseline and Alternative fiscal policies for 2013–22. Population projections were provided by the Social Security Administration and several microdata profiles of tax and transfer payments (see Appendix A) are employed to distribute CBO aggregate projections through 2022 on a per capita basis to estimate these accounts, labeled "10-year Generational Accounts." The estimates—actuarial present values calculated using an inflation-adjusted discount rate of

Because Alternative policies eliminate tax hikes and spending cuts, the overall impact of shifting from Baseline to the Alternative policies is to increase the disposable resources of today's taxpayers across the board.

Table 1
Potential Changes to Scheduled "Current Law" Fiscal Policies

Policy	Cumulative Increase in deficit (2013–22; $billions)
Maintain Medicare physician payments at current rates	316
Extend expiring tax provisions[1]	3,557
Index AMT income limits to inflation[1]	1,008
Remove BCA2011 automatic sequester: Defense Discretionary[3]	539
Remove BCA2011 automatic sequester: Nondefense Mandatory: Medicare	132
Remove BCA2011 automatic sequester: Nondefense Mandatory: Other[2]	52
Remove BCA2011 automatic sequester: Nondefense Discretionary[3]	356
Total direct effect on federal debt	**5,960**

Source: Fiscal year totals based on the Congressional Budget Office's January 2012 Budget Outlook. "BCA2011" stands for Budget Control Act of 2011.
[1] Assumes extension of expiring tax provisions and adjustments to Alternative Minimum Tax limits will be implemented together. Excludes payroll tax reduction.
[2] Excludes Social Security, Medicaid, and other programs exempt from Deficit Control Act sequester.
[3] Elimination of sequester automatic spending cut not assumed to affect taxes and transfers of current generations.

The very young and those 60 and older will be recipients of net transfers during the next 10 years, whereas working-aged adults will pay more taxes than they will receive in transfers from the government through the year 2022.

3.68 percent per year and age-specific cohort mortality rates—are shown in thousands of constant 2012 dollars.[15]

Columns 1 and 2 of Table 2 show the age-gender distribution of the present value of net tax payments under CBO Baseline projections. The table shows that very young individuals and those aged 60 and older will be recipients of net transfers during the next 10 years, whereas working-aged adults younger than age 60 will pay more taxes than they will receive in transfers from the government through the year 2022.[16] Columns 3 and 4 of Table 2 show the same information as the first two columns of the table, but under the CBO's Alternative budget projection.

Under both Baseline and Alternative projections, the most significant concurrent public intergenerational transfers during the next 10 years will occur between middle-aged workers and retirees. For example, under Alternative policies (column 3), 40-year-old males are projected to surrender to the fed-eral government about $131,400 in present value, on average, during the next decade; and 70-year-old male retirees will receive $184,300 present value, on average, between 2013 and 2022. As is well known, this prospective redistribution—a 10-year snapshot of federal transactions—occurs primarily through Social Security and Medicare taxes paid by workers to fund those programs' benefit payments to retirees.[17] It's worth pointing out that prospective generational accounts ignore past tax payments made by today's seniors. However, the main use of generational accounts is to reveal the future implications of policy changes, as discussed below.

Because the Alternative projection ignores unlikely Baseline policies that would increase taxes or reduce transfers and government purchases, it results in reduced taxes and increased transfers for almost all generations. Columns 5 and 6 of Table 2 show the actuarial-present-value difference for different generations between Baseline and

Alternative projections. The present-valued 10-year resource increase for today's 40-year-old males, per capita, is $31,800, on average. And 40-year-old women would receive, on average, $20,200 per capita in present value during 2013–22. The increases in the present value of net resources vary for different age and gender groups reflecting different direct tax-transfer incidences of policies excluded from the Baseline to generate the Alternative projection. For both males and females, younger adult generations and retirees would receive smaller boosts to their resources during the next 10 years under the CBO's Alternative policy path.

In addition, today's generations will reap the benefits of higher government purchases of pure public goods and services—defense and non-defense discretionary programs—totaling $895 billion over 10 years.[18] Normally, policies to provide extra public goods should be funded by the generations that will benefit from them. However, shifting from Baseline to Alternative policies involves providing current generations with more public goods and services, but also more transfers and smaller taxes.

Tables 1 and 2 capture the dilemma that U.S. policymakers face. Given their actions to reduce, postpone, or prevent "fiscal cliff" policies from being implemented, they must clearly believe that allowing them to occur would be very harmful economically, reducing GDP growth and employment. Their ultimate decision to follow a policy course roughly in line with the Alternative policy path means awarding sizable additional resources and public benefits to today's generations at the expense of a $7.8 trillion increase in the nation's debt burden (including $6.0 trillion in direct policy effects and $1.9 in additional debt service)—a burden that future working and taxpaying generations will have to bear.

The decision to roughly follow the Alternative policy path means awarding sizable additional resources and public benefits to today's generations and creating a $7.8 trillion increase in the nation's debt burden.

Table 2
10-Year Generational Accounts by Selected Age and Gender: 2013–22, Present Values of Net Taxes (taxes minus transfers, in thousands of constant 2012 dollars)

Age	Baseline Projection		Alternative Projection[1]		Difference	
	Males (1)	Females (2)	Males (3)	Females (4)	Males (5)=(1)−(3)	Females (6)=(2)−(4)
0	−15.6	−15.4	−15.6	−15.4	0.0	0.0
10	−11.3	−11.8	−11.5	−11.9	0.2	0.1
20	61.4	38.1	56.0	36.4	5.4	1.7
30	135.8	77.1	117.5	63.3	18.3	13.8
40	163.2	104.2	131.4	84.0	31.8	20.2
50	159.5	111.4	126.5	93.7	33.0	17.7
60	−1.3	−13.5	−35.3	−23.6	34.0	10.1
70	−168.3	−150.9	−184.3	−157.4	16.0	6.5
80	−166.2	−146.2	−172.2	−150.6	6.0	4.4
90	−107.2	−98.4	−109.7	−101.1	2.5	2.7

Source: Author's calculations.
[1] Includes the effects of all items in Table 1 except automatic sequester defense and nondefense discretionary spending changes. The two latter items are cumulatively projected to be $895 billion during 2013–22.

On the other hand, despite reducing, preventing, and postponing the effects of Baseline policies in the past—and introducing a partial payroll tax holiday since late 2010—GDP growth has remained sluggish and employment growth has remained very low. If this experience continues during the next year or two, the adoption of the Alternative fiscal policy path will entail additional debt without delivering the expected short-term beneficial effects on economic growth.[19] Indeed, continuing on the Alternative policy path and continuing to accumulate debt at a rapid pace may eventually bring about those very effects on output and employment that policymakers are currently seeking to avoid.

Although the resource redistribution tradeoffs under Alternative policy choices are appreciated in general terms, their implications, on average, for individual workers, consumers, and retirees are not explicitly calculated and reported by official budget-reporting agencies. Without such supplementary budget metrics, fiscal policy debates remain bereft of important information that could help lawmakers to better calibrate national fiscal policy choices.

> **Continuing on the Alternative policy path and accumulating debt at a rapid pace may eventually bring about those very effects on output and employment that policymakers are currently seeking to avoid.**

The Generational Implications of Continuing Baseline and Alternative Fiscal Paths beyond 10 Years

Of course, the world is unlikely to end in the year 2022—the last year of the CBO's current 10-year budget window—and neither are intergenerational transfers and obligations. What would be the implications of extending the Baseline and Alternative policies beyond 2022? Although the CBO is not legally required to do so, it occasionally provides useful reports on long-range budget projections to show prospective aggregate federal receipts and expenditures—the implications of continuing Baseline and Alternative policies for several additional decades. Again, however, the generational implications of those paths are unknown. Not having access to a sufficiently detailed set of long-range receipts and expenditures on federal tax and transfer programs, this study extends and reorients the CBO's 10-year Baseline and Alternative policy paths to estimate their generational stance. Again, population projections provided by the Social Security Administration and several micro-data based profiles of tax and transfer payments (see Appendix A) are employed to project the per capita values calculated for the year 2022. The values of taxes and transfers by age and gender are adjusted upward for each future year by the CBO's long-term annual productivity growth rate assumptions.[20] The exceptions are various health care benefits, which are adjusted at a faster rate of growth than economywide productivity plus population growth—consistent with historical evidence.[21]

Generational accounts are calculated, again, as actuarial present values of taxes paid minus transfers received per capita during a person's remaining lifetime. As in the previous section, projected taxes and transfers are discounted at an inflation-adjusted discount rate of 3.68 percent per year, adjusted for mortality. Table 3 shows generational accounts at selected ages for the 2013 U.S. population by gender under federal Baseline and Alternative policies. The generational account of a 40-year-old male under Alternative policies is just $37,600 per year. Table 2 (column 3) shows that the 10-year present value of net taxes for a male who is 40 years old in 2013 is much larger: $131,400. The difference arises because the present value of future Social Security, Medicare, and other benefits after 2022, in years beyond the person's 50th birthday, exceeds his tax payments after 2022—by an amount equal to the difference between the two estimates: $93,800.

Women's generational accounts are generally smaller than those of males of corresponding ages because they work and earn less than men and live and collect benefits for longer. For 40-year-old women, the dif-

Table 3
Lifetime Generational Accounts as of Fiscal Year 2013 by Selected Age and Gender, Present Values of Net Taxes (taxes minus transfers, in thousands of constant 2012 dollars)

Age	Baseline Projection		Alternative Projection[1]		Difference	
	Males (1)	Females (2)	Males (3)	Females (4)	Males (5)=(1)−(3)	Females (6)=(2)−(4)
0	150.4	23.4	76.8	−19.3	73.6	42.7
10	211.3	58.9	122.2	7.1	89.1	51.8
20	271.1	95.7	168.9	38.3	102.2	57.4
30	246.3	74.0	138.2	14.8	108.1	59.2
40	140.2	10.3	37.6	−38.6	102.6	48.9
50	−15.6	−92.8	−98.6	−125.7	83.0	32.9
60	−213.1	−232.3	−269.4	−250.8	56.3	18.5
70	−285.4	−273.2	−309.3	−283.9	23.9	10.7
80	−198.1	−184.1	−205.8	−189.8	7.7	5.7
90	−109.4	−102.4	−111.9	−105.2	2.5	2.8

Source: Author's calculations.
[1] Includes the effects of continuing Alternative policies—all items in Table 1 except automatic sequester defense and nondefense discretionary spending changes—throughout the lifetime of living generations.

ference between their Alternative generational account (Table 3, −$38,600) and Alternative 10-year account (Table 2, $84,000) equals $122,600. It is larger than the difference for 40-year-old men because women will pay fewer taxes and are likely to receive benefits for longer compared to men beyond the year 2022, on average, because of their greater longevity.

Table 3 shows that if Alternative policies are continued beyond the next 10 years, they would impose considerably smaller fiscal burdens on today's generations compared to Baseline policies. For example, the lifetime resource increase for today's 30-year-old males and females—who are about to enter their peak working and earning years—would be $108,100 and $59,200, respectively. All of today's generations, including younger retirees, would receive a significant boost to their lifetime resources as a result of adopting the Alternative fiscal path in the long term

compared with the Baseline policy path. Under Alternative policies, today's generations would also receive additional benefits from larger federal public goods provision through discretionary federal spending—benefits that are not reflected in Table 3's estimates.

The Federal Fiscal Imbalance

As discussed earlier, the fiscal imbalance measure of the federal government's financial condition—calculated in perpetuity—fully characterizes the underlying set of federal tax and expenditure policies. The calculation discounts future fiscal deficits (non-interest expenditures minus receipts) at the government's long-term interest rate.[22] The resulting estimate, expressed in constant 2012 dollars in this study, shows the amount of *additional* funds that the government would

All of today's generations would receive a significant boost to their lifetime resources as a result of adopting the Alternative fiscal path compared with the Baseline policy path.

need, invested at interest, to pay for all future fiscal deficits under the given set of policies. Alternatively, it is the additional amount of resources needed to never have to change those policies.[23]

The last row of Table 4 shows that under Baseline policies, the federal government's 2012 fiscal imbalance, measured in constant 2012 dollars, equals $54.4 trillion. This figure is comprised of a fiscal imbalance of $64.8 trillion from the two major social insurance programs—Social Security and Medicare—and a negative fiscal imbalance on account of the rest of federal programs of –$10.5 trillion.

Under the Alternative policy path, shown in the last row of Table 5, the 2012 federal fiscal imbalance is $91.4 trillion, with almost all of the increase coming from the rest-of-government operations that now contribute a positive $25.5 trillion to the estimate. The $37.0 trillion swing results from adopting the Alternative policy path rather than the Baseline path and maintaining that choice indefinitely into the future. Even under Baseline policies, the federal government's financial condition appears dire. Ironically, policymakers have been fixated on how to avoid the "fiscal cliff"—that is, how to hew

closely to the Alternative policy path and avoid the immediate negative economic implications that will follow if status quo policies of the Baseline path are maintained.

Since the dollar values of the fiscal imbalance estimates are extremely large, they are easier to comprehend when expressed as ratios to the present value of future GDP (see Tables 6 and 7) or future payrolls (Tables 8 and 9).[24] Table 6 shows that eliminating the Baseline fiscal imbalance would take up 5.4 percent of future GDP. But the required sacrifice would be much larger—9.0 percent of GDP—under the Alternative path, which better represents the current policy direction (or "current practice"). These fiscal imbalance metrics show the size of policy changes that are required—that policymakers *must today enact and maintain throughout the future*—to shift the trajectory of future federal expenditures and receipts from those projected under either of the two policy alternatives to eliminate the fiscal imbalance. The policy shift must ultimately be sufficient to reduce the imbalance between projected federal receipts and expenditures to zero. That is, the government must ultimately fully pay for what it spends.

Table 4
The Federal Government's Fiscal Imbalance under *Baseline* Policies, Beginning-of-fiscal-year Present Values (in billions of constant 2012 dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Social Insurance Fiscal Imbalance	64,853	65,352	66,710	68,112	69,534	70,961	73,180	75,458	77,775	80,146	82,564
Future Imbalance	67,826	68,308	69,640	71,020	72,428	73,846	76,061	78,345	80,655	83,007	85,397
Trust Funds	2,973	2,956	2,930	2,908	2,894	2,885	2,881	2,887	2,880	2,861	2,833
Rest of Government Fiscal Imbalance	−10,502	−10,233	−10,339	−10,502	−10,641	−10,687	−10,994	−11,257	−11,460	−11,619	−11,742
Future Imbalance	−23,603	−24,368	−24,937	−25,324	−25,555	−25,692	−25,987	−26,211	−26,394	−26,521	−26,597
Liabilities to the Public	10,128	11,179	11,668	11,914	12,020	12,120	12,112	12,067	12,054	12,041	12,022
Liabilities to Trust Funds	2,973	2,956	2,930	2,908	2,894	2,885	2,881	2,887	2,880	2,861	2,833
Federal Fiscal Imbalance	54,351	55,119	56,371	57,610	58,893	60,274	62,186	64,201	66,315	68,527	70,822

Source: Author's calculations.

Table 5
The Federal Government's Fiscal Imbalance under *Alternative* Policies, Beginning-of-fiscal-year Present Values (in billions of constant 2012 dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Social Insurance Fiscal Imbalance	65,934	66,440	67,804	69,201	70,619	72,036	74,256	76,529	78,841	81,202	83,606
Future Imbalance	68,907	69,396	70,734	72,109	73,513	74,921	77,137	79,416	81,721	84,063	86,439
Trust Funds	2,973	2,956	2,930	2,908	2,894	2,885	2,881	2,887	2,880	2,861	2,833
Rest of Government Fiscal Imbalance	25,457	26,261	27,076	27,919	28,810	29,826	30,994	32,256	33,631	35,101	36,660
Future Imbalance	12,356	12,103	12,081	12,168	12,401	12,736	13,306	13,966	14,685	15,472	16,323
Liabilities to the Public	10,128	11,202	12,065	12,843	13,515	14,205	14,807	15,403	16,066	16,768	17,504
Liabilities to Trust Funds	2,973	2,956	2,930	2,908	2,894	2,885	2,881	2,887	2,880	2,861	2,833
Federal Fiscal Imbalance	91,391	92,701	94,880	97,120	99,429	101,862	105,250	108,785	112,472	116,303	120,266

Source: Author's calculations.

Table 6
The Federal Government's Fiscal Imbalance under *Baseline* Policies, Beginning-of-fiscal-year Values (as a percent of the present value of GDP)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Social Insurance Fiscal Imbalance	6.4	6.3	6.3	6.4	6.4	6.4	6.4	6.5	6.6	6.7	6.7
Future Imbalance	6.7	6.6	6.6	6.6	6.6	6.6	6.7	6.8	6.8	6.9	7.0
Trust Funds	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2
Rest of Government Fiscal Imbalance	−1.0	−1.0	−1.0	−1.0	−1.0	−1.0	−1.0	−1.0	−1.0	−1.0	−1.0
Future Imbalance	−2.3	−2.4	−2.4	−2.4	−2.3	−2.3	−2.3	−2.3	−2.2	−2.2	−2.2
Liabilities to the Public	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	1.0	1.0
Liabilities to Trust Funds	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2
Federal Fiscal Imbalance	5.4	5.4	5.4	5.4	5.4	5.4	5.5	5.5	5.6	5.7	5.8

Source: Author's calculations.

To some observers, a fiscal imbalance of 9.0 percent of GDP under the Alternative policy/practice path may appear to be manageable. However, the nation's GDP is not entirely subject to taxes. If total payrolls are taken as the appropriate base, additional taxes required on total payrolls to eliminate the fiscal imbalance beginning in 2012 would be 11.7 percent under Baseline policies (Table 8) and 19.7 percent under the Alternative path (Table 9). The swing from Baseline to Alternative policies implies a swing of 8.0 percentage points of payrolls in the rest-of-government account. Similar estimates implemented during the early 2000s indicated that payroll taxes would have to be doubled

Table 7
The Federal Government's Fiscal Imbalance under *Alternative* Policies, Beginning-of-fiscal-year Values (as a percent of the present value of GDP)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Social Insurance Fiscal Imbalance	6.5	6.5	6.4	6.5	6.5	6.5	6.5	6.6	6.7	6.7	6.8
Future Imbalance	6.8	6.7	6.7	6.7	6.7	6.7	6.8	6.8	6.9	7.0	7.1
Trust Funds	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2
Rest of Government Fiscal Imbalance	2.5	2.6	2.6	2.6	2.6	2.7	2.7	2.8	2.9	2.9	3.0
Future Imbalance	1.2	1.2	1.2	1.1	1.1	1.2	1.2	1.2	1.2	1.3	1.3
Liabilities to the Public	1.0	1.1	1.2	1.2	1.2	1.3	1.3	1.3	1.4	1.4	1.4
Liabilities to Trust Funds	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2
Federal Fiscal Imbalance	9.0	9.0	9.0	9.1	9.1	9.1	9.2	9.4	9.5	9.7	9.8

Source: Author's calculations.

Table 8
The Federal Government's Fiscal Imbalance under *Baseline* Policies, Beginning-of-fiscal-year Values (as a percent of the present value of uncapped payrolls)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Social Insurance Fiscal Imbalance	14.0	13.8	13.8	13.8	13.8	13.8	14.0	14.1	14.3	14.5	14.6
Future Imbalance	14.6	14.4	14.4	14.4	14.4	14.4	14.5	14.7	14.8	15.0	15.1
Trust Funds	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5
Rest of Government Fiscal Imbalance	−2.3	−2.2	−2.1	−2.1	−2.1	−2.1	−2.1	−2.1	−2.1	−2.1	−2.1
Future Imbalance	−5.1	−5.2	−5.2	−5.1	−5.1	−5.0	−5.0	−4.9	−4.9	−4.8	−4.7
Liabilities to the Public	2.2	2.4	2.4	2.4	2.4	2.4	2.3	2.3	2.2	2.2	2.1
Liabilities to Trust Funds	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5
Federal Fiscal Imbalance	11.7	11.6	11.7	11.7	11.7	11.7	11.9	12.0	12.2	12.4	12.5

Source: Author's calculations.

to resolve the U.S. fiscal imbalance. Today, however, it would require much more than a doubling of taxes on total payrolls to accomplish the same objective.[25]

Tables 4 through 9 show that the fiscal imbalance grows larger over time, not only in dollar terms, but also as a ratio of the present value of future GDP or future payrolls. The increases in the ratio measure are explained by the fact that the fiscal imbalance grows larger at the rate of interest, whereas GDP and payrolls grow at the generally slower rate of economywide productivity growth. Table 9 shows that not shifting from the "current practice" (CBO's Alternative) path for another 10 years would increase the size of the required policy adjustment: instead of a permanent payroll tax increase in 2012 of 19.7 percent, waiting until 2022 would make the required permanent payroll tax increase 21.3 percent.

Table 9
The Federal Government's Fiscal Imbalance under *Alternative* Policies, Beginning-of-fiscal-year Values
(as a percent of the present value of uncapped payrolls)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Social Insurance Fiscal Imbalance	14.2	14.1	14.0	14.0	14.0	14.0	14.2	14.3	14.5	14.6	14.8
Future Imbalance	14.9	14.7	14.6	14.6	14.6	14.6	14.7	14.9	15.0	15.2	15.3
Trust Funds	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5
Rest of Government Fiscal Imbalance	5.5	5.6	5.6	5.7	5.7	5.8	5.9	6.1	6.2	6.3	6.5
Future Imbalance	2.7	2.6	2.5	2.5	2.5	2.5	2.5	2.6	2.7	2.8	2.9
Liabilities to the Public	2.2	2.4	2.5	2.6	2.7	2.8	2.8	2.9	3.0	3.0	3.1
Liabilities to Trust Funds	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5
Federal Fiscal Imbalance	19.7	19.6	19.6	19.7	19.7	19.9	20.1	20.4	20.7	21.0	21.3

Source: Author's calculations.

Table 10 shows fiscal imbalances under Baseline and Alternative policies using alternative tax and expenditure bases. Each column of the table shows the ratio measure as of the year shown in the first row. The first column shows that even under Baseline policies, the fiscal imbalance is already almost as large as the federal government's entire projected discretionary spending (penultimate row in top panel of Table 10). The table shows, for example, that under the Alternative policy path, income taxes would have to be almost doubled, or Social Security and Medicare benefits would have to be reduced to about one-tenth of their projected size, to eliminate the fiscal imbalance. Alternatively, it would require increasing all federal receipts by about 50 percent (the fourth row in the second panel of Table 10).

The Contribution of Social Security and Medicare to the U.S. Fiscal Imbalance

As is well known, almost the entire federal fiscal imbalance is attributable to the two major social insurance programs, So-cial Security and Medicare, which impose taxes on workers to pay for retirement and health care benefits to retired and disabled workers and their dependents and survivors. The obligations to pay those benefits in the future far outstrip projected revenues under the programs' current rules. Table 11 separates the Social Insurance component of the federal government's fiscal imbalance (under both policies) into several components: Social Security, Medicare Hospital Insurance (HI), Medicare Supplementary Medical Insurance (SMI), and Medicare Prescription Drug (Part D). For each component, Table 11 shows the total imbalance on account of past and living generations—which equals the future imbalance on account of living generations minus the value of the program's trust fund—and the imbalance on account of future generations. For each year, the sum of the fiscal imbalances for these four programs equals the "social insurance fiscal imbalance" of Table 5 (repeated in the first row of Table 11).

Social Security contributes only one-third of the total "social insurance fiscal imbalance," with Medicare accounting for the remainder—about $45.9 trillion. Table 12 shows that as a ratio of the present value of payrolls, the total social insurance fiscal im-

Table 10
The Federal Fiscal Imbalance (as a ratio of various tax and expenditure bases)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
CBO Baseline Federal Budget Projections											
GDP	5.4	5.3	5.4	5.4	5.4	5.4	5.5	5.5	5.6	5.7	5.8
Payrolls	11.7	11.7	11.7	11.7	11.7	11.7	11.9	12.0	12.2	12.4	12.6
Total Expenditures	21.3	21.5	21.7	21.9	22.1	22.3	22.5	22.7	23.0	23.2	23.4
Total Federal Receipts	25.5	25.8	26.0	26.3	26.6	27.0	27.3	27.6	28.0	28.4	28.8
Income Taxes	40.2	40.6	41.0	41.4	41.8	42.4	42.9	43.4	44.0	44.6	45.2
Non-Social Insurance Expenditures	42.9	43.6	44.1	44.5	45.0	45.6	46.1	46.6	47.1	47.6	48.1
Non-Social Insurance Revenues	35.8	36.1	36.5	36.8	37.2	37.7	38.2	38.7	39.2	39.7	40.3
Social Security & Medicare Expenditures	51.2	51.7	52.1	52.4	52.8	53.2	53.5	53.9	54.4	54.8	55.3
Social Security & Medicare Revenues	88.9	90.0	91.1	92.1	93.3	94.6	95.8	97.1	98.4	99.9	101.3
Discretionary Expenditures	87.8	89.6	91.1	92.5	93.9	95.4	96.7	98.1	99.5	100.9	102.3
Mandatory Expenditures	28.0	28.3	28.5	28.7	28.9	29.2	29.4	29.6	29.8	30.1	30.4
CBO Alternative Federal Budget Projections											
GDP	9.0	9.0	9.0	9.1	9.1	9.1	9.2	9.4	9.5	9.7	9.8
Payrolls	19.7	19.6	19.6	19.7	19.8	19.8	20.1	20.4	20.7	21.0	21.3
Total Expenditures	35.0	35.4	35.8	36.1	36.5	37.0	37.3	37.7	38.1	38.5	38.9
Total Federal Receipts	50.3	50.9	51.5	52.1	52.9	53.7	54.4	55.2	56.0	56.9	57.8
Income Taxes	86.3	87.3	88.3	89.3	90.5	91.8	93.1	94.5	95.8	97.3	98.8
Non-Social Insurance Expenditures	68.7	69.8	70.6	71.5	72.4	73.4	74.3	75.1	76.0	76.9	77.8
Non-Social Insurance Revenues	74.7	75.7	76.5	77.5	78.5	79.7	80.8	81.9	83.1	84.4	85.6
Social Security & Medicare Expenditures	86.6	87.4	88.1	88.9	89.6	90.5	91.2	92.0	92.9	93.8	94.7
Social Security & Medicare Revenues	153.4	155.4	157.4	159.6	161.9	164.4	166.8	169.3	171.9	174.6	177.4
Discretionary Expenditures	136.4	139.1	141.4	143.8	146.2	148.6	150.9	153.1	155.4	157.7	160.0
Mandatory Expenditures	47.0	47.5	47.9	48.3	48.7	49.2	49.6	50.0	50.5	51.0	51.5

Source: Author's calculations.

balance equals 14.2 percent as of 2012, rising to 14.8 percent by 2022 if no adjustments are made until then. Resolving this imbalance would require approximately doubling the current 15.3 percent payroll tax (most of the existing payroll tax is levied on capped payrolls).

Tables 11 and 12 also show the imbalance on account of just-past and living generations (excluding future generations)—or the "generational imbalance" embedded in the financial structure of social insurance programs.[26] This measure assesses the extent to which today's social insurance policies

Table 11
The Contribution of Social Security and Medicare to the Federal Fiscal Imbalance, CBO Alternative Projections

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Social Insurance (Social Security Plus Medicare)											
Fiscal Imbalance	65,935	66,442	67,805	69,200	70,618	72,036	74,256	76,530	78,841	81,201	83,607
Unfunded obligations: past and living generations	54,074	54,657	55,964	57,306	58,671	60,037	62,083	64,183	66,320	68,501	70,725
Unfunded future obligations: living generations	57,046	57,612	58,894	60,215	61,565	62,922	64,964	67,070	69,199	71,362	73,558
Trust Fund	2,973	2,956	2,930	2,908	2,894	2,885	2,881	2,887	2,880	2,861	2,833
Unfunded obligations: future generations	11,861	11,784	11,840	11,894	11,948	11,999	12,173	12,346	12,522	12,701	12,881
Social Security											
Fiscal Imbalance	20,077	20,185	20,664	21,185	21,722	22,272	23,101	23,954	24,831	25,733	26,660
Unfunded obligations: past and living generations	19,586	19,686	20,153	20,661	21,187	21,726	22,538	23,375	24,236	25,121	26,032
Unfunded future obligations: living generations	22,240	22,355	22,807	23,288	23,781	24,291	25,065	25,860	26,672	27,496	28,333
Trust Fund	2,654	2,669	2,654	2,626	2,594	2,565	2,527	2,485	2,436	2,375	2,301
Unfunded obligations: future generations	491	498	511	523	535	546	563	579	596	612	628
Medicare Hospital Insurance (Part A)											
Fiscal Imbalance	11,483	11,615	11,857	12,096	12,341	12,583	12,961	13,347	13,738	14,143	14,558
Unfunded obligations: past and living generations	11,373	11,552	11,840	12,127	12,419	12,709	13,137	13,574	14,019	14,479	14,949
Unfunded future obligations: living generations	11,618	11,770	12,035	12,299	12,578	12,856	13,279	13,715	14,153	14,601	15,055
Trust Fund	246	219	195	172	158	147	142	141	134	122	106
Unfunded obligations: future generations	111	63	17	-30	-78	-126	-176	-228	-281	-335	-391
Medicare Supplementary Medical Insurance (Part B)											
Fiscal Imbalance	19,172	19,274	19,581	19,878	20,172	20,462	20,958	21,458	21,963	22,467	22,972
Unfunded obligations: past and living generations	14,411	14,534	14,808	15,072	15,334	15,590	16,003	16,419	16,838	17,254	17,669
Unfunded future obligations: living generations	14,484	14,602	14,889	15,182	15,475	15,763	16,215	16,680	17,147	17,618	18,095
Trust Fund	73	68	81	110	142	173	212	261	310	364	426
Unfunded obligations: future generations	4,760	4,740	4,772	4,805	4,839	4,872	4,955	5,039	5,125	5,213	5,302
Medicare Prescription Drugs (Part D)											
Fiscal Imbalance	15,203	15,368	15,703	16,041	16,383	16,719	17,236	17,771	18,309	18,858	19,417
Unfunded obligations: past and living generations	8,704	8,885	9,163	9,446	9,731	10,012	10,405	10,815	11,227	11,647	12,075
Unfunded future obligations: living generations	8,704	8,885	9,163	9,446	9,731	10,012	10,405	10,815	11,227	11,647	12,075
Trust Fund	0	0	0	0	0	0	0	0	0	0	0
Unfunded obligations: future generations	6,499	6,483	6,540	6,596	6,652	6,707	6,831	6,956	7,082	7,211	7,342

Source: Author's calculations.

Today's boost to consumption spending will be reversed when future generations enter economic life and must pay higher social insurance taxes or tolerate reduced social insurance benefits.

would provide excess benefits to (or, if negative, impose fiscal burdens on) today's generations taken as a whole. By implication, the difference between the fiscal imbalance and the generational imbalance provides an estimate of the net fiscal benefit (burden) that maintaining a given fiscal policy (Baseline or Alternative) would provide to (impose upon) future generations.[27]

Economic Effects of the Current Federal Fiscal Stance

Transferring a dollar of resources from someone who consumes very little out of each new dollar to someone else who consumes a lot more will increase total consumption in the economy. The generational imbalance measure reveals the amount of additional resource that today's generations may expect to receive from social insurance programs over and above their past payroll taxes under current policies. Of course, those receipt expectations may not be as large as the generational imbalance estimated here—to the extent that various age cohorts among those currently alive expect current policies to be changed during their remaining lifetimes. However, older generations, say those aged 55 and older, might expect that they would be protected from any future policy adjustments to reduce the federal fiscal imbalance, at least on account of their social insurance benefits. Younger generations, on the other hand, may expect to receive considerably less in net excess benefits, if anything at all, because they anticipate that future policy changes would considerably diminish future government benefits or increase taxes. However, unless very large fiscal policy adjustments are implemented soon—which appears quite unlikely—current generations, especially older ones, may expect to receive sizable net excess benefits, even if not to the tune of $65 trillion estimated based on just social insurance programs (Table 11).

Ultimately, the excess benefits awarded to current generations would have to be paid for out of excess contributions over benefits of future social insurance program participants. Thus, current social insurance policy/practice paths (as reflected in the CBO's Baseline/Alternative projections) that incorporate resource transfers from the future toward today's generations are likely to stimulate consumption spending by those alive today—that is, to make current consumption larger than could be financed had current generations been compelled to spend out of their own resources. Today's boost to consumption spending will be reversed when future generations enter economic life and must pay higher social insurance taxes or tolerate reduced social insurance benefits to pay for the excess benefits to today's (and past) retirees.

The last row of Table 11 indicates that today's Social Security and Medicare policies are scheduling a transfer of net excess benefits to the tune of $65 trillion from future generations toward current ones. Such large additions to the resources of early participants in social insurance programs have been ongoing since the inception of Social Security. They were boosted with the introduction of Medicare in the mid-1960, increased again by indexing Social Security benefits to inflation during the mid-1970s, and increased yet again with the introduction of Medicare prescription drug coverage for seniors in 2003. Obamacare's expansion of health insurance also boosts this trend by imposing heavier health insurance premiums on younger and future generations. This growth in net transfers toward living generations, seniors in particular, appears to be the key explanation for why U.S. national saving has declined secularly since the late 1970s—when it averaged between 9 and 10 percent of the nation's output—to reach zero during the late 1990s, where it remains today.

The intergenerational resource boost for today's older generations will be realized as monthly benefit checks and health care reimbursements are paid out over time. The

Table 12
The Contribution of Social Security and Medicare to the Federal Fiscal Imbalance, CBO Alternative Projections (as a percent of the present value of uncapped payrolls)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Social Insurance (Social Security Plus Medicare)											
Fiscal Imbalance	14.2	14.0	14.0	14.0	14.0	14.0	14.2	14.3	14.5	14.6	14.8
Unfunded obligations: past and living generations	11.7	11.6	11.6	11.6	11.7	11.7	11.9	12.0	12.2	12.4	12.5
Unfunded future obligations: living generations	12.3	12.2	12.2	12.2	12.2	12.3	12.4	12.6	12.7	12.9	13.0
Trust Fund	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.5	0.5	0.5
Unfunded obligations: future generations	2.6	2.5	2.5	2.4	2.4	2.4	2.3	2.3	2.3	2.3	2.3
Social Security											
Fiscal Imbalance	4.3	4.3	4.3	4.3	4.3	4.3	4.4	4.5	4.6	4.6	4.7
Unfunded obligations: past and living generations	4.2	4.2	4.2	4.2	4.2	4.2	4.3	4.4	4.5	4.5	4.6
Unfunded future obligations: living generations	4.8	4.7	4.7	4.7	4.7	4.7	4.8	4.8	4.9	5.0	5.0
Trust Fund	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5	0.4	0.4
Unfunded obligations: future generations	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Medicare Hospital Insurance (Part A)											
Fiscal Imbalance	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6
Unfunded obligations: past and living generations	2.5	2.4	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.7
Unfunded future obligations: living generations	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.6	2.6	2.6	2.7
Trust Fund	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unfunded obligations: future generations	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1	-0.1	-0.1
Medicare Supplementary Medical Insurance (Part B)											
Fiscal Imbalance	4.1	4.1	4.1	4.0	4.0	4.0	4.0	4.0	4.0	4.1	4.1
Unfunded obligations: past and living generations	3.1	3.1	3.1	3.1	3.1	3.0	3.1	3.1	3.1	3.1	3.1
Unfunded future obligations: living generations	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.2	3.2	3.2
Trust Fund	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1
Unfunded obligations: future generations	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.9	0.9	0.9	0.9
Medicare Prescription Drugs (Part D)											
Fiscal Imbalance	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.4	3.4	3.4
Unfunded obligations: past and living generations	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1
Unfunded future obligations: living generations	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0	2.1	2.1	2.1
Trust Fund	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Unfunded obligations: future generations	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3

Source: Author's calculations.

expectation of that resource boost is likely to influence recipients' *current* consumption behavior and would be reflected in current consumption statistics. This effect would be especially strong for today's retirees, who are realizing the resource boost by way of generous social insurance benefits. Calculations of consumption profiles by age from U.S. micro-data sources across the 1990s and 2000s suggest that consumption spending of older generations has increased much more rapidly compared to that of younger generations. (See Appendix G for details about how consumption profiles are calculated based on Consumer Expenditure Survey micro-data.)

Figures 1 and 2 show consumption expenditures by age for males and females, respectively. Each figure shows three profiles representing consumption spending during the early 1990s (short dashes), the turn of the century (unbroken line), and the late 2000s (long dashes). All figures are in constant 2009 dollars. The figures show a distinctly stronger surge in consumption over time by older generations compared to younger ones. Without an ongoing intergenerational wealth transfer favoring older generations, the shift in consumption profiles from gains in wealth would be expected to be proportional across age. The observed stronger increase for older generations, however, is consistent with the conjecture of a significant ongoing resource transfer from younger and future generations toward older ones in the United States from the operation of social insurance programs with mandatory nationwide participation.

The Sensitivity of Fiscal Imbalance Ratios to Productivity and Interest Rate Assumptions

The fiscal imbalance estimate would change under alternative assumptions about the long-term government interest rate and the economy's productivity growth rate. The government interest rate assumption determines how rapidly future payment flows (of revenues, expenditures, or deficits) must be discounted to place them on par with current payments. An alternative interpretation is that the interest rate assumption determines how rapidly a corpus of outstanding debt grows larger. The productivity growth rate assumption determines how rapidly the economy—and the capacity to pay off outstanding debt—grows over time.

Under normal economic conditions, the long-term interest rate exceeds the economy's productivity growth rate. In general, the more steeply that the projected gap between federal receipts and expenditures increases, the larger is the variation in dollar estimates of the fiscal imbalance in response to variation in the interest rate used to discount annual fiscal shortfalls. However, changes in the interest rate and the productivity growth rate also yield roughly proportional variations in the present values of GDP and payrolls—the bases determining our capacity to resolve the fiscal imbalance. Hence the ratio measure of the fiscal imbalance is much more stable than the dollar variations in the fiscal imbalance in response to changes in assumed interest and productivity growth rates.

Table 13 shows how ratios of Baseline and Alternative fiscal imbalances to total present value of payrolls changes in response to changes in interest and productivity growth rate assumptions (25 percent higher and lower around the CBO's long-term estimates). The tables show that under Baseline policies, the fiscal imbalance ratio ranges between 11.0 percent and 13.7 percent of total present value of payrolls. Under Alternative assumptions it ranges between 18.1 percent and 21.4 percent. Thus, different assumptions about long-term interest and productivity growth rates do not appear to significantly influence the estimated size of fiscal imbalance ratios built into current federal fiscal policy (CBO Baseline projections) or, alternatively, into recent federal fiscal practice (CBO Alternative projections).

Under Baseline policies, the fiscal imbalance ratio ranges between 11.0 percent and 13.7 percent of total present value of payrolls. Under Alternative assumptions it ranges between 18.1 percent and 21.4 percent.
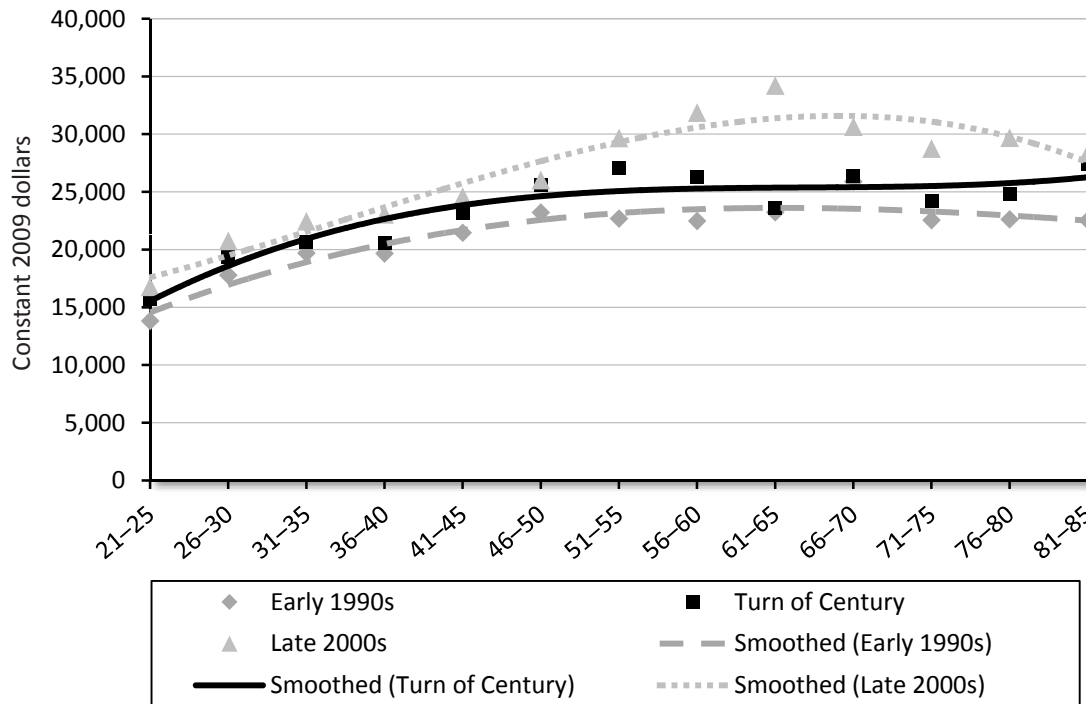
Figure 1
Male Consumption Spending by Age Group
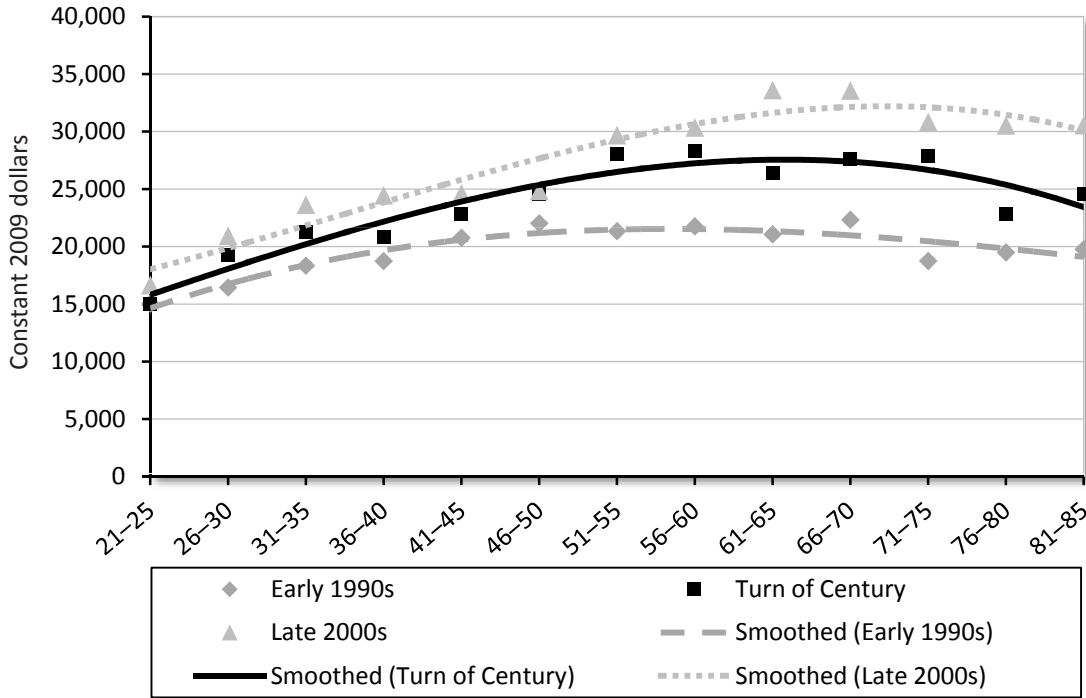
Source: Author's calculation based on the Consumer Expenditure Survey, various years.

Figure 2
Female Consumption Spending by Age Group

Source: Author's calculation based on the Consumer Expenditure Survey, various years.

21

Table 13
Sensitivity of the Fiscal Imbalance to Variation in Long-Term Interest and Productivity Growth Assumptions (baseline projections; percent of uncapped payrolls)

CBO Baseline Projections		Annual Productivity Growth (%)		
		1.5	2.0	2.5
Interest Rate (%)	2.4	13.7	13.4	13.0
	3.2	11.9	11.7	11.5
	4.0	11.0	10.7	10.5
CBO Alternative Projections				
Interest Rate (%)	2.4	19.5	20.6	21.4
	3.2	18.5	19.7	20.8
	4.0	18.1	19.1	20.1

Source: Author's calculations.

Conclusion

As this paper went to press, news came that Congress had reached a deal to sidestep the "fiscal cliff" by implementing policies consistent with practice during the last several years. This would roll back implementation of some currently scheduled fiscal policies, postpone implementing steep cuts in federal spending, and disallow expiration of several decade-old tax cuts. This move from Baseline (or current) fiscal policies to Alternative fiscal policies (or to past fiscal practice) implies an increase in the nation's fiscal imbalance by about $26 trillion in present value. Congress, thus, appears locked into the Alternative fiscal trajectory that, ironically, is likely to eventually generate the same economic problems of high unemployment and stagnant or declining GDP growth that the current policy shift intends to avoid, as business and households adjust their economic choices in anticipation of large fiscal policy adjustments. The shift from Baseline to Alternative policies will grant the public additional public goods and services, but require them to pay less in taxes

and receive more in transfers—to the tune of about $32,000 for today's working men and $20,000 for today's working women—over the next 10 years. If those policies are continued beyond the next 10 years, those cohorts' benefits would be as large as $108,000 and $59,000, respectively, over their remaining lifetimes.

The updates of U.S. fiscal and generational imbalances reported in this study show that current policies and current fiscal practices both imply that the United States is fiscally hugely overextended, with inherited debt plus future spending set to outpace revenues during coming decades. The U.S. fiscal imbalance under the CBO's more realistic Alternative projections equals 9 percent of the nation's future GDP. The fiscal imbalance equals almost 20 percent of the nation's wage base, implying that today's Social Security and Medicare payroll taxes would have to be more than doubled to resolve it. Alternatively, it will require a near doubling of the income taxes that are levied on the nation's broadest tax base.

Under the CBO's Alternative projections, three-quarters of the overall U.S. fis-

The United States is fiscally hugely overextended, with inherited debt plus future spending set to outpace revenues during coming decades.

cal imbalance is accounted for by the fiscal imbalances in Social Security and Medicare, the nation's two largest entitlement programs, which provide retirement and health care benefits to retirees, the disabled, and their dependents and survivors. A subset of the imbalance in these two programs is made up of scheduled benefits in excess of past payroll taxes by past generations and those alive today. However, net payment obligations (benefit promises in excess of future payroll taxes) to today's generations amount to $65 trillion, whereas the trust funds available to pay them amount to just $2.9 trillion, or just 4.8 percent of unfunded obligations. Unless current social insurance policies are changed soon to resolve this "generational imbalance," this funding burden would be transferred to future generations.

The transfer of such a large fiscal burden to future generations implies a transfer of wealth from the future to the living, especially to older living generations. Such transfers are seen to have real effects on today's generations' consumption choices, as measured by the relative increase in consumption spending by older generations. A secular, fiscally induced increase in consumption spending by current generations during the last several decades is the key likely explanation for the sustained decline in U.S. national saving. That decline, in turn, is likely to constrain capital formation and future labor productivity, which will likely further impoverish younger and future generations.

A secular, fiscally induced increase in consumption spending by current generations during the last several decades is the key likely explanation for the sustained decline in U.S. national saving.

Appendix A:
Calculations of Age-Gender Relative Profiles

The latest available micro-data surveys—the Census Bureau's Current Population Survey (CPS), the Federal Reserve Board's Survey of Consumer Finances (SCF), and the Consumer Expenditure Survey (CEX)—are used to derive relative profiles of federal taxes and transfers as received or paid by people of different ages and genders. The profiles are derived by first calculating average spending (or tax) values by age and gender from the appropriate micro-data survey, smoothing the values by age for both genders (done by calculating centered moving averages across several ages, separately for each gender), extrapolating values to ages beyond the maximum age for which data are provided in the survey and, finally, dividing each age-gender value by that of a 40-year-old male.

Figure A.1 shows the relative age-gender profiles for four major federal tax categories. Labor income tax profiles are based on CPS wage and salary information. Social insurance (payroll) tax profiles are calculated from the same data after subjecting them to Social Security's taxable maximum limit. Medicare tax profiles (not shown) are the same as that for labor income taxes; that is, not capped by the Social Security taxable maximum. Capital income tax and corporate income tax profiles are calculated from the SCF using net-worth values. Inheritance tax profiles are also based on SCF information on inheritance receipts by age and gender. Excise tax and customs duty relative profiles are based on CEX data on total consumption. The relative incidence of capital income taxes and indirect taxes is much larger for older age groups compared to labor and payroll taxes. Finally, the returns of net earnings by the Federal Reserve, which represents the government's returns from operating the monetary system (a.k.a., seigniorage), are distributed by age and gender according to the SCF's information on liquid assets—cash plus bank checking and savings deposits. The final profile shown is used to distribute the Alternative Minimum Tax (AMT) adjustment under the CBO's Alternative baseline. This profile is obtained by identifying those individuals with tax liabilities that are larger than the AMT limit and allocating the excess taxes by age and gender.

Figure A.2 shows selected relative age-gender profiles of federal transfer payments. These include entitlement benefits—Social Security, Medicare, Medicaid, and other health programs—and welfare programs such as family and child support payments, Supplemental Security Income, Supplementary Nutrition Assistance Program (SNAP), Unemployment Compensation, Make Work Pay (MWP), earned income (EIC) and child tax credits, federal civilian and military employee retirement programs, and other programs such as the Troubled Asset Relief Program(which is now expected to return funds to the U.S. Treasury for the next few years); federal subsidies on account of agriculture; and the bailout of Fannie Mae and Freddie Mac. In addition, the transfers include health insurance subsidies to low-income households from the scheduled expansion of Medicaid under the Patient Protection and Affordable Care Act (PPACA). The method used for calculating these subsidies is described in Appendix E below.

Also shown are relative profiles of federal civilian and military retirement and health care benefits. The federal government contributes to federal employee (civilian and military) retirement and health care funds. These payments are accounted for as current federal costs of current employee services and are distributed according to relative age-gender profiles of wages earned by federal civilian and military employees. Finally, the federal government's net costs from other programs—such as higher-education subsidy and loan programs, veterans' health and retirement benefit programs, and the federal deposit insurance program—are also calculated and used to distribute the corresponding federal transfer payments.

Figure A.1
Relative Profiles: Selected Federal Taxes
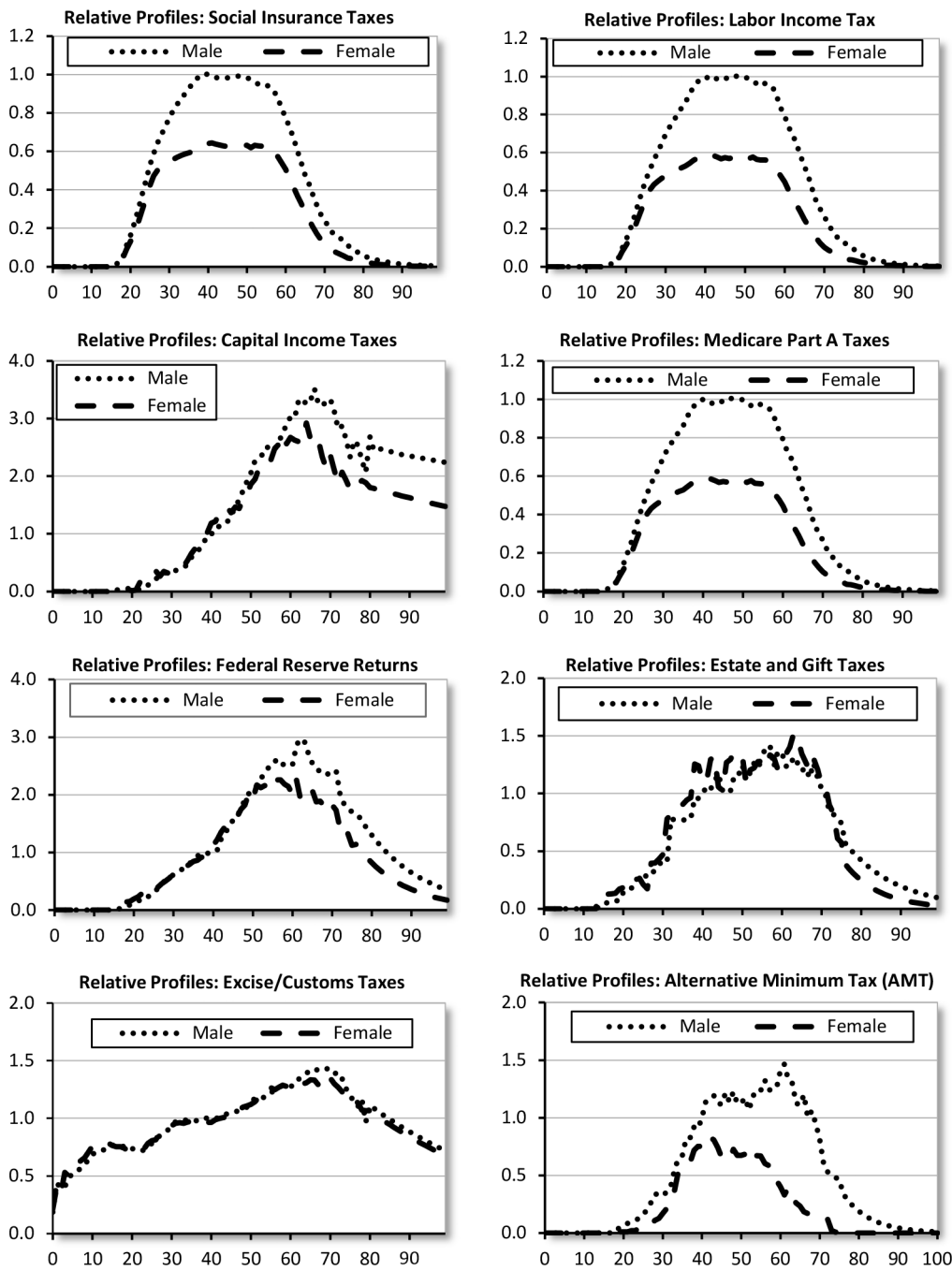
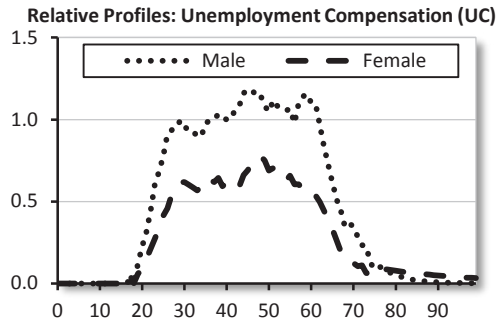

Relative Profiles: Social Insurance Taxes
(Male, Female)

Relative Profiles: Labor Income Tax
(Male, Female)

Relative Profiles: Capital Income Taxes
(Male, Female)

Relative Profiles: Medicare Part A Taxes
(Male, Female)

Relative Profiles: Federal Reserve Returns
(Male, Female)

Relative Profiles: Estate and Gift Taxes
(Male, Female)

Relative Profiles: Excise/Customs Taxes
(Male, Female)

Relative Profiles: Alternative Minimum Tax (AMT)
(Male, Female)

Source: Author's calculations based on micro-data surveys: Current Population Survey, Survey of Consumer Finances, and Consumer Expenditure Survey.
Note: Index: 40-year-old male=1.

Note that although several transfer programs target older generations, several other programs direct benefits toward middle-aged and younger generations—such as retirement pension contributions, child-support programs, SNAP, Medicaid, EIC and child tax

Figure A.2
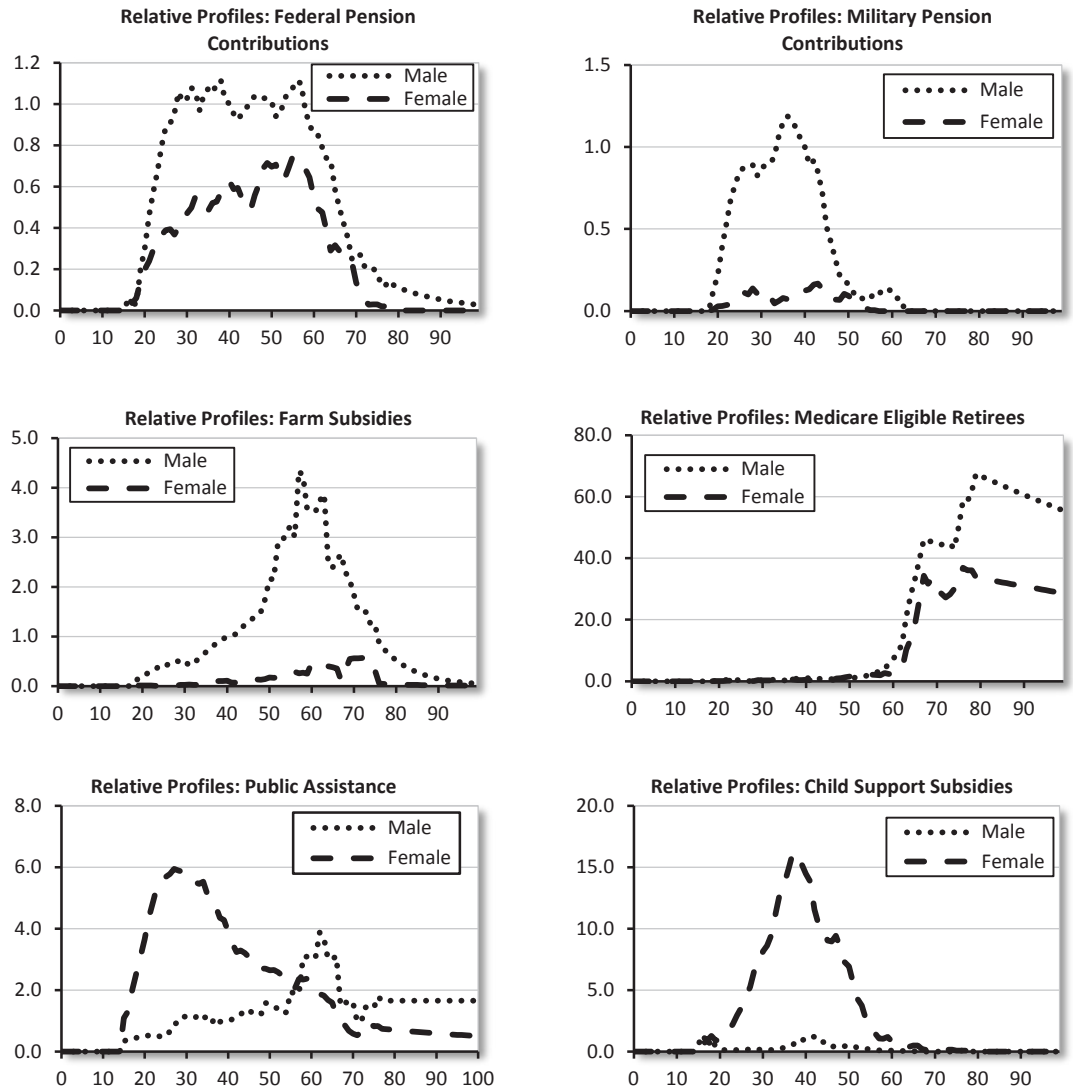## Relative Profiles: Selected Federal Transfers

Relative Profiles: Social Security

Relative Profiles: Medicare

Relative Profiles: Medicaid

Relative Profiles: Supplementary Nutrition Assistance Program (SNAP)

Relative Profiles: Unemployment Compensation (UC)

Relative Profiles: Make Work Pay

Relative Profiles: EIC & Child Tax Credit

Relative Profiles: Federal Civilian Retirement

Figure A.2 *Continued*
Relative Profiles: Selected Federal Transfers

Relative Profiles: Military Retirement

Relative Profiles: Veterans' Security

Relative Profiles: Supplementary Security Income (SSI)

Relative Profiles: Fannie & Freddie

Relative Profiles: Deposit Insurance and TARP

Relative Profiles: SMI Offsetting Receipts

Relative Profiles: PPACA Subsidies

Relative Profiles: Hi-Education Subsidies

Continued next page.

Figure A.2 *Continued*
Relative Profiles: Selected Federal Transfers

Relative Profiles: Federal Pension Contributions

Relative Profiles: Military Pension Contributions

Relative Profiles: Farm Subsidies

Relative Profiles: Medicare Eligible Retirees

Relative Profiles: Public Assistance

Relative Profiles: Child Support Subsidies

Source: Author's calculations based on micro-data surveys: Current Population Survey, Survey of Consumer Finances, and Consumer Expenditure Survey.
Note: Index: 40-year-old male=1.

The larger are the transfers targeted toward young and middle-aged groups, the less would be available to fund entitlement benefits for retirees.

credits, MWP, and PPACA health subsidies and other welfare programs. The larger these transfers are relative to the taxes paid by the young, the less would be available to fund entitlement benefits for retirees.

Figure A.3 shows the relative profiles used for distributing the CBO's March 2012 estimates of the effects of federal tax receipts and expenditures associated with the Patient Protection and Affordable Care Act of 2010. This act, which is to become fully effective in

2014, includes myriad features that the CBO has scored for their impact on the federal government's finances. Its main elements include health insurance premium and cost-sharing subsidies to those with household incomes above the federal poverty limit (FPL), which decline on a sliding scale with household income; matching grants to states for fully (partially after 2016) covering the additional costs of those made newly eligible to Medicaid; tax credits for small employers

who offer health insurance to their employees; "taxes" (as defined by the U.S. Supreme Court) on individuals who remain uninsured after 2014; "taxes" (again, defined by the Supreme Court) on employers who decline to offer health insurance to employees; excise taxes on premium payments on "Cadillac" insurance plans; and other budgetary effects, mostly on Social Security revenues from adjustments to employee wages where employers withdraw health insurance coverage.

These CBO-scored tax and expenditure amounts are distributed by age and gender using the profiles shown in Figure A.3. The profiles are calculated using various microdata sources. For example, small-employer tax credits are distributed according to the age-gender distribution of small business owners as taken from the Census Bureau's Survey of Business Owners;[28] and the population distribution by age and gender of uninsured individuals is taken from the 2011 CPS by deleting all those with private or public sources of health insurance coverage. The distribution of per capita expenditures on high-premium ("Cadillac") health insurance plans is taken from the 2010 Survey of Consumer Expenditures by excluding insurance premium payments less than $10,200. Of course, the tax is likely to change the distribution of such health insurance purchases by age and gender, but the nature of that future change is impossible to anticipate in advance. The calculations assume that the changes will not alter the relative profiles of high-cost health insurance plans by age and gender— that is, any reductions will be in proportion to current spending by age and gender. Finally, the profiles for distributing PPACA cost-sharing subsidies are based on the distribution of non-Medicaid-eligible individuals in poverty-relative family income ranges, and the amount of the subsidy by income group is allocated according to the value of health insurance premiums by age and gender, as reported by the Kaiser Foundation.[29]

The calculations assume that the tax on "Cadillac" health insurance plans will not alter relative profiles of health insurance purchases by age and gender.

Figure A.3
Relative Profiles for Distributing Spending and Taxes under PPACA
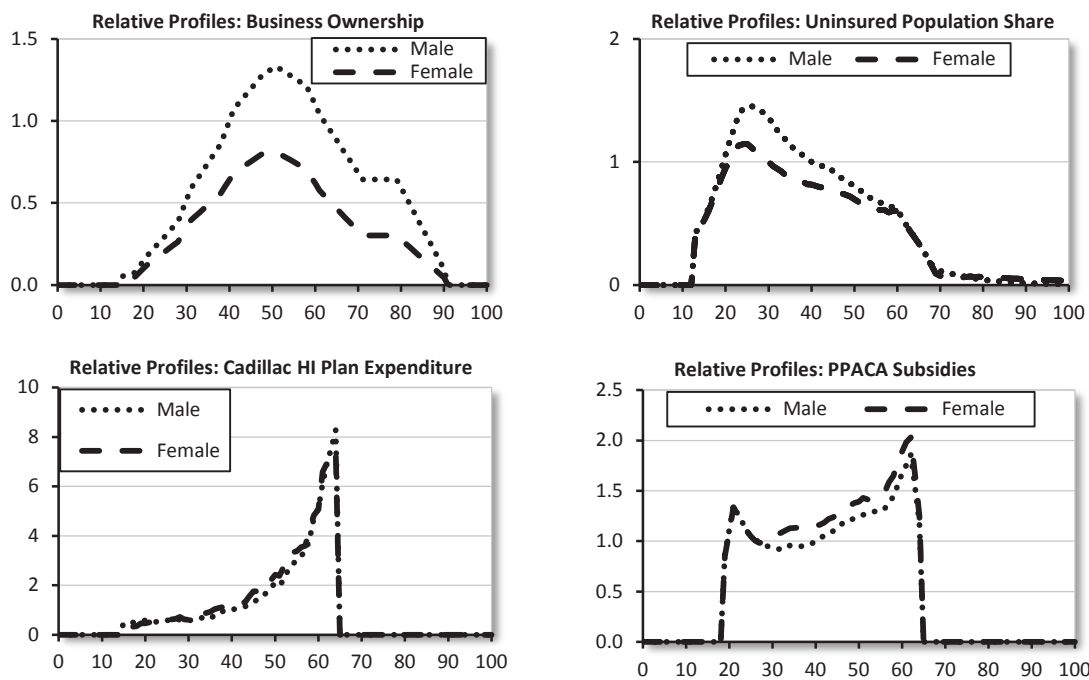
Source: Author's calculations based on micro-data surveys: Current Population Survey, Survey of Consumer Finances, Consumer Expenditure Survey, and the Census Bureau's Survey of Business Owners.
Note: Index: 40-year-old male=1.

Appendix B:
Medicare Cost Growth Assumptions

The CBO must adhere to the provisions of the Deficit Control Act of 1974, which prescribes that baseline projections be built under the assumption that future tax and spending programs will faithfully implement the laws that govern them. For Medicare, this implies a significant change in future projections relative to past experience because the Affordable Care Act now stipulates how payments are to be determined. However, other factors in determining expenditure growth in Medicare Parts A, B, C, and D imply that federal health care expenditures on this program will increase faster than the projected rate of GDP growth under baseline (current law) assumptions. An insight into how Medicare expenditures are projected can be had from the program actuaries' report for 2012. A brief description of the method adopted here, which closely follows the actuaries' method, is provided below for each of Medicare's component programs.

Medicare Part A: Hospital Insurance

Medicare Part A's expenditure projections are based on current-year costs of hospital services, skilled nursing facilities, home health agency, and hospice costs. In each case, cost projections are constructed as a weighted composite of cost increases across several components: labor and non-labor inputs, units of service, statutory payment update factors, and case-mix effects. For most federal budget tax and expenditure items, the CBO's annual aggregates are distributed by age and gender between the years 2012 and 2022 and the age-gender per capita values for the year 2022 are increased for future years at an assumed productivity growth rate. In the case of Medicare Part A expenditures, however, the Medicare actuaries projected the rate of total hospital insurance (HI) spending growth relative to the growth of HI taxable payroll through the year 2035.[30] The growth rate differentials are 2.3 percentage points in 2021; 2.5 percentage points in 2025; 2.2 percentage points in 2030; and 2.0 percentage points in 2035. Since HI taxable payrolls are already projected for future years under CBO productivity growth assumptions (see Appendix E), a simple application of the Medicare actuaries' growth-rate differentials to inflation-adjusted HI payroll growth rates yields aggregate inflation-adjusted HI expenditure growth rates through 2035. Beyond the last year of the Medicare actuaries' projections (2035), this study adopts the assumption of a linear decline in the growth differential consistent with achieving a negative 1.1 percent growth differential by 2085 to reflect the continuation of current law on (negative) use intensity allowances through the indefinite future.

Medicare Part B: Supplementary Medical Insurance

The Supplementary Medical Insurance (SMI) program consists of reimbursements for doctors' services, durable medical equipment, laboratory testing by doctors and independent testing services, and other physician-administered treatments (drugs and outpatient services including ambulatory surgery, imaging, dialysis, home-health, rural clinic, rehabilitation, ambulance, and others). The reimbursements are based on allowed charges determined by institutional intermediaries for each type of SMI-covered service after subtracting cost-sharing amounts (co-insurance, deductibles, and copayments).

Physician-fee reimbursements are based on a Medicare Economic Index that is updated for geographic factors and factors to account for growth in intensity and volume of services relative to targets specified in the Sustainable Growth Rate (SGR) mechanism.[31] The SGR mechanism was enacted as part of the Balanced Budget Act of 1997 to limit growth of total physician payments to that of the nation's GDP—unless Congress chooses to override and postpone its provisions during the current year. Congress has

reduced or postponed the legal SGR updates to doctor payments many times since the law was enacted, at times reversing a cut and granting an increase in reimbursements. As a result, the cumulative accrued adjustment now required by law has ballooned to 30.9 percent. This adjustment will become effective at the end of 2012 unless Congress reduces, postpones, or reverses the originally scheduled annual 2012 adjustment yet again.[32] The CBO's current-law projections assume that the SGR adjustment and the PPACA's productivity growth adjustments applicable to most SMI services will be implemented in early 2013. The CBO's 10-year budget projections also include the costs of new preventive services specified by the PPACA and the 2 percent reduction in Medicare expenditures as required by the Deficit Control Act of 2011. Those projections are extended by maintaining the growth of SMI outlays higher than GDP growth for a limited number of years beyond 2022; the excess growth of SMI outlays relative to GDP in 2022 is linearly reduced so that SMI outlays grow at the same rate as GDP in 2035. Thereafter, SMI growth is reduced further to 1.0 percentage point below GDP growth to reflect the annual scheduled negative productivity updates under the PPACA and growth in other SMI service components consistent with current law.

The large, legally required SGR adjustment in 2013 to physician reimbursements (of 30.9 percent) raises serious difficulties in making SMI expenditure projections. If implemented, there would arise a large secondary effect on the volume and quality of covered services provided by doctors and others to SMI patients—an effect that official projections by the CBO and Medicare actuaries ignore. Their projections include only the direct estimated price effects of SGR updates to physician reimbursements. The fact that the secondary effect is likely to be large makes these adjustments' adoption by Congress highly unlikely.

In contrast to current law, current policy (or current practice) suggests that SGR ad-justments to physician reimbursements are very likely to be overridden by Congress. Similarly, the negative productivity growth adjustments applicable to all SMI services are also unlikely to be sustained over the long range. These considerations increase the likelihood and importance attached to the CBO's alternative projections. Those are evaluated here by adjusting and redistributing federal spending and tax aggregates according to the direct (price) effects of not implementing several elements of current federal laws.

Medicare Part D (Prescription Drug Coverage) and Medicare Advantage Plans
Payments for benchmarks are payment standards that are governed by geographic, demographic, and risk characteristics of Medicare enrollees. According to the Medicare actuaries, the scheduled phase-in of a new ratebook beginning in 2012 is projected to considerably reduce Medicare benchmarks for most areas. Those benchmarks, which vary substantially across counties and range between 100 and 200 percent of local fee-for-service costs, will be transitioned to a range of 95–115 percent of such costs. "Productivity offsets" to Medicare fee updates and other adjustments are projected to slow projected increases in Medicare fee-for-service payment benchmarks. In addition, the expansion of the Medicare enrollee population is supposed to outstrip the growth in health insurance rates in Medicare Advantage plans, yielding significant reductions in per capita rebates beginning in 2013.

Appendix C:
Distributing CBO Tax and Spending Projections, 2012–2022

CBO Baseline Projections
Most federal revenues and several major elements of federal expenditures can be distributed according to who pays and receives

The 30.9 percent sustainable growth rate adjustment in 2013 to physician reimbursements raises serious difficulties in making expenditure projections and would also impact the volume and quality of covered services provided.

those amounts by age and gender among the current population. The base year for the calculations is fiscal year 2011—the year for which actual federal revenues and expenditures are available in the CBO's latest budget report.[33] These items are displayed in Table A.1 along with the source of micro-data information used to distribute them across the U.S. population by age and gender. That CBO report provides an intermediate level of detail on federal revenue and expenditure projections for fiscal years 2012–22. The revenue items include personal income taxes, corporate taxes, Social Security payroll taxes, Medicare and other social insurance taxes, estate taxes, excise taxes, customs duties, the Federal Reserve system's returns to the U.S. Treasury of interest earnings on its portfolio of assets after subtracting its operating costs, and so on. These items are distributed by age and gender according to relative profiles applicable to those transactions. For example, the age-gender relative profile for labor income taxes is obtained from the Census Bureau's March 2011 CPS micro-data release. The age-gender relative profiles used to distribute aggregate capital income taxes is obtained by calculating net worth profiles using the Federal Reserve Board's 2007 SCF. The age-gender relative profiles applied to distribute excise taxes and customs duties are those calculated from the 2010 CEX's micro-data. For Social insurance taxes, age-gender relative profiles of labor earnings capped at the maximum taxable level are calculated from the CPS.

Federal spending items that can be distributed by age and gender include Social Security, Medicaid, Medicare, welfare and other transfer payments—34 federal spending items in all. The procedure for distributing any particular federal spending aggregate (for years between 2011 and 2022) is well known. The general formula is[34]

$$x_{s,j,t} = \frac{X_t \times r_{s,j}}{\sum_{s,j}(r_{s,j} \times p_{s,j,t})}$$

where $x_{s,j,t}$ is the per capita value of aggre-

gate receipt or spending item in year t, X_t; $r_{s,j}$ is the relative profile value for a person of gender s and age j; and $P_{s,j,t}$ is the population count of such persons in year t. The summation in the denominator is over age and gender to obtain the number of parts into which X_t is to be divided, of which the person in question receives $r_{s,j}$ parts. Federal expenditures on pure public good items are distributed equally across the entire population by setting all $r_{s,j}$ values to 1.0.

CBO Alternative Projections

The CBO's baseline projections take into account future changes in tax and spending policies that are already incorporated into current law. In some cases, however, those changes involve a sizable deviation from recent fiscal practice—laws enacted to eliminate, avoid, or postpone policy changes included under current laws. When current-law policy changes are replaced by policies consistent with recent practice—that would extend lower taxes that are in effect today and ease provisions that would limit future spending—CBO projections show much lower revenues and higher outlays.

The CBO produces projections under an Alternative fiscal scenario to reveal the budgetary consequences of maintaining the tax and spending policies that have recently been in effect. Among those policies include the following:

- Expiring tax provisions (other than the reduction in the payroll tax rate for Social Security) are extended.
- The AMT is indexed for inflation after 2011.
- Medicare's payment rates for physicians' services are held constant at their current level (rather than dropping by an estimated 27 percent in January 2013 and more thereafter, as scheduled under current law).
- The automatic spending reductions required by the Budget Control Act, which are set to take effect in January 2013, do not occur (although the

Table A.1

Federal Receipts, Transfers, and Discretionary Spending Projections 2012–2022 (billions of dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Distri-bution Micro-Data[e]
Taxes and Receipts												
Labor Income Taxes[a]	739.6	934.4	1023.4	1133.4	1229.5	1328.1	1415.5	1508.5	1607.6	1710.4	1817.0	CPS
Capital Income Taxes[a]	419.6	530.2	580.7	643.1	697.6	753.6	803.2	855.9	912.2	970.5	1031.0	SCF
Social Security Payroll Taxes	556.5	675.1	731.4	772.6	821.7	872.0	919.3	965.0	1010.6	1055.6	1102.0	CPS
Medicare Part A Payroll Taxes	195.2	192.1	202.5	217.8	228.2	239.2	248.4	254.1	264.2	272.8	281.0	CPS
Medicare Part B Premiums	65.0	76.0	76.0	79.0	84.0	90.0	97.0	104.0	109.0	117.0	127.0	CPS
Other Social Insurance Taxes	8.1	9.3	9.8	10.4	11.0	11.7	12.3	12.9	13.5	14.1	14.8	CPS
Corporate Income Taxes	250.8	321.2	386.0	447.8	473.2	467.2	460.8	450.0	448.6	451.8	458.9	SCF
Excise Taxes	81.1	84.9	94.0	99.8	102.3	106.6	110.7	115.4	117.5	120.0	123.2	CEX
Estate Taxes	10.9	14.4	39.0	43.9	47.7	51.8	55.7	59.6	63.6	67.7	72.3	SCF
Federal Reserve	76.7	77.6	66.5	50.8	42.9	41.3	37.5	40.1	47.5	52.5	54.5	SCF
Customs Duties	29.4	31.7	35.4	39.4	42.6	45.2	47.5	49.4	51.4	53.5	55.7	CEX
Other Miscellaneous Receipts	23.0	21.6	38.0	51.0	57.2	59.7	63.9	68.7	73.0	76.7	79.4	U
Total	**2455.7**	**2968.5**	**3282.6**	**3588.9**	**3837.8**	**4066.3**	**4271.6**	**4483.6**	**4718.6**	**4962.5**	**5216.8**	
Defense and Non-Defense Discretionary Expenditures	**1305.3**	**1221.0**	**1196.9**	**1200.7**	**1221.7**	**1235.4**	**1252.4**	**1284.8**	**1314.7**	**1345.2**	**1425.0**	U
Transfer Programs												
Social Security and Disability Benefits	769.4	813.0	856.0	900.4	948.3	1002.2	1060.8	1124.7	1193.6	1264.9	1340.0	CPS
Health Care												
Medicare Part A Benefits[b]	264.0	280.2	293.8	301.3	319.6	327.5	339.6	361.5	380.8	401.3	433.3	CPS
Medicare Part B Benefits[b]	242.6	245.9	250.6	263.2	284.2	297.2	312.4	339.2	363.6	389.7	428.2	CPS
Medicare Prescription Drug Benefits[b]	60.1	70.6	77.1	84.8	101.0	104.1	106.3	127.6	141.0	155.3	183.1	CPS
Medicaid Benefits	258.0	276.1	337.3	383.2	424.7	450.8	474.1	505.6	539.6	577.0	621.8	CPS
ACA Subsidies, Health Exchanges, and related spending[c]	0.4	0.8	16.6	34.3	57.5	70.6	79.6	85.3	89.5	96.4	101.2	U
Medicare Eligible Retiree Health MERHCF	9.0	9.1	9.8	10.6	11.2	11.9	12.7	13.5	14.4	15.4	16.4	CPS

Continued next page.

Table A.1 *Continued*
Federal Receipts, Transfers, and Discretionary Spending Projections 2012–2022 (billions of dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Distri-bution Micro-Data[e]
Children's Health Insurance Program CHIP	9.2	9.8	14.1	16.0	7.7	5.7	5.7	5.7	5.7	5.7	5.7	CPS
Other Health Care Programs	7.5	8.1	12.4	22.7	22.2	26.5	25.9	28.6	31.2	33.7	35.7	U
Welfare												
Supplemental Nutrition Assistance Program	81.0	82.0	79.9	80.1	79.7	78.1	76.6	75.4	74.3	73.5	72.6	CPS
Supplemental Security Income	46.8	53.5	55.1	56.4	62.7	59.0	55.1	62.0	63.7	65.5	73.2	CPS
Unemployment Compensation	101.5	66.3	59.4	53.3	49.1	47.2	48.5	50.7	53.8	57.0	58.1	CPS
Earned Income Credit and Child Tax Credit	78.7	81.1	47.6	46.9	46.0	45.3	45.4	45.7	46.1	46.9	49.1	CPS
Family Support	25.5	25.0	24.8	24.9	24.9	25.0	25.0	25.1	25.2	25.2	25.3	CPS
Child Nutrition	19.7	20.8	21.6	22.5	23.4	24.1	25.0	25.9	27.0	28.1	29.2	CPS
Foster Care	6.9	7.0	7.2	7.3	7.6	7.8	8.2	8.5	8.9	9.3	9.7	CPS
Make Work Pay	6.7	5.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	CPS
Federal Employee and Veterans' Retirement												
Federal Civilian Retirement	86.5	89.2	91.8	94.4	97.3	100.4	103.9	107.5	111.0	114.6	118.6	CPS
Military Retirement	49.0	54.4	55.8	57.1	62.8	60.3	57.5	63.7	65.9	68.1	75.1	CPS
Other Retirement	8.0	7.3	7.3	7.9	9.3	9.6	10.6	11.5	12.2	13.2	13.2	CPS
Veterans Income Security	56.4	60.2	61.4	62.5	68.6	65.1	61.3	67.9	69.3	70.8	77.8	CPS
Other Veterans Benefits	13.4	13.4	12.6	13.1	14.0	14.6	15.1	16.0	16.7	17.6	18.5	CPS
Other Programs												
Farm Support	13.1	19.2	16.4	16.0	15.9	15.9	16.0	16.1	16.4	16.5	16.5	CPS
FANNIE and FREDDIE	13.0	6.9	5.3	3.8	2.9	2.0	2.7	3.4	4.1	4.2	7.7	SCF
Troubled Asset Relief Program	24.3	−3.7	3.1	2.1	1.3	0.8	0.2	0.0	0.0	0.0	0.0	SCF
Higher Education	−21.4	−20.2	−20.9	−20.3	−14.4	−7.9	−2.5	−0.5	−0.2	−0.9	−1.6	CPS
Deposit Insurance	7.3	6.7	−6.5	−8.2	−10.7	−12.1	−12.1	−17.7	−18.1	−11.0	−12.1	SCF
Other	61.1	52.9	51.4	51.7	54.6	53.4	54.0	52.8	51.4	52.3	57.6	U
Offsetting Receipts												
Medicare Part B Offsetting Receipts[d]	−83.8	−96.3	−97.4	−101.1	−108.4	−116.5	−125.3	−134.7	−141.8	−152.2	−162.1	CPS

Table A.1 *Continued*
Federal Receipts, Transfers, and Discretionary Spending Projections 2012–2022 (billions of dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Distri-bution Micro-Data[e]
Employer Contributions—Social Security	−15.4	−15.8	−16.3	−16.9	−17.5	−18.1	−18.8	−19.5	−20.2	−20.8	−21.5	CPS
Employer Contributions—Military Retirement	−21.7	−20.5	−20.7	−21.1	−21.9	−22.7	−23.5	−24.3	−25.2	−26.1	−27.1	CPS
Employer Contributions—Civilian Retirement	−28.1	−29.0	−29.9	−30.9	−32.1	−34.1	−35.3	−36.5	−37.9	−39.3	−40.7	CPS
Receipts from Natural Resources	−13.4	−14.1	−14.3	−15.1	−16.1	−15.8	−17.3	−22.0	−19.4	−20.1	−20.3	U
Medicare Eligible Retiree Receipts	−11.1	−8.5	−8.8	−9.3	−9.8	−10.4	−11.0	−11.6	−12.3	−13.0	−13.7	CPS
Other Offsetting Receipts	−26.1	−30.7	−32.0	−35.5	−34.5	−37.8	−38.0	−38.3	−37.8	−38.9	−34.5	CPS
Total Transfers	**2098.0**	**2125.5**	**2221.7**	**2357.9**	**2531.0**	**2630.0**	**2738.7**	**2919.0**	**3092.5**	**3279.7**	**3534.0**	
Total Transfers Plus Discretionary[b]	**3403.3**	**3347.5**	**3457.7**	**3600.0**	**3795.0**	**3907.8**	**4033.8**	**4247.2**	**4449.9**	**4666.8**	**4959.0**	
Net Interest[f]	**223.8**	**233.1**	**248.3**	**286.0**	**342.7**	**400.7**	**454.3**	**502.7**	**543.8**	**573.4**	**604.2**	
Projected Deficit	**1171.3**	**612.2**	**423.8**	**297.5**	**300.4**	**242.2**	**215.9**	**265.9**	**274.2**	**277.7**	**346.4**	

Source: Congressional Budget Office, March 2012.
[a] Federal income taxes divided into labor and capital shares.
[b] Adjusted for sequestered amounts under the Budget Control Act of 2011 and Medicare discretionary spending.
[c] See text in this section on the method used to distribute ACA subsidies.
[d] Micro-data profiles based on weighted distribution of income earners by family size and relative poverty thresholds for determining annual Medicare Part B premiums.
[e] Micro-Data Sources: CPS=Current Population Survey, 2011, from the Census Bureau; SCF=Survey of Consumer Finances, 2007, from the Board of Governors of the Federal Reserve System; CEX=Consumer Expenditure Survey, 2010, from the Census Bureau.
[f] Net Interest is not distributed as outstanding federal debt is included in the federal Fiscal Imbalance measure.

original caps on discretionary appropriations in that law are assumed to remain in place).

These changes, which are consistent with the recently concluded agreement to avoid the fiscal cliff, are incorporated into fiscal imbalance calculations by distributing the 10-year annual dollar aggregates (changes from current law aggregates) by appropriate tax and spending profiles by age and gender. Per capita profiles are grown at the assumed long-term productivity growth rate and subtracted from the corresponding per capita tax and spending amounts by age and gender calculated under the Baseline per capita projected amounts. The lower taxes and higher spending under the Alternative per

capita projections, naturally, lead to a larger fiscal imbalance estimate.

Appendix D: Projecting Federal Taxes and Expenditures under the CBO's Economic Assumptions

Having distributed all receipts, transfers, and public good items for the years 2011–22 in this manner, five additional calculations are made to obtain an estimate of fiscal imbalance (FI): First, nominal projections for years beyond 2022 are made by applying annual nominal productivity growth rate factors to all per capita amounts $x_{s,j,t}$. These growth factors are taken from the CBO's long-range labor productivity growth assumptions through 2087, with the terminal value applied for years after 2087. Second, population projections are applied to per capita amounts to calculate aggregate values for all receipts, transfers, and public good expenditures. Third, interest discount factors are applied to find present values of all aggregates. Fourth, the aggregates are summed (with negative signs attached to taxes and positive signs attached to expenditures) to obtain the present value of net expenditures (expenditures net of receipts). Finally, the existing value of outstanding federal debt held by the public is added to the net future expenditure amounts to obtain the fiscal imbalance estimate.

Appendix E: Projection of Future Payrolls and GDP

The projection of total future nominal output (GDP) uses the fact that net domestic income (NDI) must equal the compensation paid to labor and that paid to capital. Those respective shares of output have re-

mained fairly steady since the early 1980s. The share of labor compensation in NDI declined gradually from a peak of 74 percent in 1980 to 68 percent by 2011. Correspondingly, the share of capital has increased from 26 percent in 1980 to 32 percent in 2011. Since 1951, these two shares have averaged 70 percent and 30 percent, respectively. The projections assume that the labor share will revert to its long-term mean by 2021 and remain steady thereafter. Correspondingly, capital's share will revert to its long-term mean of 30 percent by 2021 and then remain constant at that level.

Nominal labor compensation in future years is projected by first calculating age-gender profiles of compensation per capita. These profiles are calculated as the product of age-gender relative wage earnings profiles—calculated from the Census Bureau's March 2011 CPS—and the average ratio of compensation to wages between 2002 and 2011, which equals 1.23. The relative age-gender profile of compensation is then used to distribute total nominal worker compensation, as reported in the CBO's projections for the years 2011–22. Next, the per capita compensation profile for 2022 is projected forward by applying year-specific labor productivity growth rates. The implicit assumption is that labor compensation will increase at the rate of labor productivity growth, as has been observed to hold over long periods of time. Next, in each future year, population projections obtained from the Social Security Administration are used to aggregate the age-gender profiles of total compensation to produce annual projections of aggregate labor compensation.[35] These estimates are divided by projected shares of labor in NDI to yield annual projections of future NDI.

Net taxes on production and imports and capital consumption are subtracted from GDP to obtain NDI.[36] The ratio of GDP to NDI has averaged 1.24 since 1951, having fluctuated between 1.21 and 1.27 during that period. Its value has remained very close to its long-term average since 2001. Therefore, to obtain nominal GDP projections from the

The projection of total future nominal output uses the fact that net domestic income must equal the compensation paid to labor and that paid to capital.

nominal NDI projections described above, NDI projections for years after 2022 are each multiplied by 1.24. Finally, nominal GDP estimates are divided by a projection of the consumer price index to obtain real GDP projections.

Appendix F: Calculation of PPACA Subsidy Profiles by Age and Gender

Under PPACA, the federal government provides a subsidy ("premium assistance") to families earning below 400 percent of the federal poverty level for use in purchasing health insurance. The application of this provision is complex, as is determining its effect on generational accounts. This appendix cites the actual text of the law and interprets it to derive the procedure for estimating the subsidies.

Under the law,

> The term "premium assistance credit amount" (PACA) means, with respect to any taxable year (t), the sum (Σ) of the premium assistance amounts (PAA) as defined below with respect to all coverage months (m) of the taxpayer occurring during the taxable year.[37]

This means that the premium assistance amount for year t can be calculated as

$$PACA_t = \sum_{m=1}^{12} PAA_{t,m} . \qquad (1)$$

The law further explains:

> The premium assistance amount determined under this subsection with respect to any coverage month is the amount equal to the lesser (Min) of—
> (a) the monthly premiums for such

month for one or more qualified health plans offered in the individual market (IMHP) within a State which cover the taxpayer, the taxpayer's spouse, or any dependent of the taxpayer and which were enrolled in through an Exchange established by the State under section 1311 of the Patient Protection and Affordable Care Act, or (b) the excess (if any) of—(i) the adjusted monthly premium (AMP) for such month for the applicable second lowest cost silver plan (SLCSP) with respect to the taxpayer, over (ii) an amount equal to 1/12 of the product ($\times$) of the applicable percentage (AP) and the taxpayer's household (family) income (FI) for the taxable year.

Hence, the premium assistance amount for a given month m can be calculated as:

$$PAA_m = Min\left[IMHP_m, AMP_{SLCSP_m} - \left(\frac{1}{12}\right) \times AP \times FI\right] \qquad (2)$$

Under the law, the applicable percentage varies depending on family income as a percentage of the federal poverty level, and the year—there is supposed to be an "initial premium" for years 2014–2017, and then a final premium for years 2018 and beyond. Table A.2, copied from the law, lists those percentages.

The law states that: In the case of taxable years beginning in any calendar year after 2014, the initial and final applicable percentages shall be adjusted to reflect the excess of the rate of premium growth for the preceding calendar year over the rate of income growth for the preceding calendar year. In the case of any calendar year after 2018, the percentages shall be adjusted, in addition, to reflect the excess (if any) of the rate of premium growth estimated for the preceding calendar year over the rate of growth in the consumer price index for the preceding calendar year.[38]

Those under 133 percent of the poverty limit are eligible for Medicaid. Federal spending on Medicaid-eligible individuals is

Under the Patient Protection and Affordable Care Act, the federal government provides a subsidy ("premium assistance") to families earning below 400 percent of the federal poverty level for use in purchasing health insurance.

Table A.2
Minimum Percentage that Households Should Pay for Health Insurance under PPACA

In the case of household income (expressed as a percent of poverty line) percentage is within the following income tier	The initial premium percentage is (%)	The final premium percentage is (%)
Up to 133	2.0	2.0
133 up to 150	3.0	4.0
150 up to 200	4.0	6.3
200 up to 250	6.3	8.05
250 up to 300	8.05	9.5
300 up to 400	9.5	9.5

Source: Derived from the text of the Patient Protection and Affordable Care Act, 2010.

Figure A.4
Relative Profiles of PPACA Health Insurance Premium Subsidies by Age and Gender
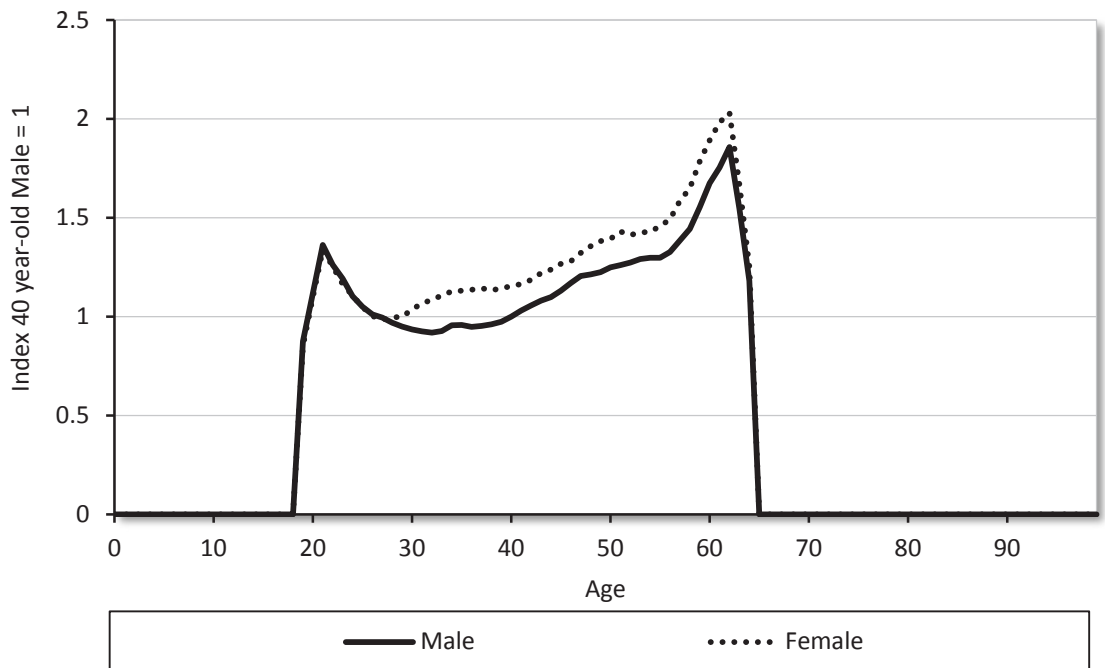
Source: Authors calculations based on the Current Population Survey, March 2011.

already allocated separately on a per capita basis. The remainder of health insurance subsidies under PPACA needs to be allocated per capita by age and gender for those between 133 and 400 percent of the poverty limit. The PPACA health care subsidy for- mula is applied to adults aged 19 through 64. It involves first calculating the person's family income position relative to the pov- erty threshold. This calculation uses micro- survey data from the 2011 Current Popula- tion Survey—which contains income data

for 2010 and applies detailed family structure elements (number of adults and number of children under 18) to calculate family income as a percent of the poverty thresholds, as specified in the 2010 poverty thresholds prescribed by the U.S. Department of Health and Human Services.[39]

If a person's family income is between 133 and 400 percent of the poverty limit, the appropriate "applicable percentage" is calculated using linear interpolation between the initial and final premium percentages listed above for the appropriate family income category. As is clear from the formula for PAA_m (see equation 2 above), the "applicable percentage" determines the insured's out-of-pocket cost-sharing component progressively on the basis of family income. Note that the formula specifies that if the individual market health insurance plan in which the family is enrolled has a lower cost than the subsidy calculated for the SLCSP, the subsidy awarded would equal the former amount. However, in a competitive health insurance market, a private plan with lower cost is likely to have poorer coverage, and the cost of shifting to an SLCSP with better coverage would be zero. Hence the subsidy is calculated based on the SLCSP alone.

The per capita subsidy estimate equals the estimated cost of the SLCSP per capita minus the estimated cost-sharing element.[40] The calculations are done separately for single persons and members of multiperson families—using single and family SLCSP premiums—and subsidy profiles are constructed by taking weighted averages across all CPS individuals by age and gender. Finally, relative profiles are calculated by dividing all age-gender average subsidy values by the average value for 40-year-old men.

The resulting profiles by age and gender of average PPACA subsidy amounts are shown in Figure A.4. Although health insurance premiums are low at young ages, family incomes are also especially low, yielding low out-of-pocket cost-sharing and, therefore, a substantial PPACA health insurance subsidy per capita. The subsidy is negatively related to income and income increases rapidly at young ages, reducing the subsidy per capita as age increases for those in their 20s. As age is increased further, however, income growth declines, and SLCSP health insurance premiums are expected to increase faster, yielding an increase in PPACA subsidies per capita. The patterns of the PPACA premium subsidy per capita are similar for men and women, but the level of the profile is higher for women, presumably because of their greater health care needs, especially during ages of high fertility and because they populate families with dependent children more often than men and have lower family incomes, on average, than men.

Appendix G: Methodology for Calculating Consumption Profiles

The CEX survey collects household level consumption, income, tax, and wealth data using simplified universal classification codes (UCC). These codes are aggregated into 109 categories using the CEX extract program created by the CBO and posted on the National Bureau of Economic Research website.

That program was modified to distribute consumption, income, and wealth across each individual family member (instead of the household) using relative consumption weights. Previous research on intra-household consumption allocation supports this distribution rule. Lazear and Michael used the 1970 and 1979 CPS surveys to find that the average child consumes 38 percent of the consumption of adults.[41] Plassman and Norton do the same analysis, breaking it down by race, income, education, and number of children using the 1994 and 1995 CEX.[42] They find that, on average, children consume 42 percent of the level of adults in the household. A couple of papers have also found that gender plays a role in the

In a competitive health insurance market, a private plan with lower cost is likely to have poorer coverage, and the cost of shifting to a second lowest cost silver plan with better coverage would be zero.

The weights are adjusted for specific consumption items to ensure allocation to people likely to consume them exclusively, based on age and gender.

resource distribution among adults. Browning et al. find this difference to be highly correlated to the percentage of income a female contributes.[43] They also found the average adult female allocation to be approximately 75 percent of a male's.[44] The following distribution rules were also tested: weights of 0.2 for children under 18, 0.6 for adult females and 1.0 for adult males, and, alternatively, weights of 0.6 for children under 18 and 1.0 for both adult males and females. Although the levels of consumption, income, and wealth varied, the relative profiles remained the same. Based on these studies, the weights used here are: 0.4 for members less than 18 years old, 0.8 for women 18 and older, and 1.0 for men 18 and older. Income and wealth are only distributed to the adults in the household using the same relative weights.

The weights are adjusted for specific consumption items to ensure allocation to people likely to consume them exclusively, based on age and gender. In cases with no family members matching our exclusive allocation weighting protocol, the regular weights are applied. For example, a retired household with no kids may purchase children's clothing, which are most likely gifts for grandchildren outside their household. Infant clothing, furniture, and equipment are distributed solely to members of the family who were under age 6. Food, housing, supplies, busing, and tuition for school-aged children are applied to household members age 6–17.

Meals received as pay and occupational expenses are distributed to those considered of working age (18–65). Tobacco products and alcohol are distributed to those over 18 (18–20 is not separated out of the alcohol category). Medical care for the retired is only applied to those 65 years and older. The expenditure categories of men's, women's, boys', and girls' clothing are distributed to those categories respectively, with those aged 6–11 considered boys or girls, and those aged 12 and older being considered men or women. Personal care services for men and women were also separate categories.

After the values are aggregated into 109 categories, they are grouped into income, wealth, income taxes, property taxes, durables, nondurables, and services. Next, aggregates for each category are benchmarked to account for underreporting—a common problem in micro-data surveys. Durables, nondurables, services, income, and tax variables from the CEX are benchmarked to National Income and Product Accounts aggregates compiled by the Bureau of Economic Analysis. The net worth (wealth) aggregate is benchmarked to national aggregates reported in the Federal Reserve's Flow of Funds Accounts of the United States.

The consumption profiles shown in Figures 1 and 2 are calculated by averaging benchmarked consumption aggregates by age and gender groups. The profiles are smoothed using a third-order polynomial regression of consumption on age categories.

Notes

1. See Martin S. Feldstein, "Social Security, Induced Retirement, and Aggregate Capital Accumulation," *Journal of Political Economy* 82, no. 5 (September/October 1974): 905–26.

2. See Alan J. Auerbach, Jagadeesh Gokhale, and Laurence J. Kotlikoff, "Generational Accounts: A Meaningful Alternative to Deficit Accounting," in *Tax Policy and the Economy, Volume 5*, ed. David Bradford (Cambridge, MA: MIT Press, 1991); and Jagadeesh Gokhale and Kent Smetters, *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities* (Washington: AEI Press, 2003).

3. Gokhale and Smetters.

4. Congressional Budget Office, "The Long-Term Budgetary Impact of Paths for Federal Revenues and Spending Specified by Chairman Ryan," March 2012.

5. Federal outlays not reduced by offsetting receipts such as Medicare premiums, federal receipts on employee Social Security, civilian retirement and military retirement, etc.

6. Total federal transfer payments are expected to constitute 64 percent of total expenditures in fiscal year 2012. By 2022, their share will increase to 72 percent.

7. See Congressional Budget Office, "Updated Budget Projections: Fiscal Years 2012–2022," March, 2012, http://www.cbo.gov/publication/43119.

8. The Congressional Budget Office reports mention that the Baseline is only a benchmark against which to compare alternative policy choices.

9. The terms "benefits" and "pay" are in quotes because of the ambiguity of those terms. "Benefits" include those provided through loopholes in income tax laws or through temporary reductions in tax rates below those consistent with a balanced federal budget. And "payments" to the federal government could take the form of direct tax increases, loophole eliminations, direct benefit cuts, stricter (less generous) eligibility conditions for benefit programs, and so on.

10. As an example, consider that the European Stability and Growth Pact of 1997, which based its economic convergence criteria on debt and deficit ratios, has failed miserably in delivering or maintaining economic convergence among Euro-area nations.

11. For examples of how budgeting over a limited time horizon can generate misleading indications of a program's true financial condition, see Jagadeesh Gokhale and Kent Smetters, "Measuring Social Security's Financial Outlook Within an Aging Society," *Dædalus* (Winter 2006): 91–104; and Andrew Biggs and Jagadeesh Gokhale, "Wage Growth and the Measurement of Social Security's Financial Condition," in *Government Spending on the Elderly*, ed. Dimitri B. Papadimitriou (New York: Palgrave Macmillan, 2007), 272–305.

12. A common criticism of calculations of fiscal imbalances in perpetuity is that high uncertainty associated with very long-term projections renders such calculations less useful. However, that should be a call for estimating the size of that uncertainty rather than simply ignoring the calculations. Another criticism is that fiscal imbalances calculated in perpetuity are very sensitive to discount rate assumptions. However, volatility is minimized when the estimate is taken as a ratio of the discounted present value of the tax base or GDP. Moreover, the degree of volatility can serve as a source of information about the size of the long-range fiscal imbalance.

13. This argument is elaborated in Gokhale and Smetters, *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*.

14. According to the Congressional Budget Office's projections, additional 10-year debt service costs under the Alternative projection would be $1.9 trillion compared to those under the Baseline projection.

15. The discount rate applied to calculate present values equals the interest rate on the government's longest-maturity (30 year) Treasury securities. That current rate turns out to be very close to the discount rate used in earlier fiscal and generational accounting estimates of 3.67 percent. The mortality adjustment applied when calculating actuarial present values of a future tax payment—say, at age 50 in 2023 by a male aged 40 in 2013—is implemented by applying the ratio of the projected population of 50-year-old males in 2023 to the population of 40-year-old males in 2013.

16. A table showing selected age distributions of per capita taxes and transfers is available upon request from the author.

17. Detailed results show that excluding Social Security and Medicare taxes and transfers from the 10-Year Generational Account calculations would eliminate almost all of the intergenerational transfers from working adults to retirees.

18. These policy changes are not included in Ta-

ble 2's results because the benefits of such government purchases accrue to all current and future generations and cannot be allocated across today's age-gender cohorts without making strong assumptions about how they are distributed.

19. The effectiveness of the fiscal stimulus provided under Alternative policies relative to Baseline ones depends on whether today's generations are "Ricardian" in their consumption-saving response. They are induced to consume more from the resource injection to their budgets under Alternative policies relative to Baseline ones, but they would be induced to consume less (and save more) of their resources if they perceive that the increase in national debt accompanying the boost to their resources implies higher future taxes for which they must save more. If the two effects exactly offset each other, today's generations would be called Ricardian in economic jargon. If the former effect dominates, current consumption would be stimulated from the explicit transfer of resources from future generations to those alive today. The size of this stimulative effect is a matter of longstanding debate, but its measurement is beyond the scope of this paper.

20. The growth rate of real wages is provided in Congressional Budget Office, "The 2012 Long Term Budget Outlook," (supplemental data EXCEL file), June 2012, http://www.cbo.gov/sites/all/themes/cbo/images/document-icons/XLS_ic.png.

21. The faster rate of growth for Medicare Part A is taken from growth rate differentials relative to payroll base growth reported by the Medicare Trustees through 2035. See Table IV.A2 in the 2012 Medicare Trustees' annual report at http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrustFunds/Downloads/TR2012.pdf. An "intensity allowance" adjustment factor, required by the Affordable Care Act of 2010 and also reported by the Medicare Trustees, is included in the growth adjustment differential. Beyond 2035, the Medicare Part A cost differential is gradually decreased until per capita expenditure growth equals economywide productivity growth. For Medicare Part B, the trustees report growth rate differentials relative to GDP growth. See Table II.F2 in the 2012 Medicare Trustees' annual report. Target growth rates are selected for the time segments through 2085 so as to deliver identical growth rate differentials relative to GDP growth in order to calibrate growth of future Supplementary Medical Insurance (SMI) expenditures.

22. The discounted sum of future deficits converges to a finite number because in a normal economic environment (technically known as dynamic efficiency), the discount rate is larger than the economy's growth rate. See Andrew B. Abel, N. Gregory Mankiw, Lawrence H. Summers, and Richard J. Zeckhauser, "Assessing Dynamic Efficiency: Theory and Evidence," National Bureau of Economic Research Working Paper No. w2097 (1989).

23. The full derivation and explanation of the fiscal imbalance measure is available in Gokhale and Smetters, *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*.

24. Clearly, GDP and payrolls projections should also be different under Baseline and Alternative policy paths. However, the CBO does not provide alternative paths for GDP and payrolls under alternative policy assumptions. Here, too, GDP and total payrolls are projected only under the Baseline policy assumption. The ratio measures of the fiscal imbalance should be interpreted as the amount of future output (or payrolls) under Baseline policies that would have to be sacrificed to eliminate the fiscal imbalance under the Alternative policy path.

25. Strictly speaking, the two sets of estimates are not directly comparable because of their different sources (Office of Management and Budget versus the Congressional Budget Office) and different sets of underlying assumptions, both demographic and economic. Nevertheless, the result that eliminating the fiscal imbalance is a much costlier proposition today than it was during the early 2000s is consistent with theoretical expectation.

26. The generational imbalance measure is also known as the "closed group" liability measure—that is the fiscal imbalance that is "closed" to future generations.

27. Detailed descriptions of generational accounting are provided in Alan J. Auerbach, Jagadeesh Gokhale, and Laurence J. Kotlikoff, "Generational Accounts: A Meaningful Alternative to Deficit Accounting," *Tax Policy and the Economy* 5 (1991): 55–110; and Jagadeesh Gokhale, "Generational Accounting," in *The New Palgrave Dictionary of Economics*, 2nd ed., ed. Steven N. Durlauf and Lawrence E. Blume (New York: Palgrave Macmillan, 2008). For a description of fiscal and generational imbalance measures, see Gokhale and Smetters, *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*.

28. The 2007 Survey of Business Owners is available at: http://www.census.gov/econ/sbo/.

29. The Kaiser Family Foundation's cost estimates by age for the second lowest cost silver plan (SLCSP), which is adopted here, is taken from the website at http://healthreform.kff.org/

SubsidyCalculator.aspx.

30. These projections are available in Table IV.A3 in the 2012 Annual Report of the Medicare Trustees. The report is available at http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/ReportsTrust Funds/index.html?redirect=/reportstrustfunds.

31. The Medicare Economic Index is constructed by the U.S. Bureau of Labor Statistics as a weighted sum of the prices of items that determine the cost of physicians' time and operating expenses. The time cost is measured using changes in nonfarm labor costs. The Medicare Economic Index incorporates an "all factor" productivity growth component to account for changes in physicians' productivity. The inclusion of the latter reduces its rate of growth.

32. Currently, about 90 percent of doctors accept patients with Supplementary Medical Insurance. Each year since its enactment, Congress has postponed the Sustainable Growth Rate's adjustments to physician reimbursements—the so-called "doc-fix"—to prevent the erosion of doctor availability to Medicare Part B patients. The historical and 10-year projected schedule of annual Sustainable Growth Rate adjustments to physician reimbursements is provided in Table IV. B1 of the Annual Report of the Medicare Trustees: http://www.cms.gov/Research-Statistics-Data-and-Systems/Statistics-Trends-and-Reports/Re portsTrustFunds/Downloads/TR2012.pdf.

33. As of the time of writing, the latest available Congressional Budget Office report was *Updated Budget Projections: Fiscal Years 2012 to 2022* (March 2012). The CBO provides an intermediate level of detail on federal revenue and expenditure projections for fiscal years 2012–22.

34. A more detailed description of the methodology and calculations is available in Gokhale and Smetters, *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*.

35. Felicitie Bell of the Social Security Administration provided population projections by gender and single year of age as incorporated in the 2012 Annual Report of the Social Security Trustees.

36. Actually, net domestic income (NDI) is obtained by subtracting those two items from gross domestic income (GDI), not from GDP. There is no theoretical difference between gross domestic product and gross domestic income; both refer to the economy's total annual output. But measurement of total output in these alternative ways (adding up what is produced versus adding up everyone's income) never matches up exactly. The difference in the two measures is reported by the Bureau of Economic Analysis as a statistical discrepancy.

37. See the text of the Patient Protection and Affordable Care Act, Pub. L. No. 111-48, 124 Stat. 213 (2010), http://www.gpo.gov/fdsys/pkg/PLAW-111publ148/content-detail.html.

38. Interpretation of Text of PPACA on page 214, see note 37.

39. See the U.S. Department of Health and Human Services' website at http://www.census.gov/hhes/www/poverty/data/threshld/index.html. In calculating family incomes as multiples of the applicable poverty thresholds, neither the incomes nor the poverty threshold values are increased for projected labor productivity growth, as the numerator and denominator would be increased by the same factor. However, the final calculation of average Patient Protection and Affordable Care Act (PPACA) premium subsidies is inflated using an annual productivity growth rate of 1.1 percent.

40. The silver plan is the second-lowest costly plan among four that the PPACA law specifies with standard coverage levels that must be offered through state health exchanges. The subsidy estimate is based on the second-lowest costly silver plan (SLCSP) under the PPACA. The Kaiser Family Foundation's cost estimates by age for SLCSP, which is adopted here, is taken from the website: http://healthreform.kff.org/SubsidyCal culator.aspx.

41. Edward P. Lazear and Robert T. Michael, "Estimating the Personal Distribution of Income with Adjustment for Within-Family Variation," *Journal of Labor Economics* 4, no. 3 (1986): S216–S239.

42. Vandana S. Plassmann and Marjorie J. T. Norton, "Child-Adult Expenditure Allocation by Ethnicity," *Family and Consumer Science Research Journal* 33 (2004): 475–97.

43. Martin Browning, Francois Bourguignon, Pierre-Andre Chiappori, and Valerie Lechene, "Income and Outcomes: A Structural Model of Intra-household Allocation," *Journal of Political Economy* 102, no. 6 (1994): 1067–96.

44. Martin Browning, Pierre-Andre Chiappori, and Arthur Lewbel, "Estimating Consumption Economies of Scale, Adult Equivalence Scales, and Household Bargaining Power," Boston College Working Papers in Economics no. 588 (August 2006).

Cato Institute

Founded in 1977, the Cato Institute is a public policy research foundation dedicated to broadening the parameters of policy debate to allow consideration of more options that are consistent with the traditional American principles of limited government, individual liberty, and peace. To that end, the Institute strives to achieve greater involvement of the intelligent, concerned lay public in questions of policy and the proper role of government.

The Institute is named for *Cato's Letters*, libertarian pamphlets that were widely read in the American Colonies in the early 18th century and played a major role in laying the philosophical foundation for the American Revolution.

Despite the achievement of the nation's Founders, today virtually no aspect of life is free from government encroachment. A pervasive intolerance for individual rights is shown by government's arbitrary intrusions into private economic transactions and its disregard for civil liberties.

To counter that trend, the Cato Institute undertakes an extensive publications program that addresses the complete spectrum of policy issues. Books, monographs, and shorter studies are commissioned to examine the federal budget, Social Security, regulation, military spending, international trade, and myriad other issues. Major policy conferences are held throughout the year, from which papers are published thrice yearly in the *Cato Journal*. The Institute also publishes the quarterly magazine *Regulation*.

In order to maintain its independence, the Cato Institute accepts no government funding. Contributions are received from foundations, corporations, and individuals, and other revenue is generated from the sale of publications. The Institute is a nonprofit, tax-exempt, educational foundation under Section 501(c)3 of the Internal Revenue Code.