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Fiscal and Generational Imbalances and Generational Accounts: A 2012 Update

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Executive Summary

Official federal budget accounts are constructed exclusively in terms of current cash flows – receipts from taxes and fees and outlays on purchases and transfers. But cash-flows do not reveal economically relevant information about who benefits and who loses from government policies. Cash flows also do not reveal how changes in government's policies redistribute resources within and across generations, including reducing the tax burden on today's generations and increasing it on future ones. Because most government transactions are targeted by age and gender, the federal government can bring about large resource transfers across generations. 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 program. Intergenerational redistributions across generations 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 Offices' March 2012 Budget Outlook Update. It finds (1) that the fiscal imbalance embedded in the federal government's current law (Baseline) policies amount to 5.4 percent of the present value of future US 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 as is 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 large federal transfers by way of present valued Social Security and Medicare benefits that their lifetime net tax burdens are almost fully eliminated.

The measurement of the fiscal condition for major developed nations started more than two decades ago. Following the theoretical work of Dr. Martin Feldstein and others that pointed out that public pension and health programs such as Social Security and Medicare can cause substantial wealth redistributions across generations.[i] Such redistributions occur because initial older generations receive windfall benefits from such programs without a history of having made payroll tax payments 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 over 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 early 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 on-going basis. However, a limited and partial sense of the magnitudes involved can be obtained via generational accounting metrics developed during the last two decades.[ii]

Unfortunately, generational accounting studies—that had argued for complementing official cash-flow deficit and debt measures with generational accounts to indicate the government's fiscal condition—were not successful: 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.[iii] 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 public pension and health care benefits. If current tax and spending policies together with demographic trends—that 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 US 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. Another example of decision making under limited information is the adoption of the Medicare prescription drug benefit in 2003, based on 10-year cost projections but ignoring longer term cost implications.

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 – that Congress has adopted one set of fiscal policies on its books but 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—are far from sustainable. Those imbalances must be resolved at some future time through tax increases and spending reductions—a 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 Congressional Budget Office's federal budget projections (2013-22) from March 2012 show that federal outlays on long-term entitlement programs such as Social Security, Medicare, and 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 gross federal outlays.[iv] CBO's projections also show that these programs will take up 67 percent of the federal budget by the end of its 10 year budget window.[v] 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 influence on re-directing resources across generations will grow much larger 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.

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 latter discussion provides the divisive fuel that prevents all rational discussion about the

former—similar to the problem represented in the well known "prisoner's dilemma" game: If both parties could agree to a deal on entitlement reform – to effectively save and invest resources for the future needs of an aging population – and are 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 may become disappointed) and the deal would be undercut when the opposing party gains power – by squandering those savings on their *current* redistributive priorities. But failure to reach a deal before it's too late increases the size of the "fiscal cliff" and increase barriers to a deal making an eventual calamitous economic outcome more likely. The fact that official budget agencies are refusing to report large outstand implicit debt embedded in entitlement programs – that will eventually compel huge resource transfers from future to current generations – only allows the lop-sided emphasis on class-warfare in public policy debates to fester.

This study updates calculations of federal fiscal and generational imbalances and reports generational accounts under current federal fiscal policies. The calculations are based on Congressional Budget Office's March 2012 Budget and Economic Outlook.

CBO's Federal Budget Projections

The federal government's fiscal situation is dire: According to the non-partisan Congressional Budget Office (CBO) this fiscal year's gap between tax receipts and federal spending will be a gaping $1.2 trillion, or almost 8 percent of the nation's Gross Domestic Product (GDP).[vi] The deficit under CBO's baseline projections – wherein currently scheduled laws governing taxes and expenditures are assumed to be fully implemented – the cumulative deficit is projected at $2.9 trillion over 10 years (2013-22).

But 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.[vii]

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 ten years compared to the Alternative policy path where those changes are postponed until after 2022. Thus, if Congress continues past practice of postponing the adoption of current fiscal policies, those of us alive during the next ten years will enjoy $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 percent per year today as indicated by the interest rate on the government's long-term securities. It means that we will consume $7.8 trillion of the nation's income through extra government "benefits" that we will not "pay" for.[viii] The accumulated additional federal debt will then constitute a bill that will be presented to those alive after 2022 -- to ourselves, excluding those who die before 2022 and including new entrants into the economic system – young workers and immigrants – after 2022.

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 ten years into the future as required by law (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.[ix]

Although it is standard practice to project budget outcomes ten 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 adjustments with long delays – often longer than 10 years – are usually deemed feasible – to allow 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 by tax payments through the 75th year – remain uncounted.[x] The full characterization of the program's financial condition can only be obtained by calculating its fiscal imbalance in perpetuity.[xi]

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

Another shortcoming of 10-year debt and deficit measures is that no-one knows what they imply for individual taxpayers and others. After ten years, most of the baby boomers will be retired and workers will be

competing more intensely in a globalized economy -- to 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 Americans would face under current-laws or alternative federal fiscal policies. Lead times considerably longer than ten 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 Ten-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 – the Medicare "docfix" for preventing steep cuts to physician reimbursements and the indexation of Alternative Minimum Tax rate brackets to protect middle class taxpayers, and so on. However, as of this writing during mid-2012, 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 physician's reimbursements, all Americans are facing economic jeopardy from a massive "fiscal cliff" created under current tax laws: The expiration at the end of 2012 of G.W Bush era tax cuts, and sizable automatic spending cuts scheduled for early 2013 under the Deficit Control Act of 2011. If allowed, these changes to taxes and federal expenditures are likely to introduce a large fiscal drag on the economy, boosting unemployment and tipping the economy into another recession.

Given the near certainty that Congress will seek to avoid the economic consequences of allowing current tax and spending laws to be fully implemented, the CBO reports 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 latter 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 from current laws the four policy items mentioned above for the next 10 years would be to cumulatively add almost $6.0 trillion to the federal debt by 2022.[xiii]

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 – also during 2013-22. Population projections provided by the Social Security Administration and several micro-data profiles of tax and transfer payments (see Appendix A.1) are employed to distribute CBO aggregate projections through 2022 on a per-capita basis to estimate these accounts – labeled "10-year Forward Generational Accounts." The estimates – actuarial present values calculated using an inflation adjusted discount rate of 3.68 percent per year and age-specific cohort mortality rates – are shown in thousands of constant 2012 dollars.[xiv]

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
Present Value of federal debt increase	

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

Table 2
Ten-Year Generational Accounts by Selected Age and Gender: 2013-22
(Present values of net taxes 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 non-defense discretionary spending changes. The two latter items are cumulatively projected to be $895 billion during 2013-22.

Columns 1 and 2 of Table 2 shows the age-gender distribution of the present value of net tax payments under CBO's Baseline projections. The Table shows that, very young individuals and those aged 60 and older will be recipients of government 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.[xv] Columns 3 and 4 of Table 2 show the same information as the first two columns of the Table, but under CBO's Alternative budget projection.

Under both Baseline or Alternative projections, the most significant concurrent public *inter*generational transfers during the next 10 years will occur between adult middle-aged workers and retirees. For example, under Alternative policies (column 3), 40-year-old males are projected to surrender to the federal 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.[xvi] 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 eliminates from the 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 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 ten years.[xvii] 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 US policymakers face. Given their past actions to reduce, postpone, or prevent current-law "fiscal cliff" policies from being implemented, they must clearly believe that not doing so again would be very harmful economically – by reducing GDP growth and employment. Following the Alternative policy path – or a slight variation thereof – to avoid those effects yet again 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) – one that future working and taxpaying generations must bear.

On the other hand, despite reducing, preventing, and postponing the effects of Baseline policies in the past—and, in addition, 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 may accrue additional debt without delivering the expected short-term beneficial effects on economic growth. [xviii] 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 trade-offs 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.

The Generational Implications of Continuing Baseline and Alternative Fiscal Paths Beyond Ten Years

Of course, the world is rather unlikely to end in the year 2022—the last year of CBO's current 10-year budget window. What would be the implications of extending the current law Baseline and Alternative scenario 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 re-orients 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.1) 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 at CBO's long-term annual productivity growth rate assumptions.[xix] The exceptions are various health care benefits, which are adjusted at a faster rate of growth than economy wide productivity plus population growth – consistent with historical evidence.[xx]

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 3.2 percent per year adjusted for mortality. Table 3 shows generational accounts at selected ages for the 2013 US 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 40 year old male 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, exceed his tax payments after 2022—by an amount equal to the difference between the two estimates: $93,800.

Table 3
Lifetime Generational Accounts as of Fiscal Year 2013 by Selected Age and Gender
(Present values of net taxes 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 non-defense discretionary spending changes of $ – throughout the lifetime of living generations.

Women's generational accounts are generally smaller than those of males of corresponding ages because they work and earn less than men and they live and collect benefits for longer. For 40-year-old women, the difference between their Alternative generational account (Table 3, $84,000) and Alternative 10-year account (Table 2, −$38,600) equals $122.6. 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 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. [xxi] The resulting estimate—expressed in constant 2012 dollars in this study—shows the amount of *additional* funds that the government would 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.[xxii]

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 which 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, the immediate challenge perceived by policymakers is about 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 gross domestic product (GDP; see Tables 6 and 7) or future payrolls (Table 8 and 9).[xxiii] 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 ratio 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.

To some observers, a fiscal imbalance of about 9.0 percent of GDP under the Alternative policy/practice path may appear to be manageable. However, the nation's entire GDP is not 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 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.[xxiv]

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 is 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 economy-wide 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 payroll tax increase 21.3 percent.

Table 10 shows fiscal imbalances under Baseline and Alternative policies using alternative tax and expenditure bases. Each column of the table show 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 of Table 10). The Table shows, for

example, that under to the Alternative policy path, income taxes would have to be almost doubled or Social Security

and Medicare benefits would have to be decimated (literally 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 second panel of Table 10) or all income taxes by about than 86 percent (fifth row).

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 as a Percent of the Present Value of GDP (beginning-of-fiscal-year values)

	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.

Table 7
The Federal Government's Fiscal Imbalance Under **Alternative** Policies As a Percent of the Present Value of GDP (beginning-of-fiscal-year values)

	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 As a Percent of the
Present Value of Uncapped Payrolls (beginning-of-fiscal-year values)

	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.

Table 9
The Federal Government's Fiscal Imbalance Under **Alternative** Policies As a Percent of the
Present Value of Uncapped Payrolls (beginning-of-fiscal-year values)

	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
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.

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—Social Security and Medicare—that impose taxes on workers to pay for retirement and health care benefits to retired and disabled workers, their dependents and survivors. The obligations to pay these 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), 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 imbalance equals 14.2 percent as of 2012, rising to 14.8 percent by 2022 if no adjustments are made until then. Thus, resolving this imbalance would require approximately doubling of 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.[xxv] This measure assesses the extent to which today's social insurance policies 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.[xxvi]

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	20077	20185	20664	21185	21722	22272	23101	23954	24831	25733	26660
Unfunded obligations: Past and living generations	19586	19686	20153	20661	21187	21726	22538	23375	24236	25121	26032
Unfunded future obligations: living generations	22240	22355	22807	23288	23781	24291	25065	25860	26672	27496	28333
Trust Fund	2654	2669	2654	2626	2594	2565	2527	2485	2436	2375	2301
Unfunded obligations: Future generations	491	498	511	523	535	546	563	579	596	612	628
Medicare Hospital Insurance (Part A)											
Fiscal Imbalance	11483	11615	11857	12096	12341	12583	12961	13347	13738	14143	14558
Unfunded obligations: past and living generations	11373	11552	11840	12127	12419	12709	13137	13574	14019	14479	14949
Unfunded future obligations: living generations	11618	11770	12035	12299	12578	12856	13279	13715	14153	14601	15055
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	19172	19274	19581	19878	20172	20462	20958	21458	21963	22467	22972
Unfunded obligations: past and living generations	14411	14534	14808	15072	15334	15590	16003	16419	16838	17254	17669
Unfunded future obligations: living generations	14484	14602	14889	15182	15475	15763	16215	16680	17147	17618	18095
Trust Fund	73	68	81	110	142	173	212	261	310	364	426
Unfunded obligations: Future generations	4760	4740	4772	4805	4839	4872	4955	5039	5125	5213	5302
Medicare Prescription Drugs (Part D)											
Fiscal Imbalance	15203	15368	15703	16041	16383	16719	17236	17771	18309	18858	19417
Unfunded obligations: past and living generations	8704	8885	9163	9446	9731	10012	10405	10815	11227	11647	12075
Unfunded future obligations: living generations	8704	8885	9163	9446	9731	10012	10405	10815	11227	11647	12075
Trust Fund	0	0	0	0	0	0	0	0	0	0	0
Unfunded obligations: Future generations	6499	6483	6540	6596	6652	6707	6831	6956	7082	7211	7342

Source: Author's calculations.

Table 12:
The Contribution of Social Security and Medicare to the Federal Fiscal Imbalance
As a Percent of the Present Value of Uncapped Payrolls – CBO **Alternative** Projections

	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.

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 remain in place 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 at all because they anticipate that future policy changes would considerably diminish future government benefits, especially social benefits. However, unless very large fiscal policy adjustment 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 CBO's Baseline/Alternative projections) that incorporate resource transfers from future toward today's generations are likely to stimulate consumption spending by those alive today—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 a large additions to the resources of early participants in social insurance programs have been on-going 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 generations and future generations. This growth in net transfers toward living generations, seniors in particular, appears to be the key explanation of 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 over time as monthly benefit checks and health care reimbursements are paid out over time. Nevertheless, the expectation of that resource boost is likely to influence their 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 today. Calculations of consumption profiles by age from U.S. micro data sources across the 1990s and 2000s, suggests that consumption spending of older generations has advanced much more rapidly compared to that of younger generations (see Appendix A7 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 on-going 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 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 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 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 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), alternatively, into recent federal fiscal practice (CBO's Alternative projections).

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.

Male

Female

30
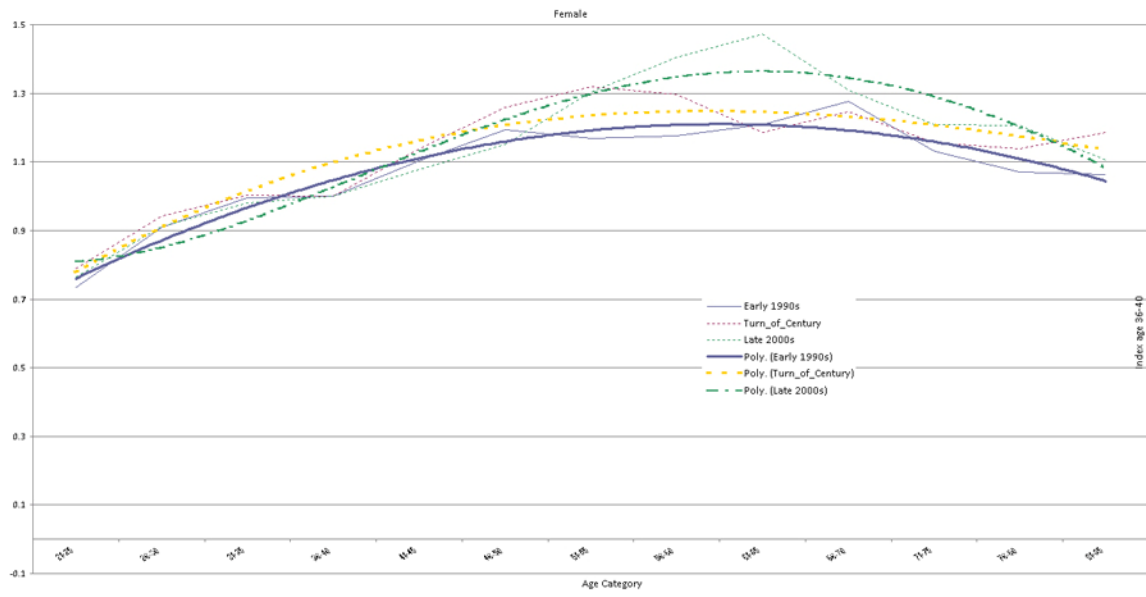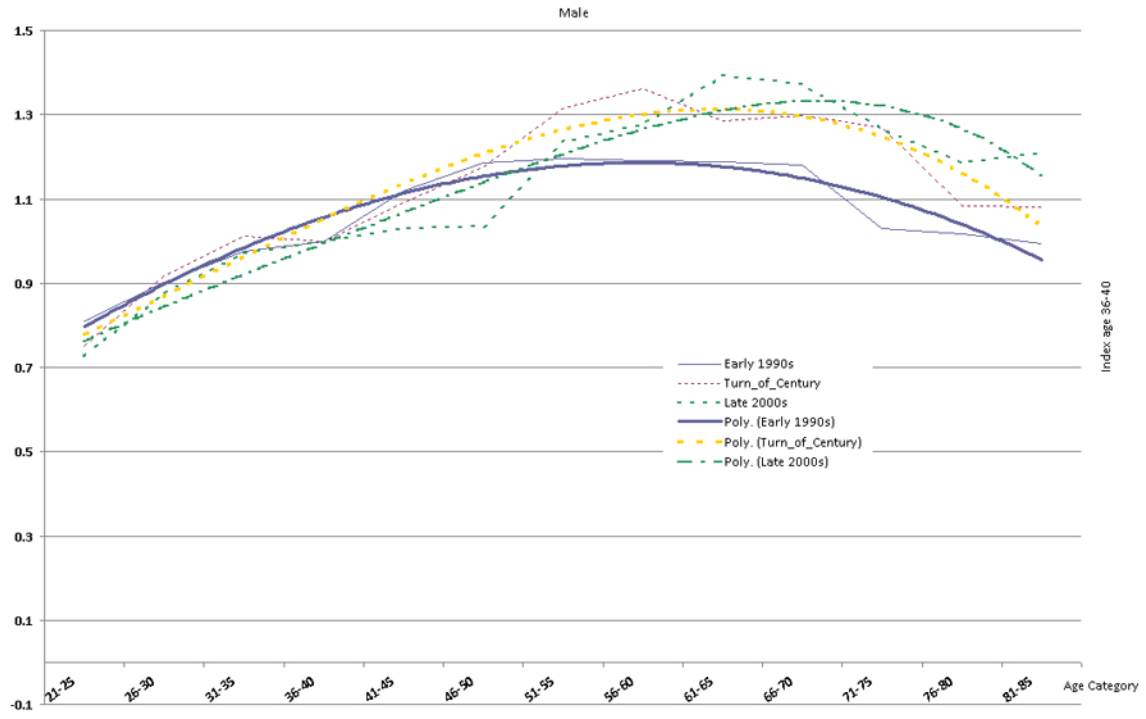
Conclusion

The federal government's fiscal imbalance measured in perpetuity is a comprehensive measure of the government's financial condition, encompassing its inherited debt and prospective financial shortfalls under current tax and spending policies. Alternatively, the government's financial condition is evaluated under the assumption that recent *fiscal practice* rather current laws on the government's books will continue to be followed in the future. As this paper was being written, news reports emerged about urgent negotiations in the Congress to sidestep the "fiscal cliff," consistent with practice during the last several years. This would roll back implementation of some currently scheduled fiscal policies, to avoid implementing steep cuts in federal spending and disallow expiration of several one-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 that is being negotiated in the Congress would grant additional public goods and services to the public, 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 income taxes that are levied on the nation's broadest tax base.

Under CBO's Alternative projections, three-quarters of the overall U.S. fiscal imbalance is accounted for by the fiscal imbalances in Social Security and Medicare, the nation's two largest entitlement programs that 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. Thus, 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 future to living, especially 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, to further impoverish younger and future generations.

A1. 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 gender. 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 taxes profiles are based on CPS wage and salary information. Social insurance (payroll) taxes 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, it is not capped by the taxable maximum. Capital income taxes and corporate income taxes 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 taxes and customs duties 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. seinorage) – 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.1: Relative Profiles: Selected Federal Taxes
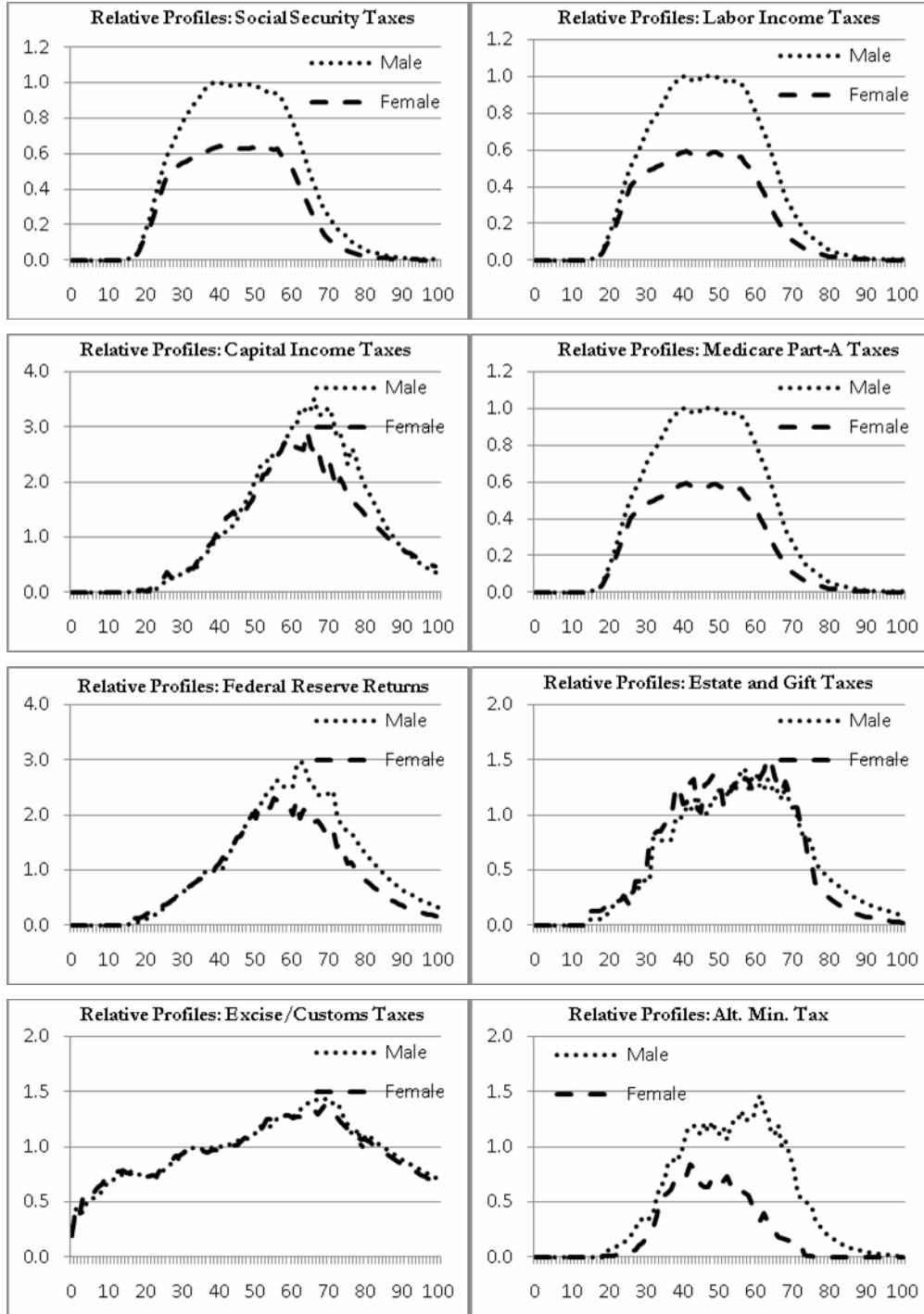
Figure A.2 shows selected relative age-gender profiles of federal transfer payments. These include entitlement benefits – Social Security, Medicare, Medicaid, and other health programs – and welfare programs such as family and child support payments, Supplemental Security Income, Supplementary Nutrition Assistance Program (SNAP), Unemployment Compensation (UC), 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 (TARP) that is now expected to return funds to the U.S. Treasury for the next few years, federal subsidies on account of agriculture, the bailout of Fannie and Freddie. 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 5 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, veteran's health and retirement benefit programs, and the federal deposit insurance program are also calculated and used to distribute the corresponding federal transfer payments.

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 credits, Make Work Pay, and PPACA health subsidies and other welfare programs. The larger are these transfers relative to the taxes paid by the young, the less would be available to fund entitlement benefits for retirees.
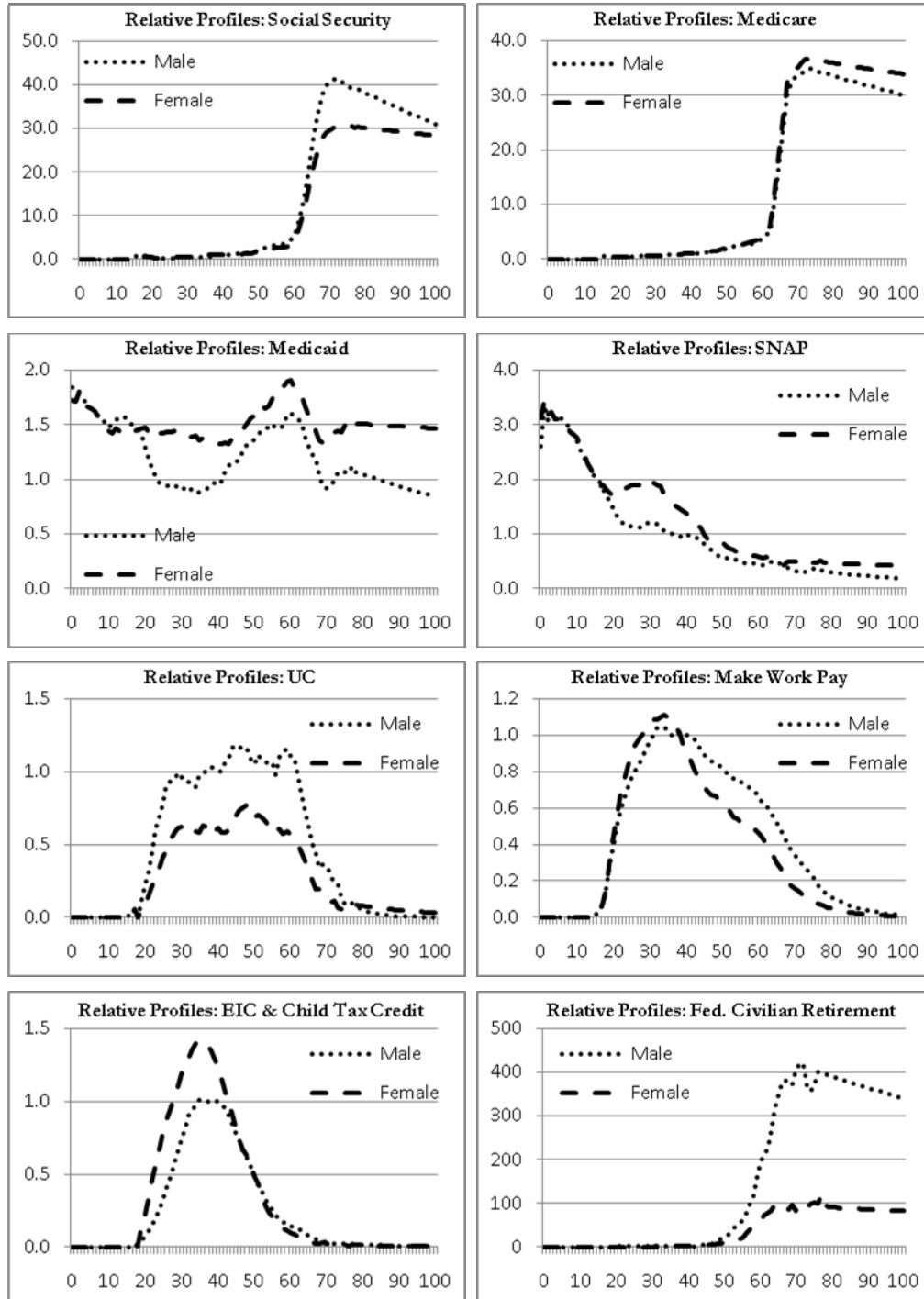
Figure A.2: Relative Profiles: Selected Federal Transfers
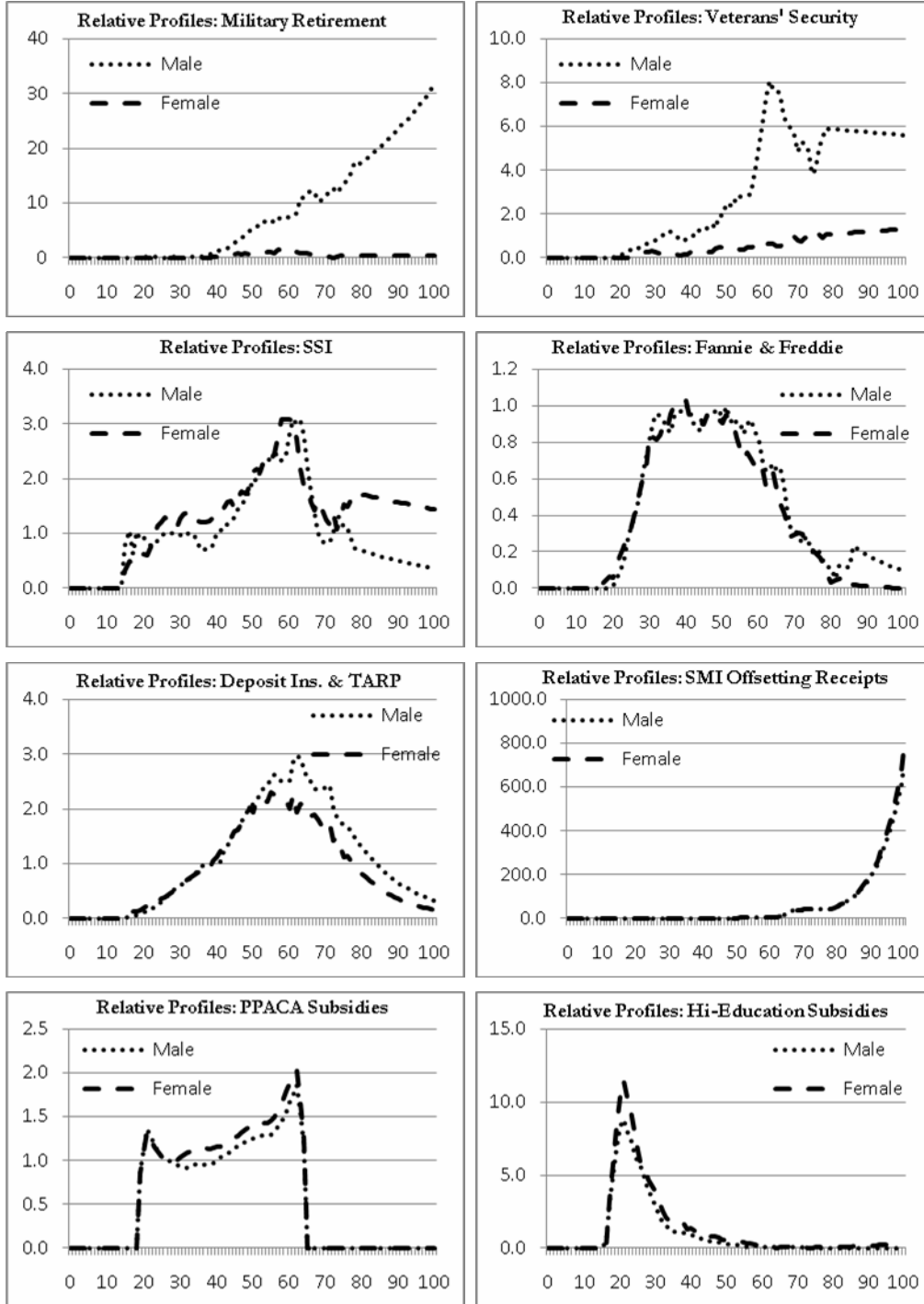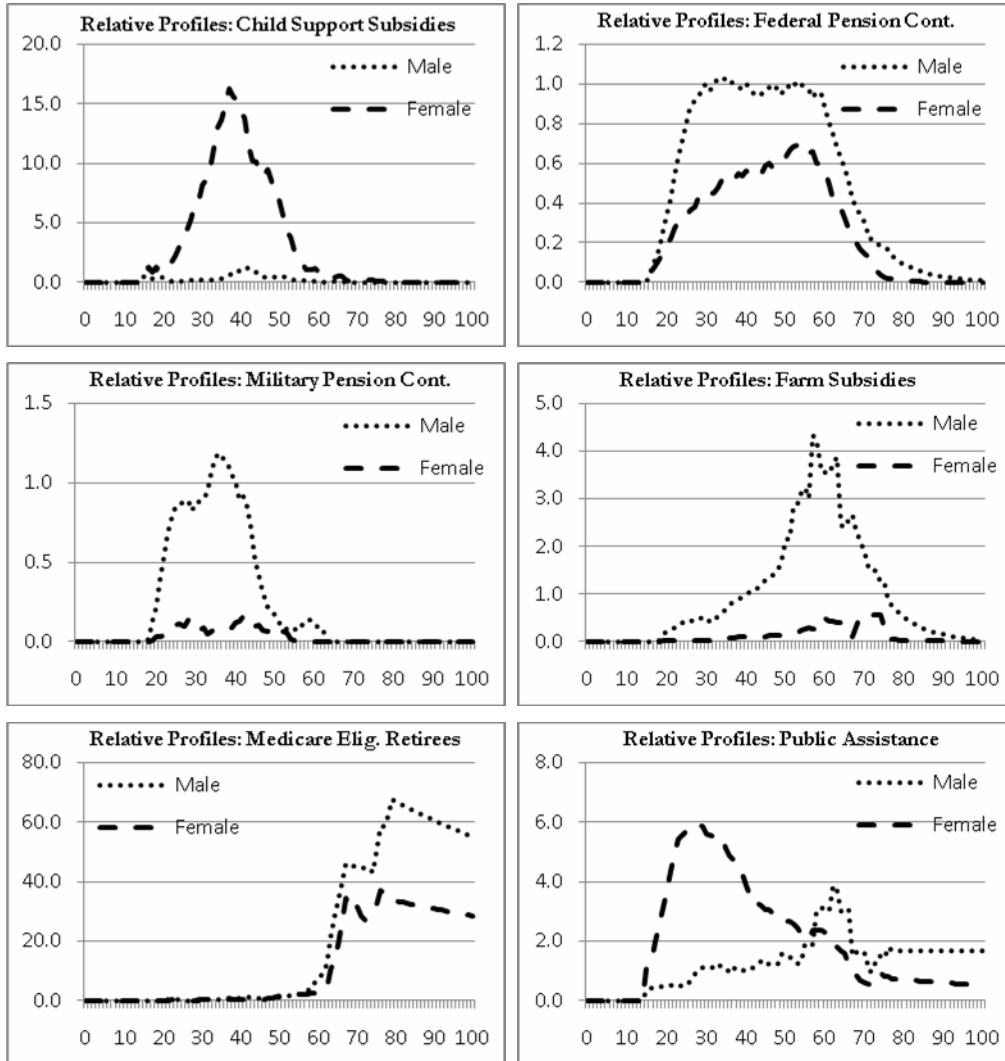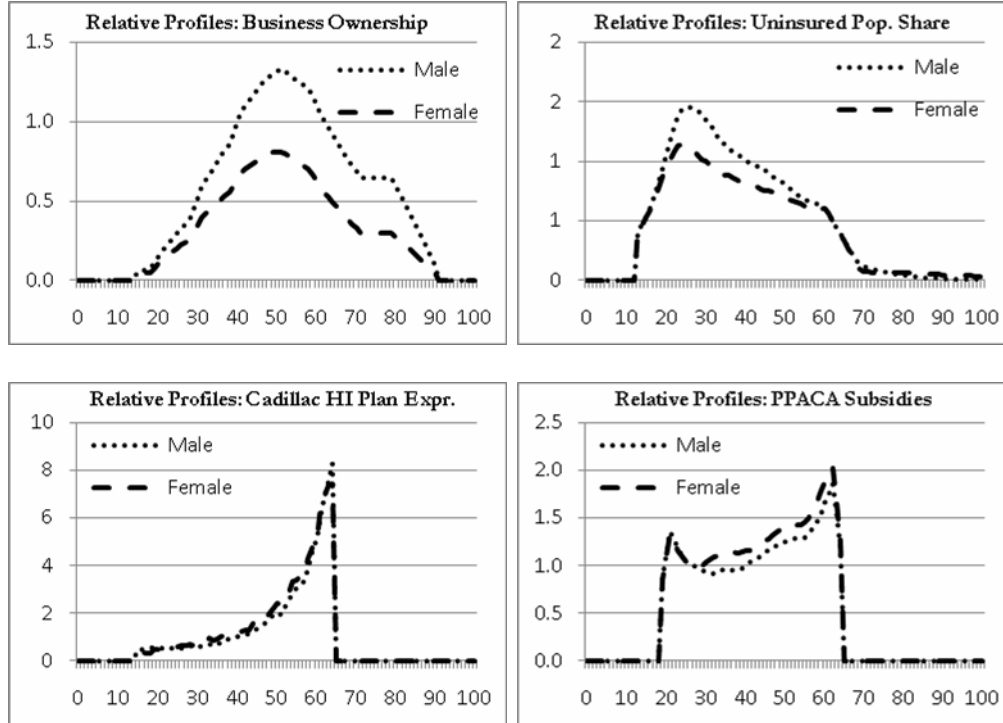
Figure A.2 (continued)

Figure A.2 (continued)

Source: Author's calculations based on micro-data surveys: Current Population Survey, Survey of Consumer Finances, Consumer Expenditure Survey.

Figure A.3: Relative Profiles for Distributing Spending and Taxes under PPACA

Figure A.3 shows the relative profiles used for distributing the Congressional Budget Offices' 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 a myriad features which the Congressional Budget Office has scored for their impact on the federal government's finances. It's main elements include health insurance premium and cost-sharing subsidies to those with household incomes above the federal poverty limit (FPL) that 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" on individuals who remain uninsured after 2014; "taxes" 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 micro-data sources: For example small-employer tax credits are distributed according to the age-gender distribution of small business owners taken from the Census Bureau's Survey of Business Owners;[27] The population distribution by age and gender of uninsured individuals is taken from the Current Population Survey, 2011 – 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 Survey of Consumer Expenditures, (CEX, 2010) 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.[28]

A2. Medicare Cost Growth Assumptions

The Congressional Budget Office 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 under the Affordable Care Act's stipulation of 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 projected Medicare expenditures are projected can be had from the program's actuaries' report for 2012. A brief description of the method adopted here, which closely follows the Medicare actuaries' method is provided below for each of Medicare's component programs.

A. Medicare Part A: Hospital Insurance (HI):

Medicare Part A's expenditure projections as 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, 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 HI spending growth relative to the growth of HI taxable payroll through the year 2035.[29] 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's productivity growth assumptions, (see Appendix A5), 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.

B. Medicare Part B: Supplementary Medical Insurance (SMI)

The 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 surgical, 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 (coinsurance, deductibles, and co-payments).

Physician fee reimbursements are based on a Medicare Economic Index (MEI) 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.[30] The SGR mechanism was enacted as part of the Balanced Budget Act of 1997 to limit growth of total physician payments to that in the nation's GDP unless, that is, Congress chooses to override and postpone its provisions during the current year. Congress has, indeed, reduced or postponed the legal SGR's updates to doctor payments – at times reversing a cut and granting an increase in reimbursements – many times since the law was enacted. 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.[31] The CBO's current law projections assume that the SGR adjustment and the ACA's productivity growth adjustments applicable to most SMI services will be implemented during early 2013. CBO's 10-year budget projections also include the costs of new preventive services specified by the Affordable Care Act (ACA) 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 ACA 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's 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 – effects 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 effects are likely to be large makes their adoption by Congress highly unlikely.

In contrast to current law, current policy (or current practice) suggests that SGR adjustment 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 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 implement 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 rate-book beginning in 2012, is projected to considerably reduce Medicare benchmarks for most areas: Those benchmarks – that 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 dampen projected increases in Medicare fee-for-service base of the 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.

A3. Distributing CBO tax and spending projections, 2012-2022.

A. CBO baseline projections

Most federal revenues and several major elements of federal expenditures can be distributed according to who pays and receives 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 CBO's latest Budget Report.[32] These items are displayed in Appendix Table 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 Current Population Survey (CPS), March 2011 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 Survey of Consumer Finances (SCF), 2007. The age-gender relative profiles applied to distribute excise taxes and customs duties are those calculated from the Consumer Expenditure Survey's (CEX) micro-data from 2010. 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, Medicaid, 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: [33]

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

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

B. CBO Alternative Projections

...

A4. Projecting Federal Taxes and Expenditures Under 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 FI: First, nominal projections for years beyond 2022 are made by applying annual nominal productivity growth rate factors to all per-capita amounts $x_{s,i,t}$. These growth factors are taken from the Congressional Budget Office'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 And 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.

A5. 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 remained 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 Current Population Survey, March 2011 -- 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 Congressional Budget Office's projections for the years 2011-22. Next, the per capital 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.[34] 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 is subtracted from GDP to obtain NDI.[35] The ratio of GDP to NDI 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 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 (CPI) to obtain real GDP projections.

A6. Calculation of PPACA Subsidy Profiles by Age and Gender

Interpretation of PPACA law: Subtitle E—Affordable Coverage Choices for All Americans

Part I—Premium Tax Credits and Cost-Sharing Reductions:

Subpart A—Premium Tax Credits and Cost-Sharing Reductions:

Premium Assistance Credit Amount: For purposes of this section,

"(1) In General.—The term 'premium assistance credit amount' (PACA) means, with respect to any taxable year, the sum (Σ) of the premium assistance amounts (PAA) determined under paragraph (2) with respect to all coverage months (m) of the taxpayer occurring during the taxable year (t). This implies:

$$PACA_t = \sum_{m=1}^{12} PAA_{t,m}$$

(1)

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 (as defined in section 152) of the taxpayer and which were enrolled in through an Exchange established by the State under 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. This implies:

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

(2)

"(3) Other terms and rules relative to Premium Assistance amounts: For purposes of paragraph (2)

"(A) Applicable Percentage:

"(i) In General: *As revised by section 1001(a)(1)(A) of HCERA.* Except as provided in clause (ii), the applicable percentage for any taxable year shall be the percentage such that the applicable percentage for any taxpayer whose household income is within an income tier specified in the following table shall increase, on a sliding scale in a linear manner, from the initial premium percentage to the final premium percentage specified in such table for such income tier:

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%

"(I) In General: Subject to subclause (II), in the case of taxable years beginning in any calendar year after 2014, the initial and final applicable percentages under clause (i) (as in effect for the preceding calendar year after application of this clause) 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.

"(II) Additional Adjustment: Except as provided in subclause (III), in the case of any calendar year after 2018, the percentages described in subclause (I) shall, in addition to the adjustment under subclause (I), be adjusted to reflect the excess (if any) of the rate of premium growth estimated under subclause (I) for the preceding calendar year over the rate of growth in the consumer price index for the preceding calendar year.

Those under 133 percent of the poverty limit are eligible for Medicaid. Federal spending on Medicaid-eligible individuals is already allocated separately on a per capita basis. The remainder of health insurance subsidies under PPACA need 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 formula is applied to adults aged 19 through 64. It involves first calculating the person's family income position relative to the poverty threshold. This calculation uses micro-survey data from the 2011 Current Population 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 as prescribed by the U.S. Department of Health and Human Services.[36]

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_{ga} (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 SLCSP with better coverage would be zero. Hence, the subsidy is calculated based on SLCSP alone.

The per capita subsidy estimate equals the estimated cost of the second lowest cost silver plan (SLCSP) per capita minus the estimated cost sharing element.[37] The calculations are done separately for single-persons and members of multi-person 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 is 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. As age increases, incomes increase to increase the out-of-pocket cost-sharing component faster than health insurance premiums, resulting in a decline in subsidies per capita. 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.

Figure A.4: Relative Profiles of PPACA Health Insurance Premium Subsidies by Age and Gender
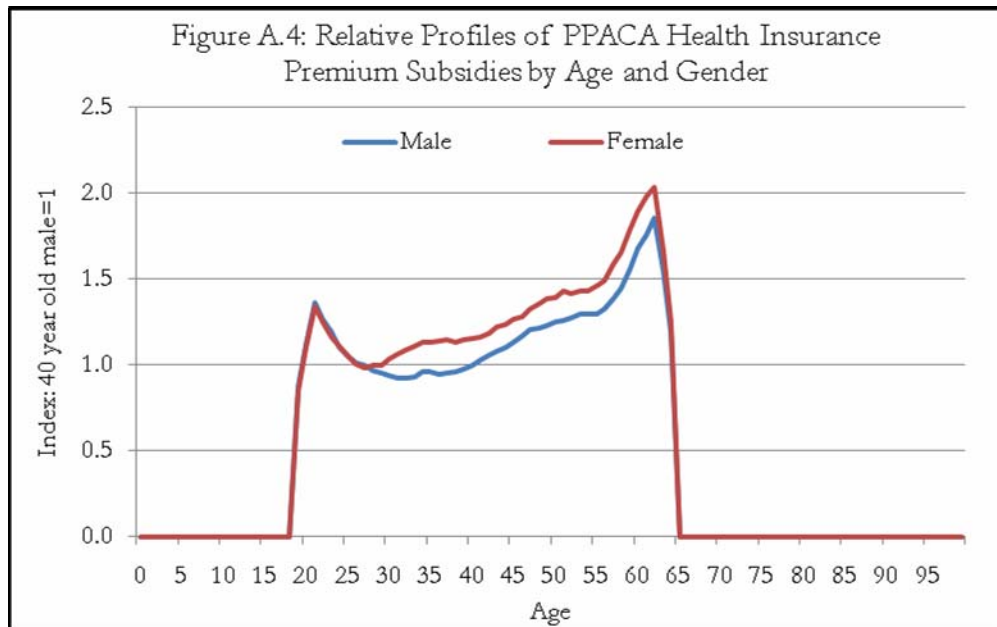
A7. Methodology for Calculating Consumption Profiles

The Survey of Consumer Expenditure (CEX) 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 Congressional Budget Office 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 Current Population Surveys to find the average child consumes 38% (.38) of the consumption of adults.[38] Plassman and Norton do the same analysis breaking it down by race, income, education and number of children using the 1994 and 1995 CEX.[39] They find that on average children consume 42% (.42) of the level of adults in the household. A couple papers have also found the gender of adults plays a role in the resource distribution among adults. Browning et al. (1994) find this difference to be highly correlated to the percentage of income a female contributes.[40] Browning et al. (2006) find the average adult female allocation to be approximately 75% (.75) of a man's.[41] The following distribution rules were also tested: .2 for under 18, .6 for adult females and 1 for adult males; and .6 for under 18 and 1 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 18years 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, likely gifts for grandchildren outside their household.

Infant clothing, furniture and equipment are distributed solely to members of the family who were under 6. Food, housing, supplies, busing and tuition for school aged children are applied to household members between 6 and 17. Meals received as pay and occupational expenses are distributed to those considered of working age (18 to 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 between 6 and 11 considered boys or girls and 12 and older being 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 is benchmarked to account for under-reporting – 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 (NIPA) 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.

Appendix Table 1
Federal Receipts, Transfers, and Discretionary Spending Projections 2012-2022,
(Congressional Budget Office, March, 2012, billions of dollars)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Distribution 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
Childrens 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
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	

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[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.

[i] See Feldstein, Martin S. , "Social Security, Induced Retirement, and Aggregate Capital Accumulation," Journal of Political Economy, Sept./Oct. 1974, 82(5), pp. 905—26;

[ii] See Alan J. Auerbach, Jagadeesh Gokhale, Laurence J. Kotlikoff. "Generational Accounts: A Meaningful Alternative to Deficit Accounting," in David Bradford, editor, "Tax Policy and the Economy, Volume 5" The MIT Press (1991) and Jagadeesh Gokhale and Kent Smetters, *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*, American Enterprise Institute, AEI Press: 2003.

[iii] See Jagadeesh Gokhale and Kent Smetters, *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*, American Enterprise Institute, AEI Press: 2003.

[iv] Federal outlays not reduced by offsetting receipts such as Medicare premiums, federal receipts on employee social security, civilian retirement and military retirement, etc.

[v] 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.

[vi] See "Updated Budget Projections: Fiscal Years 2012-2022," Congressional Budget Office, March, 2012, available at: http://www.cbo.gov/publication/43119.

[vii] The CBO reports mention that the baseline is only a benchmark against with to compare alternative policy choices.

[viii] The terms "benefits" and "pay" are in quotes because of the ambiguity of those terms. "Benefits" include those provide 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, or increases in taxes on benefits, stricter (less generous) eligibility conditions for benefit programs, and so on.

[ix] 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.

[x] For examples of how budgeting over a limited time horizon can generated misleading indications of a program's true financial condition, see "Measuring Social Security's Financial Outlook Within an Aging Society" by Jagadeesh Gokhale and Kent Smetters " *Dædalus*, Winter, (2006) and "Wage Growth and the Measurement of Social Security's Financial Condition," by Andrew Biggs and Jagadeesh Gokhale in *Government Spending on the Elderly*, ed. by Dimitri B. Papadimitriou, Palgrave (Macmillan), (2007).

[xi] 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 calls for estimating the size of that uncertainty rather than simply ignoring it. 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.

[xii] This argument is elaborated in *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*, by Jagadeesh Gokhale and Kent Smetters, AEI Press, 2003.

[xiii] According to CBO's projections, additional 10-year debt service costs under the Alternative projection would be $1.9 trillion compared to those under the Baseline projection.

[xiv] 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.

xv A more detailed table showing the age distributions of per capita taxes and transfers could be made available upon request from the author.

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

xvii These policy changes are not included in Table 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.

xviii 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 long-standing debate but its measurement is beyond the scope of this paper.

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

xx The faster rate of growth for Medicare Part A are taken from growth rate differentials relative to payroll base growth reported by the Medicare Trustees through 2035. See Table Table IV.A2 in the 2012 Medicare Trustees' annual report available 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 economy-wide 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 to deliver identical growth rate differentials relative to GDP growth to calibrate growth of future SMI expenditures.

xxi 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 "Assessing Dynamic Efficiency: Theory and Evidence" by Abel, Andrew B., Mankiw, N. Gregory, Summers, Lawrence H. and Zeckhauser, Richard J.,. National Bureau of Economic Research, Working Paper No. w2097, 1989

xxii The full derivation and explanation of the fiscal imbalance measure is available in *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*, by Jagadeesh Gokhale and Kent Smetters, AEI Press, 2003.

xxiii Clearly, GDP and payrolls projections should also be different under Baseline and Alternative policy paths. However the Congressional Budget Office 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.

xxiv Strictly speaking, the two sets of estimates are not directly comparable because of their different sources (OMB versus CBO) 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.

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

xxvi Detailed descriptions of generational accounting are provided in "Generational Accounts: A Meaningful Alternative to Deficit Accounting," by Alan J. Auerbach, Jagadeesh Gokhale, and Laurence J. Kotlikoff, *Tax Policy and the Economy*, Vol. 5, 1991; and "Generational Accounting," by Jagadeesh Gokhale in *The New Palgrave Dictionary of Economics*, second edition, 2008, ed. by Steven N. Durlauf and Lawrence E. Blume. For a description of fiscal and generational imbalance measures, see *Fiscal and Generational Imbalances: New Budget Measures for New Budget Priorities*, by Jagadeesh Gokhale and Kent Smetters, AEI Press, 2003.

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

[28] The Kaiser Family Foundation's cost estimates by age for SLCSP, which is adopted here, is taken from the website: http://healthreform.kff.org/SubsidyCalculator.aspx.

[29] 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/ReportsTrustFunds/index.html?redirect=/reportstrustfunds.

[30] The MEI is constructed by the US 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 MEI incorporates an "all factor" productivity growth component to account for changes in physicians' productivity. The inclusion of the latter reduces MEI's rate of growth.

[31] Currently, about 90 percent of doctors accept patients with SMI. Each year since its enactment, Congress has postponed SGR'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 SGR 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/ReportsTrustFunds/Downloads/TR2012.pdf.

[32] As of the time of writing, the latest available CBO budget 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.

[33] A more detailed description of the methodology and calculations is available in Gokhale and Smetters (2003).

[34] 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.

[35] Actually, 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 (GDP) and gross domestic income (GDI); 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.

[36] See the U.S. Department of Health and Human Services' website available here: 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 PPACA premium subsidies is inflated using an annual productivity growth rate of 1.1 percent.

[37] The Kaiser Family Foundation's cost estimates by age for SLCSP, which is adopted here, is taken from the website: http://healthreform.kff.org/SubsidyCalculator.aspx.

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

[39] Vandana S. Plassmann and Marjorie J. T. Norton. "Child-Adult Expenditure Allocation by Ethnicity." *Family and Consumer Science Research Journal.* 33 (2004) 475-497.

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