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MEDICARE FROM THE PERSPECTIVE OF GENERATIONAL ACCOUNTING

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This paper draws on results reported in Gokhale, Page, and Sturrock (1999), Kotlikoff and Leibfritz (1999), and Auerbach and Kotlikoff (1999). The views expressed here are not necessarily those of the Federal Reserve Bank of Cleveland. Any opinions expressed are those of the author and not those of the National Bureau of Economic Research.

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ABSTRACT

U.S. policy changes and more optimistic fiscal forecasts have significantly improved the long-term fiscal prospects of the country. Nevertheless, these prospects remain dismal. Unless U.S. fiscal policy changes by a lot and very soon, our descendants will face rates of lifetime net taxation that are 70 percent higher than those we now face. They will, on average, find themselves paying 1 of every 2 dollars they earn to a local, state, or federal government in net taxes.

A number of factors, besides current and projected Medicare spending, are responsible for the imbalance in U.S. generational policy. But the ongoing excessive growth of Medicare benefits is certainly a key culprit. Achieving generational balance solely by cutting Medicare benefits is feasible but would require cutting over two-thirds of the program's expenditures assuming the cuts were made today. If one waits five years before cutting Medicare, four-fifths of the programs would have to be slashed. Clearly, Medicare cuts of this magnitude are unlikely to happen, but however we resolve our sever crisis in U.S. generational policy, it's clear that significant reductions in Medicare spending will be a major part of the story.

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I. Introduction

Notwithstanding all the attention being paid to our nation's current budget surplus, the U.S. fiscal position is grave. Unless policies are changed and changed soon, future American generations can expect to pay 50 cents of every dollar they earn to local, state, and federal governments in net taxes (taxes paid net of transfer payments received). This 50 percent lifetime net tax rate is roughly 70 percent larger than the rate current workers are slated to pay over their lifetimes.

This estimated imbalance in U.S. generational policy emerges from the latest U.S. generational accounting prepared by Gokhale, Page, and Sturrock (1998). Their study incorporates recent changes in fiscal policy, recent demographic projections, recent forecasts of government spending, and recent projections of expenditures on social insurance programs, including Social Security, Medicare, and Medicaid.

Although the current imbalance in U.S. generational policy is huge, it's much smaller than that estimated three years ago by Auerbach, Gokhale, and Kotlikoff (1995) and Congressional Budget Office (1995). In those studies, the lifetime net tax rate confronting future generations was roughly 80 percent. The dramatic reduction in the imbalance in generational policy reflects both changes in policies and revisions in projections of the amounts U.S. governments will receive and spend under existing policy.

Some of the revisions in the government's fiscal forecasts are quite remarkable. Take Medicare expenditures between 2030 and 2040. Compared with their 1995 projections, the Health Care Financing Administration (HCFA) is now projecting these expenditures to be 2 to 3 percentage points smaller. To put this revised projection in

perspective, Medicare expenditures are now roughly 2.5 percent of GDP. Hence, the new HCFA forecast eliminates future Medicare expenditures in the 2030s, which, when measured relative to the size of the economy, are as large as the entire current Medicare program!

This paper considers the role of Medicare in contributing to the imbalance in U.S. generational policy. It also describes the recent revisions in long-term Medicare expenditure projections. And it considers the extent to which immediate or future cuts in Medicare benefits can be used to eliminate the outstanding imbalance in U.S. generational policy. The paper begins in the next section by reviewing the methodology of generational accounting. Section III presents baseline U.S. generational accounts. Section IV compares the imbalance in U.S. generational accounts with those in other developed countries. Section V describes the recent revision in projected Medicare expenditures and the ways one can restore balance to U.S. generational policy by cutting these expenditures. The final section, VI, draws conclusions.

II. The Method of Generational Accounting

This section draws heavily on Auerbach and Kotlikoff (1999) in summarizing the standard method of generational accounting. This methodology was first developed in Auerbach, Gokhale and Kotlikoff (1991).

Generational accounting is based on the government's intertemporal budget constraint, which given in equation (1). This constraint requires that the remaining lifetime net tax payments of current generations and the lifetime net tax payments of future generations suffice, in present value, to cover the government's bills – the present value of its future spending on goods and services as well as its official net indebtedness.

This constraint doesn't imply that the government ever retire its debt, only that it service at each point in time all debt that remains outstanding.

$$(1) \qquad \sum_{k=t-D}^{t} N_{t,k} + (1+r)^{-(k-t)} \sum_{k=t+1}^{\infty} N_{t,k} \;=\; \sum_{s=t}^{\infty} G_s (1+r)^{-(s-t)} + D_t^g$$

The first term on the left side of (1) sums the *generational accounts* -- the present value of the remaining lifetime net payments -- of existing generations. The term $N_{t,k}$ stands for the account of the generation born in year k. The index k in this summation runs from t-D (those age D, the maximum length of life, in year 0) to t (those born in year 0).

The second summation on the left side of (1) adds together the present values of the generational accounts of future generations, with k again representing the year of birth. To measure the value of these prospective future generational accounts as of time t, we need to discount these accounts to time t. We do so using the economy's real before-tax rate of return, r.

The first term on the right hand side of (1) expresses the present value of government consumption. In this summation the values of government consumption in year s, given by G_s, are also discounted to year t. The remaining term on the right-hand side, D_t^g, denotes the government's net debt in year t -- its explicit debt minus its assets, which consist of its financial assets plus the market value of state enterprises and extractable resources.

Equation (1) indicates the zero-sum nature of intergenerational fiscal policy. Holding the present value of government consumption fixed, a reduction in the present value of net taxes extracted from current generations (a decline in the first summation on

the left side of (1)) necessitates an increase in the present value of net tax payments of future generations.

The generational account $N_{t,k}$ is defined by:

$$N_{t,k} = \sum_{s=\kappa}^{k+D} T_{s,k} P_{s,k} (1+r)^{-(s-\kappa)} \tag{2}$$

where $\kappa=\max(t,k)$. In expression (2), $T_{s,k}$ stands for the projected average net tax payment to the government made in year s by a member of the generation born in year k. The term $P_{s,k}$ stands for the number of surviving members of the cohort in year s who were born in year k. For generations born prior to year t, the summation begins in year t and is discounted to year t. For generations born in year k>t, the summation begins in year k and is discounted to that year.

A set of generational accounts is simply a set of values of $N_{t,k}$, one for each existing and future generation, with the property that the combined present value adds up to the right hand side of equation (1). Though we distinguish male and female cohorts in many of the results presented below, we suppress sex subscripts in (1) and (2) to limit notation.

Note that generational accounts reflect only taxes paid less transfer payments received. With the exception of government expenditures on health care, which are treated as transfer payments, the accounts do not impute to particular generations the value of the government's purchases of goods and services because it is difficult to

attribute the benefits of such purchases.[1] Therefore, the accounts do not show the full net benefit or burden that any generation receives from government policy as a whole, although they can show a generation's net benefit or burden from a particular policy change that affects only taxes and transfers. Thus generational accounting tells us which generations will pay for government spending not included in the accounts, rather than telling us which generations will benefit from that spending. This implies nothing about the value of government spending; i.e., there is no assumption, explicit or implicit, concerning the value to households of government purchases.

Assessing the Fiscal Burden Facing Future Generations

Given the right-hand-side of equation (1) and the first term on the left-hand-side of equation (1), we determine, as a residual, the value of the second term on the left-hand side of equation (1) -- the collective payment, measured as a time-t present value, required of future generations. Based on this amount, we determine the average present value lifetime net tax payment of each member of each future generation under the assumption that the average lifetime tax payment of successive generations rises at the economy's rate of productivity growth. This makes the lifetime payment a constant share of lifetime income. Controlling for this growth adjustment, the lifetime net tax payments of future generations are directly comparable with those of current newborns, since the generational accounts of both newborns and future generations take into account net tax payments over these generations' entire lifetimes and are discounted back to their respective years of birth.

[1] Some of our recent generational accounting (e.g., Kotlikoff and Leibfritz, 1999) also treats educational expenditures as a transfer payment.

Another way of measuring the imbalance of fiscal policy, illustrated below, is to ask what permanent change in some tax or transfer instrument, such as an immediate and permanent increase in income taxes or reduction in old-age social security benefits, would be necessary to equalize the lifetime growth-adjusted fiscal burden facing current newborns and future generations. Because such policies satisfy the government's intertemporal budget constraint, they also sustainable.

Generational Accounting versus Deficit Accounting

A final and critically important point to make about generational accounting is that the size of the fiscal burden confronting future generations (the second summation on the left-hand side of (1)), the generational accounts of newborn generations, and the imbalance in generational policy (measured as the difference in the accounts of newborns and the growth-adjusted accounts of future generations) are all invariant to the government's fiscal labeling – how it describes its receipts and payments.

The same, unfortunately, is not true of the government's official debt. As described in Kotlikoff (1992), from the perspective of neoclassical economic theory, neither the government's official debt nor its change over time -- the deficit – is a well-defined economic concept. Rather these are accounting constructs whose values are entirely dependent on the choice of fiscal vocabulary. Stated differently, a government's reported debt and deficit bear no intrinsic relationship to any aspect of its fiscal policy, including its generational policy.

For example, if one calls past and future U.S. social security contributions "loans" to the government and past and future social security benefit payments "return of

principal plus interest on these loans" less an "old age net tax," the U.S. government's official debt becomes roughly $9 trillion larger than the "official" value. In terms of equation (1), this alternative, but equally legitimate choice of language entails a higher value of the generational accounts of all existing generations, apart from newborns, as well as a higher value of official debt. The larger value of the debt term on the right-hand side of the equation is exactly matched by a higher value of the first summation on the left-hand side of the equation. Consequently, the size of the second summation on the left-hand side of the equation -- the collective net tax burden facing future generations -- is unchanged.

Each choice of fiscal language raises or lowers the first summation on the left-hand side of (1) and the official net debt term on the left-hand side by exactly the same amount. Since there are an infinite number of ways to label each dollar given to the government by the private sector or given to the private sector by the government, there are an infinite set of alternative time series of the government's official debt that can be constructed simply by describing past and future economic policy with different words.[2] But none of these times series of debts and deficits, in of themselves, tells us anything about how the government is treating alternative generations. Hence, generational accounting's message is not simply that we can do better than conventional deficit accounting in assessing the generational stance of fiscal policy, but also that deficit accounting, notwithstanding its routine use by every country in the world, is entirely

[2] Here are just six examples of the different ways one can describe a dollar given this year to the government: 1) a $1 tax, 2) a $1 loan to the government, 3) a $2 loan to the government less the receipt of a $1 transfer payment, 4) a $5,000,000 loan to the government less the receipt of a $4,999,999 transfer payment, 5) a $2 tax less a $1 dollar loan received from the government, 6) a $999 tax less a $998 loan received from the government. Compared to case 1), using the language in the other cases will generate the following increase in this year's official debt: 2) $1, 3) $2, 4) $5,000,000, 5) -$1, and 6) -$998.

devoid of economic content.

Assumptions Underlying Generational Account Calculations

To produce generational accounts, we require projections of population, taxes, transfers, and government expenditures, an initial value of government net debt, and a discount rate. We consider the impact of total, as opposed to just federal, government. Typically, we assume that government purchases grow at the same rate as GDP, although in some cases we break these purchases down into age-specific components and assume that each component remains constant per member of the relevant population, adjusted for the overall growth of GDP per capita. This causes different components of government purchases to grow more or less rapidly than GDP according to whether the relevant population grows or shrinks as a share of the overall population.

Government infrastructure purchases are treated like other forms of purchases in the calculations. Although such purchases provide an ongoing stream rather than a one-time amount of services, they must still be paid for. Generational accounting clarifies which generation or generations will have to bear the burden of these and other purchases. For government debt, we measure the government's net financial debt – its official debt less its official financial assets. We do not include the real assets of state enterprises in this measure, but instead subtract projected net profits from state enterprises from projected government spending. This procedure effectively capitalizes the value of these enterprises.

Government assets do not include the value of the government's existing infrastructure, such as parks. Including such assets would have no impact on the

estimated fiscal burden facing future generations because including these assets would require adding to the projected flow of government purchases an offsetting flow of imputed rent on the government's existing infrastructure.

Aggregate taxes and transfer payments reported for the government sector in the National Income and Product Accounts are each broken down into several categories. Our general rule regarding tax incidence is to assume that taxes are borne by those paying the taxes, when the taxes are paid: income taxes on income, consumption taxes on consumers, and property taxes on property owners. There are two exceptions here, both of which involve capital income taxes. First, we distinguish between marginal and infra-marginal capital income taxes. Infra-marginal capital income taxes are distributed to existing wealth holders, whereas marginal capital income taxes are based on future projected wealth holdings. Second, in the case of small open economies, marginal corporate income taxes are assumed to be borne by (and are therefore allocated to) labor.

The typical method used to project the average values of particular taxes and transfer payments by age and sex starts with government forecasts of the aggregate amounts of each type of tax (e.g., payroll) and transfer payment (e.g., welfare benefits) in future years. These aggregate amounts are then distributed by age and sex based on cross-section relative age-tax and age-transfer profiles derived from cross-section micro data sets. For years beyond those for which government forecasts are available, age- and sex-specific average tax and transfer amounts are assumed to equal those for the latest year for which forecasts are available, with an adjustment for growth.

II. Baseline U.S. Generational Accounts

Tables 1 and 2 present baseline U.S. generational accounts for males and females. The base year for this analysis is 1995, but the fiscal projections used in the accounts are those prevailing as of late Fall 1998. The tables show the remaining lifetime net tax payments of every fifth male and female cohort alive in 1995. The figures are based on a 6 percent real discount rate and a 1.2 percent rate of labor productivity growth. All government (local, state, and federal) taxes and transfer payments are included in the analysis.

Consider 40-year-old males. Their remaining lifetime net tax payment is $171,200. This is much higher than the $77,400 in net taxes owed, in present value, by newborn males, because these newborn males are many years away from paying much in the way of taxes. On the other hand, it's smaller than the $196,800 account of 30-year old males, who have almost all of their peak tax-paying years ahead of them and who are farther away, in time, from receiving significant transfers in the form of social security, Medicare, and Medicaid benefits. Compared to 40-year old males and, indeed, any males under age 55, males 60 and older are, on average, net recipients of the government's largess. Seventy-year-old males, for example, can expect to receive an average of $89,200 from the government in benefits above and beyond what they can expect to pay in taxes.

The female generational accounts share the same general age-pattern as do the male accounts, but the size of the accounts are smaller for females than for males. Female newborns face a $51,900 lifetime net tax bill compare with $77,400 for male newborns. And female 70 year-olds can look forward to receiving $101,000 over the remainder of their lives from the fiscal system, compared to $89,200 for 70 year-old

males. The lower accounts for newborn females than for newborn males reflects females projected lower labor earnings and lower tax payments over their workspans. The larger net transfers owed to 70-year-old females compared to 70-year-old males reflects the longer expected lifespans of females.

The accounts for future males also exceed those for future females in accordance with our assumption used in the calculations that the ratio of female to male accounts for future generations equal the ratio prevailing for newborns. Future males can anticipate receiving a $134,600 growth-adjusted lifetime net tax bill upon their arrival on earth. For future females the bill is $90,200. Again, the growth adjustment refers to the assumption that each generation born in the future makes a 1.2 percent higher absolute lifetime net tax payment than does the generation coming before it, where 1.2 percent is the assumed rate of labor productivity growth.

Since the accounts for newborn males and females are $77,400 and $51,900, respectively, the growth-adjusted accounts for future generations are 72 percent larger than those of newborns. The size of the generational imbalance can also be described in terms of lifetime net tax rates. As indicated in Table 1, male and female newborns face a collective projected lifetime net tax bill equal to 28.6 percent of their projected lifetime labor earnings. For future generations, the corresponding projected lifetime net tax rate is 49.2 percent – or 1.72 times the tax rate facing newborns! Since most current older and working generations will also face lifetime net tax rates of roughly 30 percent, the status-quo policy entertained in Tables 1 and 2 entail a policy of much higher rates of lifetime net taxation of future than of current generations.

This represents an enormous imbalance in U.S. generational policy. Forcing

future generations to pay lifetime net tax rates that are 72 percent higher than those facing current generations is not only highly inequitable, it's also likely to be economically infeasible. Recall that the 49.2 percent lifetime net tax rate is a net tax and that it also represents an average, rather than a marginal, tax rate. The marginal gross tax rates on various economic activities that the government might try to impose in order to collect a 49.2 percent average net tax rate could well be so high as to preclude actually collecting this net tax; i.e., sky-high marginal tax rates could so dissuade future generations from working and saving that the government finds itself unable to collect the net tax revenue it needs to satisfy its intertemporal budget constraint.

Medicare and U.S. Generational Accounts

Tables 1 and 2 break down the generational accounts of current generations into their various tax and transfer components. The tax components are labor income taxes, capital income taxes, payroll taxes, and excise taxes. The transfer components are OASDI (Social Security), Medicare, Medicaid, and Welfare. The Welfare category includes all non OASDI, Medicare, and Medicaid transfers.

Medicare is clearly a very important transfer component. Indeed, for most generations, it represents the second largest transfer component after Social Security benefits. Take 70-year-olds. The present value of the projected Medicare transfer to males in this age group is $51,600. For equally aged females, it's $51,800. This is about five eighths of the corresponding Social Security transfer. It's also over four times larger than the corresponding Medicaid transfer. Since the generational accounts of 70-year-old males and females are -$89,200 and -$101,000, respectively, Medicare is responsible

for more than half of the remaining lifetime net transfer being made to this cohort.

Even though Medicare benefits are only available to disabled workers prior to age 65, the program's net transfers loom quite large for young and middle-aged workers. Take 45-year-olds. Their protected Medicare transfer exceeds $25,000 in present value. These transfers, in conjunction with the Social Security transfer, exceed the present value of the generation's projected future payroll taxes; i.e., this generation has a larger stake in maintaining the pay-as-you-go financed Social Security and Medicare programs than it does in eliminating them.

IV. Comparing U.S. Generational Accounts to Those of Other Developed Countries

Table 3, gleaned from Kotlikoff and Leibfritz (1998), compares U.S. generational accounts with those of Japan, Germany, Italy, Canada, and France. All Table 3 entries are in 1995 dollars. Unlike Tables 1 and 2, which incorporate a 6 percent discount rate and a 1.2 percent labor productivity growth rate, Table 3 assumes a 5 percent discount rate and a 1.5 percent labor productivity growth rate. It also combines males and females in reporting the overall remaining lifetime net tax payment of different generations.

In addition, to ease cross-country comparisons, the generational accounts of all the foreign countries are scaled by the ratio of 1995 U.S. per capita GDP to the country's 1995 per capita GDP. For example, U.S. per capita GDP in 1995 was 1.28 times larger than France's per capita GDP. Hence, we multiplied the French generational account values by 1.28 before recording them in Table 3. By scaling the foreign country accounts in this manner we can immediately consider whether particular cohorts in particular countries have particularly high or low generational accounts compared with those in the

U.S. after controlling for the relative living standards and levels of economic activity in those countries.

The first thing to notice in Table 3 is the bottom line that indicates the percentage imbalance in each country's generational policy. For the U.S., there is a 51.1 percent imbalance. Again, this figure differs from the imbalance reported in Table 1 because of the assumed lower discount rate and the assumed higher labor productivity growth rate. Although the U.S. generational imbalance is sizeable, it is actually relatively small compared to the imbalances in Japan, Italy, and Germany. Their imbalances are 169.3 percent, 131.8 percent, and 92.0 percent, respectively. In other words, future Japanese, Italians, and Germans face lifetime net tax rates which, respectively, are 2.7, 2.3, and 1.9 times as large as those now facing newborn Japanese, Italians, and Germans under current policy. In contrast, France's 47.1 percent imbalance is smaller than that of the U.S., and Canada's imbalance is essentially zero.

Given the discussion above about the lack of a theoretical basis for deficit accounting, it's interesting to note the absence of any positive correlation between the size of these imbalances and the countries' official net debt to GDP ratios. These ratios are .48 for the U.S., .10 for Japan, .45 for Germany, 1.10 for Italy, .69 for Canada, and .36 for France. Thus Japan, which has the largest generational imbalance of the six countries, has the smallest debt-to-GDP ratio, and Canada, which has the smallest generational imbalance, has the second largest debt-to-GDP ratio.

The sources of generational imbalance in the various countries differ across the countries. In Japan, the scaled generational accounts of both the young and the old substantially exceed those of young and old Americans. For example, 40-year-olds face

remaining lifetime net taxes of $101,300 in the U.S., but $322,100 in Japan! And 70-year-olds Americans can expect to receive $104,600 in net transfers over the rest of their lives compared with only $54,700 for comparably aged Japanese. These findings would, other things equal, suggest a smaller generational imbalance in Japan than in the U.S. But other things aren't equal. The Japanese generational imbalance is greater than that of the U.S., in part, because of its level of projected government purchases and, in part, because of its demographics. Japan is aging more rapidly and more significantly than is the U.S. In the U.S. today, there are close to 19 elderly for every 100 workers. In 2030, there will be 37 elderly for every 100 workers. In Japan today, there are only about 17 elderly per 100 workers, and in 2030, there will be 45 elderly per 100 workers.

Germany will age less rapidly than Japan, but end up with a higher elderly dependency ratio than Japan. In 2030, there will be 49 older Germans for each 100 German workers, compared to about 22 per 100 right now. The timing of Germany's aging coupled with the extremely high level of net taxes it is collecting from current German workers explains why Germany's generational imbalance is less severe than that of either Japan or Italy.

Canada is another interesting case. Projected Canadian demographic change is fairly similar to that of the U.S. This point, notwithstanding, Canada's intergenerational imbalance is zero, whereas the U.S. imbalance is over 50 percent. The main difference in policy is that Canada is collecting substantially larger net taxes from current Canadian workers than is the U.S. For 30-year-olds, for example, the scaled Canadian generational account is $241,500 compared with $170,000 for the U.S.

V. Cutting Medicare Benefits to Achieve Generational Balance

Although the imbalance in U.S. generational policy is quite large, it is substantially smaller than it was a couple of years ago. The improvement in the U.S. generational imbalance can be traced to changes in policy that have led to revised fiscal projections and changes in the fiscal projections of the same policies.

Medicare is a prime example. Since 1995, Medicare has been subject to significant legislative changes. A number of the assumptions underlying its projected expenditures have also been reassessed by HCFA – the Heath Care Financing Agency. Chart 1 presents past and projected future Medicare outlays as a percent of GDP. For years after 1995, the chart shows the Medicare-GDP ratio as projected in 1995 (labeled Pr 1995) and the ratio projected in 1997 (labeled Pr 1997). There is a tremendous difference in these two projections, culminating in a more than 5 percentage-point difference in the long-run ratio of Medicare to GDP. Note that current Medicare expenditures are now roughly 2.5 percent of U.S. GDP, so the revision in the government's long-run forecast of the size of this program amounts to the equivalent of two expenditure programs that are each as large, relative to the U.S. economy, as the current Medicare program!

Chart II repeats Chart I, but also shows the revisions between 1995 and 1997 in projections of different taxes, transfer programs, and government purchases relative to GDP. Although the revisions in Medicare projections are the most dramatic, the 1997 projections also incorporate much lower projected future OASDI expenditures and government purchases. They also incorporate significantly lower projected future government labor income and payroll tax receipts. In the case of labor income taxes,

there is over a 3 percentage-point difference in the long-run projected ratio of these receipts to GDP.

The lower long-run Medicare projections appear, in large part, to be inspired by success in the past couple of years in maintaining the level of Medicare expenditures relative to GDP. Part of this success stems from shifting a portion of the Medicare population into health maintenance organizations and other managed care programs. Whether or not the improvements in the projections of long-run Medicare expenditures are justified, it's clear that there is a great deal of uncertainty about future Medicare expenditures and that future generations can ill afford any long-term forecasting mistakes on the part of current policy makers. Given how much the government has changed its long-term Medicare forecast in just the past two years, one could argue that the government should err on the conservative side in using Medicare forecasts to help assess the imbalance in U.S. generational policy.

Achieving Generational Balance Via Medicare Cuts

Table 4 examines the permanent cuts in Medicare benefits that could be used to achieve generational balance by which we mean equalizing the lifetime net tax rates of current newborns and future generations. The table considers baseline (current) policy as well as three other policies: a) limiting government purchases after the turn of the century to the same real amount as that spent in 2000, b) reducing the annual growth rate of Medicare and Medicaid expenditures by 2 percentage points between now and 2003 and permitting real expenditures per beneficiary on these programs to grow after 2003 at the growth rate of labor productivity, and c) simultaneously engaging in policies a) and b).

The table also considers initiating the cuts in Medicare at three different dates: 1998, 2003, and 2016.

The table shows the requisite permanent percentage cut in Medicare benefits needed to achieve generational balance given the policy in place and the start date for the cut. It also shows the absolute Medicare spending cut in billions of 1995 dollars in the first year the policy is initiated. Finally, the table shows the common lifetime net tax rate that will face future and newborn generations once the specified policy is enacted.

Under baseline policy, the U.S. can achieve generational balance by either a) permanently cutting Medicare by 68 percent starting right now, b) waiting five years and permanently cutting Medicare by 78 percent, or c) waiting until 2016 and finding out that even the total elimination of the program is insufficient to produce generational balance. The simple arithmetic of generational accounting makes time a grim reaper. The longer the government waits to administer its painful medicine, the more cohorts who escape having to take that medicine, and the more medicine that needs to be taken by those cohorts who are left behind.

In terms of its impact on the conventional budget deficit, achieving generational balance via an immediate and permanent cut in Medicare would entail running close to a $250 billion surplus this year and for many years into the future. This is vast sum compared to the current official $8 billion surplus that our politicians are a) holding up as a sign of prudent fiscal management and b) contemplating spending.

Restraining government purchases is one of many ways of limiting requisite Medicare cuts. But even if real federal purchases were held absolutely fixed after 2000, an immediate and permanent 53 percent cut in Medicare spending would still be needed

to achieve generational balance. This is a remarkable finding. Holding federal purchases fixed in real terms as the economy continues to grow means that the federal government is asymptotically eliminated. But even the eventual effective elimination of general federal government appears to be far too little too late to rescue the next generation. Another way to try to avoid immediate Medicare cuts is simply to slow the growth of its expenditures as well as those of Medicaid. The third column of Table 4 contemplates such a policy. Unfortunately, slowing down health care spending through 2003 and allowing Medicare and Medicaid benefits per beneficiary to grow no faster than the rate of labor productivity growth also falls far short of what is needed for generational equity. Even with such a slow-growth policy, the initial level of Medicare would need to be reduced by almost one third. Indeed, an immediate and permanent 11 percent cut in Medicare benefits is needed even if a) the federal government is allowed to slowly dematerialize and b) the growth of health care spending is finally brought under control.

VI. Conclusion

Recent U.S. policy changes and more optimistic fiscal forecasts have significantly improved the long-term fiscal prospects of the country. Nevertheless, these prospects remain dismal. Unless U.S. fiscal policy changes by a lot and very soon, our descendants will face rates of lifetime net taxation that are 70 percent higher than those we now face. They will, on average, find themselves paying 1 of every 2 dollars they earn to a local, state, or federal government in net taxes.

Encumbering our progeny with a fiscal burden of this magnitude, apart from the question of its morality, could well prove economically infeasible. As a host of countries

in Latin American and Eastern Europe know all too well, there is a limit to the amount of resources governments can extract from their economies. Once that limit is reached governments find themselves forced to print money to try to pay their bills. Hyperinflation, the gradual disappearance of the formal sector, anemic national saving, meager rates of domestic investment, and economic stagnation are the legacies of trying to take from the private sector more than it's able or willing to give.

A number of factors, besides current and projected Medicare spending, are responsible for the imbalance in U.S. generational policy. But the ongoing excessive growth of Medicare benefits is certainly a key culprit. Achieving generational balance solely by cutting Medicare benefits is feasible but would require cutting over two-thirds of the program's expenditures assuming the cuts were made today. If one waits five years before cutting Medicare, four fifths of the program would have to be slashed. Clearly, Medicare cuts of this magnitude are unlikely to happen, but however we resolve our severe crisis in U.S. generational policy, it's clear that significant reductions in Medicare spending will be a major part of the story.

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Table 1 U.S. Male Generational Accounts

(present values in thousands of 1995 dollars, r=.06, g=.012)

		Tax Payments				Transfer Receipts			
Age in 1995	Net Tax Payment	Labor Income Taxes	Capital Income Taxes	Payroll Taxes	Excise Taxes	OASDI	Medicare	Medicaid	Welfare
0	77.4	33.5	9.0	34.3	31.5	7.2	4.7	14.9	4.2
5	95.7	41.6	11.2	42.8	36.6	8.8	5.7	16.7	5.2
10	119.5	52.1	14.3	53.9	42.5	10.6	7.2	19.1	6.5
15	149.1	65.1	18.1	67.8	48.6	12.1	8.8	21.5	8.1
20	182.2	79.5	23.5	83.6	53.4	13.7	10.9	23.5	9.7
25	196.2	86.0	27.9	90.6	53.5	16.4	12.7	22.7	10.1
30	196.8	86.3	33.7	90.2	52.7	19.9	15.0	21.5	9.8
35	189.0	82.9	40.7	86.0	51.4	24.6	17.8	20.4	9.2
40	171.2	76.0	46.6	78.6	50.4	30.8	21.6	19.3	8.7
45	139.2	65.1	50.2	67.4	47.7	38.8	26.1	18.2	8.1
50	93.7	50.8	51.3	52.9	43.7	49.3	31.6	16.5	7.6
55	37.5	34.6	49.7	36.3	38.7	62.8	37.4	14.6	7.0
60	-25.5	18.6	46.3	19.5	32.9	80.1	43.9	12.6	6.3
65	-77.7	7.4	41.2	7.5	27.5	91.8	53.3	10.6	5.7
70	-89.2	3.2	33.0	3.3	22.2	85.0	51.6	9.3	5.1
75	-87.9	1.6	22.4	1.7	16.9	71.7	46.1	8.5	4.2
80	-77.2	.9	11.2	1.0	11.9	54.8	37.4	6.9	3.1
85	-68.3	.7	.0	.7	8.0	42.6	26.8	6.1	2.1
90	-53.8	.5	.0	.5	6.3	33.7	21.1	4.7	1.7

The absolute net tax of future males is 134.6.
The percentage imbalance in generational policy is 71.9 percent.

Source: Authors' calculations

Table 2 U.S. Female Generational Accounts

(present values in thousands of 1995 dollars, r=.06, g=.012)

		Tax Payments				Transfer Receipts			
Labor Age in 1995	Capital Net Tax Payment	Income Taxes	Income Taxes	Payroll Taxes	Excise Taxes	OASDI	Medicare	Medicaid	Welfare
0	51.9	19.4	9.5	20.9	30.4	6.8	5.0	9.8	6.8
5	63.4	24.1	11.9	26.1	35.2	8.3	6.1	10.8	8.5
10	78.1	30.2	15.1	32.9	40.5	10.0	7.7	12.3	10.6
15	95.7	37.7	19.3	41.3	45.6	11.3	9.5	13.9	13.5
20	115.0	45.7	24.8	50.7	49.8	12.7	11.7	14.9	16.8
25	122.6	48.1	30.3	53.7	50.4	15.3	13.7	15.2	15.7
30	120.7	46.2	36.2	51.6	50.1	18.6	16.1	15.6	13.2
35	113.8	42.8	42.3	47.9	49.8	23.0	19.1	16.1	10.8
40	99.0	38.2	46.3	43.0	48.6	28.8	22.9	16.7	8.7
45	72.8	31.6	47.7	35.7	46.2	36.5	27.5	17.5	7.0
50	37.4	23.6	46.8	26.9	42.3	46.9	33.1	16.5	5.6
55	-5.2	15.0	44.8	17.2	37.6	60.6	39.2	15.3	4.8
60	-52.0	7.6	41.6	8.7	32.4	78.6	45.4	14.1	4.2
65	-91.2	2.7	35.6	3.1	27.1	89.3	53.7	12.8	3.8
70	-101.0	1.0	25.3	1.2	22.2	83.4	51.8	12.1	3.4
75	-101.0	.5	14.1	.6	16.9	71.6	46.7	11.8	2.9
80	-90.2	.3	5.3	.3	12.4	57.2	38.7	10.1	2.4
85	-73.5	.1	.0	.1	9.4	43.5	28.4	9.4	1.9
90	-55.8	.1	.0	.1	7.2	33.2	21.5	7.0	1.5

The absolute net tax of future females is 90.2.

Source: Authors' calculations

Table 3 1995 Scaled Generational Accounts for Six OECD Countries

(thousands of 1995 U.S. dollars)

Generation's age in 1995	United States	Japan	Germany	Italy	Canada	France
0	86.3	175.1	221.8	155.2	145.3	194.5
5	102.0	206.7	261.2	180.6	166.2	246.1
10	121.7	244.3	314.2	209.4	194.1	294.5
15	144.6	288.0	387.0	242.4	225.9	339.9
20	168.7	339.6	448.4	262.9	254.2	390.8
25	175.4	360.4	416.3	250.5	234.6	413.2
30	170.0	363.6	365.3	210.9	241.5	377.0
35	157.5	350.9	301.6	154.2	211.0	311.6
40	135.7	322.1	215.2	86.1	175.4	214.1
45	101.3	278.0	126.3	14.5	126.3	99.5
50	56.4	211.4	-5.6	-63.6	66.2	-16.0
55	4.0	120.9	-132.9	-140.1	7.4	-172.9
60	-51.7	14.5	-246.8	-192.9	-57.9	-252.9
65	-96.0	-58.2	-277.8	-187.9	-108.2	-256.6
70	-104.6	-54.7	-242.9	-159.6	-113.8	-194.5
75	-101.9	-44.0	-201.9	-128.7	-109.3	-208.1
80	-89.5	-32.6	-147.3	-98.1	-103.3	-120.5
85	-74.4	-22.2	-91.4	-71.6	-88.6	-132.1
90	-56.7	-11.8	-4.3	-10.1	-14.0	-121.2
Future generations	130.4	471.6	425.8	359.8	145.6	286.0
Generational imbalance						
Absolute	44.1	296.5	204.0	204.6	0.3	91.5
In per cent	51.1	169.3	92.0	131.8	0.0	47.1

Source: Kotlikoff and Leibfritz (1998)

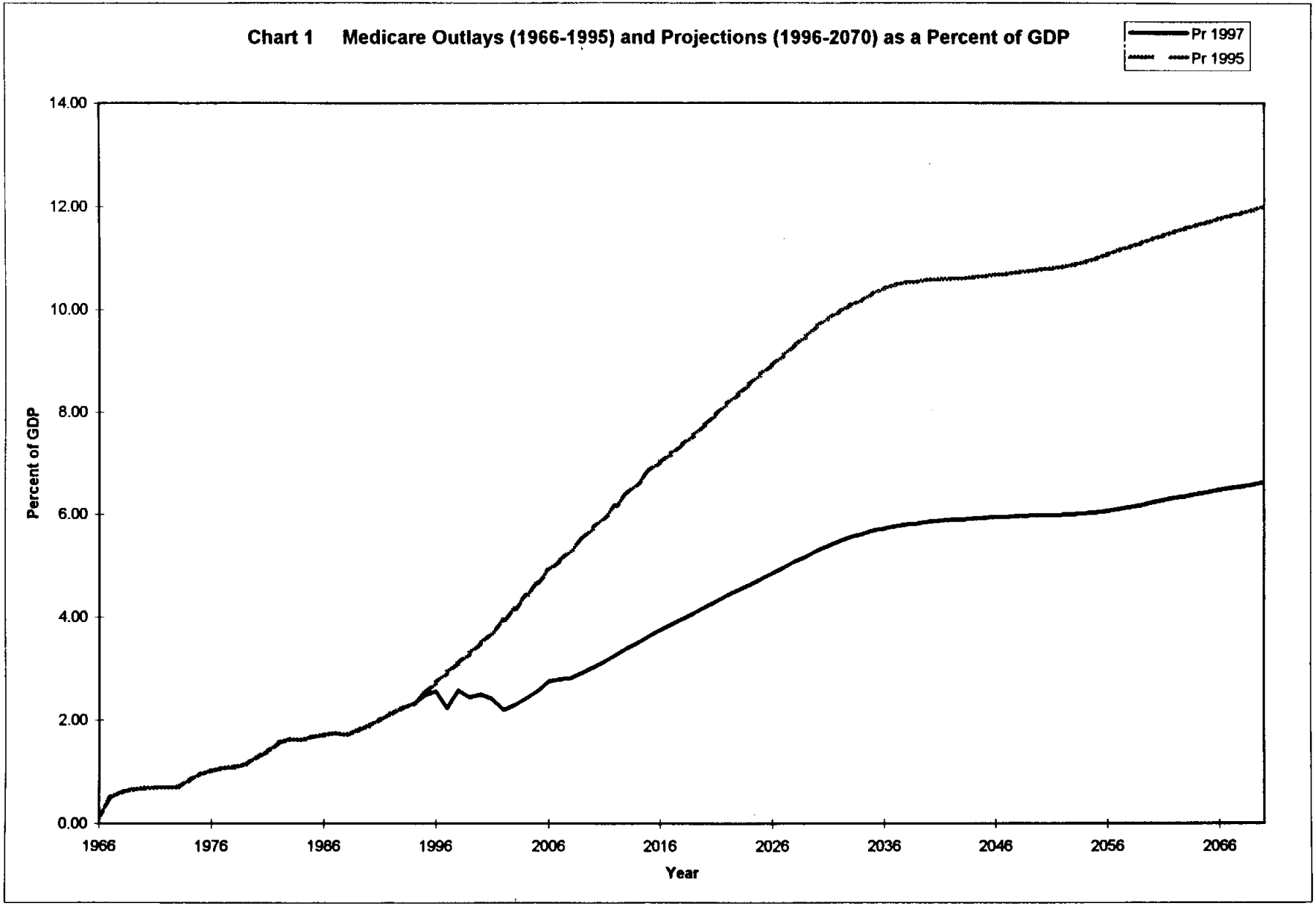
Table 4

Eliminating the U.S. Generational Policy Imbalance via Medicare Cuts

		Policy		
Policy Begins in 1998	Baseline	Limit Gov. Purchases	Limit Medical Expenditures	Limit Gov. Purchases and Medical Expenditures
Percentage cut	68.0	52.8	31.0	11.1
Initial dollar cut	239.0	185.7	108.9	39.1
Equalized Net Tax Rate	30.1	29.8	31.4	31.1
Policy Begins in 2003				
Percentage cut	77.6	60.3	36.8	13.2
Initial dollar cut	299.1	232.4	141.9	51.0
Equalized Net Tax Rate	30.3	29.9	31.5	31.1
Policy Begins in 2016				
Percentage cut	111.3	86.5	55.5	19.9
Initial dollar cut	828.5	643.7	413.1	148.4
Equalized Net Tax Rate	31.0	30.5	31.8	31.2

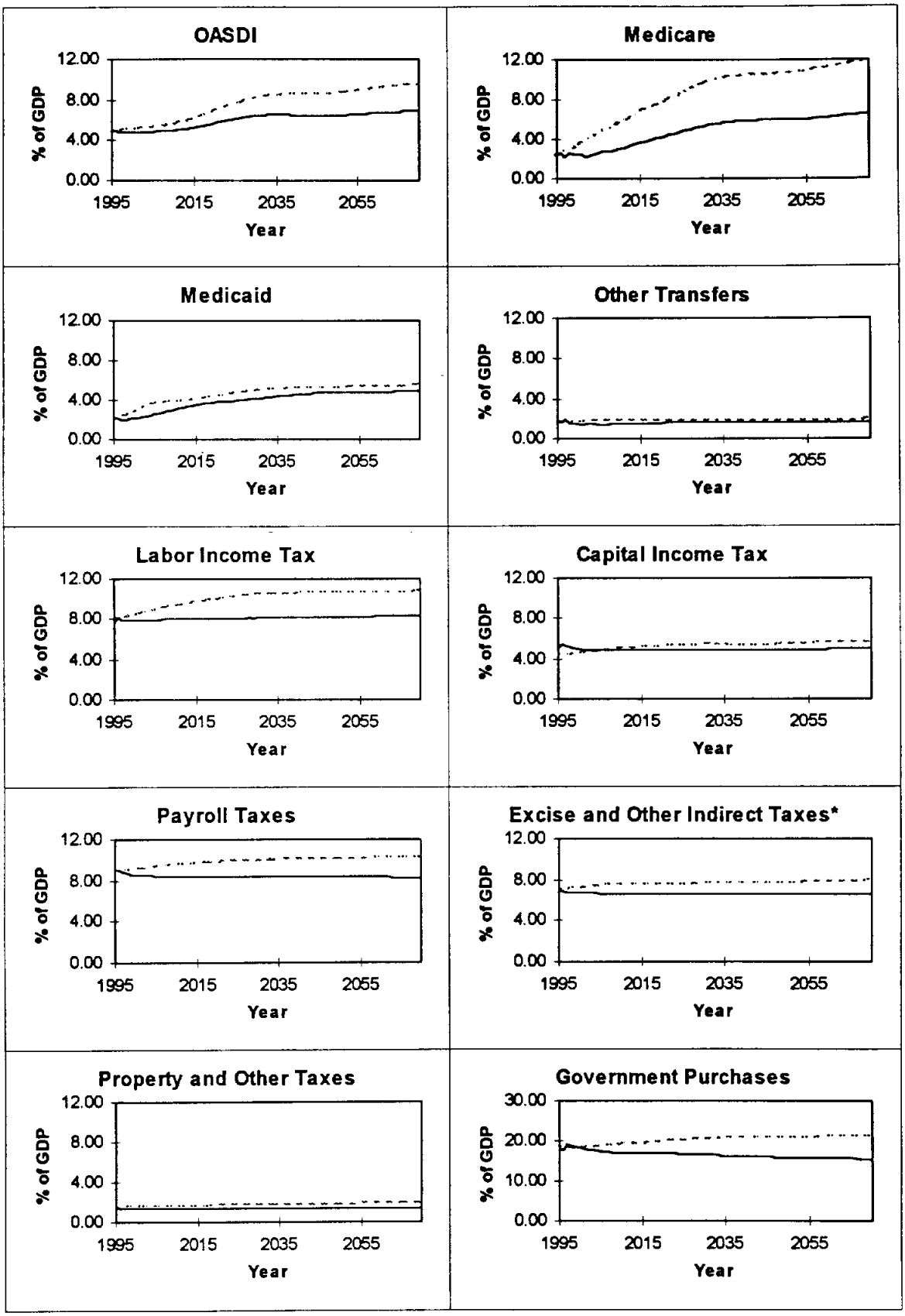
Source: Authors' calculations

Chart 1 Medicare Outlays (1966-1995) and Projections (1996-2070) as a Percent of GDP



Source: Authors' calculations.

Chart 2


OASDI
Medicare
Medicaid
Other Transfers
Labor Income Tax
Capital Income Tax
Payroll Taxes
Excise and Other Indirect Taxes*
Property and Other Taxes
Government Purchases
% of GDP
Year
1995
2015
2035
2055
0.00
4.00
8.00
10.00
12.00
20.00
30.00