# POSSIBLE ALTERNATIVES TO THE MEDICARE TRUSTEES' LONG-TERM PROJECTIONS OF HEALTH SPENDING

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**Technical Working Paper**[1]

The purpose of this working paper is to analyze some features of the current methodology used to generate the long-term health spending projections used in the Medicare Trustees' Report and to discuss some alternative approaches to improve upon the methodology. In particular, the goal is to take a closer look at the logical properties and the empirical assumptions of the current methodology used for long-run projections. The analysis is presented in two steps. The first is to review the "GDP+1" assumption for annual long-term health spending growth rates, based on historical growth rates of health care spending. The second is to offer some alternatives to the way the long run projections are computed. The paper concludes with some illustrative projections based on those alternatives.

## OVERVIEW OF TECHNICAL PANEL METHODOLOGY

The Trustees' Report projections of long term health care spending are based in part on an assumed rate of health care spending growth. This assumption was originally derived from long term historical trends (1940-90), using the methodology spelled out in the Medicare Technical Panel Report of 2000. The components of the historical trend are important because the Technical Panel assumed that not all of the components would continue to grow or change. In fact, the Technical Panel assumed that other than demographics, only technological change would contribute to future growth in health care spending. The contribution of technology is calculated as a residual after decomposing the contributions of other identifiable factors, using a methodology employed by Cutler (1995) and Newhouse (1992). Using this approach, the real per capita annual growth rate in health care spending was calculated to be 2.2 percent. The Technical Panel Report then incorporates the impact of aging using the historical distribution of health spending across different age groups; the expected aging of the population increases the projected growth rate of real per capita health spending.

At the time the Technical Panel Report was released, the Trustees' Reports projected that in long run real per capita GDP growth would be 1.2 percent. Thus, the Technical Panel arrived at the "GDP+1" formulation for health spending growth that has been used as the assumption in the Trustees' projections since 2001. Despite the initial projection of 2.2 percent growth in long-run health spending rooted in a projection of technological growth, the Technical Panel urged that

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future projections be altered according to changes in projected GDP growth. Hence, raising or lowering the projected GDP growth has a one-for-one impact on projected health spending growth because of the GDP+1 formula. Accordingly, as the projected long-run real per capita GDP growth has increased to 1.6 percent in the Trustees' Reports, the projected long-run real per capita health spending growth has swelled to 2.6 percent.

Because the assumed rate of health spending growth is higher than GDP growth, the Technical Panel projected that National Health Expenditures (NHE) would grow to consume 38 percent of GDP by 2075. According to our calculations here, at a growth rate of GDP+1 (i.e., 2.6 percent), NHE would consume 48 percent of GDP by 2078, more than 80 percent by 2130, and more than 100 percent of the economy's resources by 2154**.** [2] While in reality NHE will never plausibly exceed GDP, the Technical Panel emphasized that these projections are not predictions; rather, the purpose of Trustees' Report projections is to illustrate the magnitude of the Medicare financing problem in the absence of any reforms.

## PROBLEMS WITH CURRENT IMPLEMENTATION OF METHODOLOGY

Adoption by the Trustees of the Technical Panel's suggestions resulted in significant improvements to the calculation of long-term health spending projections and a more realistic outlook for the Medicare Trust Fund. Previously, long-term real health spending was projected to grow at the implausibly low rate of real GDP. Nonetheless, the current methodology still possesses shortcomings that can be improved. In this paper some alternative approaches are explored within the same basic methodological framework.

In particular, the focus is on the assumption of the GDP+1 real per capita health spending growth rate, from which three issues stand out:

a) After projecting future health spending growth will approximate 2.2 percent based on technological growth independent of overall economic growth, it is illogical to subsequently conclude that 2.2 percent is equivalent to GDP+1 under the methodology used to arrive at the projection.

b) Whether one concludes that the work of the 2000 Technical Panel suggests that the long run health spending growth rate is 2.2 percent or GDP+1, the methodology relies on assumptions about both the appropriate time period from which to draw inferences about future health spending growth, as well as which components of historical growth are relevant to future growth. The sensitivity of the projected future growth rate to alternative assumptions is tested. Using the same methodology, it is shown below that reasonable alternative assumptions tend to generate a projected health spending growth rate higher than 2.2 percent.

[2] The methodology used as a starting point in this paper differs slightly than that of the CMS Office of the Actuary, which makes different assumptions about health spending in the next 25 years and also uses different assumptions about how health spending will grow across different age groups. The approach taken here, using GDP+1 as a basis for real per capita health spending growth, projects slightly faster health spending growth than the CMS model.

c) The Technical Panel implicitly assumes that private as well as federal policies affecting health care spending will remain unchanged. This assumption is of course appropriate for federal policy analysis because the purpose of the projections is to measure the extent to which federal policy must change in order to make Medicare solvent. But the projections should take account of the substantial pressures that increased health spending would put on the private sector to invoke private sector policies to reduce its health care expenditures. Specifically, if the baseline historical growth rate of both public and private health care expenditure were to extend into the future, then the growth of private health spending would crowd out an increasing share of private nonhealth spending. The threat of this crowd-out would cause individuals and private institutions acting on their behalf to adopt measures curtailing the growth of private health spending. It is likely that such measures would also crimp federal health care spending, as the rate of public health spending growth, absent policy changes, tends to move with the rate of private health spending growth through an equilibrium of the standard of care. It is important to note that the goal of incorporating some notion of a private sector response to rising health spending is to improve the projections of the magnitude of the Medicare financing problem, not to predict how the problem will be solved.

These issues are addressed below.

## SPENDING GROWTH ASSUMPTIONS

To derive its projection of future health spending growth, the 2000 Technical Panel drew on Cutler's work to estimate the growth in real per capita health spending between 1940 and 1990. It then calculated the contribution of aging, increased insurance coverage, income growth, health sector-specific inflation, and administrative expense growth. It subtracted the growth of all these factors from total health spending growth. The residual, which Cutler attributed to the growth of technology is what the Technical Panel projected would continue into the future. As it happens, the annual real per capita health spending growth attributable to technology is estimated to have been 2.2 percent over this time period, which is equal to one percentage point above the long-run projection of the real GDP growth rate from the Trustees' Report at the time the Technical Panel convened. This section analyzes the empirical development used to generate long-term projections based on historical growth, discusses alternative assumptions within the same methodology, remarks on the relationship between the methodology used to arrive at future health spending growth and the GDP+1 formulation, and indicates the choices used in generating the projections in this paper.

### Time Periods

The Technical Panel Report uses the time period from 1940 to 1990 to draw inferences about future health spending growth. It is useful to consider drawing inferences from alternative periods. For one, data from 1990-2002 are available. The period from 1940 to 1965 was characterized by rapid economic growth, rapid health spending growth, and a relatively limited government presence in the health care sector. The early period may be too far removed from the reality of today's economy and health care sector. In the calculations below, results using

three alternative time periods are presented: 1940-2002, 1966-2002 (the era of Medicare), and 1983-2002 (the era of prospective payment in Medicare and of managed care).

**Aging**

The Technical Panel Report notes that Newhouse and Cutler's estimates of the share of health spending growth attributable to the aging of the population are both around 2 percent. Both authors use very similar methods to calculate the shifting demographic composition to arrive at this estimate. Cutler uses the relative spending of the 19-64 year-old population group and the 65 and over group from the 1977 National Medical Expenditure Survey and applies it to the changing age distribution over the time period. Newhouse performs the same exercise using the 1987 National Medical Expenditure Survey.

Using this methodology, most of the growth attributable to aging has come in the years since the 1960s, after the birth of the baby boom generation, when the population started to skew older. Following the Technical Panel Report, this paper uses this methodology to calculate the share of historical spending growth attributable to aging. Like Newhouse, this paper uses the 1987 National Medical Expenditure Survey, because of its more detailed demographic breakdown and its greater relevance to current health spending distributions.

**Insurance**

Both Cutler and Newhouse use estimates of the effects of insurance on health spending growth from the RAND Health Insurance Experiment (Manning et al., 1987). The RAND study estimated that the price elasticity of demand for health care is in the range of -0.1 and -0.2. This meant that as coinsurance fell from 33 percent to zero, the quantity of health care demanded increased by 40 to 50 percent. Both Newhouse and Cutler use the results, assume a linear function relating demand to the average coinsurance rate, and calculate the increase in health insurance demand attributable to the reduced coinsurance rate. The only difference is that Newhouse uses the less elastic RAND estimate (-0.1), while Cutler uses the more elastic estimate (-0.2). They each conclude that the decrease in out-of-pocket spending has generated 10-13 percent of the increase in health spending. This approach raises concerns, which include the appropriateness of using a linear elasticity function and even whether an estimate of coinsurance elasticity can be applied to overall growth in third-party payments, particularly as the product of health insurance has evolved over time, through the expansion of managed care, for example. Nonetheless, the same methodology is followed in this analysis, which adopts the more elastic estimate used by the Technical Panel. As in the Technical Panel Report, the effects of insurance on growth are assumed to stop in the long run, because so much health spending is already covered by insurance.

**Income Growth**

Estimates of the effects of income growth on health spending vary significantly. Cutler uses estimates from the RAND Health Insurance Experiment. The RAND study estimates that the income elasticity of health care demand is in the range of 0.2 and 0.4. Cutler assumes the figure is on the low end of that range. Newhouse argues that "within-country income elasticities may

be distorted by the endogeneity of income at the household level; sickness may simultaneously depress income and raise medical spending." Therefore, he suggests that a better source of income elasticity estimates are cross-country calculations, which are around 1.0 and above. He acknowledges the problems of aggregate, cross-country comparisons, and therefore suggests that the elasticity is probably at most 1.0.

The choice of income elasticity is particularly important for the Technical Panel Report, because the Technical Panel removes the effects of income from the baseline growth projections, but adds it back into the projections through the GDP+1 formula. It is conceptually difficult to separate the effects of income from the effects of technology, yet the Technical Panel's approach of adding it back in somewhat arbitrarily is unsatisfying as well. Because income is expected to continue growing in the future in the same way technology is expected to progress, it stands to reason that the effects of income on health spending ought to continue growing as well. Therefore, the calculations below include the effects of past income growth on health spending as part of the technology residual that is used to project future health spending growth..

**Relative Medical Price Inflation**

The degree to which productivity in the health sector lags behind the overall economy is a very contentious issue and one that has gotten much research attention. The degree to which health productivity is lower than the economy as a whole can be interpreted as a health-specific inflation rate. Newhouse assumes that long term relative medical price inflation is zero. Cutler assumes that it is close to 2 percent over the period 1940-1990. Cutler arrives at this number by equating productivity growth to real per capita GDP growth, and assuming that there was no productivity growth in health care. Based on recent studies on improvements in treatments of heart attacks, depression, and cataract surgery (Berndt, et al. 2000, Cutler, et al. 1998, Shapiro, et al. 2001), the assumption of zero productivity growth in health care seems implausibly low. Nonetheless, there is well-documented evidence of waste in the health care sector (Schuster, et al., 1998, Fisher, et al., 2003), and evidence that the health care sector has been relatively slow at adopting efficiency-enhancing information technology (Goldsmith, et al. 2003). Considering all these factors, the calculations here assume that productivity growth in the health care sector has equaled half the economy's growth rate. Thus this paper uses a rate of relative medical price inflation that is half that used by the Technical Panel.

**Administrative Expenses**

The Technical Panel Report assumed that avoidable administrative expense constitutes 8 percent of health care expenses in 1983, based on estimates of Himmelstein and Woolhandler. It further assumes that avoidable administrative expense was zero in 1940, thus contributing to 13 percent of real per capita health care spending growth between 1940 and 1990. In the long run, per capita avoidable administrative expense is assumed by Cutler to rise only at the rate of economy-wide inflation.

The Himmelstein and Woolhandler estimates run on the high end of estimates generated at roughly the same time period, the early 1990s. In 1991 dollars, their estimates were between $78 and $95 billion. Another study by Physicians for a National Health Policy estimated the

expenses to be $80 billion. The GAO's estimate was $67 billion, while the Lewin Group estimated them to be $47 billion. The GAO deemed virtually all of the administrative costs unavoidable, while the Lewin Group determined that administrative costs actually saved the health system money, compared with a Canadian-style system. Despite these reservations, this paper follows Cutler's methodology for the most part, assuming a constant rate of administrative cost growth from 1940 to 1983. After 1983, administrative costs are assumed to have grown at the same rate as health spending, thus comprising 8 percent of health care spending in subsequent years. Like the Technical Panel, administrative expenses are assumed not to impact growth in the future.

**Defensive Medicine**

The Technical Panel Report assumes that costs associated with defensive medicine/supplier-induced medicine have not risen over the past 40 years. By contrast, the research on this subject suggests these costs have risen.

The work attempting to quantify the costs of defensive medicine has focused on heart attack treatments and Caesarian section rates. Kessler and McClellan (1996) found that direct reforms of malpractice law reduce heart attack treatment expenditures by 4-5 percent. Localio et al. (1993) found that a doubling of malpractice premiums leads to a tripling of the Caesarian section rate for births, although they did not quantify the associated additional health care costs. Similar results came from Dubay et al. (1999), who found that direct malpractice reforms reduced the Caesarian section rate by 3-5 percent, roughly comparable to the Kessler-McClellan results for cardiac care. It is not unreasonable to think that if defensive medicine creeps into the care of two very different categories of patients, it is likely to permeate health care.

Non-technological spending growth is calculated under the assumption that defensive medicine started in 1970 with the dawn of the first medical malpractice crisis, and grew at the same rate of malpractice tort costs, until it reached 3 percent of health care spending in 2002. It is conservatively assumed that defensive medicine is not likely to grow in the long term.

**GDP+1**

The 2.2 percent assumption derived by the Technical Panel came about by excluding all identifiable factors to historical health spending growth, save for technological growth. It does not follow how this methodology can then be reconciled with the conclusion that future health spending growth has a direct relationship with future income growth, as spelled out by the GDP+1 formula. After all, the effect of income on health spending growth was explicitly removed as a factor assumed to contribute to future health spending growth. Such a strong relationship between income and health spending growth is not at all implied by the methodology used by the Technical Panel. While it is reasonable to believe that income growth will contribute to future health spending growth, there is a more sensible approach that nonetheless maintains the Technical Panel's methodology, as laid out above. This involves not trying to disentangle the effects of income growth and technology from prior health spending growth, and to assume that whatever historical relationship existed between the two factors would continue into the future.

## Comparisons

Table 1 compares alternative derivations of projected real per capita health spending growth with those done by the Technical Panel. How health spending growth differed in three different time periods (1966-2002, 1940-2002, and 1983-2002) is examined, comparing them to the 1940-1990 time period used by the Technical Panel. The decomposition of health spending growth in the alternate time periods considered incorporates the different assumptions discussed above. Specifically, income is not excluded from future health spending projections, a lower estimate of historical medical price inflation is used in the alternative decomposition of health spending, and an estimate of the costs of defensive medicine in this decomposition is included. Items included in the decomposition are *not* included in projections of future growth.

Table 1: Comparison of Health Spending Growth Rate Under Trustees' and Alternate Assumptions

| | Technical Panel 1940-1990 | Alternate A 1966-2002 | Alternate B 1940-2002 | Alternate C 1983-2002 |
|---|---|---|---|---|
| Real per capita GDP growth | 2.1 | 1.5 | 2.2 | 1.7 |
| Real per capita health spending growth | 4.4 | 4.2 | 4.2 | 3.8 |
| Contribution to growth of health spending | | | | |
| Aging | 2 | 5 | 2 | 5 |
| Insurance | 13 | 15 | 10 | 14 |
| Income growth | 5 | 0 | 0 | 0 |
| Relative medical price inflation | 19 | 8 | 7 | 13 |
| Avoidable administrative expense | 13 | 9 | 9 | 8 |
| Defensive medicine | 0 | 4 | 3 | 4 |
| All factors irrelevant to future growth | 51 | 41 | 31 | 44 |
| Share relevant to future growth | 49 | 59 | 69 | 56 |
| Projected growth rate | 2.2 | 2.5 | 2.9 | 2.1 |

Health spending grew fastest in the 1940-1990 period. Aging had a larger impact over the most recent periods (1966-2002 and 1983-2002), reflecting the aging population in recent years. As discussed, there is no distinction between the effects of income and technological growth, hence the impact of income alone on historical health spending is considered to be zero, in contrast to the 5 percent derived by the Technical Panel. All else equal, this results in a relatively higher projected growth rate. Similarly, the lower estimate of medical price inflation results in a relatively higher projected growth rate. A countervailing effect is the inclusion of defensive medicine, which results in a lower projected growth rate. Overall, these alternatives remove a smaller share of historical health spending growth from future projected growth rates than the Technical Panel. This explains why two of the three alternate projected growth rates (2.1 percent, 2.5 percent, 2.9 percent) are higher than the Technical Panel projection, even though all of the alternate periods have lower measured growth rates.

## LONG-TERM BUDGET CONSTRAINT

The term “projections” is used loosely in the context of the Medicare spending projections because it suggests a forecast or prediction. But the Medicare projections are not predictions, because they are premised on a fiscal policy that is certain not to play out. Indeed, the purpose

of the projections is to measure the extent to which policy must change so as to make the system solvent. That is, the projections inform the question of how far the projections in fact differ from a plausible prediction. Hence, spending projections that exceed GDP or that have an infinite present value are not necessarily meaningless and illogical. Such projections would inform the question of the degree to which policy must change to make Medicare solvent, which is the whole purpose of the projections.[3]

It is nonetheless unreasonable to think that private sector health spending would not respond to increasing health expenditures. For example, during the late 1980s and early 1990s, when real GDP growth was slow while health spending growth was fast, the private sector did act to slow the growth of health spending in the private sector. Table 2 shows how the health and nonhealth sectors of the economy have historically risen and fallen together, according to NIPA.

Table 2: Average Annual Growth in Real Per Capita Health and Nonhealth Spending

| | 1940-50 | 1950-60 | 1960-70 | 1970-80 | 1980-90 | 1990-2000 |
|---|---|---|---|---|---|---|
| Personal Medical Care Expenditures | 4.1% | 4.9% | 6.2% | 3.8% | 5.6% | 2.4% |
| Nonhealth Expenditures | 4.0% | 2.0% | 2.7% | 1.1% | 1.4% | 1.1% |

With this in mind, this paper considers a change in the Technical Panel methodology that imposes a private sector budget constraint on health spending. This approach assumes that there will continue to be growth in nonhealth spending and, in contrast to the implications of the Technical Panel Report, that private health spending will not fully crowd out private nonhealth spending. Projections of private nonhealth spending under different assumptions are constructed to illustrate this methodology.

**Methodology Refinement**

This exercise calculates private nonhealth spending using all of the different health spending growth rates derived in Table 1: 2.1, 2.2, 2.5, and 2.9 percent. These are assumed for the years after 2013; for prior years, we use the Trustees' Report short-term projections. These projections use Trustees' assumptions of population growth, and use the health spending distribution across different age groups calculated by Waldo et al. (1989) and cited in the Technical Panel Report. Projected real per capita GDP growth is also consistent with current Trustees' projections.

Real per capita nonhealth spending growth is tracked, setting points at which the private sector would not tolerate any more crowding out of nonhealth expenditures. This effect is incorporated by assuming that once the three year-average rate of growth for real per capita nonhealth spending growth falls below a threshold level (either 0.75 percent, 1.00 percent, 1.25 percent, and 1.50 percent), real per capita health spending growth slows so that the growth of nonhealth spending stays at the threshold level. Note that in Table 2, real per capita nonhealth spending

[3] The infinite horizon projections in the 2004 Trustees Report assumed that real per capita Medicare expenditures grow at real per capita GDP+1 for the first 75 years and thereafter grow at the same rate as real per capita GDP, which generates finite projections. An infinite present value of Medicare expenditures relative to GDP could nonetheless be meaningfully interpreted. Such a projection would imply that there is no proportional cut to Medicare expenditures in all years (except 100 percent) that would make the system solvent, and that any reform that would make the system solvent must reduce the steady state growth rate of real Medicare expenditures to a level at or below the growth rate of real GDP.

growth has never fallen below one percent for a 10-year period. Omitting demographic effects, setting such a threshold ensures that projected nonhealth spending grows at a relatively low, but positive rate. One way of rationalizing this approach is offered by Jones (2002); he models the point at which society is unwilling to pay to prolong the lives of those near death. Under different parameter values, he postulates that the health share of the economy will peak somewhere between 2000 and 2050, and then begin a slow decline.

Nonhealth spending is calculated according to the following equation:

***Nonhealth Spending=Real GDP-(0.185*Real GDP)-Real Private Health Expenditures***

The first term on the right-hand side measures the size of the economy, and the second term is the approximate share of the economy that is paid in federal taxes under current law, which is assumed to remain constant over time. The final term is real private health expenditures, which are assumed to grow at the rates derived in Table 1, plus an adjustment for demographic changes. It is worth noting that private health expenditures also include state and local government health spending, because that spending tends to be bounded by a budget constraint. Because private health expenditures are assumed to grow faster than nominal GDP under all the scenarios, growth in private nonhealth spending is increasingly slowed by growth in health spending. Again, once real per capita nonhealth spending slows to a certain small but positive rate (0.75 percent, 1.00 percent, 1.25 percent, 1.50 percent), private nonhealth spending growth is fixed at that rate. Both public and private health spending growth, which have historically tracked each other, are assumed to slow to maintain the constant nonhealth spending rate.

It is important to point out that spending on federal health programs is not included in the private budget constraint. Although it is reasonable to expect that federal health program growth might be directly slowed at some point in the future, this paper does not attempt to presuppose policy changes to accomplish this. The goal is simply to improve on the assumptions used in the projections, not find a way to correct the funding imbalance.

## PROJECTIONS

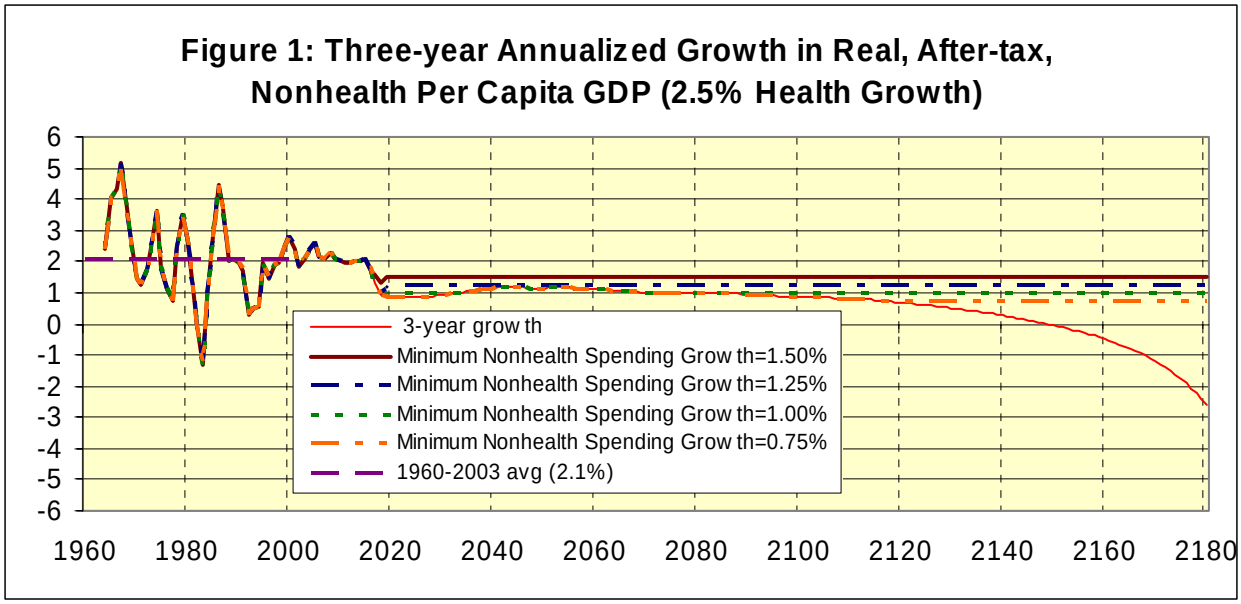
Table 3 shows the years when the nonhealth spending thresholds are hit using different health spending growth rates. Once the threshold is reached, health spending growth slows to accommodate that level of nonhealth spending growth. Obviously, assuming a higher growth rate of health spending accelerates the point at which the threshold is hit. For example, under a health spending growth rate of 2.5 percent and minimum sustainable nonhealth spending growth rate of 1.00 percent, the threshold is hit in 2017. By imposing a minimum nonhealth spending growth rate, health spending growth paths that are consistent with realistic nonhealth spending growth paths can be considered.

Table 3: Year in Which Three-Year Growth in Aggregate After-Tax, After-Health Care Spending Falls Below Threshold

| Health Spending Growth Factor | Minimum Sustainable Per Capita Nonhealth Spending Growth | | | |
|---|---|---|---|---|
| | 1.50 percent | 1.25 percent | 1.00 percent | 0.75 percent |
| 2.1 percent (From Alternate C) | 2014 | 2130 | 2236 | 2273 |
| 2.2 percent (From Technical Panel: 1940-90) | 2014 | 2014 | 2019 | 2100 |
| 2.5 percent (From Alternate A) | 2014 | 2014 | 2017 | 2025 |
| 2.9 percent (From Alternate B) | 2014 | 2014 | 2016 | 2020 |

Under all of the suggested thresholds, nonhealth spending always grows more slowly than GDP. Accordingly, health spending always grows faster than GDP. Therefore, in the very long run, private health spending asymptotes to 81.5 percent of GDP, which is just the difference between GDP and the fixed proportion (18.5 percent) dedicated to taxes. This is true under all thresholds in which nonhealth spending is lower than GDP and health spending growth rates that exceed GDP. Because spending on federal health programs, such as Medicare and the federal component of Medicaid, are not included in the private budget constraint, national health expenditures eventually exceed GDP. Relative to using a single, constant growth rate, this point occurs in the more distant future. As shown below in Figure 3, however, the choice of minimum nonhealth spending growth rate has a dramatic effect on the point at which NHE exceed GDP.

To show how imposing a threshold would affect nonhealth spending growth, Figure 1 tracks nonhealth spending without a threshold, and with the thresholds described above. These projections assume that real per capita health spending growth will at the outset grow at 2.5 percent annually. Without any private sector budget constraint, real per capita after-tax nonhealth GDP growth turns negative around 2150. The thresholds are activated according to Table 3 and prevent nonhealth spending growth from falling below the specified rate.



Figures 2 and 3 show how the budget constraint reduces health spending growth. The choice of sustainable growth rate determines how quickly the budget constraint is activated, and thus determines the speed at which a lower health spending growth rate is activated. Because fast health spending growth in the next decade is predicted to slow down nonhealth spending growth, the threshold is reached in the next 15 years if one assumes a higher health spending growth rate or imposes a higher threshold. In fact, as Figure 3 demonstrates, the choice of health spending growth rate does not influence NHE growth if a minimum nonhealth spending growth rate (1.25 percent or 1.50 percent) that approaches the historical average (2.1 percent) is chosen. As society demands a reasonable rate of nonhealth consumption growth, health spending growth will be constrained far below the initial projected growth rate.

**Figure 2: National Health Expenditures (NHE) as a Percentage of GDP and 1.00% Minimum Real Per Capita Nonhealth Spending Growth**

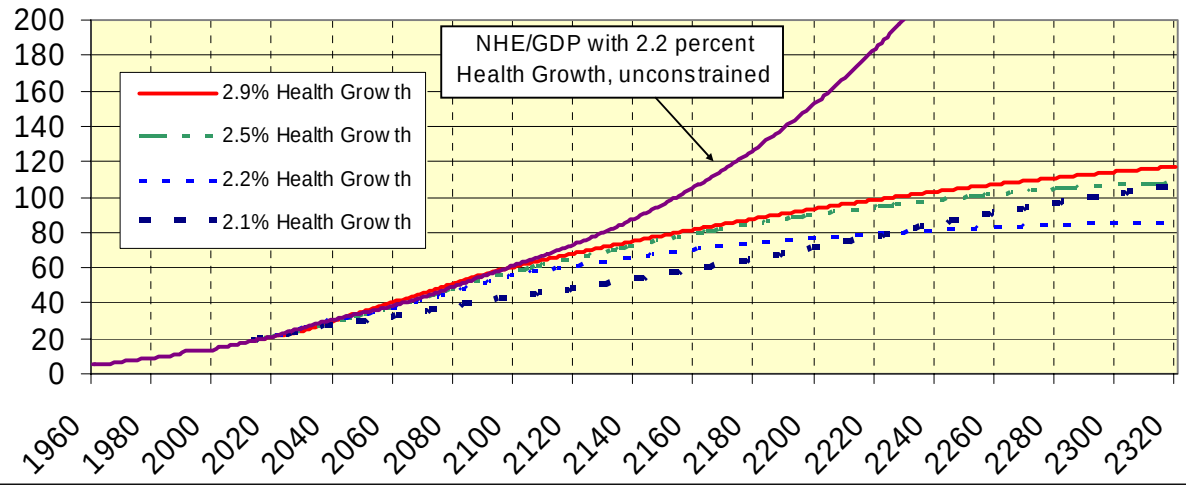



**Figure 3: National Health Expenditures (NHE) as a Percentage of GDP under 1.50% and 1.25% Minimum Real Per Capita Nonhealth Spending Growth**

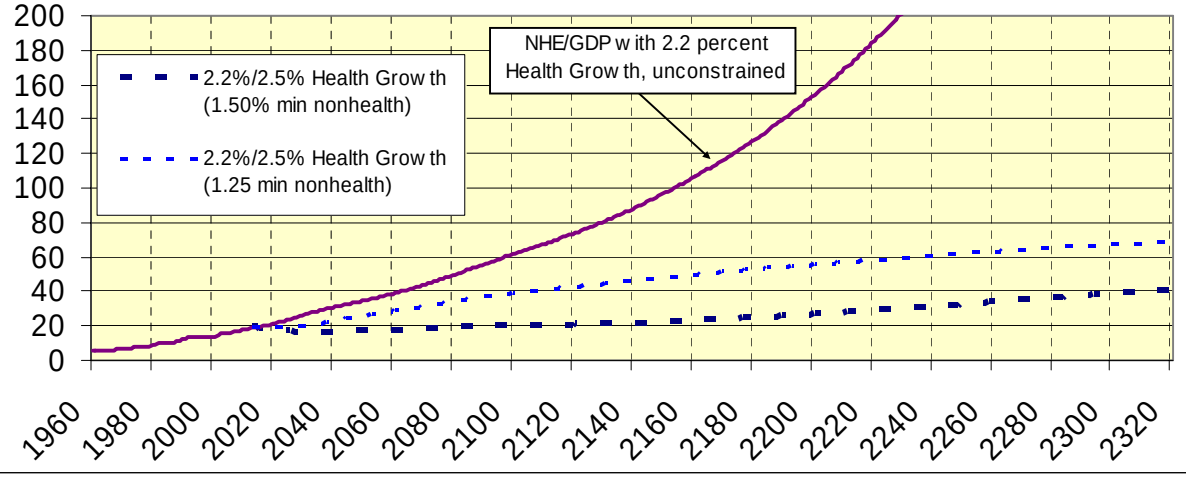
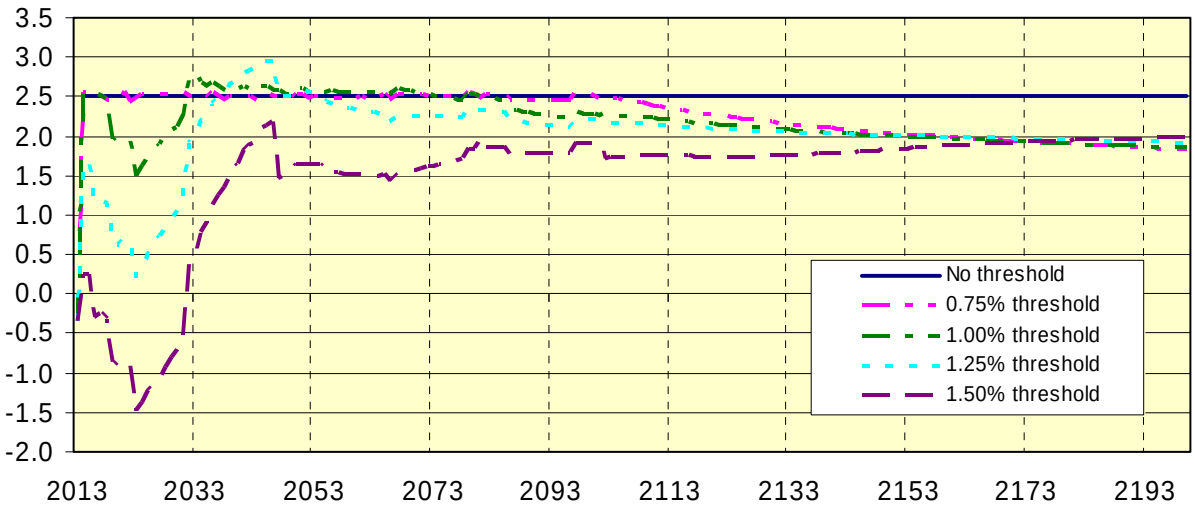


Figure 4 shows the impact of imposing minimum nonhealth spending thresholds on NHE growth. It plots the technology residual under various minimum nonhealth thresholds, using a baseline of 2.5 percent technology growth in health spending. If a relatively high minimum growth rate of nonhealth spending is to be maintained during the early years of the baby boom retirement, the technology component of health spending growth will have to fall for several years. Under this approach, in the very long run, no matter what minimum nonhealth spending threshold is chosen, the technology component will adjust so that health spending grows roughly at the rate of GDP.

**Figure 4: Real Per Capita Health Spending Growth Rate Under Initial 2.5% Rate and Various Nonhealth Spending Thresholds**




## CONCLUSIONS

This paper was drafted to further the discussion of some issues raised in the 2000 Technical Panel Report. The Technical Panel significantly improved the Medicare projections by analyzing the various components of health spending growth. In light of the availability of more data and more research on the causes of health spending growth, the analysis can be further refined. Using a similar methodology, this paper explores alternatives that would generate assumptions of real per capita health spending that would exceed the 2.2 percent initially recommended by the Technical Panel. Moreover, the paper considers the implications of assuming a rapidly growing health sector far into the future, and offers an alternative to using a fixed rate of health spending growth. In particular, this paper postulates that a private sector budget constraint may restrain both the rate of public and private health spending growth in the future.

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