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A Perspective on Long-Term Health Care Cost

Trend and Macroeconomic Modeling

by Wes Edwards

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I would like to thank Professor Thomas E. Getzen of Temple University for the attention he has brought to a critical long-term assumption in retiree medical liability valuation work. His study, "Modeling Long-Term Health Care Cost Trends," has contributed to a renewed focus on the reasonableness of a key premise in actuarial liability valuation work for health and welfare benefits. The ultimate health care cost trend rate assumption has been a subject of particular interest at least since the first Medicare Trust Fund projections and since the exposure draft for FASB's SFAS 106 was released. It is perhaps safe to say, the key to developing a realistic and reasonable assumption is an understanding of the factors influencing the statistic itself. I hope to expand the discussion by addressing some of these key factors.

An actuarial valuation's ultimate health care cost trend rate attempts to model expectations for private pay health care inflation. Private pay health care inflation as well as Medicare, Medicaid and other public pay health care inflation is a component of general inflation. If general inflation is an average of other inflationary components, not all components of general inflation can be above general inflation.

Actuarial education touches economics so actuaries have become aware of many of the forces that act on inflation. Inflation itself measures the increase in the costs of goods and services in the economy. The U.S. economy, and specifically U.S. economic growth, is measured by the Gross Domestic Product (GDP). Nominal GDP is the GDP unadjusted for inflation, which makes a longitudinal GDP time series useful in studying the impact and potential impact of inflation.

It has long been cited by actuaries that the ultimate growth in health care expenditures is limited by the theoretical maximum share of GDP that health expenditures can comprise. This is the basis for macroeconomic modeling to attempt to identify maximum upper limits for ultimate health care trend rate assumptions. This article will highlight two considerations for an actuary attempting to construct a macroeconomic model for this purpose. These are:

- GDP Components other than health care expenditures—their share of total GDP and their ultimate expected inflation rates
- Sub-components of health care expenditures —their share of total national health expenditures (NHE) and their ultimate expected inflation rates.

These considerations are important to the discussion of private plan retiree health care expenditure trends because a one size fits all assumption for either health expenditures or non-health expenditure inflation rates masks to a great degree what is a very sensitive result: the share of GDP associated with health expenditures. I will not comment further on the Getzen paper or model, except to note that in varying only the input percentage of GDP "at which growth is assumed to meet resistance," the lowest ultimate share of GDP projected for NHE is 28.2 percent, while even when 50 percent is input, the ultimate share projected for GDP is only 40 percent. This indicates a priori expectations have been used to limit the model sensitivity. Whether these expectations are appropriate is and should be subject to productive debate.

Recent articles in Contingencies, including "Our Finite World: Implications for Actuaries" by Gail E. Tverberg and "Climate Change and the Role of the NAIC" by Evan Mills and "Borrowing Trouble" by Harper, Martin and Wolzenski, ask questions like, "Why are we still behaving as if world resources will last forever when they are fast being exhausted?" and "Will discontinuities cause past trends to be irrelevant?" I don't intend to forecast the impact of major worldwide economic shocks to U.S. GDP or NHE, but I do hope to raise questions about whether strictly using a portion of the past to predict a future where NHE is no less than 28.2 percent of GDP is reasonable.

GDP Components

Table 1 as produced from Bureau of Economic Analysis data and reflects the major components of U.S. GDP and their share of the total. A general understanding of these components is essential to evaluating the reasonableness of any forecasted increase in health care expenditures. (The private medical care component does not include all health care. Medicare, Medicaid and other public health expenditures representing four percent of GDP are included in the government components.)

Any projected increase in the share of GDP attributed to medical care must come at the expense of other components. Giving some thought about a forecast of health care expenditures topping 30 percent of GDP will allow us to better evaluate the reasonableness of such a forecast. We should be able to make some rational assessment of what components of GDP "pie" might decline in share and by how much.

The Bureau of Labor Statistics (BLS) makes projections of GDP by major components. (Unfortunately, they do not release projections of sub-components such as personal consumption of medical care.) The BLS has and continues to project government expenditures to constitute a shrinking share of GDP. In 1997, they projected that by 2006, federal defense spending would decrease to three percent of GDP[1]. This seemed logical following the end of the Cold War and the first Gulf War. However, the 2006 reality (shown in Table I) was much different. Clearly, national defense against immediate threats such as terrorism can continue to be a high priority and it is a possibility that such threats will continue to require national expenditures as will maintenance and modernization of conventional military assets. The latest BLS forecast of major GDP components for 2016 is shown in table 2.

Interestingly, this forecast again anticipates a decline in federal defense spending as a percentage of GDP. Whether this will be realized is worth consideration. The private investment component share is not forecast to change so would not appear to be a likely source of reallocation of GDP to health expenditures. The sum of federal non-defense and state and local components share of GDP is forecast to decline from 14.4 percent to 13.7 percent over the 10 year period. However, in 1997 it also was forecast to only be 13.5 percent in 2006 rather than 14.4 percent. Government expenditures include governmental social benefits to individuals. The projected increases of the latter have been studied in depth by actuaries. It is difficult to imagine any increase in medical spending not being shared by the governmental sector.

Other than these components, all increases in health care expenditures share of GDP must come from other personal consumption expenditures. Personal energy consumption including gasoline, fuel oil, household electricity and gas increased from 3.5 percent of GDP in 1996 to 4.2 percent of GDP in 2006. Will this trend continue or increase at a more rapid pace or will energy components decline? Futurists studying energy trends today do not sound optimistic, forecasting:

- Global demand for energy in the near future will outpace supply within twenty-five years unless new sources are found to support global growth.
- Energy terrorism and theft will become a future weapon of choice, threatening global peace and security.
- GDP, growth and productivity will decline if new and cost-effective non-oil energy sources are not found fast to protect future growth and prosperity, and to help rebalance the future of the world.

CONTINUED ON **PAGE 36**

Table 1: Actual 2006 GDP Components Percentage Share

Private Consumption, except	57.9%
Medical Care	12.0%
Private Investment	16.7%
Government	
State and Local	12.1%
Non-Defense - Fed	2.3%
Defense	4.7%
Net Exports	-5.8%

Source: *http://www.bea.gov/national/nipaweb*

Table 2: Projected 2016 GDP Components Percentage Share

Private Consumption	70.1%
Private Investment	16.6%
Government	
State and Local	11.8%
Non-Defense - Fed	1.9%
Defense	4.0%
Net Exports	-4.6%

Source: *http://www.bls.gov/opub/mlr/2007/11/art2full.pdf*

[1] *http://www.bls.gov/opub/mlr/1998/06/art3full.pdf*

This leaves durable goods, food, textiles and other services to decline from 53.7 percent to offset any projected increase in health expenditures.

Broader analysis and a more comprehensive macroeconomic model are necessary.

To gauge the implications of a large increase in the health expenditures share of GDP over thirty years, let's consider these trends collectively. NHE is currently 16 percent of GDP, but four percent of that is either governmental or investment and only 12 percent is in personal consumption. Then for NHE to increase from 16 percent to 28 percent, would mean personal health care consumption must increase from 12 percent to 24 percent. Based on the component trends previously discussed it doesn't seem unreasonable to assume that the expenditures including governmental, private investment, net balance of trade and fuel combined remain a constant percentage of GDP. Under this set of conditions, durable goods, food, textiles and other services must decline from 54 percent to 42 percent of total GDP. This is a decline of nearly one quarter. Is it reasonable to expect those components of personal consumption to experience a decline of that magnitude? It would seem a conceptual "stretch," when we see that collectively these components increased from 53.1 percent to 53.7 percent of GDP from 1996 to 2006 and have been increasing slightly but steadily from 1976 when they were 52.4 percent of GDP.

These are only some of the unanswered questions about any macroeconomic model that implicitly forecasts grand structural shocks to our economy as a result of health care trend. A macroeconomic model is needed because, health care trend clearly cannot be considered only in isolation. Broader analysis and a more comprehensive macroeconomic model are necessary to fully appreciate the reasonableness of health care trend rate projections.

NHE Components

NHE projections are made annually by CMS' actuary for eleven years into the future, and the latest projection released in 2007 projected expenditures for 2006–2016. The data is available in aggregate and per capita. The NHE projections are broken down by source of payment and by use of funds. The sources include individual out of pocket payments, private health insurance, other private funds, federal government and state/local government. These last two governmental sources include Medicare and Medicaid and these programs are also shown separately. Uses of NHE include governmental public health activity, program administration and investment in health care infrastructure. Excluding these uses, the majority of NHE are for personal health expenditures (PHE).

Using this data we can see the historical trend in PHE by source. For modeling, non-governmental plan sponsor trend, the payment sources of interest are private health insurance[2] (PHI) and individual out-of-pocket (OOP) payments (since deductibles and coinsurance out-of-pocket costs are a standard component of sponsor plan designs and both should be considered for purpose of gross health care cost trend). The latest CMS actuary's per capita projections for the sum of these two components increase at a 5.5 percent annual rate (from $1,546 and $701 for PHI and OOP, respectively in 2001 to $3,673 and $1,362 in 2016).[3]

Four years ago, when 2012 was the final year in the projection, per capita projected PHI in 2012 was $218 (seven percent) higher than they are in the latest projection. The projected per capita OOP in 2012 has similarly been revised downward over the last four years. Thus, retrospectively, it is evident that the CMS projections were conservative in assumed trend rates for these payment sources.

The NHE projections from the CMS actuary do not include projected Medicare and Medicaid expenditures on a per capita basis, however projected annual increases in aggregate expenditures for these programs between 2006[4] and 2016 is 7.7 percent. With expected growth in enrollment in the 2.0-2.2 percent range, the annual increase in per capita expenditures for these programs is in the neighborhood of 5.5 percent.

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[2] This includes self-funded plans.

[3] *http://www.cms.hhs.gov/NationalHealthExpendData/downloads/proj2006.pdf*

[4] Data prior to 2006 does not reflect the Part D program costs and is therefore not comparable to later periods for evaluating trend.

Other private funds (including charitable care) and other governmental programs including medical research expenditures, state child health insurance programs, subsidies to hospitals, etc. make up the balance of PHE. Overall, the CMS actuary projects per capita public expenditures to increase 6.8 percent during the last five years in the projection period, while per capita PHI increases 5.6 percent and OOP increases 4.8 percent over the same period. These projections reflect a continuation of the observed history of public expenditures per capita outpacing per capita privately paid expenditures.

History has shown and the actuaries at CMS project the future will continue to show that different components of PHE as well as NHE will trend at different rates. Any macroeconomic model which is designed for the purpose of projecting rates of increase in per capita private paid health care costs must account for the differences in components of NHE. Based on the historical data for NHE a model that attempts to forecast trend rates for all combined NHE will produce a trend rate that is too great to be used for projecting private paid per capita health care costs.

Summary

Not being an economist, I am left to wonder how to reconcile this data and these concerns with the new model from Professor Getzen. I will be the last person to argue that actuarial assumptions for short term and intermediate term health care trend rates in the past have been proven accurate. Fortunately, the issue that faces us as a profession today is what is reasonable as an assumption beyond 2008. So, before we leave the frying-pan for what may be a solution or simply the proverbial fire, let's carefully consider all aspects of the models and data available to the profession. With the help of economists and futurists, we as actuaries should continue to focus our efforts in this area. Only after such a rounded investigation, will we be able to move forward with confidence in our liability forecasting and valuation work.

Actuaries should reach out to economists and futurists to seek input in developing assumptions that can be used in a macroeconomic model to portray reasonably what the future might hold. A simple model that ignores other long-term trends and economic fundamentals will be inadequate and not advance the discussion of what is a reasonable assumption for long term health care cost trend rates. ■

Response

by Thomas E. Getzen,

The "Perspective" commentary by Wes Edwards on the Long-Term Health Care Cost Trends (Getzen) Resource Model raises two important points:

1) The impact of affordability (also called "sustainability" or "maximum share of GDP") on the overall economy

2) Growth of separate health care components (public/private; hospital/drugs): equal or not equal?

The ability of the nation to afford increasing health care costs displacing other kinds of spending has been raised repeatedly since the 1960s. Once it was felt that doom would befall corporate benefits managers and the federal government if health spending ever exceeded seven percent. Soon, the tipping point was raised to eight percent, and it has been subsequently pushed upward at intervals since then. After years of efforts to define and quantify "sustainability" with regard to medical cost growth, the Medicare trustees and their technical advisors finally concluded the task was not subject to scientific determination, (i.e., our certainty that some limit is fast approaching has been proven wrong so consistently over the prior four decades we don't even want to suggest that our answer is anything other than a "best guess") and thus what CMS and CBO should do was just to show that any projection of current trends led to untenable results—clarifying that at some point in the future some change would have to take place without specifying when or how.

During an interactive SOA webcast about the model held online in April 2008, a quick poll was conducted of the actuaries who attended (about

CONTINUED ON **PAGE 38**

100) regarding their beliefs about likely magnitudes of future spending, with the following result:

Q2: What do you expect total spending on health care as a percentage of the U.S. economy to be in 2050 (42 years from now)?
(SOA webcast poll April 2008, n= 58)

less than 15%	0%
15% - 25%	41%
26% - 35%	52%
36% - 45%	5%
above 45%	2%

One should not read too much into this informal and unscientific poll of actuaries, but it is apparent that the "average" and range is pretty much in line with the beliefs of medical experts, health economists, budget analysts and others who have some professional interest and experience in the question. Note that only 58 actuaries were willing to provide an answer to this question, while over ninety answered the other two questions posed during the webcast—indicative perhaps of the extraordinary degree of uncertainty involved in trying to answer this basic question.

The total tax revenues for the U.S. tend to stick around 20 percent, and this would seem to make it difficult to allow Medicare and Medicaid to continue to increase at the rate of private health insurance. Thus, more spending would be shifted to private payers as happened during the implementation of BBA 1997.

In short, we do not know what amount of medical spending is affordable or "sustainable" in the long run, except that it is a) a lot more than any professional would have said 30 years ago and b) something less than 100 percent. None of us is entirely comfortable with such uncertainty, but we may just have to live with it (and help our clients adjust to the reality of uncertainty) despite the demands for accountability posed by FASB 106 and GASB 43 & 45. What the Long-Term Health Care Cost Trend (Getzen) Resource Model does is to 1) accept that some limit or resistance is likely 2) provide a baseline estimate that can be modified under a range of assumptions 3) provide a means for a user to change the limits on growth and (perhaps most importantly) 4) make that process of "limiting" the model fully transparent.

The question of whether some components of medical spending will rise more or less rapidly than others arises repeatedly, most saliently with regard to whether a separate trend should be estimated by age group. Although for many decades per capita spending grew relatively more rapidly for the elderly, this excess growth appears to be mostly due to the implementation of Medicare, so that rates of growth for both young and old are about the same over the last decade, with some indications pointing toward relatively slower growth among the oldest old in the future. Thus, for the purposes of the Long-Term Health Care Cost Trend (Getzen) Resource Model, it was assumed that the relative growth rates would be approximately the same over the long run (the biggest disparity lies in the field of Nursing Home and LTC costs, which are a bit ambiguous with regard to placement among private employer health insurance benefits projections).

Edwards raises the disparity between public and private health spending growth as a particular concern, and I would agree, although I think that rates of increases for public spending are more likely to fall behind, rather than exceed, those for private spending as he suggests. In the past, periods of relative more rapid public (private) spending growth have alternated—comparison of the 1960s with the 1990s is quite instructive in this regard. For most of the last 40 years employer insurance premium growth has exceeded growth in out-of-pocket spending and overall NHE growth, primarily due to coverage expansions. This expansionary trend seems to have run its course and is perhaps even now being reversed with higher copays, employee premium contributions, HSAs, etc. Periods of sluggish growth in pharmaceutical spending have usually been preceded and followed by periods of more rapid growth in that component. What we observe overall is that the total health spending per capita (which is axiomatically equal to the total funding stream for the U.S. health system with its varied hospitals, physicians, technicians, pharmaceutical companies–and insurers) grows much more steadily than any particular component. This is true not just of health care, but of most categories of consumer spending (e.g., the relative growth of spending for food is much more constant than of any particular component such as fresh vegetables, lamb or garlic). The reason that I suspect public spending may grow relatively less rapidly than private spending has to do with the "crowding out" concerns that Edwards raised with regard to share of GDP. The total tax revenues for the U.S. tend to stick around 20 percent, and this would seem to make it difficult to allow Medicare and Medicaid to continue to increase at the rate of private health insurance. Thus, more spending would be shifted to private payers as happened during the implementation of BBA 1997. Of course, we are speaking as if we had a good set of expectations about future government budgets, and most of us are quite unsure if the aftermath of the 2008 election will be a) more privatiza-

tion b) more government control or c) continued muddling through with about the same policy confusions as before. Given the degree of uncertainty with regard to the next two years, a bit of humility is called for in making projections about budgetary pressures and outcomes over the next five decades.

I want to thank Mr. Edwards for his thoughtful comments on the Long-Term Health Care Cost Trends (Getzen) Resource Model and the efforts of our working group, and to suggest that we are going to have to live with much more uncertainty than any us, or our clients, are truly comfortable with. Thus it is incumbent upon actuaries to work creatively with clients to understand the implications of uncertainty and craft creative solutions based upon a range of possibilities, and to accept that the only way to get a perfect estimate of future medical costs trends is to wait until it no longer matters. ■

References

Long-Term Health Care Cost Trends (Getzen) Resource Model and documentation accessible at ***www.soa.org***.

Altman, Stuart H. "Will the United States Continue to Allocate a Growing Portion of Its GDP to Health Care?" in ***Wanting it All: Reforming the U.S. Health Care System*** ed. A.S. Little, Fed Reserve Bank of Boston, 2007.

Getzen, TE (2000) "Forecasting Health Expenditures: Short, Medium and Long (long) Term." ***Journal of Health Care Finance*** 26(3):56-72, 2000a.

Getzen, TE (2006) Aggregation and the measurement of health care costs. Health Services Res. 41(5):1938-1954.

Navigating New Horizons | FROM PAGE 9

Juggling work and life

Of course advancement means more responsibility and less time for everything else. Rosenblatt said balancing her career with that of her husband presented challenges at times, the hours were long and finding time to engage in recreational activities was almost unheard of.

"High aspirations are possible, but it's going to require a lot of work and I think there are tradeoffs," she said. "I didn't watch TV for years and years. I know some women juggle family life with a high-powered career and I think it's possible to do that. It's probably even harder than what I did without having children. So there are always risks to take and rewards to get and you need to put in a lot of effort if you want to succeed."

Now that she has retired, Rosenblatt said she has a new feeling about time. She and her husband are building a new house in a golf community and she has been working on her game.

"I'm playing golf almost every day," she said. "I'm also spending more time working out and just relaxing, enjoying myself and having a whole new view of time. I suddenly have time to just sit and watch TV if I want to!"

The couple also has two dogs, a cockatoo and a 20-year-old parrot to take care of and spend time with.

Making a Difference

Reflecting upon her career, Rosenblatt said it was very rewarding for reasons that go a lot deeper than just earning a salary.

"I do think health insurance plays a very important part in the lives of a lot of people, including my own," she said. "I'm a breast cancer survivor and I really appreciated the health insurance that I had when I was going through treatment for the disease. It was comforting to not have to worry about the financial impact of treatment decisions and knowing I was covered for chemotherapy and radiation treatments."

Rosenblatt said she believes the insurance industry is striving to improve health care in this country.

"I think they get a bad wrap politically by some, but they're doing good work," she said. "Health insurance companies are trying to figure out how they can help the consumer make good choices to get quality care." ■