

THE DOUBLE WHAMMY OF HIGH HEALTH CARE PRICES

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President Bill Clinton has declared health care reform the number one domestic political objective of his administration. He has illustrated his determination to pass comprehensive health care legislation in the United States by appointing his number one political ally, First Lady Hillary Clinton, to spearhead the health care reform effort. INFORUM staffers, in particular Ralph Monaco and Jeff Janoska, have been working on health care too -- they have enhanced the LIFT model in order to better simulate the economic effects of health care reform. The Health Care Financing Administration, the federal agency in charge of overseeing government health care programs, has been one of the heaviest users of the model in recent years.

This paper and my presentation should serve three purposes:

- summarize our recent work on modeling changes in the health care system;
- provide a brief introduction to the health care debate in the United States; and
- illustrate the interaction of health care prices and the social insurance funds in the United States (and in LIFT).

INFORUM'S Recent Work on Health Care Modeling

Ralph Monaco and Jeff Janoska have been busy enhancing and using LIFT for health care modeling. Their work has been largely done with the generous support of the Health Care Financing Administration. Recent INFORUM publications on the issue are listed in the bibliography. INFORUM Working Papers are available from the EconData site on the Internet.

In the Spring, LIFT was expanded to include more health care sectors. "Follow" fixes have been added to LIFT to allow individual product prices or components of value added to grow with either overall prices, the GNP deflator, nominal labor compensation per employee, or nominal GNP. The treatment of social insurance contributions by both employers and employees has been revised.

Many thanks to my patient INFORUM colleagues, and especially to Ralph Monaco, who deserves almost all of the credit and none of the blame for this work.

Ralph, along with John Phelps of HCFA, has completed simulations that are much more detailed than the simple ones I outline in this paper. They have carefully examined the effects of reform that slows health care price inflation and have submitted their findings to the journal *Health Affairs*.

Jeff's research centers on examining the way the federal health funding program Medicare impacts PCE. He notes that government transfers can be classified as either income transfers, in-kind transfers (commodity transfers) or price subsidies (in-kind subsidies). Medicare, he concludes, is not an in-kind transfer since recipients do not receive free medical care. Nor should Medicare be considered income since it may be spent only on health care. Following the National Income and Product Account treatment, Medicare is an income transfer in LIFT (Janoska, 1994a). Jeff argues Medicare should be modeled as a price subsidy. His most recent work (Janoska, 1994b) provides empirical results from implementing this change in how Medicare is modeled in LIFT.

Our next large health-care project will be to extend LIFT's simulation horizon another 40 years to the year 2050. This even-longer-term forecasting tool will include a detailed demographic model.

An Introduction to the Health Care Debate in the United States

Since Bill Clinton took the oath as President of the United States in January, 1993, health care reform has been the top of the political agenda. Although the Administration can be credited with a number of domestic achievements, agreement on health care reform has remained elusive. This section will provide a brief introduction to the health care debate in the United States. It draws heavily from Ralph Monaco's recent paper that was prepared for publication in *Studi & Informazioni* (Monaco, 1994b).

Concern over the health care system in the United States is based on three observations:

- the United States spends more on health care than any other developed country, both in absolute terms and relative to the size of the economy;
- Despite the high per capita expenditures on health, Americans do not seem any healthier than citizens of other countries; and
- A large number of U.S. citizens are not covered by any health insurance, private or public.

Table 1 provides a summary of health care expenditures and prices in the United States, relative to other OECD countries. We had the highest per-capita spending in 1980 and the gap between us and our major trading partners widened between 1980 and 1990. Our ratio of health spending to GDP in 1990 was 4.5 percentage points above the OECD average. Since 1990, the picture has become even worse: in 1993 health care expenditures amounted to 14.3 percent of GDP.

Despite these elevated spending levels, simple measures do not suggest that Americans are much healthier than citizens of other countries. We have the highest infant mortality rates and the lowest life expectancy at birth of any of the Big 7 countries. And unlike most other OECD countries, many of our citizens are without access to health insurance. Recent estimates are that 39 million Americans were without health insurance for the entire year in 1992 and over 20 percent of the population was without health insurance sometime during the year.

Table 1. Health Sector Variables in Selected OECD Countries.

	Per-capita Health Spending in US\$		Health Spending as a Percent of GDP		Excess Health Inflation
	<u>1980</u>	<u>1990</u>	<u>1980</u>	<u>1990</u>	<u>1980-1990</u>
Canada	773	1770	7.4	9.3	1.9
France	736	1532	7.6	8.8	-1.1
Germany	856	1486	8.4	8.1	0.4
Italy	600	1236	6.9	7.7	0.7
United Kingdom	474	972	5.8	6.2	1.2
United States	1064	2566	9.2	12.1	2.2

Source: Scheiber, Poullier, and Greenwald, 1992. The first two columns are calculated using OECD purchasing power parity exchange rates. The last column shows the average annual percentage point difference between health care inflation and inflation in the GDP deflator.

One reason it is possible for so many people to be denied access to health insurance is that in contrast to other developed countries, the United States relies heavily on the private sector to deliver and finance individual access to health care. Private health spending accounted for 58 percent of total health spending in 1990, which was the highest private spending share of all other OECD countries except Turkey. Private medical insurance is financed by set fees (premiums) paid jointly by consumers and employers to insurance companies. Employers contribute the bulk of the costs: over 80 percent of premium costs on average are covered by employers. Employers are not required to offer health insurance as part of the labor compensation package, and the U.S. press abounds with examples of firms that do not. Recently, the fast food industry has been highlighted as an industry that often neglects to offer employees private health insurance. Another problem with the current system of health care is that since private insurance is most often obtained from the employer, health care coverage is subject to the whims of the business cycle. Cyclically low employment not only lowers people's incomes, it also often leaves many people without insurance.

The bulk of the remaining health insurance is provided by public programs. Medicare and Medicaid are the two most important public programs that provide health care financing. Medicare is aimed at the elderly and is part of the social insurance system described below.

There are two parts: Part A is like a government-run hospital insurance programs for people over 65, the disabled, and people with chronic kidney failure. This part of Medicare is financed by a 2.9 percent payroll tax on virtually all working Americans. Part B is called Supplemental Medical Insurance and covers doctor visits and surgical procedures that are done outside of a hospital. People who enroll in Part B, who must first qualify as eligible for Part A, pay premiums that cover about a quarter of the costs. The remaining costs come out of federal government general revenues. Medicare outlays grew rapidly during the 1980s, with annual growth of around 10 percent.

Medicaid is aimed primarily at the poor. It is an entitlement program administered separately by each state. About half of the Medicaid funding comes from the federal government in the form of grants to the states, and the rest is usually funded by state general revenues. During the 1980s, state and local health-care spending rose by about 10 percent per year, while revenues rose only slightly more than 7 percent.

The health care reform package initiated by President Clinton is entitled the Health Security Act. It is not surprising that the name mirrors that of the popular Social Security system. The plan serves two major goals: to provide insurance to the currently uninsured and to control costs. Under the scheme, all U.S. citizens will belong to a regional health alliance. It maintains the connection between employers and health insurance. One controversial part of the plan is a mandate that all employers must offer some sort of health insurance. The Health Security Act contains ambitious cost containment language, although few specifics. If reorganization of the way private insurance is purchased and consumed does not control costs sufficiently by increasing efficiency in the health care sector, the plan provides a back-up system of price controls. In addition to efficiency gains, the plan is to be financed by tax increases on tobacco products and on firms that elect not to be a part of a regional health alliance.

As *The Washington Post* recently put it, "the political diagnosis is sinking in: National health care reform legislation for this year is in terminal condition." (Trafford and Rich, 1994, p.12) A number of competing health care proposals have been circulating in the Senate, where the bill is currently mired. The one receiving the most attention was put together by a "mainstream coalition" headed by Senator John Chafee. The plan has a much more incremental approach than the Health Security Act. It would overhaul the rule for health insurance to make it easier for individuals and small firms to obtain coverage. It would increase federal subsidies to provide help for low-income people to buy private health insurance policies. The coalition plan is estimated to eventually provide coverage for an additional 15 to 20 million people, about half of those currently without health care. President Clinton has vowed to veto any bill that does not provide universal coverage. It remains to be seen what sort of health reform package, if any, will emerge from the last few weeks of the current Congressional session.

An Introduction to the U.S. System of Social Insurance

The U.S. system of social insurance is unique among major industrialized countries. The Social Security system, the largest component of our social insurance plan, is the most important

transfer program in the country. It was initiated by President Franklin Roosevelt as a government-sponsored pension fund in 1935. During their working lives, workers would deposit money into the plan and it would accrue interest that was used to pay benefits. In 1939 the scheme was converted to a pay-as-you-go plan. It was based on a overlapping generations model: taxes on workers and firms were used to finance transfer payments to retirees over the age of 65. The plan was delightfully simple in the early stages: as long as the population was growing, most of the working generation were employed, and wages grew at least modestly, the system could provide each older generation more in transfers than it paid in. It is not surprising that Social Security enjoyed immense popular support, particularly from the very politically active older generation.

Demographic changes, volatility in the taxable wage base, and ever-expanding benefits have greatly complicated the social insurance system in the United States. In addition to Social Security, the social insurance programs include unemployment insurance, workers' compensation, and several federal retirement programs. All of these social insurance programs share some common characteristics: (1) participation is required; (2) eligibility and benefit levels depend, in part, on past contributions by the worker; (3) as with regular insurance, benefits begin with some "adverse" occurrence such as illness, old age, or unemployment; and (4) the programs are not means-tested (Auerbach and Kotlikoff, 1995, p.150). The last fact means that financial need is not a factor in determining eligibility for benefits. Although Social Security is not means-tested, Congress has recently begun to tax Social Security benefits of high-income pensioners. Several books in the bibliography provide a more information of the social insurance programs in the United States.

The U.S. Social Security system has greatly expanded since 1935 and now encompasses three major programs: Old Age and Survivors' Insurance, Disability Insurance, and Medical Insurance, or Medicare. (The first two programs are often lumped together and referred to as OASDI) In 1994, these three programs, along with other social insurance programs for unemployment insurance and a few small federal employees' retirement plans, are projected to pay 528 billion dollars in benefits. Old-age and disability benefits are about 300 billion dollars and Medicare Part A and the social insurance portion of Supplemental Medical Insurance (SMI, or Medicare Part B) are slightly over 100 billion dollars. During the period from 1980-1993, Medicare payments relative to GDP grew from 1.3 percent to 2.0 percent (Auerbach and Kotlikoff, 1995, p.248).

Social security is financed by a payroll tax, which is politely and politically referred to as "contributions for social insurance". The payroll tax is also called the fica tax, after the Federal Insurance Contributions Act that governs it. Half of the tax is deducted automatically from employees' paychecks, and the other half is paid by the employer. The rationale behind this system was that workers and employers should share the tax costs. However, numerous studies have shown that the worker bears the entire burden of the tax. The current combined fica rate is 7.65 percent (on employees and employers separately): a 6.20 percent tax on income up to \$57,600 for OASDI, and 1.45 percent on earnings up to \$135,000 for Medicare.

Until the mid-1970s, Social Security operated fine on a pay-as-you-go basis. Instead of being tempted to raise Social Security benefits before every election, in the mid-1970s Congress decided to index benefits to rise with the Consumer Price Index. It seemed a smart thing to do in order to end the pre-election pandering. But the move required that wages, which determined how much money was coming into the system, always rise faster than prices. Rapid price rises and declining employment in the mid-70s and early-1980s sent the system into crisis.

It became clear with the recessions of the mid-1970s and early-1980s that the pay-as-you-go system, where payroll taxes on working people roughly equaled benefits to retirees, was not feasible. And looking beyond the crisis at hand, a commission was set up to study the Social Security system, when it was realized that policies would need to be revised in anticipation of the retirement of the baby boom generation.

The baby boom generation is the extraordinarily large cohort of babies born after the World War II. The crude birth rate in the Depression was 18.3 per thousand. By 1950-1955, the birthrate had jumped to about 25 per thousand, and by the late 1970s, it had fallen back to about 15 per thousand (Sheffrin, 1993, p.65). The baby boomers will move into retirement between 2010 and 2030 and will put tremendous stress on the Social Security system and other programs for the elderly. Demographers often look at the support ratio, which is the ratio of retirees to the number of the population of working age. In 1950, that ratio was 0.138, in 1992 it increased to 0.210. By the year 2030, the support ratio is anticipated to be about 0.378, and it will soar even higher to 0.412 by 2060 (Sheffrin, 1993, p.65).

The Greenspan Commission, which was established to study the problem and was headed by Alan Greenspan before he became Chairman of the Federal Reserve, increased social insurance taxes and made other changes in the system that led to the accumulation of significant reserves. These reserves are accumulated in separate trust funds for Old Age Security, Disability Insurance, Medicare, and SMI. Policymakers look at the solvency ratio of these funds to determine their long-run viability. The solvency ratio is the ratio of the total reserves in the fund to the annual outlays of the program. A solvency ratio of 100 means that the fund could meet next year's obligations without any extra revenue. In LIFT, we combine all the social insurance trust funds into one fund. In 1994, the combined solvency ratio for the social insurance funds is about 150.

The purpose of the trust funds is to increase national savings so that future generations are assured of getting as much out of the system as they paid in, and so that payments can be met even when receipts are temporarily low due to the business cycle. The trust funds purchase special government securities, which are sold back to the government when needed to fund payments to retirees. There is considerable debate about the desired size of the social insurance trust funds. Current Social Security Administration projections call for an overall solvency ratio near 240 in 2010 (Monaco and Phelps, 1994).

Health Care Prices, the Economy, and the Social Insurance Funds

The health simulations I want to present today illustrate the effects of high health prices on the economy. The traditional impact from rising relative health care prices is as we might expect: much higher nominal spending on health as a share total PCE, lower nominal and real output, higher unemployment, and lower wages. The second punch from high health prices comes from their effect on the social insurance funds. With rapidly rising relative health care prices, the social insurance funds are hit from one side by higher payments for medical care, and on the other by a declining wage base that eats away the funds' income. In these simulations, this double whammy knocks out the social insurance funds by the end of the forecast.

For a few illustrations of the impact of high health prices on the economy, we have made production prices in the medical care sectors exogenous. Although "universal coverage" is a hot political topic and certainly of utmost importance to the 39 million Americans who had no health insurance in 1992, it is the cost containment aspect of health care reform that will most profoundly effect the economy. We do not consider the effects of a move towards universal coverage; we do not explicitly change the institutions that deliver health care or their efficiency; nor do we address issues of the changing quality of health care or the possibility of rationing. These simulations are intended to illustrate the response of the federal trust funds to higher health care prices. The base forecast is one in which producer prices in the health care sectors rise one percentage point faster than the GNP deflator each year. The forecast can be thought of as an optimistic one, where health care reform immediately curtails the brisk increases in health care prices. The alternative is a business-a-little-worse-than-usual forecast which has health sector prices rising about 5 percentage points faster than the GNP deflator.

A Brief Look at the Base Forecast

The base case for these simulations is a reasonable LIFT forecast not unlike the one we presented at the May 1994 meeting for our subscribers or that Clopper presented to the participants at last week's meeting. The purpose of this paper is not to defend the base forecast, but I will briefly outline the base as our reference point for the analysis. Real GDP is growing about 2 percent throughout the forecast (1994 - 2010); price growth is about 3 percent a year when measured by the GNP deflator, and slightly higher when we use the PCE deflator as our measure of inflation. Short-term interest rates rise slightly until the end of the century and then decline by 2010. The federal deficit remains at roughly 2.8 percent of GNP until the year 2000, and then declines at the end of the forecast. Social insurance funds grow throughout the forecast, and by 2010 the solvency ratio for the combined trust funds increases to 300, a value high enough to ensure continued solvency when the baby boomers retire. Producer prices of the health care sectors (sectors 79-85) are exogenous and a follow fix was used to keep their growth rates about 1 percentage point higher than the growth in the GNP deflator. Average hourly compensation in manufacturing is rising at about 3.3 percent annually throughout the base forecast. Real Medicare and Medicaid grow between 1.4 and 2.0 percent annually, and per-capita Medicare is kept constant. Employer health insurance contributions as a share of total labor compensation rise slightly from 6.2 percent in 1993 to 7.2 percent in 2010.

Higher Health Care Prices -- Assumptions

The forecast against which the base will be compared has producer prices in the health care sectors growing about 5 percentage points faster than the GNP deflator from 1995 to 2010. In contrast to the type of simulations we often consider, this is a constant shock to prices. Prices do not just jump up by 5 percentage points more than the GNP deflator and then continue the same growth as the GNP deflator each year; instead the growth of health prices is higher every year in the forecast. As in the base case, real per-capita Medicare is kept constant at its 1994 level. Medicaid is increased to account for the health price increases. All other exogenous variables are the same as in the base case. In particular, the legislated social insurance contribution rates are unchanged between the base and the alternative. The assumptions and results of the base and alternative forecasts are shown in the appendix table. The first line corresponding to each title gives the base forecast; the second line shows the alternative's absolute deviations from the base values. The assumptions on health care price increases can be seen on the last page of the appendix table: the assumed price increases of 7.8 percent per year between 1995 and 2000, which can be seen by adding the 4.1 and 3.7 in the growth columns with the heading "95-00" are only 2 percentage points faster than the historical 5.8 percent annual growth that occurred between 1987 and 1992.¹

A brief discussion of how labor compensation and health benefits are modeled in LIFT will make the interpretation of some of the simulation results below easier. The base and the alternative forecast assume no labor compensation pass-through. This means that higher health benefits do not translate into higher overall labor compensation. In LIFT, total compensation is determined in each industry via productivity equations, and is then split among wages and salaries, pension benefits, health benefits, other benefits, and employer contributions for social insurance. Pension and other benefits remain the same share of total labor compensation in each industry in the forecast. Employer contributions for social insurance move with implied changes in the fica rate. Health benefits as a share to total labor compensation rise with the nominal health PCE. Wages and salaries constitute the remaining labor compensation.

Higher Health Care Prices -- Impact on the Macroeconomy

The outlook for the U.S. economy is devastating if producer prices in the health care sectors are allowed to rise at around 7 percent a year. The impacts of high health care prices on basic macroeconomic indicators are shown in the graphs in Panel 1. Real GDP is 159 billion 1977 dollars lower by 2010, and its growth rate is lower by 0.2 to 0.3 percentage points throughout the forecast period. The higher health care prices cut 4.3 million jobs from the economy by 2010. The short-term interest rate declines from 4.8 percent in the base in 2010 to

¹ Note that because of the mechanics of the follow fix, the producer prices reported in the table do not grow at precisely 5 percentage points faster than the GNP deflator. The growth rates reported are calculated (correctly) as exponential growth rates, while the follow fix uses the ratio of the prices to one another.

3.2 percent in the higher health care prices alternative. Interestingly, the interest rate on 10 year Treasury notes is almost unchanged. This steepening of the yield curve is due to the fact that the short-term rate is more sensitive to current economic conditions than is the long-term rate. The dampening effect of current economic conditions on the long-term rate is counteracted by the increased competition for funds by larger government deficits, leaving long-term rates virtually unchanged between the base and the alternative forecasts.

The bottom right graph in Panel 1, which shows that the PCE deflator is almost unchanged between the base and the alternative, is particularly interesting. It is especially surprising when compared with the top two graphs in Panel 2. Health care prices and health care expenditures as a percent of total PCE are both much higher in the alternative forecast, and yet the overall PCE deflator is virtually the same in both forecasts. Obviously, this implies that prices in other sectors are declining. The relative price declines are not by assumption, but rather are an endogenous response to a weak economy. Higher unemployment reduces wages, and although health benefits are rising, overall labor compensation is down. The growth in average hourly compensation in manufacturing is 1.8 percent between the years 2000 and 2005, and 1.5 percent between 2005 and 2010, compared to the base values of 3.3 and 3.4 percent. Total labor compensation is 20 percent lower in 2010 in the alternative relative to the base, and total value added is about 12 percent lower. This lower value added translates into much lower prices in the non-health sectors.

The effects of higher health care prices on health-related variables are summarized in Panel 2. The implicit health deflator is 64 percent higher in 2010 as a result of the producer price increases in the health sectors. Nominal health PCE as a percent of total PCE increases from 16.4 in 1994 to 30.1 in 2010 in the alternative -- that ratio is only 19.3 percent in the base forecast. Clearly health care is eating up much more of the economy's resources in the alternative. The bottom left graph in Panel 2 shows the rise in health benefits as a share of total labor compensation. This rise comes at the expense of wages and salaries, which are much lower

Panel 1. The Impact of High Health Care Prices on the Macroeconomy: Base (solid line) versus Alternative (dotted line).

Panel 2. The Impact of High Health Care Prices on Health-related Variables: Base (solid line) versus Alternative (dotted line).

Panel 3. The Impact of High Health Care Prices on Government Variables: Base (solid line) versus Alternative (dotted line).

in the alternative than in the base. The share of federal and state and local transfer payments that are accounted for by Medicare and Medicaid is much higher in the alternative. By 2010, higher health care prices imply that Medicare and Medicaid account for over 35 percent of all government transfers -- a 10 percentage point increase over the value in 1994.

The effects of higher health care prices on the government deficit and the social insurance funds are my primary interest in this paper. These are illustrated in Panel 3. High health care spending not only raises social insurance outlays directly, it adversely affects social insurance receipts by reducing the taxable wage base. Wages and salaries are down relative to the base because average labor compensation has declined, the number of jobs in the economy have declined, and health benefits have risen. In the appendix table on page A2, we see that in 2010 federal social insurance outlays are 230 billion dollars higher than if we had low health care price increases. Both employer and personal contributions to the social insurance funds are much lower: personal contributions are 70 billion dollars lower and employer contributions have declined by 100 billion dollars relative to the base. This double whammy of higher outlays because of rapidly rising health prices and reduced receipts because of a lower taxable wage base have devastating effects on the social insurance funds and on the federal deficit. In fact, we could call the effect a triple whammy, if such a thing exists: by 2010, the depressing economic conditions, declining trust fund balances, and low short-term interest rates also lower receipts of interest revenue on the trust funds by 121 billion dollars. Despite the fact that we have declining military spending and relatively slow increases in government expenditures on goods and services, the federal deficit rises to 6.7 percent of GDP in 2010: a much higher ratio than any time in history and a full 5.6 percentage points higher than the base value. The top right figure in Panel 3 shows the annual flows into the social insurance trust funds in the base and alternative. Because of declining revenues and increasing outlays, the balance declines throughout the forecast. By the year 2003 we are actually drawing down the trust funds: annual payments begin to exceed annual receipts by that time. Three years later, the solvency ratio of the combined trust funds is less than 100, implying that the trust fund contains less than the amount necessary to meet the next year's payments. By the end of the forecast in 2010 the trust funds are almost empty, and back-of-the-envelope calculations suggest that the trust funds will actually be in deficit in the following year. The appendix tables reveal that state and local government social insurance funds also suffer significantly under high health prices.

Higher Health Care Prices -- Industry Effects

The graphs contained in Panel 4 illustrate the effects of higher health care prices on aggregate industries. The solid bar represents the high health price alternative and the striped bar is for the base. Figure 4a shows employer health contributions as share of total labor compensation. For the entire economy, this value rose from 6.2 percent in 1994 to 7.2 percent in the base forecast in 2010, and 13.6 in the alternative.

Panel 4. The Impact of High Health Care Prices on Aggregate Industries.

The remaining three graphs show the change in the indicated variable between 1994 and 2010 in the base and the alternative. In figure 4d, for example, the solid horizontal bar for the Fire, Insurance, and Real Estate sector shows the number of jobs in the industry in the alternative forecast in 2010 less the number of jobs in that sector in 1994. The striped horizontal bar results from the same calculation for the base forecast.

These figures show at a glance that all industries suffer as a result of higher health care prices. Clearly, there are no industries that could be called "winners" under the high health price scenario. It is also not easy to pick out relative winners and losers -- all industries appear to suffer similarly. We might think that industries in which health benefits are a large share of compensation may fare worse in a world with high medical price inflation. The data seem to support that hypothesis: Non-durable and durable manufacturing, whose health care shares were the highest except utilities in 1994, had the largest percentage differences in output between the base and the alternative in 2010. Non-durable and durable manufacturing had health care shares of 9.0 and 9.8 respectively, and their output in the alternative was 5.1 and 5.6 percent lower than in the base. In contrast, the health shares for trade, non-medical services, and FIRE were 5.7, 4.7, and 6.3, and together their output was only 4.1 percent lower in 2010 in the alternative than it was in the base.

Higher Health Care Prices -- Toying with a Target Solvency Ratio

The graphs of Panel 3 show the devastating effects of high health prices on the macroeconomy in general and, in particular, on the solvency of the social insurance trust funds. Smart policymakers would be able to anticipate these effects and would adjust social insurance contribution rates or outlays accordingly. With such a powerful elderly lobby in U.S. politics, the former seems much more feasible. We incorporated these ideas in LIFT by building a target solvency ratio into the model. If a target solvency ratio is specified, the model will adjust the contribution rates so that the target is met. In this simulation, we set a target solvency ratio of 150 throughout the high health prices forecast in an attempt to keep the social insurance funds from becoming bankrupt.

Understanding the mechanics of the target solvency ratio is important for interpretation of the results. If a target is set, the model calculates the difference between last year's solvency ratio (which is the ratio of the total amount of money in the trust fund to the year's outlays) and this year's target. It then uses the difference to adjust the social insurance contribution rate so that the target for the year will be roughly met by increased (or decreased) revenue.

The idea is a clever one, but our first implementation of it has given rather unrealistic results. Because the routine uses last year's deviation from this year's target, it never adjusts tax rates exactly enough to hit the target. In effect, it uses assumes no partial-adjustment or forward-looking behavior on the part of policymakers. The model waits until we deviate from the target and then panics and adjusts taxes immediately to try to get back to the target. As shown in Panel 5, the solvency ratio moves in cycles around the target. Only the solvency ratio and real GDP

are graphed here, but from the amplified cycles, it is easy to imagine the patterns in other variables.

Panel 5. Reaction of GDP and the Solvency Ratio to Setting a Target Solvency Ratio.

A less naive approach to keeping the social insurance trust funds afloat under the assumption of high health care prices would be to allow more forward-looking behavior on the part of policymakers. Rather than waiting until there is a trust fund crisis, we would hope that policymakers adjust taxes gradually to compensate for anticipated shortfalls in the social insurance funds. Although the members of the commission headed by Alan Greenspan to study the social insurance funds in the early 1980s were reacting to a funding crisis, they were forward-looking enough to not only reform the system to meet the immediate crisis, but also raised taxes and cut some benefits in anticipation of the strain on the system that would be caused by the retirement of the baby boom generation.

To implement these ideas in LIFT we could adjust social insurance contribution rates more slowly than we did in our initial attempt to have a target solvency ratio. This could be done either by exogenous assumption or with a partial-adjustment policy function.

Conclusions

Health care cost containment is of utmost importance for the economy. A dynamic interindustry macro model like LIFT illustrates the varied ways that high health care prices influence the economy. Our work shows two major points. First, reducing health care inflation has an overall positive effect on the economy. The benefits cumulate over time and are extremely significant by 2010. So far, this examination of the overall impact of health care reform is new to health care analysis. Second, continued high health care prices have a devastating effect on the social insurance funds. Without immediate curtailment of health care prices, the social insurance funds face insolvency within twenty years. This looming policy problem should be dealt with sooner rather than later. Over the next several months, we hope to add our analysis to the ongoing health care policy debate.

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