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PUBLIC POLICY FOR HEALTH CARE

ABSTRACT

This paper reviews the public sector role in the provision of health care. A first role of the government is to use tax policy to correct externalities associated with individual behaviors. Estimates suggest that the external effects of many "sins" such as alcohol consumption are greater than current taxes on these goods. A second role of the government is to correct distortions in markets for medical care and health insurance. Markets for health insurance have traditionally not offered a choice between cost and the generosity of benefits. As a result, there have been incentives for excessive technological development, particularly technologies that increase spending. Once technologies have diffused widely, they are overutilized. Policies to increase choice in insurance markets could increase welfare, provided they limit segmentation on the basis of risk.

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Government involvement in health care is on a scale virtually unrivaled in any other market. In most markets, the government has some regulatory authority and potentially an informational or monitoring role. Rarely does the government decide how much of the good people should buy or whom they should buy it from. Almost never does the government provide the good itself.

In health care, however, government involvement is much more extensive. Perhaps the largest role of the government is as a *health insurer*. The government provides insurance to the poor, the elderly, and the disabled through the Medicare and Medicaid programs. The government also insures Veterans (the VA system), active duty military personnel and their families (the Department of Defense health system and CHAMPUS), and Native Americans (the Indian Health Service). The government provides implicit insurance to the poor with public hospitals and clinics, and insures mental illness with psychiatric hospitals. Governments pay for nearly half of health care services and supplies consumed in the United States.

In addition to providing insurance, the public sector also *provides care* directly to many people. Veterans, for example, receive care from government-paid providers at hospitals that are owned and operated by the VA system. Defense personnel receive care at DoD hospitals, and state and local governments run public hospitals, clinics, and institutions for the mentally retarded. Even in the Medicare and Medicaid program, the government is actively involved in setting reimbursement rates for providers, rather than just contracting the insurance role to private insurers.

The public sector is also involved in financing *research* and monitoring public health. The National Institutes of Health spends over \$10 billion annually on biomedical research, with another \$5 billion or so on other government health research.

Governments are also involved in health care through *tax policy*. The most noticeable form of taxation is “sin taxes” that are levied on cigarettes, alcohol, and even snack foods in some states. More

important budgetarily is the \$70 billion annually or so that is not collected because employer spending on health insurance is not counted as income for tax purposes. This “tax expenditure” plays a major role in any discussion of public sector health reform.

Finally, the government is involved in health care on the *regulatory* side. While the government regulates many industries, regulation in health care is particularly extensive. New drugs and medical devices, for example, must be approved by the Food and Drug Administration before they can be used clinically. Many state governments regulate the rates that hospitals can charge private sector payers, and nursing homes cannot expand their capacity without approval from state governments. Insurance companies are regulated by state insurance departments. And standards for malpractice litigation affect doctors and hospitals.

And yet, even with this pervasive role of the public sector in health care -- or perhaps because of it -- fundamental issues about the appropriate role of the public sector in health care are still unsettled. The costs of medical care are rising 2 to 3 times as rapidly as the economy as a whole. Should the government limit spending on medical care? People are unhappy that their insurance may be canceled when they become sick or their rates may increase through no fault of their own. Should the public sector do anything about these practices? Fifteen percent of the population is uninsured and that proportion is rising. Should the government intervene to guarantee health insurance to all? Some have called the 1980s “The Tax Decade”, because tax policy consumed so much of the public agenda. Halfway through the 1990s, it seems fair to characterize this decade as “The Health Decade”. Fundamental issues of health policy show every indication of being with us for years to come.

In this paper, I survey the economics of the public sector role in health care. I want to define the topic broadly. Discussion about *health care* often leaps immediately to the provision of *medical services*. It is certainly true that medical services influence health. It is also true, however, that other factors such as lifestyle and diet also influence health. I want to discuss the range of potential government involvement

broadly.

Public intervention in private markets is typically justified on one of three grounds. In some cases, individuals may not make decisions about their individual behavior that are socially desirable, and these external effects should be rectified by government. Alternatively, the market mechanism itself may not work well, and governments may want to support or replace markets. Finally, society has preferences about the distribution of income or the consumption of specific goods, and the government may want to intervene to promote a fairer distribution of resources. All of these issues are prominent in the health care debate.

I begin by considering government intervention in individual lifestyle choices -- smoking, drinking, and the range of similar activities. The theory of public intervention is well developed here: the public sector should intervene if individuals do not accurately perceive the costs of their actions to themselves, or if individual actions have effects on others that are not otherwise accounted for. For many goods, these problems are likely to be important. As a result, public action is appropriate, and economic theory suggests the magnitude of intervention. Increased taxation of tobacco and particularly alcohol finds broad economic justification.

The bulk of the paper considers public involvements in markets for medical care and health insurance. These are the issues over which most of the public policy debate has occurred. Why have health costs increased so rapidly? Should we have public or private provision of insurance? Should receipt of health insurance be linked to employment? These issues are at the top of the public agenda.

I organize the discussion of medical care around three facts: first, that the diffusion of technology is the source of increases in health costs over time; second, that technology that has diffused widely is overused; third, that the financing of health insurance does not sufficiently pool risk. The first two facts are likely related; opportunities for technology to be overutilized create incentives for the more rapid innovation and diffusion of new technologies. I suggest that the solution to this excessive utilization of

care and thus overly rapid growth of costs is to create incentives for more cost-effective choice over insurance policies. Limiting excessive medical spending is largely a result of designing insurance policies that encourage or force individuals to receive less medical care. The tradeoff between income and generosity of medical care has not been a central feature of health insurance markets, however, and thus the cost of medical care has become such a vexing issue.

The solution of increased insurance market competition is made difficult because of the third fact. Individual choices over insurance may lead to less rapid technological diffusion but will certainly lead to more segmentation by risk. Minimizing the incentives for risk selection is therefore likely to be a major concern of public policy.

Throughout this discussion, I focus very little on the redistributive aspects of medical care financing or insurance coverage. Medical care poses particularly tough questions for us as a society, in part because we feel differently about medical care than we do about most goods. Society does not feel that everyone has the right to a VCR, or even a telephone, as important as the latter may be in holding a job. We do feel that everyone should have the right to at least basic medical care.¹ Thus, the question about what is an appropriate base level of care is necessarily a public policy issue and the cost of this care is necessarily a social cost. Considering this set of questions involves a host of other issues, however, such as the role of cash vs. in-kind transfers in the welfare of the poor, and the nature of our social guarantee. This goes beyond what I want to tackle in this paper, and thus I largely omit this discussion.

I start off by describing the potential role for the government in health care. I then examine the role of the government in affecting individual lifestyles and in organizing markets for medical care.

I. The Determinants of Health

Before discussing the role of the government in health care, I want to describe the markets involved in a more systematic way. Following Grossman (1972), it is helpful to think about the ultimate output of the health system as the health of the population. Individuals value health as well as consumption of goods, which together determine individual welfare.

Social welfare is a combination of individual welfares. Society may value the marginal welfare of some people (for example, the poor) more than it values the marginal welfare of others (for example, the rich). That is a statement about society's desire to transfer resources to the poor generally, however, not about society's desire to transfer medical resources to the poor. I want to separate issues of redistribution from issues of efficiency. So, throughout the paper I ignore income differences across people.

There are a number of inputs into health. The first is lifestyle. Individuals decide how much to consume of different goods, whether to smoke or drink alcohol, whether to exercise, whether to own a gun, and a myriad of other issues directly affecting health. Lifestyle choices also affect utility directly, as a consumption item. Cigarettes provide direct utility even as they lower health. Jogging may be both pleasurable and good for health.

The second input is public health -- factors such as air and water quality and overall sanitary conditions. Historically, public health measures were more important than they are now. A century ago, most of America's health problems were related to the lack of clean water, non-pasteurized milk, and poor sanitation. In 1900, life expectancy at birth was below 50 years. Today, it is closer to 80 years. A large share of this increase in life expectancy is due to improvements in public health (Preston and Haines, 1991).

The third input is medical care. This encompasses the range of acute care, mental health care, and long-term care. Some medical care may have independent consumption value, but most probably does not.

Finally, there are random factors that affect health, such as the probability of coming down with a particular illness or the chance that a baby is born with a particular disease.

There are two broad questions facing the public sector: when, if at all, should the government intervene in these factors affecting individual health? And when the government does intervene in these factors, what are the results of this intervention? This paper addresses these two questions. I discuss first lifestyle choices, and then turn to the provision of medical care.

II. Externalities and Individual Lifestyle Choices

Since Pigou in the 1920s, economists have recognized the role of the government in correcting externalities. Individual lifestyle choices -- particularly smoking and drinking -- are classic examples of this. If one person smoking causes harm to others, society may want to intervene in this decision. This has been the traditional rationale for government taxation of sin -- largely smoking and drinking. Currently, the Federal government taxes cigarettes at \$.24 per pack, beer at \$.32 per six-pack, wine at \$.21 per 750 milliliter bottle, and 80 proof distilled spirits at \$.21 per 750 milliliter bottle. These taxes have increased in recent years, as the need for revenue increased and the effects of these sins on health outcomes has become more apparent.

Of course, not all smoking or drinking is bad. Individuals will chose to engage in these activities if the consumption value to them is greater than the monetary and health costs of the behavior. Different people may feel differently about this tradeoff. Some individuals, for example, will get more utility from smoking than from the current and future lifeyears they would spend without smoking.

The public sector role here is two-fold. A necessary condition for individuals to make appropriate lifestyle choices is that they correctly perceive the health consequences of their actions. If individuals do not have complete knowledge of the risks of smoking, for example, policy measures to either provide this

information or to raise the costs of smoking would be appropriate.²

Evidence on individual perceptions of risk is spotty. Viscusi (1992, 1995) shows that individuals, if anything, *overstate* the risk that they will get lung cancer from smoking.³ These surveys are based on generic questions about a “typical” smoker, however. Schoenbaum (1996) shows that in response to a question about individual mortality expectations, moderate smokers correctly perceive their mortality risk but heavy smokers underestimate the probability of near-term death. And recent evidence shows that children may be particularly susceptible to tobacco advertisements, suggesting that they may not accurately perceive the long-term consequences of smoking. The evidence on individual perceptions of smoking risk is thus mixed, with some sense that certainly for children and possibly for adults, public intervention can be justified on information grounds. I am aware of no information on individual perceptions of the health risks from drinking.

Beyond the issue of individual risk assessments, society has an interest in lifestyle choices if these choices have external effects beyond the individual involved. For example, smokers and drinkers use more medical expenses than do non-smokers and non-drinkers. Since most Americans are insured, smokers and drinkers bear little of the additional medical costs resulting from their actions. Smokers and drinkers are also less productive than non-smokers and non-drinkers, reducing tax revenue on their income. These two costs ought to be born by individuals as they decide whether to smoke or drink. Taxing cigarettes and alcohol the amount required to pay for this care is therefore an efficient policy.

A major issue of research has been estimating these external costs. There are factors in both directions. While the health and productivity externalities suggest increased taxation of sin, smokers and drinkers also die younger than do non-smokers and non-drinkers, and thus receive less in the way of Social Security, Medicare, and Medicaid benefits. This would tend to lower optimal tax rates. Manning et al. (1991) estimated of the external cost of smoking and drinking, accounting for the effects of these behaviors on medical costs, pensions, and foregone tax revenue. Manning et al. concluded that, in total, current taxes

on cigarettes were about right (because the savings in Medicare and Social Security are reasonably high), but that taxes on alcohol should be doubled.

This analysis of optimal taxation has received much attention (Grossman et al., 1993). Some arguments suggest that not all external effects should be counted as costs. For example, if I choose to ride in a car driven by a drunk driver and am hurt in an accident, is that an external effect, or did I internalize the cost in my decision to ride in the car? Most economists would say that was not an externality, but the Manning et al. analysis treats that as an external effect. Other effects would tend to argue for increased taxation. The Manning et al. analysis did not consider the health effects of secondhand smoke, which is a particularly contentious scientific issue. If one believes the evidence on adverse effects of environmental tobacco smoke, the optimal tax rate would be higher.

A related issue is the question of what is the decision-making unit. Women who smoke while pregnant put their fetus at increased risk of low birthweight, which has an extremely high personal and social cost. Are these costs internalized by the woman, or should they be counted as external effects? In the Manning et al. analysis, any effects within a family are treated as internal effects and thus not something that should contribute to increased taxation. Estimates that treat intra-family health effects as externalities, however, produce optimal tax rates of as high as \$5.00 per pack (Hay, 1991).

A fair reading of the evidence is that on net, economic research suggests very strongly that raising current taxes on alcohol would improve efficiency, and that the same may be true of cigarette taxes as well, although the case is less complete. Policies to limit adverse lifestyle behaviors for children are even more efficiency-enhancing.

It is important to note that the raising revenue is *not* the rationale for increased taxation of sin. Smokers and drinkers may respond to increased prices of these goods by cutting back on their consumption, and empirical evidence suggests they will (Grossman et al., 1993). The goal, instead, is to reduce the amount of excessive smoking or drinking. In this case, the more that people substitute out of

these goods (and thus the less revenue that is raised), the more important it is to impose appropriate taxes.

Taxation of cigarettes and alcohol have received most of the economic attention. I suspect that taxation of firearms and bullets is as important as taxation of cigarettes and alcohol, but no comparable estimates of optimal taxation for these goods have been made.

The same analysis involved in sin taxation is applicable to the case of public health measures as well. The key to efficient smoking decisions, for example, is that the marginal benefits to an individual from smoking equal the marginal costs to society of that individual smoking. In the case of public health, efficient provision dictates that the *sum* of the marginal benefits to everyone from providing the public health measure equal the marginal cost of the good. Determining the valuation of public health for everyone is more difficult than determining the valuation for one person, but the principles involved in the analysis are the same.

III. The Organization of Medical Care Markets

Perhaps the most challenging public policy issue is the organization of markets for medical care. Medical care is an enormous industry in the United States, as it is in most developed countries. Table 1 shows information on medical care spending in the United States and other OECD countries. The United States spends close to \$3,000 per capita on medical care, or about 12 percent of GDP. The next highest country (Canada) spends about 10 percent of GDP on medical care, and the average in the OECD is about 8 percent of GDP. Spending in the United States is roughly 40 percent above the OECD average.

Spending on medical care is also increasing rapidly. Between 1960 and 1990, real per capita medical care spending rose at roughly 4.5 percent annually, far above the growth rate of GDP. As a result, medical spending as a share of GDP increased from 5 percent in 1960 to 12 percent in 1990. Increases in the share of GDP devoted to medical care are a characteristic of every OECD country.

Since medical costs are to a large extent random, it is natural and beneficial that people have health insurance. Table 2 shows the sources of health insurance in the United States.⁴ About 20 percent of people are on public insurance programs. The largest public program is Medicare, which provides insurance for the elderly, the disabled, and those with end-stage renal disease. Medicaid is the second largest program, insuring the poor elderly (long-term care and Medicare cost sharing), the blind and disabled, and poor women and children. A small number of people are insured as dependents of military personnel or veterans. In total, the public sector accounts directly for nearly half of medical spending. Another two-thirds of Americans have private insurance, with 90 percent of this being employment-based policies. Spending by the privately insured accounts for roughly half of medical spending. Finally, 15 percent of the population is without health insurance. These people pay for about 2 percent of medical spending, although they use more resources than this (perhaps another 4 percent of medical spending). These additional costs are “shifted” to other payers and are thus reflected in the public and private sector spending in the earlier rows.⁵

There are two goals of a well-functioning medical care delivery system. First, it should lead to the right amount of care being provided and direct that care to the right people. Second, it should spread the burden of financing care fairly. Many of the concerns about the organization of medical care in the United States are that it performs neither function well. The rapid increase in medical spending, for example, has led to enormous concern about whether we are wasting resources on too much medical care and whether costs are increasing too rapidly. Other fears have focused on the difficulty some people find in getting insurance, and the fact that many people feel “locked” into their current job because they are uncertain if they will get equivalent insurance coverage on a new job.

The role of economic analysis is to provide some structure to analyze these concerns. I want to start with three facts about the amount of medical care provided and the financing of that care. The facts are not particular to public sector; indeed, the issues in medical care delivery show up on the private ledger

as much as the public one. Between 1970 and 1990, for example, real per capita spending on medical care increased by 4.1 percent in the private sector and 4.9 percent in the public sector. Given that the public sector programs expanded their benefits over this period and enrollment increases were more rapid in the public sector, these growth rates are remarkably similar. I thus state the facts as general for the medical sector as a whole:

Fact 1: The growth of medical care spending is a result of technological advance and the diffusion of existing technologies to new patients.

Fact 2: Technology that has diffused widely is overused.

Fact 3: The burden of financing medical care is not shared in a sufficiently widespread fashion.

In the next sections, I examine the evidence for these facts, and consider policy implications.

IV. Fact 1: The Diffusion of Medical Technology

The first issue in the analysis of medical care markets concerns the increase in spending on medical care over time. Continual increases in health costs have led to a series of public policy measures designed to limit cost growth. The first wave of action was in the 1970s. The perception at the time was that rising costs were due to haphazard investments in technology on the part of hospitals and the tendency of providers, once technology existed, to use it fully ("Roemer's Law"). Thus, the solution was more appropriate system-wide planning of new facilities and services. By Federal law, states implemented Certificate of Need (CON) programs in the 1970s, requiring hospitals to get approval for major capital

purchases. Later analysis of CON programs found them to be essentially ineffective (Altman and Ostby, 1991). As I explain below, this is not surprising, since the program did nothing to change the underlying incentives encouraging the diffusion of medical technology.

In the early 1980s, it was apparent that a new strategy was needed. The prevailing view became that the growth of medical costs was a result of the fee-for-service payment structure. Providers performed too much care and charged too much for that care because they were paid retrospectively on a per-service basis. Thus, the way to limit costs was to bundle services into one price, and limit the reimbursement for that bundle. The first manifestation of this was the Prospective Payment System for hospitals, implemented in Medicare in 1984 and in many Medicaid programs shortly thereafter. PPS set up roughly 470 Diagnosis Related Groups (DRGs) into which a patient was classified. Payment to the hospital is the product of the DRG weight and an “update factor”. Since the implementation of PPS, the update factor has fallen in real terms, as the need to limit Medicare spending increased. Continuing in this vein, the Resource Based Relative Value Scale (RBRVS) for physicians was implemented in 1992, which attempts to establish a similar pricing structure for physician services.

It is clear that PPS has not succeed in limiting the growth of health costs. Figure 1 shows the growth of Medicare spending for hospitals before PPS, and in the years afterwards (see Cutler and McClellan, 1996a,b for more details). For several years, PPS managed to lower the growth rate of hospital spending substantially. In recent years, however, cost growth has again increased. Official projections are for continuing rapid increases in Medicare expenditures.

As a result, there is once again a search for public policy solutions to the rising cost of medical care. Before turning to these proposals, it makes sense to ask why health costs continue to increase. There are two ways to approach this question: at the level of medical spending as a whole, and by considering particular types of care.

IV.A. Aggregate Accounting for Health Costs

A first way to approach the issue of rising health costs is at the aggregate level. This is the approach taken in Aaron (1991) and Newhouse (1992). As the first row of Table 3 shows, between 1940 and 1990, real per capita medical spending increased by 790 percent, or nearly 4.5 percent annually. There are seven potential explanations for this dramatic increase in spending.

A first explanation is demographics. The United States is older now than it was in 1940. Since older people require more medical care than younger people, some of cost growth is due to the natural aging of the population. While aging has had some effect on health costs, this effect is nowhere near as large as the increase in health costs noted in Table 3. As a quick calculation, the 1977 National Medical Expenditure Survey shows that children (aged 0-18) spend 37 percent of what non-elderly adults (aged 19-64) do, and the elderly (aged 65+) spend 165 percent of non-elderly adults (Fisher, 1980). Between 1940 and 1990, the share of the population over age 65 increased from 7 to 12 percent.⁶ Using these data, population aging would be expected to explain an increase in medical spending of 14 percent, or 2 percent of the total increase from 1940 to 1990. Clearly, demographics does not explain much of the increase in medical costs over time.⁷

A second factor in the rise in health costs is income. Per capita income has increased dramatically since 1940. Since richer people demand more medical care than poorer people, it is natural that medical spending would increase along with income. Again, this explanation is economically sound but quantitatively unimportant. Estimates of the income elasticity of demand using microeconomic data (that is, holding the level of technology across people constant) typically find that a 10 percent increase in income leads to a 2 percent increase in medical spending, or an elasticity of .2 (Manning et al., 1987).⁸ Between 1940 and 1990, real per capita income increased by 185 percent. Thus, income alone would predict an increase in spending of 37 percent, or 5 percent of the observed increase.⁹

A third factor is the spread of insurance. Americans are better insured for medical care now than

they were in 1940. People demand more medical care when they are better insured; one of the purposes of insurance, after all, is to allow people to use care when they are sick. As insurance coverage has spread, we would naturally expect medical spending to rise. To evaluate the quantitative importance of this explanation, note that from 1940 to 1990, the average coinsurance rate for medical spending fell from 81 percent to 27 percent (United States Public Health Service, 1990). Based on the Rand Health Insurance Experiment (Manning et al., 1987), a change in insurance of this magnitude *holding the level of technology constant* would be expected to increase spending by about 100 percent, or 13 percent of the observed increase.¹⁰ Thus, this explanation too is theoretically correct but relatively unimportant quantitatively.

A fourth explanation is the “cost disease” of the services sector (Baumol, 1988). Most services are labor intensive. Since productivity growth is typically associated with capital investment, services on average have less rapid productivity growth than do goods. This slower productivity growth translates into relative price increases over time for the service sector. In equilibrium, the price of medical care should increase at the difference in productivity growth rates between medical care and the rest of the economy.

Economic growth in the economy as a whole averages about 2 percent annually. What is uncertain is the rate of productivity growth in medical care. Since it is hard to measure the price of medical services, it is virtually impossible to know about the productivity of inputs into medical care. A worst case assumption is that there is no productivity growth in medical care.¹¹ In that case, the relative price of medical services would be expected to grow by about 2 percent annually. With an elasticity of demand for medical care of about -0.2 (Manning et al., 1987), roughly 80 percent of the increase in prices would be reflected in increased spending. Over 50 years, this would be a 147 percent increase in medical spending, or 19 percent of the observed amount. While this is high, it is important to remember that this is an upper bound.

A fifth factor explaining cost growth is administrative expense. Administrative costs are a central

factor in medical care and other markets. Some administrative expense is necessary and helpful. Money spent monitoring what care doctors provide, for example, may cut back on the incentives for overprescription resulting from generous insurance. Other administrative expense -- for example, costs from non-standard claims forms or from insurers seeking to screen out the best risks -- are an unnecessary social cost. After all, someone must pay for the cost of those who are very sick, and money spent avoiding these people is a social loss. To the extent that these types of administrative costs have increased over time, unnecessary administration has contributed to the rise in medical spending.

The largest estimates are that avoidable administrative expense in 1983 was about 8 percent of medical spending (Himmelstein and Woolhandler, 1986). If we assume that there was no avoidable administrative expense in 1940, then all of this spending on administration was a source of cost growth. If this were true, administrative costs would account for a 101 percent increase in spending, or 13 percent of the total rise in medical spending.¹²

A sixth explanation for increasing costs is inflation in factor prices, or what is oftentimes termed “economic rents”. The fact that medical treatments are often needed on an emergency basis and patients do not have time to search for the most efficient care means that doctors may induce additional care, or may charge more than competitive levels for their services. If the ability to do this has increased over time, it might explain the growth in medical spending.

This “supplier-induced-demand” hypothesis has generated an enormous amount of controversy. On the issue of induced quantities of care, most economists believe that physicians induce more care than is optimal (Fuchs, 1996), although there is very little agreement on how large this is empirically or how it has changed over time (Cromwell and Mitchell, 1986; Phelps, 1992). There are also substantial differences in the price of medical services in different countries, which would be consistent with some economic rents. Fuchs and Hahn (1990), for example, show that doctors’ fees in the United States are up to three times higher than fees in Canada.¹³ Since net income of physicians is about 10 percent of total

medical spending, these additional fees can explain about 3 percent of medical spending.

It is difficult to think of provider rents as an explanation for the rapid growth of costs, however. In the early post-war period, factor rents probably increased as the medical profession evolved into a major industry and the range of what doctors could do expanded. Indeed, doctors moved from an “average” profession in terms of income and status to one of the “elite” professions over this period. Recent changes in medical care markets have limited the ability of providers to extract rents, however. In the 1970s and 1980s, there was a wave of public regulation of prices and technology, including Certificate of Need Regulation (CON), All Payer Rate Regulation (APRS), Prospective Payment for Hospitals (PPS), and Relative Value Scales for Physicians (RBRVS). While these programs were not uniformly successful (as discussed above), to the extent that they had any effect on medical spending it is likely that they reduced factor rents. Finally, the late 1980s and early 1990s have seen the advent of managed care. By negotiating for a group of patients, insurers can often cut fees below the levels providers would otherwise have set. This has surely reduced the amount of provider rents. I suspect that factor rents on net have been constant or declining in the 1940-90 period. In the absence of better data, however, this is indicated in Table 3 as having no contribution to the growth of costs.

The net effect of these six factors is to explain, at most, half the growth of health costs in the past half century. There is still a substantial residual, though, of at least 50 percent of medical spending. The residual is almost certainly due to the introduction of new technologies -- new and better treatments; and the diffusion of existing treatments to new patients. This type of conclusion is the one that essentially all health economists have reached (Fuchs, 1996).

Indeed, the most striking observation about medical practice is how much it constantly changes.¹⁴ Weisbrod (1991), for example, notes that about 10 of the 200 largest selling drugs each year are new; and only 25 percent of the 200 top-selling drugs in 1972 were top-selling drugs in 1987. In disease after disease, treatments now are substantially different than they were just a decade ago. The aggregate

accounting above suggests that this change in disease treatment is the source of most of the cost growth in medical care. In the next subsection, I give a concrete example of the importance of technological change to cost growth.

IV.B. An Example - Acute Myocardial Infarction

An example of the impact of technology on costs is instructive.¹⁵ Consider the case of heart attack treatments (Acute Myocardial Infarction, or AMI) for the elderly. There are roughly 250,000 new heart attack cases in the Medicare population annually.¹⁶ Medicare is a major payer for heart attacks. Indeed, if we add up hospital costs only in the year following a new AMI, Medicare spent \$2.6 billion on heart attacks in 1984 (adjusted to 1991 dollars), and \$3.4 billion in 1991,¹⁷ for an annual growth rate in real terms of 3.9 percent. This is shown in the first row of Table 4.

What accounts for this nearly 4 percent annual growth in spending on heart attacks? One potential explanation is an increase in the number of patients with heart attacks. In fact, however, as the second row of Table 4 shows, the number of new heart attacks has been essentially constant.¹⁸ In contrast, spending per heart attack, shown in the third row of Table 4, increased by 4.0 percent annually between 1984 and 1991.

To understand what is responsible for cost growth, it helps to know more about the treatment of a heart attack. The least invasive treatment for an AMI patient is medical management. This typically involves drug therapy, monitoring, and intensive care interventions for heart failure or irregular heart rhythms, followed by counseling and treatment for reducing risk factors such as high cholesterol levels and smoking. There are important choices here -- such as whether to use a drug to dissolve the clot, and which drug to use -- but this branch does not involve major surgical procedures.

An alternative to medical management of an AMI is to use one or more invasive cardiac procedures. Invasive treatment begins with a *cardiac catheterization*, a diagnostic procedure that detects

areas of no or limited blood flow. If the catheterization procedure detects important blockages in the arteries supplying the heart, more intensive *revascularization* procedures may be used to treat the blockages. The first, older technology is coronary artery bypass surgery (CABG). CABG is a highly intensive, open-heart surgical procedure that involves grafting arteries or leg veins to bypass occluded or near-occluded regions of the heart's blood flow. A more recent innovation in coronary revascularization, which is less intensive than CABG, is percutaneous transluminal coronary angioplasty (PTCA). In this procedure, a balloon-tipped catheter is inserted into the blocked artery and inflated, with the goal of restoring blood flow through the artery without having to undertake open-heart surgery.

The importance of these major procedures in the treatment of AMIs is evidenced in the lower panels of Table 4. In 1984, 11 percent of patients received a catheterization, with 5 percent of patients going on to receive bypass surgery and 1 percent receiving angioplasty. By 1991, 41 percent of patients received a catheterization, with 13 percent also receiving bypass surgery, and 12 percent also receiving angioplasty.¹⁹

Naturally, Medicare pays much more for patients receiving intensive surgery than for patients not receiving intensive surgery. In 1991 bypass surgery was reimbursed at 3 times the rate of medical management, and angioplasty was reimbursed 60 percent more than medical management.

How much of the rise in costs is because of this explosion in the use of high-tech procedures and how much is due to price changes? Arithmetically, the growth of per patient spending can be decomposed into the growth of prices, the growth of quantities, and a covariance term:

$$\Delta Spend = \sum_{i=1}^T \left[(P_{i,1} - P_{i,0}) \cdot q_{i,0} + (q_{i,1} - q_{i,0}) \cdot P_{i,0} + (P_{i,1} - P_{i,0}) \cdot (q_{i,1} - q_{i,0}) \right],$$

where $P_{i,t}$ is the price of treatment option i in year t (either 1984 or 1991), $q_{i,t}$ is the share of patients receiving that option in year t , and the sum is taken over the number of treatment options (4 in this case).

As the last rows of Table 4 show, most of the growth of costs was because of increases in the quantity of care. Indeed, quantity increases account for over 100 percent of cost growth. Price increases contribute a small amount to cost increases, and there was a reduction in costs as procedures being used more frequently on average fell in price. The inescapable conclusion is that *essentially all of the growth of costs for treatment of heart attacks is the result of the diffusion of new technologies. Price changes have played virtually no role in the growth of costs.*

The conclusion that spending growth is a result of increases in the amount of medical care provided is not necessarily bad. Spending more is worthwhile if we receive goods that are valued more than their cost. The important question is: what is the value of increased medical care? I turn to this next.

V. Fact 2: The Marginal Value of Treatment is Low

A key issue in analyzing the value of medical care is the heterogeneity of likely treatment effects. Some patients will benefit from intensive treatments a great deal. AMI Patients with non-Q wave infarcts and with pain after the infarct, for example, will benefit a great deal from knowing the extent of the arterial blockage, which a cardiac catheterization can determine. Other patients will benefit substantially less from intensive technologies, however, for example patients with an AMI but no pain after the infarct. There is likely to be a substantial difference between the *average* value of technology and the *marginal* value of technology. The average value of a technology will be high if some patients benefit from the technology a great deal. The marginal value of technology will be low if all care that has any value is applied.

In asking whether technological change is on net valuable, we care about the average value of care. In asking whether care is overprovided at any point in time, we care about the marginal value of medical care. I want to start off by presenting evidence on the marginal value of care, and then later return to the question of the average value of care.

A substantial amount of research has examined the marginal value of medical care. This research almost uniformly suggests that *among those with insurance, the marginal value of medical care is low*. The Rand Health Insurance Experiment (Manning et al., 1987; Newhouse et al., 1993) is perhaps the best known study. Individuals in the HIE who were better insured used more medical care than those who had less generous insurance, but their health outcomes were no better. The demand for medical care is thus price elastic, but health is relatively unaffected by marginal amounts of care.

A second set of research has examined the implications of variations in the use of medical care in different areas of the country, in different types of institutional settings, or over time for health outcomes. People in Boston, for example, consume nearly twice as much medical care as people in New Haven, Connecticut, and yet, health outcomes in Boston are no better than health outcomes in New Haven (Wennberg et al. 1987). This type of area variation is quite common and has led to the widespread view that some areas just provide too much medical care (Phelps, 1992).

Garber, Fuchs, and Silverman (1984) looked at costs and outcomes for two groups of patients treated at the same hospital -- one group seen by community-based physicians and the other group seen by academic-based physicians. They found that patients seen by the academic physicians received over three times more care than patients seen by community-based physicians. These patients were also more likely to survive the hospital stay than patients treated by the community-based physicians. But, by 9 months post-discharge, both groups of patients had the same mortality rate. The benefits associated with dramatically more intensive care were thus limited to a few months of additional life.

Cutler and Staiger (1995) examine mortality rates after acute hospitalizations between 1974 and 1987. They find that mortality rates in the first 45-days after admission declined by 5 percentage points, but mortality rates at one year post admission declined by only 40 percent as much. The implication is that about half of medical progress was directed at keeping people alive for several months, but not as long as a year.

A third set of studies has examined the production function for health directly. McClellan and Newhouse (1995) use the distance between where a patient lives and the nearest hospital with high-technology care to estimate the value of intensive medical care for outcomes. The example they consider is cardiac catheterization after a heart attack. Patients who live farther from a hospital with catheterization are less likely to receive the procedure than those who live closer to a hospital with the technology, but they are only slightly more likely to survive in the next year. The implication is that catheterization does not substantially improve outcomes for those patients “rationed” by their distance to the technology.

A series of studies at the Rand Corporation also looked directly at the issue of the value of care (Chassin et al., 1987; Winslow et al., 1988a, 1988b; Greenspan et al., 1988). Those studies surveyed physicians about what constituted “appropriate care”, “inappropriate care”, and “care of equivocal value” and then determined how much of care that was provided fell into each of these categories. For five common conditions in the elderly, the studies found that inappropriate care or care of equivocal value accounted for 20 to 30 percent of medical spending. These studies are controversial; recent evidence has found much less care that is inappropriate than these studies would indicate (Altman, 1994). These studies also underestimated the amount of inappropriate care, however, because they considered only the health benefits relative to the risks to the patient, ignoring the costs to society of providing the care.

Finally, other research has focused on the effects of changes in payment policy on health outcomes. Kahn et al. (1991) looked at the health consequences of implementing Prospective Payment. Prospective Payment led to substantial reductions in care provided: lengths of stay in the hospital fell, for example, by nearly 20 percent between 1983 and 1993. Kahn et al. found no significant effect of Prospective Payment on mortality in the first one-half to one year.

In a related vein, Cutler (1995) and Staiger and Gaumer (1990) looked at the mortality experience in hospitals that received more money under Prospective Payment relative to hospitals that received less money. Both analyses found that in hospitals with payment reductions, more people died shortly after a

hospital admission, but the share of people who survived a year did not change. The implication is that the marginal amount of medical care prolonged life by several months, but not by as long as a year.

The common conclusion from all of these studies is that the marginal value of medical care is low or in many cases zero -- or that care is being provided until it brings very little in the way of health benefits. I thus take the overprovision of technologically intensive care as a basic fact about the provision of medical services.

It is important to bear in mind that these findings refer to the marginal value of care among patients who are insured. They do not imply that additional care received by the uninsured would have little health benefit. Research has shown, for example, that the uninsured are substantially less likely to receive intensive treatments than the insured, and some research suggests that this results in materially better health outcomes (Weissman and Epstein, 1994; Hadley, Steinberg, and Feder, 1991; Currie and Gruber, 1994). Designing insurance coverage for the uninsured, however, is not a subject that I shall explore at length.

VI. Implications of the Overuse of Care

The observations that technology explains most of the growth of health costs and that technologies are overutilized once they diffuse are almost certainly related. Indeed, three types of explanations might be put forth to explain such a link.

The first explanation for these facts is a fatalistic one: New technologies develop because of advances in fundamental biological research. Once the technology exists, medical ethics make it hard to deny care to those in need. This includes those who would benefit a lot, and those who would benefit only a little. Thus, the "culprit" behind rising costs and overuse of care is the inevitable march of technology. Indeed, with the genetic revolution and improved understanding of molecular biology, the future promises

even more new knowledge and thus even more rapid cost increases (Schwartz, 1994).

If the fatalistic view is correct, the only way to limit the growth of health costs is to limit research spending on medical care, limit the development of new technology, or limit the aggregate resources available for medical care. Thus, single payer health systems draw support from those who believe that technological change is largely exogenous. Of course, in this scenario, there is no guarantee that limiting the growth rate of medical spending is a good policy. Indeed, if the new care provides large medical benefits on average, limitations on its use would be disadvantageous, and it would be far wiser to allow the new technology and develop appropriate revenue sources to pay for it. More generally, determinations would need to be made on a technology-by-technology basis about the appropriateness of new innovations.

Fundamentally, this explanation is unsatisfying. Even if knowledge is uncontrollable, the decision to develop new technologies or apply them in particular cases is an economic decision. Thus, other explanation for these findings have to be allowed.

The second explanation for these facts is a demand-side story (Feldstein, 1971; Pauly, 1986; and Weisbrod, 1991): Patients are sufficiently well insured that they pay little for additional medical care. As a result, they consume medical services until the marginal value of services is essentially zero (the effective price they pay for the care).²⁰ Because patients demand technology so extensively, there is a bias toward excessive technological development. As a result, health costs increase at a rate greater than optimal. Thus, dynamic moral hazard causes both overuse of technology and overly rapid growth of medical costs.²¹

Of course, some amount of health insurance is optimal, and thus some moral hazard is unavoidable. What has drawn the most attention of economists is the subsidy to health insurance in the tax code. Income that is paid in the form of wages and salaries is taxed through Federal income taxation, Social Security taxation, and state income taxation. Income that is paid in the form of health insurance premiums, in contrast, is untaxed. Thus, the price of consuming medical care through insurance is lower than the price of consuming medical care through out-of-pocket payments. Gruber and Poterba (1994)

estimate that for the average person with health insurance, the tax code provides a subsidy of about 30 percent for the purchase of health insurance. This subsidy leads people to be over-insured, resulting in moral hazard, and thus cost growth, beyond what is optimal.

Three empirical assumptions are buried in this hypothesis: first, that the quantity of medical care consumed depends on the generosity of insurance; second, that the demand for health insurance is responsive to its price; and third, that technological innovation is driven largely by expected use once it is developed. That medical care responds to the price of care was demonstrated conclusively by the Rand Health Insurance Experiment.²² The price elasticity of demand for medical care is relatively small (about $-.2$) but is not zero. The elasticity of demand for health insurance has also been a subject of much research.²³ Most studies find a statistically significant response of health insurance coverage to price, with a demand elasticity on the order of $-.2$ to -1 . I return to the evidence on the third question below.

The third explanation for these facts is a supply-side story: Providers wishing to maximize their income induce medical consumption until the marginal amount of care has essentially no value. Because care is provided in excessive quantities, there are incentives for the excessive development and diffusion of new technologies, leading to cost growth above appropriate levels. This theory is similar to the demand side theory, with the primary difference being that this hypothesis focuses on incentives for the excessive supply of medical care rather than incentives for the excessive demand for medical care.

There are several potential reasons why suppliers might induce more medical care than is optimal: to maximize their income (the “supplier-induced-demand” hypothesis noted above); to attract more patients in a competitive environment (often termed the “medical arms race”; see Robinson and Luft, 1985); or to deter malpractice litigation (often termed “defensive medicine”; see Reynolds, Rizzo, and Gonzales, 1986). There has been a great deal of debate over the importance of each of these theories. As noted above, there is likely some truth to the supplier-induced-demand explanation, but the empirical importance of this view is relatively unknown. Most research suggests that malpractice is not particularly

important in explaining the overuse of care, although recent research suggests that malpractice concerns can account for 5 percent or so of current medical spending (Kessler and McClellan, 1996). Evidence on the medical arms race has been difficult to compile, and no consensus estimates are in the literature.

Both the demand- and supply-side explanations suggest that market structures cause a bias in both the overall rate and composition of technological change. The rate of technological change is too high because too many procedures and devices are judged beneficial when some should not be. The composition of technologies is skewed because patients with generous insurance or providers will particularly value technologies that increase the range of what can be treated -- even at a dramatic increase in cost -- and will undervalue technologies that save money but result in slightly worse outcomes.

The composition effect is particularly important. In general, there is little economic presumption that private markets will lead to the right amount of new innovation. The inability to fully appropriate the returns from innovation and the importance of fixed costs in research typically suggest that there will be underinvestment in research and development. Allowing for greater reimbursement of new technologies -- as generous health insurance has done -- may be one way to alleviate this. The fact that the type of innovations is likely to be distorted, however, means that subsidizing innovation in this fashion may be inferior to subsidizing innovation through other means with less distortion in the type of innovation, for example through increased direct funding of research efforts. The tradeoff between these two sources of encouraging innovation has not been well explored.

VI.A. Solutions to Overconsumption of Medical Care

Both the demand- and supply-side explanations of the overconsumption of medical care are really stories about imperfect insurance markets. The underlying problem in both of these theories is that individuals cannot contract *ex ante* to limit the care they will receive *ex post*. If patients and providers could agree on prices and agree to limit their care before they were sick, they would only contract for the

socially desirable amount of care.²⁴ The fundamental problem is that the decision about appropriate medical care is separate from the decision about insurance coverage.

This separation of insurance and provision of care is in large part due to the historical organization of the medical care sector -- providers decided on appropriate treatments, and insurers paid the bills. Neither side interfered much with the operation of the other side. Increasingly, this situation is changing, with the insurance and delivery roles becoming more integrated. A broad range of insurance falls under the heading of "managed care". Health Maintenance Organizations [HMOs] are the traditional form of managed care. HMOs have a panel of approved providers; care received from those providers comes at little or no cost, while care received outside those providers is typically not reimbursed. Preferred Provider Organizations [PPOs] are a looser form of managed care. PPOs typically have a "network" of physicians. Patients pay little when they use a network provider, and pay more (but not the full amount) when they go out of the network. The popularity of PPOs has led to the creation of Point of Service plans [POSs], which are HMOs that have some reimbursement for patients who go outside of the panel of physicians.

Managed care limits spending by controlling what services are performed, who performs the services, and how much the providers are paid. Moral hazard is typically limited by restricting the providers that individuals can go to receive care from. Providers are generally not paid on a fee-for-service basis, and thus do not have financial incentives to overprescribe care. Indeed, providers often bear a financial *cost* for providing additional care. And to get into the panels, doctors often agree to receive lower fees.

Indeed, the dominant fact about health insurance in the past decade in the United States is the increasing importance of managed care. As Figure 2 shows, managed care enrollment has skyrocketed in just the past decade. In 1987, nearly three-quarters of the privately insured population was in conventional fee-for-service insurance, with few restrictions on the use of care. By 1993, less than half the privately insured population was in conventional insurance. About thirty percent of people were in an HMO or POS

plans, and the remaining quarter were in PPOs.

These policies seem to many the most likely way to limit excessive utilization of medical care. To the extent that the overprovision of care leads to more rapid cost growth, encouraging use of alternative care arrangements will also limit the growth of health costs. Thus, the policy prescription that (loosely) draws the most support from economists is to *increase the choice that people have over different insurance policies, particularly policies that will limit the amount of care provided, and to increase the financial returns from choosing less expensive health insurance*. There isn't one consensus "choice-based" approach to health care reform. A sampling of policies that have featured in many proposals is:

- o *Encourage or require small firms to pool into larger groups and offer a choice of policies* (Enthoven, 1993). Because of high administrative costs and fears by insurers of adverse selection, most small firms only offer one insurance policy. As a result, many proposals have called for increased pooling of small firms, into large enough groups where multiple choices can be offered.²⁵ Encouraging these purchasing groups has enjoyed widespread support; they were termed "Health Insurance Networks" in the Bush Plan, "Health Alliances" in the Clinton Plan, and "Health Insurance Purchasing Cooperatives" in the Cooper Plan.
- o *Convert Medicare into a choice-based system* (Cutler, 1995; Aaron and Reischauer, 1995). Medicare recipients are among the last major group of the population without substantial enrollment in managed care. Currently, only 7 percent of Medicare enrollees are in managed care, compared to over half of privately insured people. Creating more efficient choice among this large segment of the population would increase substantially the cost sensitivity of the average insured person.

- o *Limit the tax exclusion of employer-provided health insurance* (Feldstein, 1995; Pauly, 1986; Enthoven, 1993). Tax policies that subsidize health insurance reduce the after-tax savings to individuals who choose less expensive health insurance plans, because they reduce the other consumption that can be bought with less expensive insurance choices. Thus, many proposals eliminate the marginal tax subsidy to insurance. This does *not* imply that there should be no subsidy for health insurance, however. In the absence of universal health insurance coverage, it is desirable to provide an *inframarginal* subsidy to health insurance purchases as a means of countering the incentives to be uninsured. As a result, many proposals limit the exclusion of health insurance premiums from taxation to a fixed amount (for example, the cost of a basic health insurance policy).

With several years of managed care experience, it is possible to develop a tentative view about how effective a choice-based system is likely to be in limiting the overuse of care and the rate of growth of costs. The evidence is mixed. Managed care plans do appear to reduce spending on medical care. Miller and Luft (1994) suggest that the reduction in spending is about 10 percent. In markets with more managed care penetration, costs grow slower for at least some period of time (Zwanziger and Melnick, 1988), managed care premiums are lower (Wholey, Feldman, and Christenson, 1995), and fee-for-service fees are lower (Baker, 1994). Further, these reductions in spending do not appear to come at the cost of increased sickness (Miller and Luft, 1994). This latter finding is somewhat tentative, however, since it is not clear that such effects could be measured in the short period for which we have data.²⁶

What is particularly uncertain, however, is whether these savings from managed care are one-time reductions in spending (for example, from reducing provider rents) or whether they represent longer-term reductions in the rate of cost growth from less rapid diffusion of technology. Historically, while managed care premiums have been lower than fee-for-service premiums, they have increased at the same rate over

time (Newhouse, 1985). And there has been no recent reduction in the growth of overall medical spending, even as managed care enrollment has skyrocketed (Huskamp and Newhouse, 1994).²⁷ Thus, some argue that managed care will not have long-run effects on cost growth (Schwartz and Mendelson, 1994).

If the diffusion of technology responds to the *average* level of insurance coverage, however, the fact that cost growth has not slowed with the increase in managed care enrollment would be expected. After all, managed care has not historically been a large enough share of the market to have much effect on the nature of technological change in aggregate, particularly given the lags between medical research and technological diffusion. It is only recently that managed care has assumed a more prominent role in health care delivery, and thus the best evidence on the long-run effects of managed care will not be known until more recent data are examined.

A fair synopsis of the literature on the cost and value of medical care is that the answer to this fundamental set of questions is uncertain. There is a great deal of evidence that care is overprescribed relative to efficient levels. Alternative insurance arrangements appear to limit the overuse of care and to reduce the fees paid for care, and these savings are valuable. But the important question is whether the growth of costs is inefficiently high. Economic theory suggests that it is, but there is not a great deal of evidence on the empirical determinants of this rate of cost growth or how to limit it. In the absence of such evidence, most economists support more choice in principle, but remain skeptical about the size of any long-run effects.

VII. Fact 3: Sharing the Burden of Medical care Financing

If individuals are to have choice over insurance, the question becomes: at what price will this choice be offered? And will this choice interfere with other decisions individuals need to make? In this

section and the next, I examine these two issues.

As Rothschild and Stiglitz (1976) first pointed out, insurance markets are *not* like all other markets. Insurance works well when risks are large and neither individuals nor insurers know about the probability that an individual will experience any particular medical condition. People will be willing to buy insurance because the risk reduction is large; insurers will be willing to sell insurance because the pool will consist of a broad cross-section of the community.

What makes health insurance so problematic is that the likelihood of needing care is not unknown. Individuals certainly know something about their projected medical needs. People with a history of heart disease, for example, know they are at above average risk for a heart attack. When people know more about their medical risks than do insurers, the result is *adverse selection*. The sick will find generous health insurance more attractive than the healthy, and will thus drive up premiums. The healthy will choose segregated policies, with less complete insurance but lower premiums.

Adverse selection is a key feature of many group health insurance policies (Newhouse, 1994). Almost all health insurance systems where individuals are allowed choice over insurance have experienced adverse selection. Medicare enrollees who choose managed care, for example, are healthier than employees who do not (Hill and Brown, 1990).²⁸ The Federal Employees Health Benefits Program, as a second example, has adverse selection between more and less generous policies. The spread in premiums between more and less generous policies is 68 percent greater than benefits alone would dictate (Price and Mays, 1985). And almost every large firm that has encouraged employee choice has found that the cost of the most generous policies increases sufficiently rapidly that those plans are no longer viable (often termed a “death spiral”).

Increasingly, however, adverse selection is being replaced by a second difficulty -- the fact that insurers know as much or more about a person’s expected spending as the person does. Knowledge about expected spending is readily available. If the group was insured in the previous year, the insurance

company has direct estimates of medical resources used. If the group is applying for coverage, the insurer can administer detailed questionnaires on family background and likely health risks, or can insist on medical screenings.

In competitive markets, insurers will then use this information in pricing: firms with good risks receive low premiums; firms with poor risks receive higher premiums. Pricing on the basis of expected cost is termed *experience rating*. The result is segmentation of insurance by risk. Table 5 presents evidence on the degree of premium variability by firm size.²⁹ For small firms, premiums are extremely variable. Some firms pay up to three times more than other firms for roughly the same set of benefits. This difference declines as firm size increases, reflecting the lower variability of expected costs for larger groups. Among firms with 500 to 1000 employees, for example, high-end premiums are less than twice low-end premiums.³⁰

At a point in time, experience rating allows more people to buy full insurance. The low risk population can get insurance without having to pool with the more expensive high risk population, or can get more complete coverage than they otherwise could have. Over time, however, experience rated health insurance reflects a substantial market failure -- the inability of people to insure against future health status. In an experience rated market, people have insurance in a given year, but do not have insurance against the risk that they will learn they are high cost in the future, what might be termed "intertemporal insurance" (Cutler, 1992; Cochrane, 1995; Pauly, Kunreuther, and Hirth, 1992).

The great worry about the future of health insurance is that insurers will get better at predicting who will be high cost and who will be low cost. Think about a future where DNA tests at birth indicate the probability that a person will die at particular ages or contract particular costly diseases. Individuals can be perfectly sorted on the basis of their expected costs, with those born less fortunate charged more for insurance throughout their lifetime. As knowledge about the biomedical link between genetics and health increases, this possibility becomes ever more likely. And the ability to achieve meaningful risk pooling

will fall as well.

Risk selection is an extremely widespread concern among the public. The slogan for the Clinton health reform plan (“Health Care That’s Always There”) was in part a reference to problems in risk selection.

The potential for risk segmentation is the major drawback to increased choice in insurance markets. If price differences across plans reflect differences in the risk characteristics of enrollees in the plans rather than differences in efficiency or the social costs of increased choice, encouraging choice over health insurance policies will not result in an efficient outcome.

There are three potential solutions to problems of risk selection. The first is to contract for more than annual insurance. The farther off is risk in the future, the less individuals are likely to know about their expected costs. Indeed, one could think about markets where individuals buy insurance against the possibility that they will learn this year that their future costs are likely to be high. Such policies have been proposed by Cochrane (1995) and Pauly, Kunreuther and Hirth (1992) as solutions to risk selection problems. In practice, however, such insurance is rarely observed.³¹

The second solution is to mandatorily group individuals into large pools on a basis other than risk. Diamond (1992), for example, proposed mandatory regional pools for health insurance. One insurance company would insure everyone, but might offer multiple policies to the group. This would solve risk segmentation problems and still allow choice, although it might also lead to regional monopoly insurance companies.

The third solution is to allow individuals choice over health insurance policies but adjust payments to insurers on the basis of expected health costs. Even if individuals pay the average cost for insurance, insurers do not need to receive the average price for each person they enroll. By “taxing” health plans that enroll healthier risks and “rebating” the money to plans that enroll sicker risks, the incentives to select health risks are minimized. Such a process is termed *risk adjustment*.

The prospects for effective risk adjustment are only mixed (Newhouse, 1994). Easy to observe characteristics such as age and sex can only explain about 10 to 20 percent of the variability in health costs that can be explained with detailed clinical data. Indeed, the large share of medical expenses devoted to very highest cost cases (the top 10 percent of users account for 70 percent of medical spending; Berk and Monheit, 1992) suggests that the incentives to risk select, even with some risk adjustment, will be substantial. Thus, purely prospective risk adjustment is likely to leave substantial incentives for adverse selection and risk selection (Newhouse, 1995). The search for ways to deal with these issues is just beginning.³²

For some, the inability to perfectly risk adjust inclines them against any form of choice-based insurance, and often towards a single-payer system. For others, the lack of perfect risk adjustment is a nuisance that gives some pause, but not much delay, to choice-based reform. One's weighing of these two choices is directly related to the weight one places on cost efficiency relative to distributional equity. As the efficiency costs of the current medical care system increase, however, more and more economists are willing to experiment with cost reforms and manage the risk problems to the best extent possible.

VIII. Health Insurance and the Labor Market

Beyond the implications of health insurance choice for health insurance markets is the effect of such choices on the labor market. Most private insurance is received through employment, with the employer (nominally) paying roughly 70 percent of the premium and the employee paying the remainder. Basic economic models suggest that this is beneficial: employment is a natural form of group coverage (avoiding the segmentation issues in individual markets), and such coverage is likely to be non-distortionary. The latter point is particular to economic reasoning. If employees value the insurance provided by employers at its cost, they should be willing to "buy" health insurance from their employer by

accepting lower wages when the employer provides health insurance (Summers 1989). The employee will receive less cash income but the same total compensation. Indeed, empirical research suggests that this is in fact the case (Gruber 1994; Gruber and Krueger 1990; Sheiner, 1994).

In practice, however, there are increasing strains in the employment relationship that appear due to the rising cost of health insurance. A first strain is the effect of health insurance on job mobility. While wages may adjust so that the *average* worker is indifferent between receiving health insurance on a job or not, workers with pre-existing conditions or high demand for continuous health coverage will not be indifferent between insurance and wages. As a result, these workers will be less likely to leave jobs with health insurance. An emerging body of empirical research documents the importance of “job lock” for labor market turnover (Madrian 1994; Buchmueller and Valletta 1994; Monheit and Cooper 1993; Gruber and Madrian, 1994; Penrod 1994).³³

A second strain results from the fact that not all workers are willing to accept wage reductions to pay for increased health insurance costs. Low wage workers, for example, find it particularly hard to continually pay for health cost increases when their real incomes are falling. The response of employers has been to increasingly exclude these workers from coverage by expanding their use of contingent workers, temporary workers, and part-time workers, to whom benefits need not be provided. Anecdotal stories about the importance of these effects abound. And workers who are kept in the insurance pool are working longer hours, as the increase in the fixed costs of health insurance relative to the marginal costs of wages induce firms to substitute additional hours of work for additional numbers of employees (Cutler and Madrian, 1996).

The effects of health insurance on the employment relationship are becoming increasingly apparent as health costs increase. When health insurance was a small part of total compensation, its effects on firms and workers was small. As costs have increased in importance and the wages of less-skilled workers have stagnated, health insurance has become a more significant determinant of employment

relations. Almost certainly, the labor market distortions associated with employment-based health insurance will increase in the future.

Thus, the only long-run solution to these employment distortions is to remove the link to employment. This is consistent with the goal, noted above, of giving employees more choice over health insurance, independent of the particular firm they work for. The salient question, however, is where people can go for coverage that is economically fair. As noted above, the answer to this question is not completely clear, making the discussion of employment-based health insurance that much more complicated.

IX. Conclusions

My conclusions about public policy for health care can be summarized in three points. First, the public sector has an important role to play in affecting individual lifestyle choices. People do not bear the full cost of their lifestyle choices, and tax policy can be used to correct this. Taxes on alcohol, cigarettes, and probably firearms and bullets appear too low in light on their external effects.

Second, the medical care marketplace is driven by overuse of medical resources, and the rapid development and diffusion of new technologies. The best hope for market-based cost containment is to provide individuals the ability and incentive to choose among alternative health plans with differing coverage and costs.

Third, choice-based systems must be used in conjunction with some method of risk adjustment. Choice-based systems have the potential for promoting cost reduction and can eliminate the inefficiencies associated with employer-provided insurance. They may also result in increased segmentation by risk, however, as adverse selection and risk selection are encouraged. Designing mechanisms to adjust for this risk selection is a substantial policy priority.

Public policy for health care is at a crossroads. The public did not support broad health care reform. And yet nobody thinks that problems in health care markets will get better without some public action. The problem for economists is to design the sensible middle between these shores.

References

- Aaron, Henry, *Serious and Unstable Condition: Financing America's Health Care*, Washington, D.C.: The Brookings Institution, 1991.
- Aaron, Henry, "Health Care Reform: The Clash of Goals, Facts, and Ideology", in Victor Fuchs, ed., *Individual and Social Responsibility*, Chicago: University of Chicago Press, 1995.
- Aaron, Henry, and Robert Reischauer, "Medicare: Where To From Here?", mimeo, 1995.
- Altman, Lawrence K., "Surgery Is Found to Fight Stroke", *New York Times*, October 1, 1994, page 1.
- Altman, Stuart, and Ellen Ostby, "Paying for Hospital Care: The Impact on Federal Policy", in Eli Ginzberg, ed., *Health Services Research*, Cambridge, MA: Harvard University Press, 1991.
- Baumol, William, "Containing Medical Costs: Why Price Controls Wont Work", *The Public Interest*, Fall 1988, 37-53.
- Berk, Marc L., and Alan C. Monheit, "The Concentration of Health Expenditures: An Update", *Health Affairs*, Winter 1992, 145-149.
- Blumberg, Linda J., and Len M. Nichols, *Health Insurance Market Reforms: What They Can and Cannot Do*, Washington, D.C.: The Urban Institute, 1995.
- Blumenthal, David, Penny Feldman, and Richard Zeckhauser, "Misuse of Technology: A Symptom, not the Disease", in McNeil and Cravalho, eds., *Critical Issues in Medical Technology*, Boston: Auburn House, 1982.
- Blumenthal, David, and Richard J. Zeckhauser, "The Artificial Heart as an Economic Issue", in Margery W. Shaw, ed., *After Barney Clark: Reflections on the Utah Artificial Heart Program*, Austin: University of Texas Press, 1984.
- Buchmueller, Thomas C. and Robert G. Valletta, "Employer-Provided Health Insurance and Worker Mobility: 'Job-Lock' or Not?" Unpublished paper. University of California, Irvine, February 1994.
- Chassin, Mark et al., "Does Inappropriate Use Explain Geographic Variations in the Use of Health Care Services?", *Journal of the American Medical Association*, 1987, 258: 2533-2537.
- Cochrane, John, "Time Consistent Health Insurance", *Journal of Political Economy*, June 1995, 445-473.
- Cooper, Philip F. and Alan C. Monheit, "Does Employment-Related Health Insurance Inhibit Job Mobility?" *Inquiry*, 1993, 30: 400-16.
- Currie, Janet, and Jonathan Gruber, "Saving Babies: The Efficacy and Cost of Recent Expansions of Medicaid Eligibility for Pregnant Women", NBER Working paper 4644, 1994.
- Cutler, David M. "A Guide to Health Care Reform." *Journal of Economic Perspectives*, Summer 1994, 13-27.

- Cutler, David M., "Why Doesn't The Market Fully Insure Long-Term Care?" NBER Working Paper No. 4301, 1992.
- Cutler, David M., "Market Failure in Small Group Health Insurance", NBER Working Paper No. 4879; 1994.
- Cutler, David M., "The Incidence of Adverse Medical Outcomes Under Prospective Payment", *Econometrica*, February 1995, 29-50.
- Cutler, David M., and Mark McClellan, "What Determines Technological Change?", forthcoming in D. Wise, ed., *The Economics of Aging*, 1996a.
- Cutler, David M., and Mark McClellan, "The Determinants of Technological Change in Heart Attack Treatments", mimeo, March 1996b.
- Cutler, David M., and Brigitte C. Madrian, "Labor Market Responses to Rising Health Insurance Costs", mimeo, February 1996.
- Employee Benefit Research Institute, "Sources of Health Insurance Coverage, 1993", January 1994.
- Enthoven, Alain, "Why Managed Care Has Failed to Contain Health Costs", *Health Affairs*, Fall 1993, 27-43.
- Feldstein, Martin, "Hospital Cost Inflation: A Study of Nonprofit Price Dynamics", *American Economic Review*, 1971.
- Feldstein, Martin, "Comment on Henry Aaron", in Victor Fuchs, ed., *Individual and Social Responsibility*, Chicago: University of Chicago Press, 1995.
- Fisher, Charles R., "Differences by Age Groups in Health Care Spending", *Health Care Financing Review*, Spring 1980, 65-89.
- Fuchs, Victor, *Who Shall Live?*, New York: Basic Books, 1974.
- Fuchs, Victor, and James Hahn, "How Does Canada Do It?" *New England Journal of Medicine*, September 27, 1990, 884-890.
- Fuchs, Victor, *Individual and Social Responsibility*, Chicago: University of Chicago Press, 1995.
- Fuchs, V. "Economics, Values, and Health Care Reform", forthcoming, *American Economics Review*, March 1996.
- Giljens, Annetine, and Nathan Rosenberg, "The Dynamics of Technological Change in Medicine", *Health Affairs*, Summer 1994, 29-45.
- Greenspan, Allan M., et al., "Incidence of Unwarranted Implantation of Permanent Cardiac Pacemakers in a Large Medical Population", *New England Journal of Medicine*, 1988, 318: 158-163.
- Grossman, Michael, *The Demand for Health: A Theoretical and Empirical Investigation*, New York: Columbia University Press, 1972.

- Grossman, Michael, Jody L. Sindelar, John Mullahy, and Richard Anderson, "Policy Watch: Alcohol and Cigarette Taxes", *Journal of Economic Perspectives*, Fall 1993, 211-222
- Gruber, Jonathan, "The Incidence of Mandated Maternity Benefits", *American Economic Review*, June 1994.
- Gruber, Jonathan, and James Poterba, "Tax Subsidies to Employer-Provided Health Insurance", NBER Working Paper No. 5147, June 1995.
- Gruber, Jonathan, and Alan Krueger, "The Incidence of Mandated Employer-Provided Insurance: lessons from Workers' Compensation Insurance", in David Bradford, ed., *Tax Policy and the Economy*, Volume 5, 1991, Cambridge, MA: MIT Press.
- Gruber, Jonathan, and Brigitte Madrian, "Limited Insurance Portability and Job Mobility: The Effects of Public Policy on Job Lock", *Industrial and Labor Relations Review*, October 1994, 86-102.
- Hadley, Jack, Earl P. Steinberg, and Judith Feder, "Comparison of Uninsured and Privately Insured Hospital Patients", *Journal of the American Medical Association*, 1991, 265, 374-379.
- Hay, Joel W., "The Harm They Do to Others: A primer on the External Costs of Drug Abuse", in Melvyn B. Krauss and Edward P. Lazear, eds., *Searching for Alternatives: Drug-Control Policy in the United States*, Stanford: Hoover Institution Press, 1991, 200-225.
- Hill, J. W., and R.S. Brown, *Biased Selection in the TEFRA HMO/CMP Program*, MPR Reference No. 7786-503, Princeton: Mathematica Policy Research, 1990.
- Himmelstein, David, and Steffie Woolhandler, "Cost Without Benefit: Administrative Waste in U.S. Health Care", *New England Journal of Medicine*, 1986, 441-445.
- Holtz-Eakin, Douglas, "Health Insurance Provision and Labor Market Efficiency in the United States and Germany." In Rebecca M. Blank, editor, *Social Protection Versus Economic Flexibility: Is There a Tradeoff?* Chicago: University of Chicago Press, 1994.
- Kahn, Katherine L., et al., "Comparing Outcomes of Care Before and After Implementation of the DRG-Based Prospective Payment System", *Journal of the American Medical Association*, 264, 1984-1988.
- Kessler, Daniel, and Mark McClellan, "Do Doctors Practice Defensive Medicine?", forthcoming, *Quarterly Journal of Economics*, May 1996.
- Madrian, Brigitte C., "Employment-Based Health Insurance and Job Mobility: Is There Evidence of Job-Lock?" *Quarterly Journal of Economics*, 1994, 109:27-54.
- Manning, Willard, et al., "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment", *American Economic Review*, 1987.
- Manning, Willard B., Emmett B. Keeler, Joseph P. Newhouse, Elizabeth M. Sloss, and Jeffrey Wasserman, *The Costs of Poor Health Habits*, Cambridge, MA: Harvard University Press, 1991.

- McClellan, Mark, and Joseph P. Newhouse, "The Marginal Benefits of Medical Technology", mimeo, Harvard University, 1995.
- Miller, R. and H. Luft, "Managed Care Plan Performance Since 1980", *Journal of the American Medical Association*, May 18, 1994, 1512-1519.
- Newhouse, Joseph P., "Are Fee-for-Service Costs Increasing Faster than HMO Costs?", *Medical Care*, August 1985, 960-966.
- Newhouse, Joseph P., "Medical Care Costs: How Much Welfare Loss?", *Journal of Economic Perspectives*, 1992.
- Newhouse, Joseph P., *Free For All?: Lessons From the Rand Health Insurance Experiment*, Cambridge, MA: Harvard University Press, 1993.
- Newhouse, Joseph P., "Patients at Risk: Health Reform and Risk Adjustment", *Health Affairs*, Spring (1) 1994, 132-146.
- Newhouse, Joseph P., "Selection versus Efficiency", *Journal of Economic Literature*, forthcoming.
- Haiden A. Huskamp and Joseph P. Newhouse, "Is Health Spending Slowing Down?", *Health Affairs*, Winter 1994, 32-38.
- Pauly, Mark, "Taxation, Health Insurance, and Market Failure in Medical Care", *Journal of Economic Literature*, 1986.
- Pauly, Mark, Howard Kunreuther, and Richard Hirth, "Guaranteed Renewability", mimeo, 1992.
- Penrod, John R., "Health Care Costs, Health Insurance, and Job Mobility." Unpublished paper. Princeton University, November 1993.
- Poterba, James M., and Lawrence H. Summers, "Public Policy Implications of Declining Old Age Mortality", in G. Burtless, ed., *Work, Health, and Income Among the Elderly*, Washington, D.C.: The Brookings Institution, 1987.
- Preston, Samuel H., and Michael R. Haines, *Fatal Years: Child Mortality in Late Nineteenth-Century America*, Princeton, N.J.: Princeton University Press, 1991.
- Price, James R., and James R. Mays, "Selection and the Competitive Standing of Health Plans in a Multiple-Choice, Multiple-Insurer Market", in R. Sheffler and L. Rossiter, eds., *Advances in Health Economics and Health Services Research*, Volume 6, Greenwich, CT: JAI Press, 1985.
- Reynolds, Roger, John A. Rizzo, and Martin L. Gonzalez, "The Cost of Medical Professional Liability", *Journal of the American Medical Association*, May 22/29, 1987, 2776-2781.
- J. Robinson and H. Luft, "The Impact of Hospital Market Structure on Patient Volume, Average Length of Stay, and the Cost of Care", *Journal of Health Economics*, 1985, 333-356.
- Rogowski, Jeanette A. and Lynn A. Karoly, "The Effect of Health Insurance on the Decision to Retire." Unpublished paper. Santa Monica, CA: RAND Corporation, 1993.

- Rothschild, Michael and Joseph Stiglitz, "Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information", *Quarterly Journal of Economics*, 1976, 629-650.
- Schoenbaum, Michael, "Do Smokers Understand the Mortality Effects of Smoking? Evidence from the Health and Retirement Survey", UC Berkeley, mimeo, 1996.
- Schwartz, William B., "In The Pipeline: A Wave of Valuable Medical Technology", *Health Affairs*, Summer 1994, 70-79.
- Schwartz, William B., and Michael Mendelson, "Eliminating Waste and Inefficiency Can Do Little To Contain Costs", *Health Affairs*, Spring I 1994, 224-238.
- Sheiner, Louise, "Health Costs, Aging, and Wages", Federal Reserve Board mimeo, 1994.
- Staiger, Doug, and Gary Gaumer, "The Effect of Prospective Payment on Post-Hospital Mortality", mimeo, 1990.
- Summers, Lawrence H., "Some Simple Economics of Mandated Benefits." *American Economic Review Papers and Proceedings*, 1989, 99: 177-183.
- Viscusi, W. Kip, *Smoking: Making the Risky Decision*, New York: Oxford University Press, 1992.
- Viscusi, W. Kip, "Cigarette Taxation and the Social Consequences of Smoking", in James Poterba, ed., *Tax Policy and the Economy*, 9, 1995, 51-101.
- Weisman, Joel S., and Arnold Epstein, *Falling Through the Safety Net: Insurance Status and Access to Health Care*, Baltimore, MD: The Johns Hopkins University Press, 1994.
- Weisbrod, Burt, "The Health Care Quadrilemma: An Essay on Technological Change, Insurance, Quality of Care, and Cost Containment", *Journal of Economic Literature*, June 1991, 523-552.
- Wennberg, Jack E., J.L. Freeman, and W.J. Culp, "Are Hospitals Services Rationed in New Haven or Over-Utilized in Boston?", *Lancet I*, May 23, 1987, 1185-1188.
- Wholey, D., R. Feldman, and J.B. Christianson, "The Effect of Market Structure on HMO Premiums", *Journal of Health Economics*, 1995, 81-106.
- Winslow, Constance M., et al., "The Appropriateness of Carotid Endarterectomy", *New England Journal of Medicine*, 1988a, 318: 721-727
- Winslow, Constance M., et al., "The Appropriateness of Performing Coronary Artery Bypass Surgery", *Journal of the American Medical Association*, 1988b, 260: 505-510;
- Yelowitz, Aaron S., "The Medicaid Notch, Labor Supply, and Welfare Participation: Evidence from Eligibility Expansions." *Quarterly Journal of Economics*, November, 1995, 909-940.
- Zwanziger, Jack, and Glenn Melnick, "The Effects of Hospital Competition and the Medicare PPS Program on Hospital Cost Behavior in California", *Journal of Health Economics*, 1988, 301-320.

Figure 1

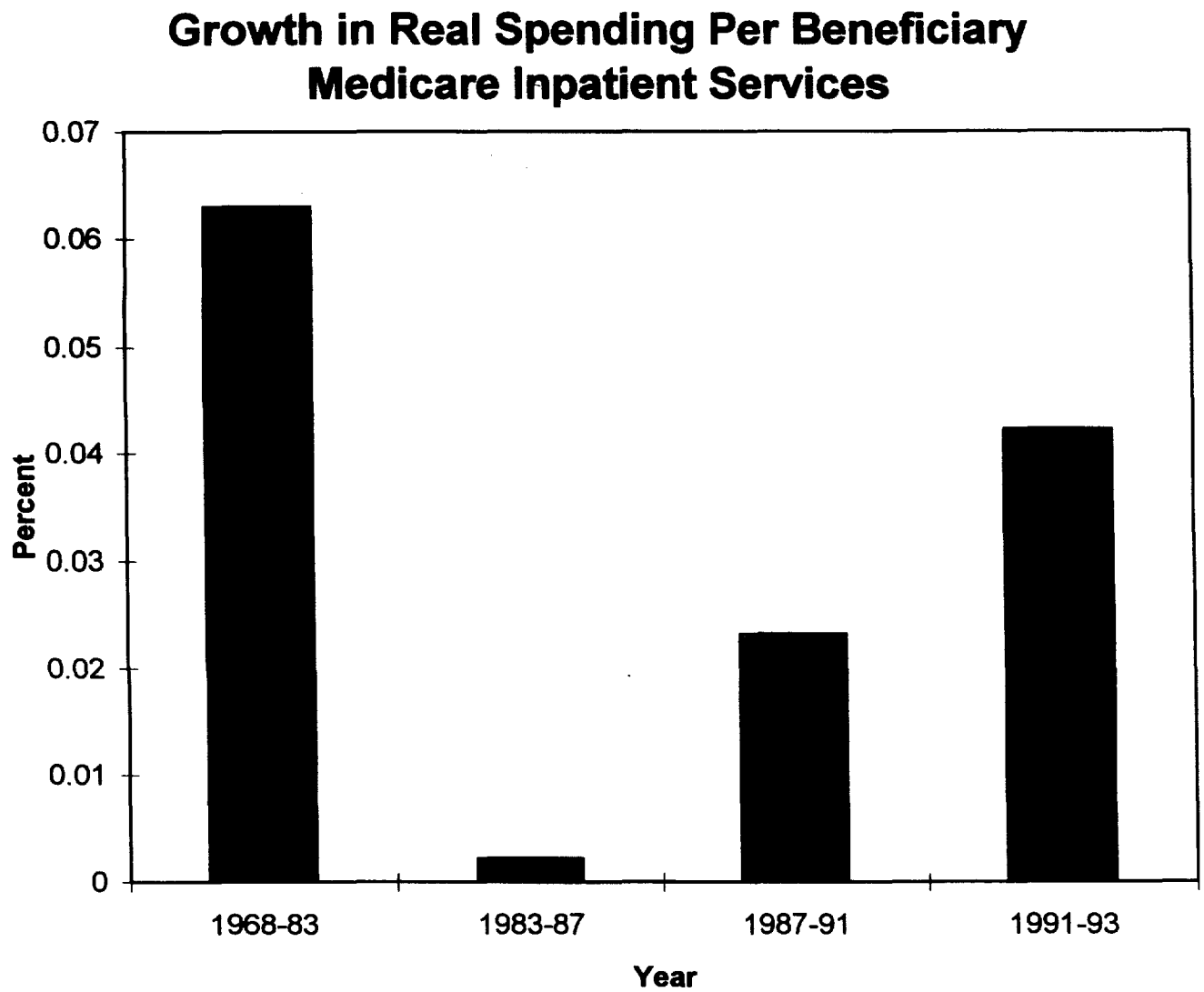
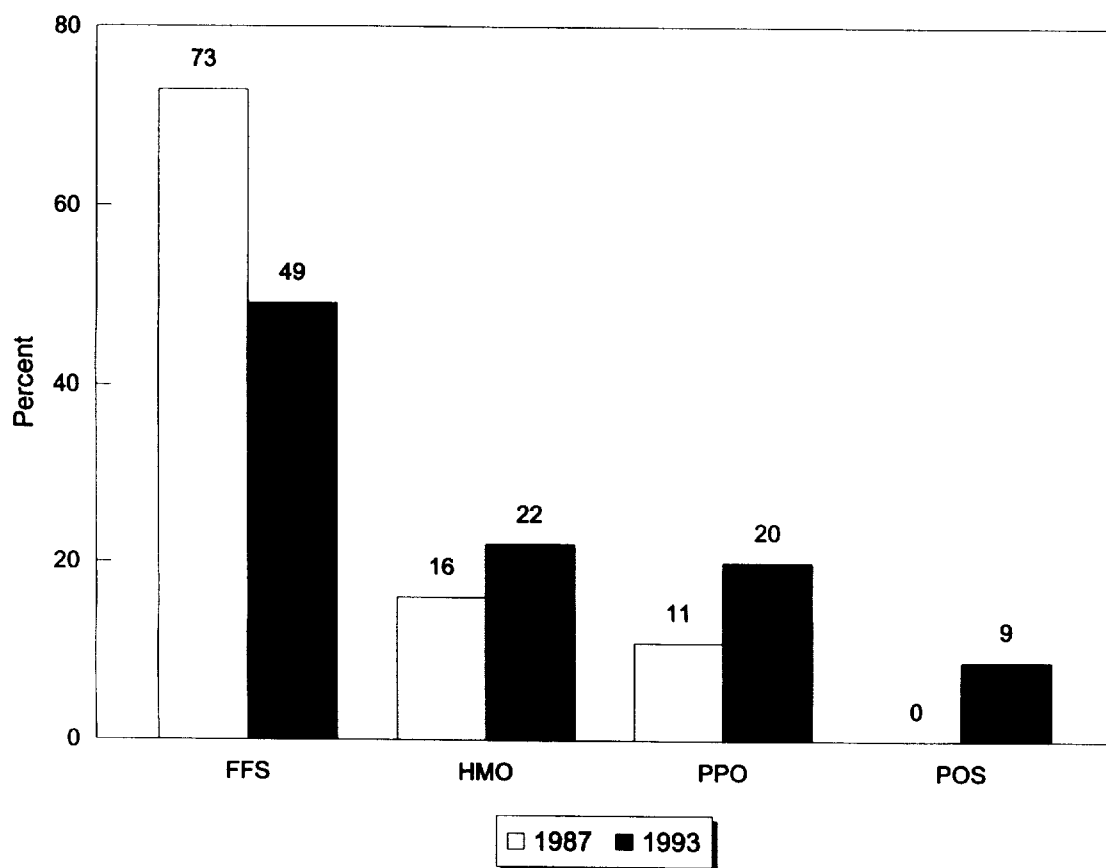


Figure 2: Growth of Managed Care, 1987-1993



Source: HIAA Surveys

Table 1: Trends in Medical Spending and Income

Country	Spending (\$1990)			Spending/GDP		
	1960	1990	Growth	1960	1990	Growth
Canada	\$473	\$1,770	4.4%	5.5%	9.5%	1.8%
France	326	1,532	5.2	4.2	8.8	2.4
Germany	425	1,486	4.2	4.7	8.3	1.8
Italy	223	1,236	5.7	3.3	8.1	2.5
Japan	117	1,171	7.7	2.9	6.7	2.7
UK	349	972	3.4	3.9	6.2	1.5
US	621	2,566	4.7	5.2	12.2	2.8
G-7 Average	\$407	\$1,808	5.0%	4.5%	8.5%	2.1%
Ratio: US/G-7	1.53	1.42		1.16	1.44	
OECD Average*	\$376	\$1,680	5.0%	4.1%	8.0%	2.2%
Ratio: US/OECD	1.65	1.53		1.27	1.53	

* The OECD average excludes Luxembourg, Portugal, and Turkey, for which data were not available in 1960.

Table 2: Sources of Health Insurance Coverage for the United States Population

Source	Groups Insured	Share of Total Population	Share of Total Spending
<i>Public</i>			
Medicare	Elderly; Disabled; End-Stage Renal Disease	12%	18%
Medicaid	Elderly; Blind and Disabled; Poor Women and Children	8	14
Champus/Champva	Dependents of Military Personnel	1	12**
<i>Private</i>			
Employer-sponsored	Workers and Dependents	56	54
Non-group	Families	7	
<i>Uninsured</i>	---	15	2
Source: Employee Benefit Research Institute (1994) and National Health Accounts.			
** Includes all other public spending on health services and supplies.			

Table 3: Accounting for the Increase in Health Costs

Factor	Increase Due To	Share of Total
Total Increase	790%	---
Static Factors	399%	51%
Demographics	14%	2%
Income	37	5
Spread of Insurance	100	13
Relative Price Change	147	19
Administrative Expense	101	13
Factor Rents	0	0
Residual	391%	49%
Source: Author's calculations as described in the text.		

Table 4: Growth in Spending for AMIs, 1984-91

Measure	Year		Annual Percent Change
	1984	1991	
Total Reimbursement (\$billion)	\$2.6	\$3.4	3.9%
Number of Patients	233,295	227,182	-0.4
Average Reimbursement per Patient	\$11,175	\$14,772	4.0%
Average Reimbursement Medical Management	\$9,829	\$10,783	1.3%
Catheterization	15,380	13,716	-1.6
Angioplasty	25,841	17,040	-5.9
Bypass Surgery	28,135	32,117	1.9
Treatments*			
Medical Management	88.7%	59.4%	-4.2
Catheterization	5.5	15.5	1.4
Angioplasty	0.9	12.0	1.6
Bypass Surgery	4.9	13.0	1.2
Share of Cost Increase:			
Prices	24%		
Quantities	106%		
Covariance	-31%		

Note: Costs for 1984 are in 1991 dollars, adjusted using the GDP deflator.

* Growth is average percentage point change each year.

Table 5: Distribution of Benefit Cost

Percentile	Total	Firm Size				
		≤50	51-100	101-500	501-1000	>1000
Benefit Cost						
10	\$831	\$782	\$925	\$833	\$1,017	\$1,069
50	1,366	1,385	1,353	1,227	1,343	1,422
90	2,126	2,143	2,034	1,753	1,734	2,143
90/10	156%	174%	120%	111%	71%	100%

Note: Data are from Cutler (1994).

Endnotes

1. Victor Fuchs (1974, 1985) has termed this the choice between individual and social responsibility.
2. Information provision is the first response to misperceptions of health risks. Because such information has been widely available for years, however, if individuals do not correctly perceive these risks now, it may be that individuals are not capable of accurately processing this information and therefore tax measures should be considered.

Richard Zeckhauser has pointed out that if tastes for cigarettes are random, people may want to insure against the risk that they will have a high demand for cigarettes. This point argues against using taxes to alter individual lifestyle choices.

3. The surveys do not indicate whether individuals understand the deterioration in physical functioning associated with smoking.
4. Individuals can have more than one source of insurance coverage. The table shows primary coverage.
5. National data do not indicate what share of spending is paid for by the privately insured relative to the uninsured, but a rough guess is that the 40 million uninsured pay about \$500 on average for medical care (Cutler, 1994).
6. There is a second demographic issue that one would like to correct for but typically cannot. As medicine advances and more people are kept alive to older ages, the average healthiness of the survivors to any age will change. For example, policies that allow the least healthy 40 year-olds to survive an additional 30 years (perhaps through preventing death from infectious disease) will increase the average sickness of the population 30 years in the future, and thus result in higher per capita medical spending at that time, even controlling for the subsequent age distribution of the population. Policies that improve the health of all 40 year olds, in contrast, may increase the average health of the population 30 years in the future, even if the population at that point is composed of more “marginal survivors”. There are no natural data on intrinsic healthiness, however, and thus such adjustments are typically not made. The evidence that is available (for example Poterba and Summers, 1987) does not suggest that such adjustments would

be particularly important, and thus I suspect there is little bias from this omission.

7. Calculations using more detailed age breakdowns reach very similar conclusions (see Newhouse, 1992).

8. Estimates of income elasticities based on macro data are much larger (generally 1 or higher), but these estimates also include relative price differences and differences in technology across countries.

Conceptually, we want to hold these constant in evaluating the contribution of income alone to spending growth.

9. Note that this ignores any changes in the norms of care for poor people resulting from changes in average income. Such effects would be captured in the residual of this calculation.

10. Some extrapolation is needed to create this estimate. In the Rand Health Insurance Experience, the average coinsurance rate for the 95 percent cost-sharing plan was 31 percent, and spending on this plan was about 50 percent above the free care plan. Since the reduction in the average coinsurance rate between 1940 and 1990 was roughly twice the difference between the 95 percent cost-sharing plan and the free plan, I doubled the estimated inducement effect of moving to the free care plan from the 95 percent plan.

11. Calculating productivity in the medical care industry is particularly hard since the ultimate output (better health) does not show up directly in GDP. For purposes of relative price comparisons, the right measure of prices is the deflator for the physical output of the industry (the price of a surgery, a new drug, etc.) rather than a deflator for health. Even so, the computed CPI for medical care almost surely overstates the true value.

12. To put this in 1990 dollars, I assumed that the share of avoidable administrative expense in 1990 was the same as the share in 1983.

13. This estimate is not adjusted for any difference in physician quality between the two countries.

14. See Giljens and Rosenberg (1994) for an interesting discussion.

15. This example is taken from Cutler and McClellan (1996a,b).

16. These figures exclude the elderly enrolled in managed care. This is a growing, but small, share of the elderly population.

17. Total Medicare spending on inpatient care was \$63 billion in 1991.
18. The demographic characteristics of heart attack patients has also not changed greatly. In fact, since heart attack patients were on average older in 1991 than in 1984, and older patients are less likely to receive intensive treatments, demographic changes actually suggest a slight reduction in spending on heart attacks (see Cutler and McClellan, 1996a).
19. Some patients may receive both bypass surgery and angioplasty. These patients are grouped with other bypass surgery recipients.
20. More generally, patients consume medical resources until the small amount that they pay plus the pain and suffering inherent in the consumption of the care are equal to the marginal benefit of the care.
21. As Blumenthal, Feldman, and Zeckhauser (1982) and Blumenthal and Zeckhauser (1984) put it, misuse of technology is a “symptom” not a “disease” of the problems in the health sector.
22. There is some controversy over whether the elasticity of demand estimated in the HIE is correct, particularly if insurance provisions are changed for the entire population rather than for just a few individuals, but the HIE certainly gives an appropriate lower bound.
23. In reality, there is not just one response of health insurance to price. In response to tax subsidies, firms may change the type of benefits offered, the generosity of the coverage, and the share of premiums paid by the employer. The first two of these would lead to incentives for greater provision of medical care; the latter would not. Unfortunately, the literature has not always separated these responses.
24. This assumes away cross-person externalities in medical care consumption.
25. Some want to set up regional purchasing arrangements so that later on they can be used to limit spending on medical care through other means, if need be (Aaron, 1995).
26. Indeed, it is not clear that doctors know exactly which care is “marginal”, even if they only wanted to eliminate marginal care. Some of the response to the studies about appropriateness, for example, suggest that the views about appropriate care differ from physician to physician.
27. Recent news reports have noted a reduction in the growth rate of employer spending on health insurance in recent years. No estimates have been made about how representative this finding is, whether

it is true about total premiums or just employer-paid premiums, and whether it is explicable by changing numbers of people insured or changes in the generosity of insurance.

28. Indeed, they are sufficiently healthier that Medicare loses money when managed care enrollment rises.

29. The Table actually shows the distribution of benefit costs. The benefit cost is the premium net of administrative load.

30. The distribution of benefit costs increases for the largest firms. This likely reflects selection into the sample relative to self insurance.

31. One reason for this might be the fact that in the long-term, a lot of the uncertainty in spending is about the *average* cost of care, not the *cross-section* distribution of costs across individuals. Risks to average costs, if they are serially correlated, are impossible for private firms to diversify. Cutler (1992) develops this point.

32. See Blumberg and Nichols (1995) for more discussion.

33. Not all studies have found evidence of job lock (Holtz-Eakin, 1994).