Analysis of Welfare Loss Due to Current U.S. Medicare Program

Sukmyung Yun

Medicare, the second largest domestic program of the U.S. federal government, is composed of Hospital Insurance (HI) and Supplementary Medical Insurance (SMI). Medicare was introduced as a part of the U.S. Social Security System in 1966. Since then, Medicare achieved rapid expenditure growth in comparison with other Social Security benefits. In 1996, the combined HI and SMI benefit payments for all Medicare services averaged $5,302 per enrollee.

This essay deals with the welfare loss induced by the current U.S. Medicare program. First, the welfare loss of Medicare as an in-kind benefit was examined. One important feature of medical care is the time involved with the consumption of medical services. So, I developed a consumer behavior model that includes the time cost in medical care consumption. The model predicts that Medicare would reduce the national income via overconsumption by recipients in the sense that the marginal cost is greater than the marginal benefit. Based on my given value of parameters, the welfare loss in 1992 would have been $2.19 billion. Next, I calculated the deadweight loss caused by Medicare (HI) payroll tax. Given my preferred value of parameters, it was shown that the deadweight loss due to the HI tax (2.9% net HI payroll tax) was about $19.46 billion in 1992. The incremental deadweight loss resulting from the additional 2.9% HI tax was about 0.31 percent of the U.S. GDP in 1992 (U.S. GDP was $6244.4 billion in 1992).

◎ Key Words : Social Security System, Medicare, Welfare Cost

I. Introduction

The cost of health care in the United States has risen sharply over the past 50 years. The cause of this increase is still obscure. However, the reason for cost increase can probably be ascribed to the growth of new and expensive medical technology interacting with the increased use of third-party payers.

The U.S. Federal government subsidizes health care, which allows consumers greater access to medical care than they would otherwise have. Although these programs provide essential (and in some cases life-saving) medical care to millions of people, the programs also dull the price signals from the health care markets, encouraging overuse of services. The major subsidies are provided in three ways: Medicare, Medicaid, and tax subsidy. The largest of the government's health care program is Medicare, which helps pay medical care for people aged 65 or older and for certain disabled people.

Although there is strong justification for government involvement in health care, this involvement may cause markets to be inefficient. When the government subsidizes the purchase or becomes the insurer, the budget constraints on consumers of health care are eased, and as a result, some effectiveness in controlling less-valued spending are lost. Likewise, federal budget constraints for health care do not operate with the same force as they do in the private sector or in much of the rest of the public-sector budget. Medicare is entitlement, which means that Medicare costs are strongly affected by trends in eligibility.

II. Brief Review of the Current U.S. Medicare Program: Medicare Part A (Hospital Insurance) and Part B (Supplementary Medical Insurance)

The two separate but coordinated health insurance plans referred to as Medicare were passed by the Social Security Amendments of 1965 and have become an important part of the U.S. Social Insurance system. Their primary function is to pay medical benefits for persons aged 65 or older. The Medicare program has been the most rapidly growing part of the U.S. Social Security system, rising from $4.7 billion in 1967 to $164.9 billion in 1994. The amount involved in 1994 equals nearly 58 percent of Old-Age, Survivors and Insurance (OASI) payments, while the amount in 1967 was only 23 percent of OASI payments.[1]

The compulsory program of Hospital Insurance (HI) is Part A of Medicare and a voluntary program of Supplementary Medical Insurance (SMI) is Part B. Benefits were first available in July 1966. At its inception in 1966, the HI was closely tied with the already existing OASI. HI is financed by the trust fund separate from the one that finances Old-Age, Survivors, and Disability Insurance (OASDI) benefits. Until 1990, OASDI and HI taxes have been applied to the same maximum earnings base ($51,300 in 1990). Beginning in 1991, however, employees and employers with annual earnings up to $125,000 were subjected to HI taxes. The same payroll tax rate of

---

1) The data source is "Table 4. A1.-Old-Age and Survivors Insurance, 1937-94, Table 8. A1.-Hospital Insurance, 1966-94, and Table 8. A2.-Supplementary Medical Insurance, 1966-94 of *Annual Statistical Supplement, 1995*. For OASI, $20,382 million in 1967; $284,133 million in 1994. For Medicare (HI & SMI), $4,737 million in 1967; $164,862 million in 1994.

1.45 percent for HI applies equally to employers and employees.

By paying a monthly premium, any person is eligible to voluntarily participate in Medicare Part B (SMI) if he or she is: (1) already enrolled in Medicare Part A (HI); or (2) age 65 or older. The SMI component of Medicare is financed in an entirely different manner than either OASI or HI. Neither employees nor employers directly contribute to the trust fund of SMI during their working years. At age sixty-five, the elderly are entitled to join SMI on a voluntary basis by paying monthly premiums.

III. Theoretical Analysis of Medicare as an In-kind Benefit of Social Security

1. Early Debates on the Economic Rationale of Public Health Provision

Akerlof (1970) suggests the problem of adverse selection as the economic rationale for public health provision. His classical paper on asymmetric information views the Medicare program as a public sector remedy for insurance market failure among the elderly because of its lack of labor-market ties with employer-based insurance. Akerlof directly applied the problem of adverse selection to the medical insurance of the elderly. Group insurance, which is the most common form of medical insurance in the United States, selects healthy individuals, since generally adequate health is a precondition for employment. In effect, medical insurance is least available to those (the elderly) who need it most because insurance companies do

their own adverse selection. From this, Akerlof deduces the economic rationale of public health provision for the elderly. However, his argument ignores the problem of moral hazard of insurance buyers: i.e, the elderly.

Pauly (1968) shows that even though all individuals are risk-averters, the absence of commercial health insurance for certain risks may not be optimal. His argument is based on the existence of moral hazard as a peculiarity of medical insurance. He points out that, although the illness of insured individuals occurs randomly, the presence of insurance may increase medical expenses if there is an elasticity in medical care demand. Pauly (1986) suggests two different types of moral hazard; the first sort of moral hazard arises when the purchase of health insurance encourages individuals to spend less on preventive medical care. The second type occurs when the purchase of insurance induces an individual who is ill to spend more resources for treatment.

When moral hazard exists, too much medical care will be consumed in the sense that the true marginal cost is greater than the marginal benefit. Pauly (1968) suggests that, if the individual is not fully covered by health insurance, the welfare loss resulting from this distortion may be limited. He concludes that, for a population of diverse tastes and behavior, any single insurance policy cannot be best or most efficient. Hence, his major point can be summarized as follows; the absence of health insurance in the competitive market does not guarantee nonoptimal resource allocation, and compulsory health insurance may be an inefficient solution. In the following section, I have examined the second sort of moral hazard that Pauly has pointed out, in regards to Medicare consumption. Analysis is

made on the theoretical possibility that the presence of Medicare can induce the overconsumption of medical care in the sense that the true marginal benefit of the retiree is less than the true marginal cost.

2. The Opportunity Cost of Time as One Possible Explanation for Medicare Consumption

I will illustrate the effect of Medicare on distortion of medical demand under moral hazard. The time cost of the retiree is suggested as a possible factor of the moral hazard problem in Medicare demand. The distorted demand under moral hazard leads to a level of expenditures and costs that is excessive in terms of efficiency level and rate of growth.

Browning and Browning (1994) mentioned current Medicare benefits as follows. Part A, covering hospital costs, uses a deductible ($676 in 1993) and thereafter covers all hospital expenses for a stay up to 60 days. Part B uses a $100 per year deductible and then pays 80 percent of the cost of physicians and most other services (a 20 percent coinsurance rate). Basically, Medicare covers virtually all costs of medical care for beneficiaries. Therefore, Medicare beneficiaries will consume too much medical service if there exists the second sort of moral hazard pointed out by Pauly (1986).

Models Including Time Budget as Full Income

Becker (1965) introduced a new theory which proposed that each household produces commodities by combining inputs of goods and time based on the cost-minimization principle. In his model, the cost minimization rule of each household is the same as that arising from

the traditional theory of the firm. In another words, the advance made by Becker is to incorporate the cost of time into the standard utility function. He suggested that the full income of each household is the sum of monetary income and time cost that foregone or lost to produce income. By considering foregone time cost, Becker provided the theoretical basis for analyzing consumer behavior as earned-income changes. According to his reasoning, a rise in wages represents an increase in the marginal value of leisure. A rational consumer would substitute time-expensive goods with goods-intensive commodities for which the time cost is less. His theory predicts the change in consumption by the law of demand; traditional theory explains the above consumer behavior in terms of change in taste or income effect. In the following section, I developed a model of consumer behavior that includes the cost of time in medical care consumption.

Medical Care Consumption Model Including the Opportunity Cost of Time

The cash income of Medicare beneficiaries usually comes from OASI cash benefits and capital income. Their main income is non-earned income since they are retirees. It can be argued that the opportunity time cost (with respect to earned income and leisure) of Medicare beneficiaries at the margin would be lower than that of the current worker.

One important feature of medical care is that it takes time to consume medical services. In the case of ill patients, he or she is hospitalized for medical services. For physician service, the patient consumes waiting and travel time for treatment. Therefore, time is an important factor in the medical consumption function. Based on

Becker's analysis, it can be argued that both medical care cost and time should be included in the full cost of medical services. To Medicare beneficiaries, however, Medicare coverage reduces the price of care to zero and the opportunity cost of time is relatively low. Using the above reasoning, I developed a model of consumer behavior that includes the cost of time in medical care consumption. This model is based on Acton's model (1976). While Acton analyzed the general case of current workers, my analysis focused on current beneficiaries (i.e., the retirees).

To derive the formal model, assume that two goods enter the individuals utility function: medical services of Medicare, m, and a composite, X, for all other goods and services. For simplicity, assume that Medicare demand is a time-intensive good, in terms of waiting and travelling time for treatment. On the other hand, the composite good, X, is assumed to be the price-intensive good. In this model, it is assumed that each current Medicare beneficiary lives for one period and is identical in the sense that each beneficiary has the same utility function. I assume that the utility of each beneficiary is expressed as the following utility function:

(3.1) $U = U(m, X)$

> where U is the utility of the current Medicare beneficiary
> m is medical care
> X is the composite good (all other goods and services except medical care)

It is also assumed that the current Medicare beneficiary maximizes his or her utility with respect to the following budget constraint:

(3.2) $(p + t)\, m + q\, X \leq Y = y + k + T$

> where p is the money price per unit of medical care that the current beneficiary demands,
>
> t is the amount of time which is needed to consume medical care per unit,
>
> q is the market price per unit of the composite good (X),
>
> Y is the full income of the Medicare beneficiary,
>
> y is social security cash benefits and in-kind benefits,
>
> k is the capital income of the Medicare beneficiary, and
>
> T is the total amount of time available to Medicare beneficiary.

Using this model, it is possible to conduct comparative statics analyses on the effects of change in price of medical care and change in time cost. For maximization behavior of each individual, the following Lagrangian is formed:

(3.3) $L = U(m,\ X) + \lambda\{(p+t)m + qX-(y+k+T)\}$

Differentiating, with respect to the three unknowns, m, X, and λ, and setting these equal to zero, yields the following first order conditions for utility maximization:

$$\frac{\partial L}{\partial m} = U_m + \lambda(p + t) \qquad = 0$$

$$\frac{\partial L}{\partial X} = U_x + \lambda q \qquad = 0$$

$$\frac{\partial L}{\partial \lambda} = m(p + t) + Xq - y - k - T \qquad = 0$$

$$\text{where} \quad U_m = \frac{\partial L}{\partial m} \quad \text{and} \quad U_x = \frac{\partial L}{\partial X}$$

(A) Effects of Change in Price

To find the effect of change in price of m on the demand for m, differentiate the above first order conditions with respect to p, yielding:

$$U_{mm}\frac{\partial m}{\partial p} + U_{mx}\frac{\partial X}{\partial p} + (p + t)\frac{\partial \lambda}{\partial p} = -\lambda$$

$$U_{xm}\frac{\partial m}{\partial p} + U_{xx}\frac{\partial X}{\partial p} + q\frac{\partial \lambda}{\partial p} = 0$$

$$(p + t)\frac{\partial m}{\partial p} + q\frac{\partial X}{\partial p} = -m$$

The determinant of the matrix of coefficients $|D|$ is:

$$|D| = \begin{vmatrix} U_{mm} & U_{mx} & (p+t) \\ U_{xm} & U_{xx} & q \\ (p+t) & q & 0 \end{vmatrix}$$

$$= U_{mx}\,q(p+t) + U_{xm}\,q(p+t) - U_{xx}(p+t)^2 - U_{mm}\,q^2$$

If it is assumed that U_{xx} and $U_{mm} < 0$ and that U_{xm} and $U_{mx} > 0$, then $|D|$ is positive. Solving $\frac{\partial m}{\partial p}$ by Cramer's rule,

$$\frac{\partial m}{\partial p} = \frac{\begin{vmatrix} -\lambda & U_{mx} & (p+t) \\ 0 & U_{xx} & q \\ -m & q & 0 \end{vmatrix}}{|D|}$$

$$= \frac{-m\,U_{mx}q + m\,U_{xx}(p+t) + \lambda\,q^2}{|D|}$$

Since λ is negative by the first order conditions, the effect of change in price of medicare on medicare demand, that is, $\frac{\partial m}{\partial p}$, is negative. Therefore, Medicare service, m, is acting as a normal good;

Medicare beneficiaries demand more, with a lower money price of Medicare.

(B) Effects of a Change in the Time Price

Here, I analyzed the effect of change in the time price of m on the demand for *m*. Differentiating the above first order conditions with respect to *t*, yields:

$$U_{mm} \frac{\partial m}{\partial t} + U_{mx} \frac{\partial x}{\partial t} + (p + t) \frac{\partial \lambda}{\partial t} = -\lambda$$

$$U_{xm} \frac{\partial m}{\partial t} + U_{xx} \frac{\partial x}{\partial t} + q \frac{\partial \lambda}{\partial t} = 0$$

$$(p + t) \frac{\partial m}{\partial t} + q \frac{\partial x}{\partial t} = -m$$

Using Cramer's rule,

$$\frac{\partial m}{\partial t} = \frac{\begin{vmatrix} -\lambda & U_{mx} & (p+t) \\ 0 & U_{xx} & q \\ -m & q & 0 \end{vmatrix}}{|D|}$$

$$= \frac{-m \, U_{mx} q + m \, U_{xx} (p+t) + \lambda \, q^2}{|D|}$$

Since $|D|$ is positive and λ is negative, the sign of $\frac{\partial m}{\partial t}$ is negative; the effect of change in time price (t) on medical care demand is negative. That is, with their low time price, Medicare beneficiaries demand more.

The above results imply that the demand for free medical services would be very sensitive to changes in time prices, because time is a greater proportion of total price of medical service. Since Medicare

covers virtually all costs of medical care for beneficiaries, it appears that low time opportunity cost of retirees increases the overconsumption of medical care. This model predicts that the overconsumption of recipients induced by Medicare would reduce national income in the sense that the true marginal cost is greater than the marginal benefit.

3. The Framework for Analyzing the Welfare Cost of Reduced Saving

In this section, I have analyzed the welfare costs of reduced saving under Medicare program. A more complete analysis should include the distortion in pre-retirement labor supply caused by Medicare payroll tax, however, I will ignore the human capital approach based on the assumption that private intergenerational transfers are operative. To analyze the effect of social security on saving, I have concentrated on the evaluation of the welfare loss from the induced reduction in savings, assuming that it occurs.

Theoretical framework for Analyzing the Welfare Cost

Since the analysis focuses on the welfare cost of reduced capital, the following extreme assumption was made. I assumed that labor supply and retirement behavior are exogenously fixed since the labor supply distortion incurred by Medicare payroll tax is ignored. Also, the analysis is made based on the assumption that each dollar of the present value of social security benefits reduces private saving by one dollar.[2] This attempt was made to focus the analysis on the

---

2) Based on the above assumption that each dollar of the present value of social security benefits reduces private saving by one dollar, the social security system would decrease wage rates and increase the return rate of

welfare cost of reduced capital accumulation.

The framework for the present study is based on Sherwin Rosen (1984) and Martin Feldstein (1987). The study assumes that a productive capital stock exists in the economy; that is, savings may be invested in real capital. It also assumes that the life of each individual is divided into two periods: working in the first period and retiring in the second. All individuals are identical and earn a wage w_t if they work in period t. The growth rate of labor force is n percent per period and the growth rate of real wage is g percent per period. I assumed that the number of retirees in each period (A_t) is equal to the number of workers in the previous period (L_{t-1}). Based on the population growth rate of n percent per period, the following equation is derived:

(3.4) $L_t = (1+n)L_{t-1} = (1+n)A_t$

Now assume that an unfunded social security system imposes tax at the rate of θ on wage income per period. The workers in period t pay a tax of $T_t = \theta w_t L_t$ and receive benefits of B_{t+1} when they retire. The amount of benefits received is equal to the taxes paid by the next generation. Namely,

(3.5) $B_{t+1} = b_{t+1} A_{t+1} = \theta w_{t+1} L_{t+1}$

   where b_t is per retiree benefit in period t.

Define the implicit rate of return, that individuals earn on their

---

capital. Nevertheless, for simplicity, I will assume that the marginal product of capital remains at a constant rate in each period, and wage rates are unaffected.

tax contribution, as the ratio of the benefits received to the taxes previously paid. Using $L_{t+1}/L_t = 1+n$ and $1+g = w_{t+1}/w_t$, the benefit-tax ratio is derived as follows:

(3.6) $\qquad B_{t+1}/T_t = \theta w_{t+1} L_{t+1} / \theta w_t L_t = (1+g)(1+n) = 1 + \gamma$

The above benefit-tax ratio implies that the implicit return rate of social security is equal to the growth rate of total real wage earnings, $(1+g)(1+n)$. If the individual worker saves his social security tax (T_t) using his own account, the return rate of his saving would be the real marginal product of capital, ρ. That is, instead of receiving $B_{t+1} = (1+\gamma)T_t$ in return for social security tax, he would receive $(1+\rho)T_t$. If the real marginal product of capital (ρ) exceed the implicit rate of return (λ) of an unfunded social security plan, then an unfunded social security system will reduce social welfare of each generation.

By reasoning, an unfunded social security system reduces the insured worker's lifetime income by:

(3.7) $\qquad (\rho - \gamma)T_t = (\rho - \gamma)\theta w_t L_t$

The present value of reduced income induced by total welfare cost will be:

(3.8) $\qquad (\rho - \gamma)w_t L_t / (1 + d)$

> where d is the discount rate of the insured worker between two periods.

The present value of reduced income, in the next generation, would be:

(3.9) $(\rho - \gamma)wt_{+1}$ $Lt+1/(1+d)$ $=$ $(\rho - \gamma)\theta(1+g)$ w_t $(1 + n)L_t/(1+d)$

$$= (1+\gamma)(\rho - \gamma)\theta w_t L_t/(1+d)$$

The above equation implies that the generational loss increases at rate γ, the implicit return rate of capital, under an unfunded social security system.

Then I analyzed the present value of the deadweight loss growing over time.[3] The equation (3.9) implies that the generational loss increases at rate γ, the implicit return rate of capital (i.e., the sum of the growth rates of the wage base and of the labor force), under an unfunded social security system. If the program is introduced with workers of generation $t=0$ and continues forever, the present value of the generational loss would be:

(3.10) $$\sum_{t=0}^{\infty} \frac{(\rho - \gamma)\theta W_t L_t}{(1+d)(1+\delta)^t}$$

where δ is the discount rate (the appropriate rate for discounting consumption of the future generation), and $W_t=(1+\gamma)wt$. Using the relation $W_tL_t = (1+g)^t w_0(1+n)^t L_0 = (1+\gamma)^t w_0 L_0$, equation (3.10) can be written as:

(3.11) $$\frac{(\rho - \gamma)\theta W_0 L_0}{1+d} \sum_{t=0}^{\infty} \left(\frac{1+\gamma}{1+\delta}\right)^t$$

If the discount rate exceeds the implicit rate of return of an unfunded social security ($\delta > \gamma$), equation (3.11) is:

---

3) The framework for the present study is based on Martin Feldstein (1987).

(3.12) $\left(\dfrac{(1+\delta)(\rho-\gamma)}{(1+d)(\delta-\gamma)} \right) \theta W_0 L_0$

Equation (3.12) implies that the present value of the dead weight loss per initial dollar of tax is the ratio of the difference between the marginal product of capital and the rate of return of an unfunded social security system to the difference between the discount rate and the rate of return of an unfunded social security system. In the following analysis, the after-tax rate of return of private investment (7.3 percent) is assumed to be the time preference rate. A marginal product of capital of 10 percent[4], a rate of return of an unfunded social security program of 2.6 percent, and a discount rate of 7.3 percent imply the present value of deadweight loss of 2.60 [(10 – 2.6) / (7.3 – 2.6)] per dollar of initial transfer from the current generation to the previous generation (the current retirees). However, the equation (3.12) ignores the initial generation of recipients who received benefits but did not pay any tax. Since the benefits of the initial recipient generation are equal to the taxes paid by their next generation (i.e., current workers), $\theta W_0 L_0$, the present value of the loss to all generations is:

(3.13)　　equation(3.12) – $\theta W_0 L_0$ = $\left(\dfrac{(1+\delta)(\rho-\gamma)}{(1+d)(\delta-\gamma)} - 1 \right) \theta W_0 L_0$

If we subtract the value of the initial transfer from equation (3.12), the net dead weight loss is 1.6 times the initial transfer. This

---

4) See Rippe, Richard and Lavin, Rita (1995), p.12. According to their research, the average of pretax margins from 1953 to 1994 was 9.6 percent. Their calculation combines profits before all taxes on capital income and assets (including corporate income taxes and property taxes) plus the net interest paid.

reasoning implies that, in any subsequent year, the present value of the net dead weight loss is 1.6 times the value of that year′s transfer.

Empirical Evidence for Analyzing the Welfare Cost

In this section, I estimated the consumption function of U.S. Households for analyzing the welfare loss of Medicare as In-kind benefit. Before estimating, I needed the concept of Social Security Wealth and the specification of the consumer expenditure function based on the life-cycle hypothesis.[5] Gross Social Security Wealth is the present value of retirement benefits anticipated by the present and future beneficiaries, while Net Social Security Wealth is gross wealth minus the present value of the future social security taxes anticipated by current workers.

Net Social Security Wealth is the correct concept for the present value of future Social Security Wealth. However, neither gross Social Security Wealth nor net Social Security Wealth are conceptually perfect for the econometric model based on the life-cycle hypothesis. The consumer expenditure function under a life-cycle hypothesis is

---

5) In Yun (1997), I constructed Social Security Wealth (SSW) defined as the present value of the retirement benefits anticipated by insured workers. To construct SSW, it is assumed that individual workers correctly project their future expected benefits every year. In conjunction with this assumption, I assume that current insured workers project their future benefits using the benefit rates of current retirees. Although current insured workers are not involved in medical consumption, the current rate of Medicare benefit induced by the distorted demand under moral hazard is indirectly incorporated into the expected rates of future benefit of current workers every year. The above assumption implies, even though I only consider the medical demand of current retirees in the following analysis, that Medicare consumption of current retirees is indirectly related with the expectation of current workers, and leads to their saving behavior. Thus, this analysis can be easily incorporated in the analysis of the wealth replacement effect of OASI and Medicare discussed earlier.

specified by the flow of current and lagged disposable income. Since payroll taxes are already deducted to find disposable personal income, gross Social Security Wealth might be the correct concept for the estimation of the consumer-expenditure function. Nevertheless, gross Social Security Wealth is not perfect since it implicitly assumes that the capitalized value of future payroll taxes will be constant over time; this concept ignores the budget constraint of the current U.S. Social Security program in which the payroll tax should inevitably be increased. To reflect this nature, I used both gross and net Social Security Wealth in analyzing the welfare loss of Medicare.

(A) Estimation of Social Security Wealth Variable

In this section, I estimated a consumer expenditure function using OASI and Medicare Wealth for the post war period (1947~1992). The basic specification, estimated in this study, is the consumption function developed by Ando and Modigliani (1963), and used in several time-series studies of the effect of social security on saving in the United States. The basic specification is:

$$C_t = \alpha_0 + \alpha_1 YD_t + \alpha_2 YD_{t-1} + \alpha_3 W_t + \alpha_4 RUYD_t + \alpha_5 SSW_t \ (\ + \text{other variables})$$

where C_t is consumer expenditures in year t,
YD_t is personal disposable income in year t,
YD_{t-1} is the lagged value of YD_t,
$RUYD_t$ is the unemployment rate multiplied by disposable income in year t,
W_t is the market value of household wealth in year t, and
SSW_t is Social Security Wealth in year t.[6]

6) Barro (1978) suggested that the government surplus variable should be included in the specification of the consumer expenditure function. His

All variables are in real per capita 1987 dollars.[7]

The estimation results using OLS shows the low value of the Durbin-Watson statistics, implying that the autocorrelation of the

reasoning is that; "The government surplus variable has direct implications for income through inverse effects on current and future price levels, and it has indirect effects that involve predictions of future disposable income (which would be affected by future taxes associated with financing the public debt)" [p. 6]. Furthermore, Barro argues that the unemployment rate – suggested as a consumer spending determinant by Ando and Modigliani (1963) – should be specified as a multiplier of YD (disposable income) rather than a separate linear term. His argument is as follows; "Since the unemployment rate (in relation to the natural or average rate) would seem to be a proportional measure of the deviation of income from its normal position, the $U*YD$ specification seems more reasonable than a linear form for U(unemployment rate)" [p. 19]. Also, Feldstein supports Barro's argument. Feldstein (1978) commented on Barros argument in following; "Barro made the useful suggestion that the unemployment rate should be specified as changing the marginal propensity to consume (that is, as a multiplier of YD_t) rather than as a separate linear term. That is quite sensible since the linear specification of consumer expenditure function implies that a one percent change in U alters per capita consumption by the same amount with the high incomes of the 1970s as when incomes were much lower" [p. 43].

7) The data set used in the following estimation is similar to that used in Feldstein (1995a). Personal consumption expenditure and disposable income data for the years 1930-1988 were taken from *the National Income and Product Accounts of The United States*: Volume 1, 1929~58 and Volume 2, 1959~88. The additional data for 1989-92 was taken from *the Economic Report of The President* (1995). The stocks of household wealth are data from Feldstein (1996). The unemployment rate (percentage) in the total labor force for 1930 to 1947 was taken from *Historical Statistics of the United States, Colonial Times to 1970*. Later values (1948-92) are based on data in The Economic Report of The President (1995). Total Population is used, including armed forces overseas. Population data for 1930 to 1947 were taken from *Historical Statistics of the United States, Colonial Times to 1970*. Later values are based on data in *The Economic Report of the President* (1995). Social Security Wealth variables (Gross and Net SSW) are taken from Yun (1997). All prices are in 1987 dollars by way of the implicit price deflator for personal consumption expenditure (1987 = 100).

residual is substantial and thus, the standard errors are biased downward.

OLS Estimation Results[8)]

(3.14) C = 1231 + 0.609 YD − 0.056 YD_{t-1} + 0.028 W
     (7.43)   (−0.75)   (3.51)
     − 0.440 RUYD + 0.037 SSWG
     (−3.91)   (6.48)
            SSR = 395787, DWS = 1.08

(3.15) C = 821 + 0.716 YD − 0.047 YD_{t-1} + 0.023 W
     (9.49)   (−0.65)   (2.98)
     − 0.489 RUYD + 0.037 SSWN
     (−4.41)   (6.86)
            SSR = 372834, DWS = 1.18

  where the sample period = the post-war period (1947~1992);
      SSWG   = Gross Social Security Wealth;
      SSWN   = Net Social Security Wealth;
      SSR   = Sum of Squared Residuals;
      DWS   = Durbin-Watson statistics;
      Figures in parentheses are standard error.

To correct the autocorrelation of the residuals, I used the Hildreth-Lu procedure. The Hildreth-Lu method provides more efficient parameter estimates and consistent estimates of the residuals.

AR(1) Correction Results

(3.16) C = 1217 + 0.619 YD − 0.042 YD_{t-1} + 0.024 W
     (7.54)   (−0.64)   (2.62)
     − 0.308 RUYD + 0.0346 SSWG

---

8) Since the R^2 values for all of the equations presented in this paper exceed 0.99, they are not presented. Standard errors are shown in parentheses.

$$(-2.10) \qquad (3.60)$$

$$\text{SSR} = 314347, \text{DWS} = 1.72$$

$$(3.17) \quad C = 786 + 0.695 \text{ YD} - 0.020 \text{ YD}_{t-1} + 0.023 \text{ W}$$
$$(9.88) \qquad (-0.31) \qquad (2.62)$$
$$- 0.367 \text{ RUYD} + 0.0338 \text{ SSWN}$$
$$(-2.53) \qquad (3.97)$$

$$\text{SSR} = 307428, \text{DWS} = 1.77$$

where the sample period = the post-war period (1947~1992).

Based on the estimation results, the estimated parameter of SSWG and SSWN are statistically significant.

The Welfare Loss of Medicare as In-kind Benefit

Benefits under both HI and SMI bear no relation to past income and contributions to the program but are made according to the reasonable costs for illness episode, no matter what the income and past contributions by an ill elderly have been. Based on this nature of Medicare, it can be argued whether or not the amount and type of insurance protection provided are appropriate for the need of the recipients. According to Browning and Browning (1979), several studies have estimated that the insurance protection is greater than the recipients would prefer.[9]

Although it is on private insurance, Manning et al. (1987) showed that moving from an average coinsurance rate of 33 percent to a coinsurance rate of zero induces roughly a 40 to 50 percent increase in demand. This figure implies that current Medicare recipients, on

---

9) Timothy Smeeding (1975) estimated a welfare cost of 32 percent for Medicare and Medicaid. Eugene Smolensky et al (1974) estimated the welfare cost to be generally lower, between 15 and 26 percent.

average, have a tendency to overconsume. Since no recent study on Medicare is available, I will use Manning et al. (1987) as indirect evidence of health care demand in the case of Medicare.

In Japan, several macro-level studies show a negative relationship between copayment and utilization of services. Kupor et al. (1995) examined prefecture-level cross-section data from the government-sponsored National Health Insurance Society (Kokuho) and found that the number of claims per 100 plan members decreases with average copayment for inpatients, outpatients, and dental patients. Their estimate of the price impact on utilization for outpatients implies a price elasticity of demand of -0.1333.

For illustrative purposes, I assumed that a low coinsurance rate of Medicare induces about a 20 percent increase in medical care demand. Since total Medicare program payments were $120.7 billion in 1992, the amount of overconsumption would be around $20 billion. Based on my preferred equation (3.17), the implied effect of overconsumption was to reduce potential saving by $0.7 billion [$20 billion × 0.035].

Now I can apply the reasoning of section (III-3) on the welfare loss of reduced saving. That reasoning implies that, in any subsequent year, the present value of the net dead weight loss is 1.6 times the value of that year's transfer. Since overconsumption of Medicare medical demand reduced private saving by $0.7 billion in 1992, the net dead weight loss incurred by the overconsumption of Medicare is about $1.12 billion. The table below shows the welfare loss under alternative assumption on the price elasticity of Medicare consumption.

Table 1. Welfare Loss under Alternative Assumptions

(Unit: Billion in U.S. $)

The Percentage of Medical Demand Induced by Medicare[1]	10%	20%	30%	40%	50%
The Amount of Overconsumption	10.97	20.12	27.85	34.49	40.23
Reduced Potential Saving	0.37	0.68	0.95	1.17	1.37
Welfare Loss of Reduced Saving	0.59	1.09	1.52	1.87	2.19

Note: 1) "The percentage of medical demand induced by Medicare" means the increased amount from the consumption level under the assumption that Medicare program does not exist.

The lower limit of welfare loss due to in-kind benefit is $0.59 billion in 1992 as the upper limit is $2.19 billion in 1992. For my preferred assumption (30%), the welfare loss is $1.52 billion in 1992.

Ⅳ. The Deadweight Loss of Labor-Market Distortions

In this section I took a more careful look at the tax of the social security program. In terms of federal tax revenues, the social security payroll tax is the second largest in the United States, following the federal individual income tax. However, the social security tax has become the largest tax paid by the majority of taxpayers.

1) The Effective Marginal Social Security Tax Rate on Labor Supply

Although the statutory marginal social security tax rate is the same for all taxpayers, the formula linking social security taxes and future benefits suggest that the net marginal social security tax on additional earnings varies substantially among taxpayers. The social security (OASDHI) payroll tax is a proportional tax on wage and salary income of employees and to the earnings of self-employed persons up to a maximum level. In 1992, the social security tax rate was 15.3 percent and this was levied on incomes up to $55,500 in the case of OASDI tax. The HI (Medicare) portion of the tax was levied on income up to $130,200 in 1992. The social security payroll tax is composed of two equal rate levies, half of this tax is paid by the employees and half by the employer. Most economists agree that the distinction of tax into the employer and the employee has no effect on the long-run tax incidence; i.e., on who actually bears its burden. Since the incidence of the social security tax does not depend on this division, it is assumed that the social security tax is paid entirely by the employees in my analysis.

To analyze the welfare loss caused by social security payroll tax, I needed an estimate of the marginal tax rate on wage and salary income of taxpayers. The social security program, however, has been alternatively referred to as a progressive system and a regressive system in the economic literature. The source of this apparent contradiction is that social security is comprised of two components, payroll taxes on current earnings and future retirement benefits. Viewed in isolation, the payroll taxes are likely to be regressive since the payroll tax rate is uniform up to a maximum taxable earnings level and zero thereafter. In contrast to that, the future retirement benefit formula linking social security taxes and future benefits

suggest that the effective marginal social security tax on additional earnings varies substantially among taxpayers. That is, households with lower income receive greater rates of return than households with higher income, which implies that the social security program viewed from a lifetime perspective is progressive.

Nevertheless, most past studies of welfare loss in labor supply caused by the social security payroll tax have treated the tax fully as a real tax at the margin. Important earlier exception to this were Gordon (1983), Browning (1985), and Burkhouser and Turner (1985, hereafter BT). By considering the link between marginal taxes paid and marginal benefits accrued, their papers made calculations of the effective social security payroll tax rates.[10]

According to Gordon (1983) and BT (1985), the effective marginal social security tax rate is well below the statutory rate, which is a combined rate of 15.3 percent in 1992. Browning (1985) presented totally different results; he found that the effective marginal tax rate is only slightly lower than the statutory rate for most workers, except for those who retire in the start-up phase of the system.[11]

---

10) Browning (1985) refers to the implicit tax rate on labor income of social security as the effective marginal social security tax rate on labor supply. While BT (1985) refer to it as the true payroll tax rate, Gordon (1983), and Feldstein and Samwick (1993, hereafter FS) refer to it as the net marginal rate of social security taxes. In the following analysis, I will follow Browning's terminology.

11) Browning (1985) gave an explanation of the extremely low effective marginal social security tax rates reported by Gordon (1983), and BT (1985). As the possible sources of low estimates, Browning (1985) suggested the following components. First, BT, and Gordon use low discount rate: 1 percent in BT, and the effective rate between 1 percent and the rate of growth in real wage (*g*) in Gordon. Although the estimates are sensitive to the discount rate used, they simply used one discount rate (1%). Second, they presented estimates for only two different

Based on the analysis using a discount rate of 6%, Browning suggested that a rate between 80% and 90% of the statutory rate would be appropriate. Browning′s analysis supports the view on statutory rate as the effective rate in the context of a mature social security system. For the calculation of the effective rate, FS (1993) used three different discount rates: 2%, 4%, and 6%, respectively. Their estimates are sensitive to the choice of discount rate. One of the major findings of the FS study is that the full statutory rate applies to young workers. The effective marginal tax rate is almost the statutory rate for young workers.

In their effective marginal tax rate calculation, FS (1993) excluded the payroll tax portions that are earmarked for disability insurance and for Medicare, only considering 11.2 percent as the statutory rate. In his subsequent work, Feldstein (1995b) approximates an effective marginal tax rate of 7 percent; the sum of the HI portion (2.9 percent) and one-third of OASDI portion (4.1 percent). Since my analysis of the welfare loss caused by the social security payroll tax is mainly concerned with the mature phase of the U.S. Social Security system, I will focus on the estimates by Browning (1985) and FS (1993) in the welfare cost analysis. In the following analysis, I will give greatest weight to Brownings (1985) analysis; 12.24% (80% of the statutory rate, 15.3%) will be used as the most important effective marginal rate. Nevertheless, I will consider different effective marginal tax rates for the sensitivity test.

---

marginal replacement brackets (exclusively for 0.32 and 0.48) of average indexed monthly earnings (AIME); they did not consider the marginal replacement brackets of AIME which will give higher effective rates. Third, they ignored the Medicare portion of the payroll tax.

The Deadweight Loss of the Labor-Market Distortions

This section calculates the deadweight loss caused by an income tax which is used instead of a lump-sum tax with the same revenue which do not distort the leisure-income choice of insured workers. Put differently, given the effective marginal social security payroll tax, the deadweight loss caused by the existing personal income tax will be calculated. As Browning (1975) points out, the welfare cost caused by the social security payroll tax becomes greater as the link between taxes and benefits weaken. Furthermore, Browning (1985) points out that the inclusion of the payroll tax of the Medicare portion of social security raises the effective marginal tax rates by the full statutory HI rate (2.9% in 1992) for all taxpayers. This is because of the tenuous connection between HI payroll taxes and health protection as an in-kind benefit for insured workers. The HI benefit is not related to AIME (Average Indexed Monthly Earnings); it is the same for all eligible insured workers.

I will analyze the welfare loss incurred by the HI parts of social security. Based on my discussion in the previous section, three alternative effective marginal tax rates will be analyzed in the following welfare loss computation. Feldstein's (1995b) effective marginal rate of 7 % is divided into 4.1% for OASDI and 2.9% for HI, Browning's (1985) rate of 12.24% is divided into 9.34% and 2.9%, and the 15.3% of the statutory rate is divided into 12.4% and 2.9%.

(A) The Welfare Cost of HI Part

To calculate the incremental deadweight loss that results from the additional net HI tax, I used formula (4) from Browning (1987)[12]:

$$(4.1) \qquad W = \frac{1}{2} \ \eta \ \frac{m^2}{1-m} \ wL_2$$

where η is the compensated labor supply elasticity,
        m is the marginal tax rate,
        $1{-}m$ is the net marginal tax rate,
        w is workers wage rate,
        L_2 is the quantity of labor supplied, and
        wL_2 is the tax base.

The increase in the dead weight loss because the marginal tax rate is at m_2 rather than m_1 can be considered using the following two equations:

$$(4.2) \qquad W = \frac{1}{2} \ \eta \ \frac{m_2^2 - m_1^2}{1 - m_2} \ wL_2$$

$$(4.3) \qquad W = \frac{1}{2} \ \eta \ \frac{m_2^2}{1 - m_2} \ wL_2 \ - \ \frac{1}{2} \ \eta \ \frac{m_1^2}{1 - m_1} \ wL_2$$

Although Feldstein (1995b and 1996a) uses the equation (4.2) in his welfare cost analysis, he does not derive this equation formally; he borrows equation (4.2) from equation (4.1) of Browning (1987). To test the sensitivity of the estimates, I considered both equation (3.2) and (3.3) in the welfare loss analysis. To get the welfare loss from each equation, I needed estimates of aggregate labor earnings, a weighted-average compensated labor supply elasticity for workers as a group, and a weighted-average marginal tax rate for workers as a group. Browning (1987) provides a discussion of the basis for selection of values for a marginal rate of m. In that discussion,

---

12) Φορ τηε δεριϖατιον οφ τηισ εθυατιον, σεε Βροωνινγ, Εδγαρ (1987), ππ.11∼23.

Browning (1994) uses 43 percent as a marginal rate of m. This value comes from the assumption that the effective tax rate of social security (OASDHI) is 15.3%; i.e., the statutory rate. For OASDI and HI calculations, 15.3% is subtracted from 43% in the statutory case to find the effective rate. That is, the Social Security tax (OASDHI) comes on top of an initial 27.7% marginal income tax rate.

To calculate the incremental deadweight loss that results from the additional 2.9% net HI tax, I used the equation (4.2) and (4.3). For the calculation of the welfare loss caused by the HI tax, the HI payroll tax comes on top of an initial 31.8% marginal income tax rates given the effective tax rate of Feldstein (1995b). Similarly, 37.04% for Browning (1985), and 40.1% for the statutory rate will be used in the estimation. For the statutory case, I used 40.1% as m_1, 43% as m_2, and 2,719 billions as wL_2 for the HI payroll tax in 1992.[13] Table 2 and 3 give estimates of the welfare cost of the HI part in 1992. Table 2 presents estimates based on the equation (4.2), while Table 3 gives estimates based on the equation (4.3).

Table 2. The Welfare Cost of HI Using the Equation (4.2)

(Unit: $ Billion)

compensated labor supply elasticity(η)	m_1 = 0.318 m_2 = 0.347	m_1 = 0.3704 m_2 = 0.3994	m_1 = 0.401 m_2 = 0.43
η = 0.2	8.05	10.09	11.50
η = 0.3	12.07	15.13	17.25
η = 0.4	16.10	20.18	23.00

Notes: where η is the compensated labor supply elasticity.
m_1 and m_2 are the marginal tax rate.

---

13) Φορ τηε τοταλ ταξαβλε ωαγεσ, I υσε ∀Εστιματεδ Παψρολλσ οφ Χοϖερεδ Εμπλοψμεντ ιν Ρελατιον το Ωαγεσ ανδ Σαλαριεσ: 1980 το 1992∀, Στατιστιχαλ Αβστραχτ οφ τηε Υνιτεδ Στατεσ 1995, Τηε Νατιοναλ Δατα Βοοκ, Υ.Σ. Δεπαρτμεντ οφ Χομμερχε, Σεπτεμβερ 1995, π.376.

Table 3. The Welfare Cost of HI Using the Equation (4.3)

(Unit: $ Billion)

compensated labor supply elasticity(η)	$m_1 = 0.318$ $m_2 = 0.347$	$m_1 = 0.3704$ $m_2 = 0.3994$	$m_1 = 0.401$ $m_2 = 0.43$
$\eta = 0.2$	9.84	12.97	15.19
$\eta = 0.3$	14.77	19.46	22.80
$\eta = 0.4$	19.69	25.94	30.40

Notes: where η is the compensated labor supply elasticity.
m1 and m2 are the marginal tax rate.

For my preferred value of η (0.3), $m_1 = 0.3704$, and $m_2 = 0.3994$ in equation (4.3), and the deadweight loss due to the net HI tax was about $19.46 billion in 1992. This dead weight loss was about 0.31 percent of GDP in 1992 (GDP is $6244.4 billion in 1992).

V. Conclusion

Upon examining the welfare loss of Medicare as an in-kind benefit, comparative statics′ results suggest that with their low time price, Medicare beneficiaries demand medical care more. I showed that possible range of the welfare loss would be from $0.59 billion to $2.19 billion, in 1992. Based on my preferred assumption, the welfare loss would be $2.19 billion in 1992. The welfare loss of this type is the opportunity cost due to current Medicare program which is entitled as the in-kind benefit, not the cash benefit.

Next, I calculated the deadweight loss caused by Medicare (HI) payroll tax. Based on Browning′s (1987) formula, given my preferred

value of parameters, it was shown that the deadweight loss due to the HI tax (2.9% net HI payroll tax) was about $19.46 billion in 1992. The incremental deadweight loss resulting from the additional 2.9% HI tax was about 0.31 percent of the U.S. GDP in 1992 (U.S. GDP is $6244.4 billion in 1992).

Since the welfare loss caused by the labor market distortions and the overconsumption of Medicare occurs simultaneously, it is difficult to obtain the aggregate value of the welfare loss induced by different sources. Nevertheless, I guess that the actual welfare loss due to Medicare program would be larger than simple aggregation of above values, since this analysis does not consider the welfare cost due to the consumption behavior of current insured workers with Medicare benefits in the future.

References

Acton, Paul J., ″Demand for Health Care among the Urban Poor, with Special Emphasis on the Role of Time″, *The Role of Health Insurance in the Health Services Sector*, National Bureau of Economic Research, New York, 1976, pp.165~208.

Akerlof, George A., ″The Market for Lemons: Quality Uncertainty and the Market Mechanism″, *Quarterly Journal of Economics*, Vol.84, No.3, 1970, pp.488~500.

Ando, Albert and Modigliani, Franco, ″The Life Cycle Hypothesis of Saving: Aggregate Implications and Tests″, *American Economic Review*, Vol.53, No.1, March 1963, pp.55~84.

Arrow, Kenneth J., ″Uncertainty and the Welfare Economics of

Medical Care", *American Economic Review*, Vol.53, No.5, December 1963, pp.941~973.

Barro, Robert, *The Impact of Social Security on Private Saving*, American Enterprise Institute, Washington, D.C., 1978, pp.1~36.

Becker, Gary S., "Theory of the Allocation of Time", *The Economic Journal*, Vol.75, No.229, September 1965, pp.493~517.

Browning, Edgar K., "Labor Supply Distortions of Social Security", *Southern Economic Journal*, Vol.42, No.2, 1975, pp.243~252.

_____, "The Marginal Social Security Tax on Labor", *Public Finance Quarterly*, Vol.13, No.3, July 1985, pp.227~251.

_____, "On the Marginal Welfare Cost of Taxation", *American Economic Review*, Vol.77, No.1, 1987, pp.11~23.

Browning, Edgar K., "The Non-Tax Wedge", *Journal of Public Economics*, Vol.*53*, 1994, pp.419~433.

Browning, Edgar K. and Browning, Jacquelene M., *Public Finance and The Price System*, Macmillan Publishing Company, New York, 1994.

Bukhauser, R. and Turner, J., "Is The Social Security Payroll Tax A Tax?", *Public Finance Quarterly*, Vol.13, No.3, 1985, pp.253~267.

Congressional Budget Office, "Economic Implications of Rising Health Care Cost", *The Congress of the United States*, Washington, D,C., October 1992.

_____, *Trends in Health Spending: An Update*, The Congress of the United States, Washington, D,C., June 1993,

U.S. Government Printing Office, *Economic Report of the President*, Washington, D,C., 1995.

Feldstein, Martin S., "Social Security, Induced Retirement and Aggregate Capital Accumulation", *Journal of Political Economy*, Vol.82, No.5, 1974, pp.905~925.

_____, *The Impact of Social Security On Private Saving: Evidence from the U.S. Time Series, Reply*, American Enterprise Institute, Washington, D.C., 1978, pp.37~47.

_____, "The Welfare Cost of Social Security's Impact on Private Saving", *Modern Developments in Public Finance: Essays in Honor of Arnold Harberger*, Boskin, M. J., Basil Blackwell Ltd, New York, 1987, pp.1~13.

_____, *Social Security and Saving: New Time Series Evidence*, National Bureau of Economic Research Working Paper #5054, National Bureau of Economic Research, Cambridge, Mass., March 1995a.

_____, *Tax Avoidance and the Deadweight Loss of the Income Tax*, National Bureau of Economic Research Working Paper #5055, National Bureau of Economic Research, 1995b.

_____, *Would Privatizing Social Security Raise Economic Welfare?*, National Bureau of Economic Research Working Paper #5281, National Bureau of Economic Research, Cambridge, Mass., September 1995c.

_____, "Fiscal Policies, Capital Formation, and Capitalism", *European Economic Review 39*, 1995d, pp.399~420.

_____, Richard T. Ely Lecture, "The Missing Piece in Policy Analysis: Social Security Reform", *American Economic*

Review, May 1996a, pp.6～7.

Feldstein, Martin S., "Social Security and Saving: New Time Series Evidence", *National Tax Journal*, Vol.86, No.3, June 1996b, pp.151～164.

Feldstein, Martin S., Samwick, Andrew, "Social Security Rules and Marginal Tax Rates", *National Tax Journal*, March 1993, pp.1～22.

Kupor et al., "The Effect of Copayments and Income on the Utilization of Medical Care by Subscribers to Japan's National Health Insurance System", *International Journal of Health Services*, Vol.25, No.2, 1995, pp.295～312.

Leimer, Dean R. and Lesnoy, Selig, "Social Security and Private Saving: New Time-Series Evidence", *Journal of Political Economy*, Vol.90, No.3, 1982, pp.606～629.

Lind, Robert C., "The Shadow Price of Capital: Implications for the Opportunity Cost of Public Programs, the Burden of the Debt, and Tax Reform", Heller, Starr, and Starrett, eds., *Essays in Honor of Kenneth J. Arrow*, Vol.I, Cambridge University Press, 1988, pp.189～212.

Manning et al., "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment", *American Economic Review*, Vol.77, No.3, June, 1987, pp.251～277.

Newhouse, Joseph P., "Medical Care Costs: How Much Welfare Loss?", *Journal of Economic Perspectives*, Vol.6, No3, Summer 1992, pp.3～21.

Pauly Mark V., "The Economics of Moral Hazard: Comment", *American Economic Review*, June 1968, pp.531～537.

_____, "Taxation, Health Insurance, and Market Failure in the Market Economy", *Journal of Economic Literature*, June 1986, pp.629~675.

Rippe, Richard D. and Lavin, Rita J., *Economic Outlook Monthly*, Prudential Securities, August 1995, p.12.

Rosen, Sherwin, "Some Arithmetic of Social Security", Collin D. Campbell, ed., *Controlling the Cost of Social Security*, Lexington Books, 1984.

Samuelson, Paul., "An Exact Consumption-loan Model of Interest with or without the Social Contrivance of Money", *Journal of Political Economy*, December 1958, pp.467~482.

Silberberg, Eugene., *The Structure of Economics: A Mathematical Approach*, McGraw-Hill Publishing Company, 1990, pp.393~396.

Smeeding, Timothy., *Measuring the Economic Welfare of Low-Income Households, and the Anti-poverty Effectiveness and Non-cash Transfer Programs*, unpublished Ph.D. dissertation, University of Wisconsin-Madison, 1975.

Smolensky, E., Stiefel, L., Schmundt, M., and Plotnick, R., *Adding In-kind Transfers to the Personal Income and Outlay Account: Implications for the Size Distribution of Income*, Institute for Research on Poverty Discussion Paper, University of Wisconsin-Madison, March 1974.

U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1970*, Government Printing Office, Washington, D.C., 1975.

U.S. Board of Trustees of the Federal Hospital Insurance Trust Fund, *1996 Annual Report*, U.S. Government Printing Office, Washington, D.C., 1996.

U.S. Board of Trustees of the Federal Supplementary Medical Insurance Trust Fund, *1996 Annual Report*, U.S. Government Printing Office, Washington, D.C., 1996.

U.S. Department of Commerce, *National Income and Product Accounts of the United States*, Vol.1, 1992, pp.1929~1958

_____, *National Income and Product Accounts of the United States*, Vol.2, pp.1959~88, Bureau of Economic Analysis, U.S. Government Printing Office, Washington, D.C., September 1992.

U.S. Department of Health, Education and Welfare, *Life Tables: 1959-61*, PHS Publication No.1252, U.S. Government Printing Office, Washington, D.C., 1968.

U.S. Department of Health and Human Services, *Social Security Programs in the United States*, SSA Publication No.13-11758, Office of Research and Statistics, Social Security Administration, Winter 1993.

U.S. Social Security Administration, *Social Security Bulletin Annual Statistical Supplement*, U.S. Government Printing Office, Washington, D.C., Various Years.

Yun, Sukmyung, *Social Security and Private Saving: A Reexamination of the Time Series Evidence*, Ph.D Dissertation, Texas A&M University, College Station, U.S.A., 1997.

요 약 ————————————————————————————

美國 醫療保障制度에 基因한 厚生損失 分析

<div align="right">尹 錫 明</div>

———————————————————————————————

　현재 미국에서는 급격한 의료비상승과 의료보장제도 재정불안정이 큰 사회문제로 부각되고 있다. 국내지출 기준으로 연방정부예산중 두번째로 큰 비중을 차지하고 있는 미국의 의료보장제도(Medicare)는 병원보험계정(HI: Hospital Insurance)과 보충적 의료보험계정(SMI: Supplementary Medical Insurance)으로 나뉘어진다. 병원보험계정은 입원 치료시 발생되는 비용(병원비)을 지불하며, 보충적 의료보험계정은 의사진료비와 통원치료시 발생되는 제반 비용을 처리해 주고 있다. 1996년 병원보험계정은 3800만 가입자에게 1299억불을 지출하였고 보충적 의료보험 계정은 3600만 가입자에게 704억불을 지출하였다. 두 계정을 합한 가입자 1인당 지출액은 1996년에 5302불이었다.

　본고는 현행 의료보장제도에서 기인하는 후생손실을 측정하고 있다. 본고를 쓰게 된 직접적인 동기는 1966년 의료보장제도가 도입된 이래 미국 사회보장제도의 현금급여에 비해 의료부문의 급여가 훨씬 빠른 속도로 증가하고 있다는 점에 착안하였다. 후생손실 측정에 있어, 첫째, 의료보장제도가 현물급여이기 때문에 발생되는 후생손실을 측정하였다. 진료시 시간비용이 의료 수요에 영향을 미칠 수 있음에 착안하여 시간비용을 명시적으로 고려하는 수요모형을 전개하였다. 유도된 모델은 의료보장의 경우 한계비용보다 한계효용이 낮다는 의미에서 초과소비가 존재할 수 있음을 예측하고 있다. 이러한 모델예측을 이용하여 미국 의료수요에서 흔히 언급되는 모수(Parameter)를 사용하면 1992년에 약 22억불의 후생손실이 발생되었음을 알 수 있다.

  두번째로 2.9%의 의료보장세(Medicare Payroll Tax)가 정상적인 근로행위에 부정적으로 미치는 영향을 추정하였다. 가장 흔히 사용되는 모수들을 이용하여 얻은 후생손실은 1992년에 195억불에 이르고 있다. 2.9%의 의료보장세가 초래하는 후생손실은 1992년 미국 총국내생산(6조 2444억불)의 0.31%를 차지하고 있다.