OPTIMAL UNEMPLOYMENT INSURANCE BENEFIT STRUCTURE*

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Given the constraint that the unemployment benefit is not allowed to vary freely over the unemployment duration, this paper examines the optimal UI benefit structure. In particular, identifying the conflicting effects of benefit amount and benefit duration upon incentive and insurance, this paper characterizes the optimal combination of UI benefit amount and duration. Based upon some important factors determining the optimal UI benefit structure that are derived from the model, a set of directions for UI reform in Korea have been proposed.

— Key Words: Unemployment Insurance, Search, Benefit Duration, Replacement Rate, Incentive —

I. Introduction

As the labor market becomes more flexible to survive the so-called globalization trend, there has been increase in social demand for the safety net. Recently a number of important works have recently been conducted to design optimal unemployment insurance system. This paper is

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aimed to examine the benefit structure of the unemployment insurance system to characterize its optimal pattern as a function of major parameters, which might provide some guidelines or insights for the institutional set-up of UI system in an economy.

The main objective that an unemployment insurance system tries to achieve would be to provide the unemployed with insurance against the income loss during the subsequent unemployment period. Thus, unless the UI system is subject to its side effect, the most desirable form of the UI benefit structure would be the constant UI payment for the whole unemployment period given the UI budget and the reemployment probability.

As we often observe in reality, however, the UI benefit system causes some side effects or inefficiency in terms of the delay in reemployment on the part of the UI beneficiary. In other words, the UI benefit would adversely affect the search behavior of the unemployed so that the chance of his or her reemployment may decrease. Recent academic literature on the so called optimal UI structure addresses this issue and tries to characterize the optimal UI benefit structure that can effectively balance out the two conflicting effects — insurance and search incentive — of the UI system upon the unemployed.

Most of the theoretical studies argue that the optimal UI benefit system involves decreasing amount of UI benefit over the infinite benefit duration (Hopenhayen & Nicolini (1997), Shavell & Weiss (1979)). In fact, however, the UI systems in most of the countries have the almost constant benefit amounts over the finite benefit durations. The discrepancy between theory and reality may be probably due to the administrative costs of implementing the theoretically optimal UI system, i.e., the cost of implementing the differential benefit structure over time.[1]

If the amount of UI benefit is constrained to be constant over time for any reason, then the optimal potential duration of benefit would not be infinite as in the literature. Thus the relevant question we can ask is what would be the optimal combination of benefit amount and duration for a given UI budget. One could have a combination of lower benefit amount and longer duration or a combination of higher benefit amount and shorter duration given the UI budget.

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1) There are a few countries (France, for example) that adopt differential benefit structures. But they offer just two or three different benefit amounts over time, which we cannot think reflects optimal benefit structure suggested in the literature. In fact, the informational requirements for the implementation of the optimal benefit structure seem to be too big especially for the middle income countries.

The optimal combination will be determined by the consideration of income insurance and search incentives, which are the two important problems inherent in the UI system.

In general, the UI system with higher benefit amount and shorter potential duration of benefit, which provides less insurance for risk-averse unemployed workers, would motivate them to engage in more intensive search for the following reasons. First, the lower level of insurance provided by the UI system increases the cost of remaining unemployed. Second, the early reemployment, which will be more facilitated by more intensive search, yields higher income under the system than the one with lower benefit amount and longer duration. The latter point has not been considered in Davidson and Woodbury (1997), which is why they argued that the optimal benefit duration is infinite in the case when benefit amount is constrained to be constant during the UI entitlement period.[2)]

Identifying the conflicting relationship between incentive and insurance in determining a benefit structure we can derive from the model a particular pattern of UI benefit structure, i.e., the particular combination of benefit amount and duration for a given economy. There are several factors that may affect the optimal combination of benefit amount and duration. First, we can think of risk aversion of the unemployed, i.e., how much they are willing to and able to bear the risk of income loss, as a parameter affecting the optimal UI benefit structure. For it is risk aversion of workers that is why they need insurance provided by UI system. If the unemployed are more risk-averse because of their preferences or because of their low wealth levels, for example, lower benefit amount with longer duration would be desirable for them. This might imply that it would be better for a poor country to adopt an UI benefit structure with lower replacement rate and longer duration.

As another important parameter affecting the UI benefit structure, we can think of search efficacy for the unemployed, i.e., the arrival rate of new job opportunities per unit search effort. For it is the search efficacy that determines the size of inefficiency caused by low search effort under the UI benefit system. If the number of new jobs created is small relative to that of the

2) In addition to the possibility of finite benefit duration, Davidson and Woodbury (1997) also takes into account the fact that individual search activity affects unemployment rate through its effect on the overall job vacancies. Since the model gets fairly complicated, however, they focused on the simulations rather than rigorous analysis based upon the full model.

unemployed searching for jobs in a certain economy, for example, low benefit amount with long duration might suit the economy because the inefficiency cost would not be so serious under this circumstance.

Finally, the budget size can surely affect the UI benefit structure. Higher tax rate for UI financing will allow the unemployed to have both higher replacement rate and longer benefit duration.

In the following section a simple model that can formulate the above arguments in the context of optimal unemployment insurance will be developed, and some specific functional forms will be imposed upon the model in Section 3 to derive meaningful results from it. Finally, some implications for the reform of unemployment insurance benefit structure in Korea will be given in Section 4, which is followed by a brief concluding remarks.

Ⅱ. Model

Consider an unemployed worker who lives for one period and has a following utility function:

$$\int_0^1 U(I_t)dt \; - \; e,$$

where It and e represent income at time t search effort, and $U'>0,\ U''<0,\ U(0)=0$. At the beginning of the period a worker chooses search effort, which determines his reemployment dynamics in the whole period. The search technology assumed in this paper emphasizes its aspect of scale economy or of fixed cost. In other words, once a worker makes an investment into job search, it will positively affect the reemployment probabilities in the subsequent period s.[3] This can be compared with the existing literature on optimal unemployment insurance, which assumes that the reemployment probability in one period is not affected by the previous search

3) The scale economy of search technology reflects the fact that a displaced worker tend to make some initial investments into job search, such as visiting job information centers and forming job search networks, which would reduce the search cost of reemployment in the later periods.

investments.

More precisely, the unemployment spell t for a worker is indicated by a random variable, whose distribution function $F(t;e)$ is affected by the search effort e he chooses. Taking into account the positive effect of search effort upon reemployment probability, we will assume that, for $t_1 < t_2$,

$$f_e(t_1) > f_e(t_2). \tag{1}$$

where f(.) is the probability density function of the unemployment spell t. Since $F(1) = 1$, there exists a certain point $\hat{t}$ in time such that $f_e(\hat{t}) = 0$.

Suppose a worker is eligible for the unemployment insurance that provides him with UI benefit b for the time up to T. We will assume that

$$T < \hat{t}. \tag{2}$$

If the worker gets wage w after getting reemployed while he gets nothing during unemployment once his UI benefit is exhausted, his expected utility function V[4] will be

$$V = U(w)[\int_0^1 (1-t)f(t;e)dt] + U(b)[\int_0^T tf(t;e)dt + T\int_T^1 f(t;e)dt] - e$$

$$= U(w)(1-\bar{t}(e)) + U(b)\{\bar{t}(e) - \phi(T;e)\} - e,$$

where

$$\bar{t}(e) \equiv \int_0^1 tf(t;e)dt, \qquad \phi(T;e) = \int_T^1 (t-T)f(t;e)dt.$$

Note that $(1-\bar{t}(e))$ indicates the expected length of employment period for the UI beneficiary, and that $\{\bar{t}(e) - \phi(T;e)\}$ represents the expected length of unemployment period during which the

4) In this paper, as in Baily (1979), I do not take a dynamic approach in formulating the expected utility function, in which the expected utility of an unemployed worker at each point in time under each circumstance is defined. Note that the purpose of this paper is to figure out optimal combination of benefit amount and duration, not to figure out the benefit level at each point in time over benefit duration as in Hopenhayen and Nicolini (1979)

worker receives UI benefit b.

Then the unemployed worker will choose his search effort e^* in the following way:

$$-\bar{t}_e U(w) + (\bar{t}_e - \phi_e(T))U(b) = 1. \tag{3}$$

The LHS of (3) represents the marginal search benefit, $MS(e;T,b,w)$. The second-order condition requires the following to hold,

$$MS_e \equiv -\bar{t}_{ee}(U(w) - U(b)) - \phi_{ee}(T)U(b) < 0.$$

which is assumed to be true. The assumptions (1) and (2) imply that

$$\bar{t}_e < 0, \qquad \bar{t}_e - \phi_e(T) < 0.^{5)} \tag{4}$$

We can see from the condition (3) that the UI system (b,T) affects individual search effort. First we have by (3)

$$\frac{\partial e^*}{\partial T} = -\frac{MS_T}{MS_e} = -\frac{1}{MS_e}\{-U(b)\phi_{eT}(T)\}$$
$$< 0$$

because

$$\phi_{eT}(T) = F_e(T) > 0.$$

We can also see that

$$\frac{\partial e^*}{\partial b} = -\frac{MS_b}{MS_e} = -\frac{1}{MS_e}U'(b)\{\bar{t}_e - \phi_e(T)\}$$
$$< 0,$$

by (4).

The fact that both benefit amount b and (potential) benefit duration T decreases search effort

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5) $\bar{t}_e - \phi_e(T) = \int_0^T (t-T)f_e(t;e)dt < 0$ since $f_e(t;e) > 0$ for t < T by (1) and (2)

on the part of individual unemployed worker indicates the search disincentive effect of UI system. Since an individual worker does not take into account the effects of his search effort upon UI system (b, T), the search effort e* he chooses would be different from the socially optimal level of search effort denoted by eo . To the extent that the increase in individual search effort reduces unemployment rate and thereby increases UI benefit b and duration T, which may be the case in reality,[6] the individually chosen search effort e* would be lower than the socially optimal one eo.

The main purpose of this model is to characterize the optimal set of parameters (T*,b*) that maximize the expected utility of an unemployed worker[7] subject to the individual rationality constraint (3) and to the government UI budget constraint:

$$B = b(\bar{t} - \phi(T)). \tag{5}$$

In doing this we will first find out the incentive effect of T or b as they vary within the constraint (5), which we will then consider in determining the optimal (T*,b*).

Disregarding the incentive effect of the change in (T,b), we can have from (5)

$$\left.\frac{db}{dT}\right|_{\bar{B},\bar{e}} = \frac{b\phi_T(T)}{\bar{t} - \phi(T)}.$$

Suppose T increases while b decreases so as to keep the constraint (5) (with the search effort being constant). Then its effect on the marginal search benefit MS will be

$$\left.\frac{dMS}{dT}\right|_{\bar{B}} = \frac{\partial MS}{\partial T} + \frac{\partial MS}{\partial b}\left.\frac{db}{dT}\right|_{\bar{B},\bar{e}}$$

$$= -\ U(b)\phi_{eT}(T) + U'(b)(\bar{t}_e - \phi_e(T))\frac{b\phi_T(T)}{\bar{t} - \phi(T)} \tag{6}$$

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6) This is subject to the externality arguments, which are also mentioned in Baily (1979).

7) In characterizing optimal UI system Baily (1979) used as an objective function the expected utility function of an employed worker (rather than that of unemployed worker), which can include layoff probability, tax rate. Here, however, I follow the others (Hopenhayen and Nicolini (1997), Shavell and Weiss (1979)) by taking the expected utility function of an unemployed worker as the one to be maximized.

Note that

$$\phi_T(T) = -(1-F(T)), \qquad \phi_{eT}(T) = F_e(T)$$

and that

$$\bar{t} - \phi(T) = \int_0^T tf(t)dt + T(1-F(T))$$

and

$$\bar{t}_e - \phi_e(T) = \int_0^T tf_e(t)dt - TF_e(T)$$

Since

$$\frac{\bar{t}_e - \phi_e(T)}{\bar{t} - \phi(T)} = \frac{\int_0^T tf_e(t)dt - TF_e(T)}{\int_0^T tf(tdt + T(1-F(T))}$$

and since

$$\int_0^T tf_e(t)dt > 0$$

by (1) and (2), we have

$$\frac{\phi_{eT}(T)}{\phi_T(T)} < \frac{\bar{t}_e - \phi_e(T)}{\bar{t} - \phi(T)} < 0 \qquad (7)$$

Since $U'(b)b < U(b)$ by concavity of the utility function, we have from (6) and (7) that

$$\left.\frac{dMS}{dT}\right|_{\bar{B}} = \left.\frac{\partial MS}{\partial T} + \frac{\partial MS}{\partial b}\frac{db}{dT}\right|_{\bar{B},\bar{e}} < 0 \qquad (8)$$

Similarly, we have

$$\left.\frac{dMS}{db}\right|_{\bar{B}} = \left.\frac{\partial MS}{\partial b} + \frac{\partial MS}{\partial T}\frac{dT}{db}\right|_{\bar{B},\bar{e}}$$

$$= U'(b)(\bar{t}_e - \phi_e(T)) - U(b)\phi_{eT}(T)\frac{\bar{t} - \phi(T)}{b\phi_T(T)}$$

$$> 0$$

(9)

We have thus far demonstrated the following proposition.

Proposition 1

Suppose the benefit duration T and the benefit amount b change while keeping the government budget constraint (5). Then we have

$$\left.\frac{\partial e}{\partial T}\right|_{\bar{B}} < 0, \quad \left.\frac{\partial e}{\partial b}\right|_{\bar{B}} > 0 .$$

<proof>

The conditions (8) and (9), and the second-order condition for e* , that $MS_e < 0$, lead to the desired results.

Among the set of benefit structures that satisfy a given budget constraint, the one with long benefit duration and small benefit amount given the budget provides a worker with more insurance against unemployment risk than the one with short duration and large benefit amount (or high replacement rate). Proposition 1, on the other hand, implies that as we change the UI benefit structure toward longer benefit duration T and lower benefit amount b (or lower replacement rate) within the budget constraint, the unemployed worker would have less incentive to search for jobs. Therefore, there is a conflicting relationship between insurance and incentive in determining a benefit structure (T, b) given a budget constraint, and the optimal benefit structure (T*, b*) would be the one that balances out these virtues.

More specifically, the optimal benefit structure (T*, b*) will maximize the expected utility function

$$V = U(w)(1-\bar{t}(e)) + U(b)\{\bar{t}(e) - \phi(T;e)\} - e,$$

subject to the individual rationality constraint (3) and the budget constraint (5). Then the solution (T*. b*) to this problem will satisfy

$$\frac{B}{b^*}\{U'(b^*) - \frac{U(b^*)}{b^*}\} - \{\bar{t}_e - \phi_e(T)\}\frac{U(b^*)}{b^*} \quad \{\frac{\partial e}{\partial b}\bigg|_{\bar{B}}\} = 0 . \qquad (10)$$

As the benefit amount b increases within the budget constraint, it has both positive and negative effects on welfare. The first term of (10) indicates its marginal cost in terms of reduction in insurance, while the second term represents its marginal benefit in terms of improvement in incentive.

If there is no incentive concern associated with unemployment insurance, i.e., if $\frac{\partial e}{\partial b}\Big|_{\bar{B}} = 0$, then the optimal benefit amount $\hat{b}$ would be the one that satisfies

$$U'(\hat{b})\hat{b} = U(\hat{b}),$$

and the corresponding benefit duration $\hat{T}$ would be the one that satisfies the budget constraint for the given $\hat{b}$. Then we can establish the following proposition.

Proposition 2

As the unemployment insurance causes adverse incentive problem on the part of workers, the optimal benefit structure (T*, b*) is such that

$$b^* > \hat{b}, \qquad T^* < \hat{T},$$

where $(\hat{T},\ \hat{b})$ is the optimal benefit structure under no moral hazard.

<proof>

As $\left.\frac{\partial e}{\partial b}\right|_{\bar{B}} > 0$, the optimal benefit amount b* should be the one such that

$$U'(b^*)b^* < U(b^*)$$

by (10). Since U < 0, which implies that $\{U(b) - U'(b)b\}$ is increasing in b, we have

$$b^* > \hat{b}$$

and the budget constraint (5) implies that $T^* < \hat{T}$

Proposition 2 argues that the need for balance between incentive and insurance leads to the optimal UI benefit structure entailing shorter benefit duration and larger benefit amount than the one that is not subject to the incentive constraint.

Ⅲ. Comparative Statics

Although the necessary condition (10) has a certain implication for the optimal benefit structure (T*, b*) , it is not informative enough to characterize the benefit structure itself. Thus I will in this section assume a specific form of distribution function F(.) of unemployment spell and of utility function to derive some meaningful comparative static results.

Suppose unemployment spell t is distributed as follows:

$$t = T_1(< T) \text{ with probability } P(e),$$

$$= T_2(> T) \text{ with probability } (1 - P(e)),$$

where T is benefit duration and

$$P(e) = 1 - \exp(-\gamma e), \quad P' = \gamma \exp(-\gamma e), \quad P'' = -\gamma^2 \exp(-\gamma e). \tag{11}$$

And the instantaneous utility function is assumed to be

$$U(I)=\frac{1}{\delta}I^{1-\delta}, \tag{12}$$

where δ is the constant (relative) risk-aversion.

The expected utility function V of a worker will be

$$V(b,T;T_1,T_2,w,\gamma,\delta)=P(e)\{T_1U(b)+(1-T_1)U(w)\}$$
$$+(1-P(e))(TU(b)+(1-T_2)U(w))-e. \tag{13}$$

And the worker will choose his search effort e as follows (Individual Rationality Condition):

$$P'(e)\{(T_2-T_1)U(w)-(T-T_1)U(b)\}=1 \tag{14}$$

The second-order condition holds because

$$D\equiv P''(e)\{(T_2-T_1)U(w)-(T-T_1)U(b)\}<0 \tag{15}$$

by (11). We can see from (14) and (15) that

$$\begin{aligned}\frac{\partial e}{\partial b}&=\frac{-1}{D}\{-P'(e)(T-T_1)U'(b)\}\\ &=-(1-P)(T-T_1)U'(b)\end{aligned} \tag{16}$$

and

$$\begin{aligned}\frac{\partial e}{\partial T}&=\frac{-1}{D}\{-P'(e)TU(b)\}\\ &=-(1-P)TU(b)\end{aligned}, \tag{17}$$

which implies that the benefit structure (T,b) affects the individual search decision.

The optimal benefit structure (b^*,T^*) will solve the following problem:

$$\underset{b,T}{Max}\quad V(b,T:a,w,\gamma,T_1,T_2)$$

subject to the budget constraint

$$B = b\{P(e)T_1 + (1 - P(e))T\} \tag{18}$$

and to the individual rationality condition (14). Now let $b^* = rw$, where r is the replacement rate. Considering the fact that the tax revenue for the UI benefit is proportional to wage, we will let B = Rw, where R is constant. Then the condition (18) can be rewritten as

$$R = r\{P(e)T_1 + (1 - P(e))T\} \tag{19}$$

Since, as r = 1, the search effort e = 0 (by (14)) and thus P(0) = 1 (by (11)), we can see that

$$R = T_1 \tag{20}$$

by (19).

Forming the following Lagrangean

$$L = V(b, T; w, \gamma, \delta, T_1) + \lambda(B - b\{P(e)T_1 + (1 - P(e))T\})$$

to solve for (T*, b*), we have

$$\frac{bU'(b)}{U(b)} = \frac{1 + bP'(e)(T_1 - T)\dfrac{b}{B}\dfrac{\partial e}{\partial b}}{1 + bP'(e)(T_1 - T)\dfrac{1}{(1-P)b}\dfrac{\partial e}{\partial T}}. \tag{21}$$

Substituting (16) and (17) into (21), we have

$$\frac{U(b^*) - b^*U'(b^*)}{b^*U'(b^*)U(b^*)} = \gamma T_1(1 - r^*). \tag{22}$$

And the optimal benefit duration T* will then be determined by the budget constraint (18).

To characterize the optimal benefit structure (T*, b*) (or (T*, r*)), we will rewrite the condition (22) by using (12) as follows:

$$Z(r^*, \delta, w) = \gamma T_1(1 - r^*). \tag{23}$$

where

$$Z(r,\delta,w) \equiv \frac{\delta}{(rw)^{1-\delta}}\frac{\delta}{1-\delta}.$$

Suppose there is minimum level of UI benefit for workers, so that r ro .Then we can prove the following.

Lemma

Suppose that the wage w is large enough so that $Z(r^o,\delta,w) > \gamma T_1(1-r^0)$. Then, there exists a solution r* for (23), where

$$\frac{\partial Z}{\partial r} < \gamma T_1$$

at r = r*.

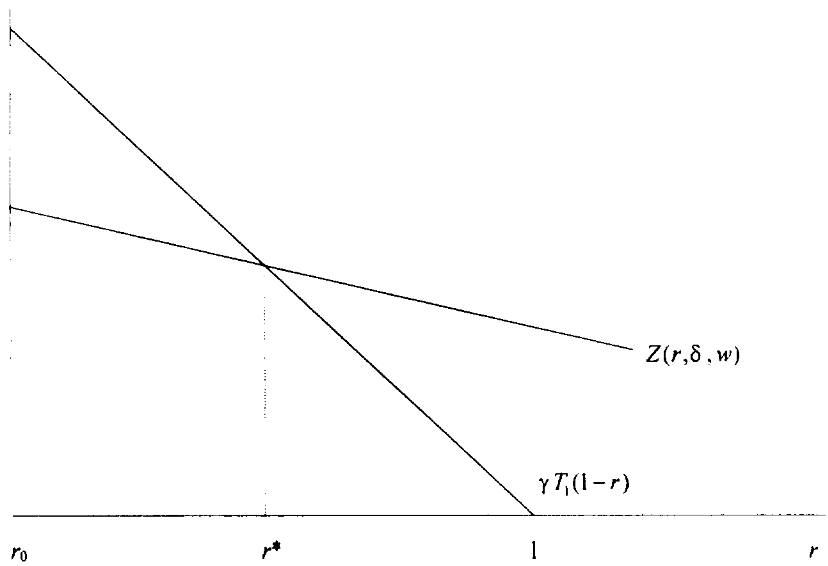
<proof>

Note that Z(1,δ,w) > 0, the value of RHS of (23) at r = 1. This, together with the assumption that $Z(r^o,\delta,w) > \gamma T_1(1-r^0)$, guarantees the existence of the solution. If we have more than one solutions, there exists one r (r_1, r_2) such that $\frac{\partial Z}{\partial r} < -\gamma T_1$ at r = r and that $\frac{\partial Z}{\partial r} > -\gamma T_1$ at r = r_1 or r_2. Since $\frac{\partial Z}{\partial r} = -Z\frac{1-\delta}{r} = -\gamma T_1\frac{(1-r)(1-\delta)}{r}$, $\frac{(1-r')(1-\delta)}{r'}$ cannot be greater than 1 because rl < r and $\frac{(1-r_1)(1-\delta)}{r_1} < 1$. Thus there should exist unique solution r* at which $\frac{\partial Z}{\partial r} > \gamma T_1$.

The optimal replacement rate r* can be shown as in the following graph.

The optimal potential benefit duration T* will be set by the budget constraint given the budget constraint (18) once the replacement rate r* is determined. Then we can establish some important comparative static results on the optimal structure of UI.

< Optimal Replacement Rate r* >



Proposition 3

$$\frac{\partial r^*}{\partial \gamma} > 0, \quad \frac{\partial T^*}{\partial \gamma} < 0, \quad \frac{\partial r^*}{\partial \delta} < 0, \quad \frac{\partial T^*}{\partial \delta} > 0, \quad \frac{\partial r^*}{\partial w} > 0, \quad \frac{\partial T^*}{\partial w} < 0 .$$

<proof>

Let

$Y(\gamma) \equiv \gamma T_1(1-r^*)$. Then we have $Y'(\gamma) > 0$, which leads to the result $\frac{\partial r^*}{\partial \gamma} > 0$. Since $Z_\delta > 0$ or $Z_w < 0$, the result that $\frac{\partial r^*}{\partial \delta} < 0$ or $\frac{\partial r^*}{\partial w} > 0$ follows, respectively. And the budget constraint (18) explains the rest of the desired results.

There are two major factors that affect the optimal UI benefit structure in this model. The one is the search efficacy in terms of the sensitiveness of reemployment to search effort, which determines the benefit amount and duration through its effect upon incentive cost. As the search efficacy increases, the incentive cost associated with UI gets higher so that the optimal benefit amount and duration may increase and decrease, respectively. The other factor is the risk-aversion of a worker, which determines his need for insurance against unemployment risk. Thus the optimal UI structure for the workers with greater risk aversion would be the one with lower benefit amount and longer potential benefit duration. Finally, the wage level of a worker can also affect UI structure through its effect upon the worker's search incentive. For an economy of workers with high wage, for example, they would need relatively less insurance and more incentive than the others, so that the optimal benefit structure would be the one with high replacement ratio and short benefit duration.

Ⅳ. Some Implications For Unemployment Insurance System in Korea

In this section I will explore the implications of the theoretical arguments provided in the previous sections for the Korean unemployment insurance system. The benefit structure of unemployment insurance in Korea shares some of the important elements in common with that of US: the potential benefit duration is around six months at maximum, and the replacement rate is about 50%. Also the contribution rate for UI benefit had been 0.6% in Korea (although it has recently been increased to 1%), which is the same as the net UI tax rate for the US. In this respect, therefore, I will compare the relevant parameter values in Korea with those in the US to indicate the desirable changes of our system in the light of the theory I developed. In particular, I will focus on the three factors that determine the optimal benefit structure — wage income of workers, search efficacy and the budget availability.

First, many statistics show that Korean workers are poorer than US workers are in general. This would imply that it will cost Korean workers more to bear a certain amount of income risk than the American counterparts. To the extent that this is the case, the previous theoretical argument suggests that our replacement ratio and duration should be lower and longer than those of US, respectively, given the same expected UI expenditure for an unemployed worker.

Second, another relevant parameter will be the search efficacy for workers, which is represented by in the model. The variables, which may represent the efficacy of search activity, would be turnover rate and unemployment rate. As the turnover rate gets higher for a given unemployment rate, the ratio of the hirings to the job seekers (the separated plus the unemployed) will go up, making the search effort effective. Now that the unemployment rate in Korea is expected to be around 4% in the future, which is comparable to the U.S., we will compare the turnover rates in the two countries in figuring out the relative search efficacy in Korea.

The turnover rate in the US is very high relative to other countries. According to the OECD's Employment Outlook (1995), the monthly turnover rate is about 10% during the early 80's, as measured by the ratio of the number of separations and hirings per month to the total employment. This turnover rate is comparable to Canada, but is clearly higher than other OECD countries. It is also higher than the turnover rate in Korea, which is about 5% during the 90's (*Report on Monthly Survey* by Ministry of Labor). The turnover rate in Korea is in general lower than in other OECD countries except Japan and the Netherlands. Another evidence that supports the low search efficacy in Korean labor market is the low estimated reemployment probability, as was reported by Ryoo (2000), who used Survey of Unemployment and Welfare Needs (1998) to find the effect of UI benefit upon the reemployment in both regular and non-regular jobs to be insignificant.

In the light of the previous theoretical arguments, these statistics and empirical studies would imply that the replacement rate should be lower while the benefit duration should be longer in Korea than in the US.

Lastly, our UI budget is expected to be in surplus in the future under the current UI benefit system. One reason for this surplus is because, although the UI revenue was 70% of the UI expenditure in 1998, our contribution rate has increased by 67% from 0.6% to 1% and the unemployment rate is expected to be stabilized around 4%. This fact might lead some to argue that the current UI tax rate should be lowered in Korea. This argument would not be viable, however, because the level of UI benefit in Korea is never sufficient enough (particularly in terms of benefit duration) to provide adequate insurance to the unemployed workers. In 1998 the average benefit duration is around 3 months, while the average unemployment duration for the regular workers who constitute the most of UI beneficiaries is around 7-8 months.

Taking into consideration the effects of risk-aversion, search efficacy and the budget availability on our optimal UI benefit structure, we can summarize them as follows: the benefit duration should be extended because all the parameters considered act toward longer benefit duration, while the desirable direction of change in the benefit amount is ambiguous. Note that our workers' risk-aversion and our search efficacy imply lower benefit amount, whereas the prospect of the budget surplus works in the opposite direction. Given the current UI contribution rate, therefore, we can argue that our UI benefit structure should be redesigned toward the one with longer benefit duration. Keeping the current replacement rate under the assumption that the above conflicting effects on the benefit amount cancel each other, Fields, Hur, Yun(2000), based on the estimated reemployment dynamics of unemployed workers, showed that the benefit duration can be extended up to 48 weeks under the balanced UI budget.

V. Conclusion

Given the constraint that the unemployment benefit is not allowed to vary freely over the unemployment duration, this paper examines the optimal UI benefit structure. In particular, identifying the conflicting effects of benefit amount and benefit duration upon incentive and insurance, this paper characterizes the optimal combination of UI benefit amount and duration. This model can be compared with the existing literature on optimal unemployment insurance, which mostly argue that the optimal UI benefit structure entails a decreasing benefit amount for the infinite benefit duration.

This model also enables us to recognize some important factors that determine the optimal combination of replacement ratio and benefit duration — wage level, search efficacy, and budget size -, and thereby to figure out the direction of UI reform in Korea. After examining the relevant parameters related to these factors in Korea, we argue that the UI benefit duration needs to be extended under the premise of balanced UI budget.

Despite the important policy implications one reservation would be relevant about this model: it does not take into account the possible externalities that may arise in the search process. A worker's intensive search, for example, may adversely affect the reemployment probabilities of the other workers through the resulting reduction in the overall job vacancies. This aspect may be important in that this type of externality would reduce the socially optimal level of job search, which would affect the pattern of our UI benefit structure.[8)]

Finally, I would like to mention another promising possibility of improving UI system in Korea, which is to introduce individual savings account into the usual unemployment insurance framework. If we replace a part of UI contribution by individual (mandatory) savings as suggested by Feldstein & Altman (1998), we can expect to have improved incentives on the part of workers, which will enable us to better balance out between the incentive and insurance.

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8) I did not include this type of search externality in the model, because it would make the model too complicated and because there could be other type of search externality that may increase the socially optimal level of search intensity (so that the net effect of the two conflicting externalities may be ambiguous). See Baily (1978) for this point.

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abstract

Optimal Unemployment Insurance Benefit Structure

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본 논문에서는 현실적으로 실업보험급여가 수급기간별로 차등지급되기 어렵다는 전제하에 가장 바람직한 실업급여체계가 어떠한 것인가를 분석하고 있다. 특히 법정수급기간과 소득대체율이 실업자들의 구직유인과 소득안정에 대해 미치는 영향을 파악하고, 이에 따라 사회후생을 극대화시킬 수 있는 법정 수급기간 및 소득대체율의 조합을 분석하고 있다. 아울러 본 모형을 통해 적정 실업급여체계를 결정하는 여러 가지 요인들을 도출하고, 그에 의거하여 앞으로 우리나라의 고용보험제도의 개혁 방향을 제시하고 있다.