Economic Effects of Work-Oriented Welfare Policies in the Presence of Uncertainty on Job Opportunity

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Abstract

This paper investigates the economic effects of work-oriented welfare policies in the presence of the uncertainty on job opportunity, taking explicit account of income risks resulting from uncertain job opportunity as well as the moral hazard problem of low-income workers. Policy simulation with a general equilibrium stochastic overlapping generations model and its calibration that reflects characteristics of U.S. economy shows that work-orient social welfare policies such as TANF and EITC are effective to improve the work incentive of low-income workers, even though they result in their welfare decrease through decrease in leisure consumption. It is also shown that among the two major components of TANF, strict work requirement and lifetime limit of benefit receipt period, the latter provides much stronger work incentives to low-income worker.

1. Introduction

Recent social welfare policy reforms of the U.S. represent the change of social philosophy from social minimum guarantee through some combination of family income and public transfers to economical independence and self-reliance through limitation of collective support for individual well-being and promotion of job preparation and work. Temporary Assistance for Needy Families (TANF) replaced the preexisting Aid to Families with Dependent Children (AFDC), which was criticized by its serious labor supply disincentives. The most fundamental restructured elements of TANF, created to strengthen work incentives, are: (1) imposition of strict work requirement in order to qualify for federal aid; and (2) lifetime limit on the number of years of benefit receipt which could be paid out of federal funds. The Earned Income Tax Credit (EITC), which was enacted in 1975 and has expended thereafter, aims to strengthen the work incentives of low-income workers by imposing negative effective income tax rates for a range of earned income.

The economic effects of the work-oriented welfare policies, such as the TANF and the EITC, are influenced by two contradicting forces. Even though they mitigate the moral hazard of low-income workers by decreasing the labor supply disincentives, they are susceptible to the income risk due to the uncertainty on job opportunity, which results from individuals' idiosyncratic risks, which can not be pooled in a competitive economy. In this sense, the preexisting social-minimum-guarantee schemes may have welfare-improving effects through risk pooling by cross-sectional redistribution of resources

The purpose of this paper is to study the economic effects of work-oriented welfare policies in the presence of the uncertainty on job opportunity, taking explicit account of income risks resulting from uncertain job opportunity as well as the moral hazard problem of low-income workers.

For this purpose, we construct a stochastic general equilibrium overlapping generations (OLG) model, which is designed to investigate the effects of the individual elements of work-oriented welfare policies, such as work requirement, lifetime limit on the number of years of benefit receipt, and negative effective income tax rates. The

model explicitly considers the unemployment risk, the liquidity constraint and the decision making of the unemployed to reacquire employment status, in order to investigate the risk pooling effects of public transfers and moral hazards of low-income workers. We adopt the lifecycle framework to investigate the effects of lifetime limit on the number of years of benefit receipt.

Policy simulation with the model and its calibration that reflects characteristics of U.S. economy shows that the effects on work incentives and savings are more important determinants of welfare of low-income workers than the risk-pooling effects of social minimum guarantee schemes. In addition, we also show that work-orient social welfare policies such as TANF and EITC are effective to improve the work incentive of low-income workers, even though they result in their welfare decrease though decrease in leisure consumption. It is also shown that among the two major components of the TANF, benefit receipt period limit provides much stronger work incentives to low-income worker.

The remainder of the paper is organized as follows. Section 2 explains the simulation model and in Section 3, the model is calibrated and the computation procedure is described. In Section 4, our numerical results are presented. Finally, Section 6 concludes the paper.

2. The Model

The economy in the model employed for the simulation consists of three sectors: households; firms; and the government. The household sector is divided into J lifetime income classes. Each individual in this economy is assumed to live T periods, each period corresponding to one year. During childhood, each person has no role as a worker or a consumer, i.e. until reaching a certain stage of life, he/she does not work or consume any goods. However, upon becoming an adult, he/she makes decisions about labor supply and savings. Therefore, we assume that each individual is born as an adult at the age of 20 and dies at the age of 80 (i.e. T=60). Each individual inherits no wealth and leaves no bequest. An individual can be either employed or unemployed during working life (age 21-66)[1]. An individual's employment status is determined by a stochastic employment opportunity and the decision on whether to accept a given job

[1] The age of compulsory retirement, 66, is determined based on the fact that the full OASDI benefit

offer.

Firms transform labor and capital into consumption goods or investment goods with a constant-returns-to-scale technology. The government provides social insurance policies, such as public pensions (OASDI), Unemployment Insurance (UI), that are financed by social public pension contributions and UI contributions. The government also provides public assistance for low-income households programs, such as Earned Income Tax Credit (EITC), Temporary Aid to Needy Families (TANF), and Aid to Families with Dependent Children (AFDC), financed by the tax revenue.

Since we will only analyze steady-state allocations, the time index is omitted from stationary variables (e.g., w for wage rate or r for interest rate).

2.1. Households

The households are heterogeneous in terms of labor productivity and unemployment risks. e_{ij} represents the levels of labor productivity of an aged *i* worker belonging to the income class *j*.

Agents are endowed with one unit of time in each period that can be allocated to work or leisure. However, labor is assumed to be indivisible, which means that an agent can choose to work some given number of hours, $0 < \hat{h} < 1$, or not at all.

In each period, an individual faces a stochastic employment opportunity. Either one is offered the opportunity to work for wage income ($w \cdot e_{ij} \cdot \hat{h}$) or one is not. An individual's employment opportunity state, $s_j(i)$ (s henceforth), is assumed to depend on the employment status of the previous period, his/her age, and the income class he/she belongs to. If an individual was employed in the previous period ($\eta = 1$)[2], he/she is given an employment opportunity with a probability of $1 - sp_j(i)$. If the individual was not employed in the previous period ($\eta = 0$), he/she is given an employment opportunity with a probability of $fp_j(i)$. The difference in the separation rate, $sp_j(i)$, and the job finding rate, $fp_j(i)$, reflects the difference in the degree of working status stability (or unemployment risk) across income classes and ages. If $s = e$, the agent is

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entitlement age is 67.

[2] η and η' represent employment decision making in the previous period and the current period, respectively.

given the opportunity to work and can choose to work either $\hat{h}$ hours or not at all (i.e. η'=1 or 0). If $s = u$, the agent is not given the opportunity to work and will be unemployed that period.

Therefore, agents with 5 different kinds of employment status $\varepsilon \in \{1,\cdots,5\}$ can be distinguished: $\varepsilon = 1)$ those who are employed in the previous period ($\eta = 1$) and given an employment opportunity ($s = e$); $\varepsilon = 2)$ those who are not employed in the previous period ($\eta = 0$) and given an employment opportunity ($s = e$); $\varepsilon = 3)$ those who are employed in the previous period ($\eta = 1$) and not given an employment opportunity ($s = u$); $\varepsilon = 4)$ those who are not employed in the previous period ($\eta = 0$)[3] and not given an employment opportunity ($s = u$); and $\varepsilon = 5)$ retired people $(i \geq 47)$.

Unemployment insurance is paid to all short-term unemployed workers irrespective of their wealth or their non-labor income. UI is not paid to long-term unemployed workers who are unemployed for two or more consecutive periods.

AFDC or TANF benefits are paid to low-income households that pass the income-and-asset-based means test. AFDC (TANF) benefits are paid to the individuals whose non-capital income (y) and asset-holdings are below the income and asset eligibility criterion, $W_{AFDC}^{\max}$ ($W_{TANF}^{\max}$), $k_{AFDC}^{\max}$ ($k_{TANF}^{\max}$). New features of the TANF compared with AFDC are: (i) the imposition of strict work requirement that a beneficiary has to work for $\hat{h}_{TANF}$; and (ii) lifetime limit on the number of years of benefit receipt ($n_{TANF}^{\max}$). AFDC (TANF) benefit (W_{AFDC} (W_{TANF})) is defined as follows:

$$W_{AFDC} = W_{AFDC}^{B} - \left((1 - rd_{AFDC}) \cdot y - W_{AFDC}^{BED}\right) \cdot 1(y > 0) \qquad (1)$$

$$W_{TANF} = W_{TANF}^{B} - \left((1 - rd_{TANF}) \cdot y - W_{TANF}^{BED}\right) \cdot 1(y > 0) \qquad (2)$$

where $1(y > 0) = \begin{cases} 1 \text{ if } y > 0 \\ 0 \text{ if } y = 0 \end{cases}$, and rd_{AFDC} (rd_{TANF}) and W_{AFDC}^{BED} (W_{TANF}^{BED}) are earning's disregard rate, and lump-sum earning's disregard amount for non-zero non-capital

[3] The process of job status transition of working population ($\varepsilon = 1,\cdots,4$) is illustrated in Figure 1.

income earners.

The AFDC (TANF) benefit level is determined by the difference between basic benefit guaranteed (W_{TANF}^{B} (W_{TANF}^{B})) and the beneficiary's regarded non-capital income ($(1-rd_{AFDC})\cdot y - W_{AFDC}^{BED}$ ($(1-rd_{TANF})\cdot y - W_{TANF}^{BED}$)). The regarded non-capital income is computed by disregarding some part (rd_{AFDC} (rd_{TANF})) of the beneficiary's non-capital income[4] and the lump-sum earning's disregard amount W_{AFDC}^{BED} (W_{TANF}^{BED}).

Public Pensions are paid to retired workers whose age is 67 or older. The level of public pension benefits is dependent upon the wage income history of each agent during his/her working periods, and the number of periods in which the agent made a public pension contributions (*n*).

Agents maximize their lifetime expected utility:

$$\max E_{g+1}\sum_{t=g+1}^{g+T}\beta^{t-g-1}u(c_{gj}(k,\varepsilon,n,n_{TANF},t),l_{gj}(k,\varepsilon,n,n_{TANF},t)) \tag{3}$$

$$u(c,l)=\frac{(c^{\theta}l^{1-\theta})^{1-1/\gamma}}{1-1/\gamma}\quad (l\le 1) \tag{3-1}$$

where $c_{gj}(k,\varepsilon,n,n_{TANF},t)$ and $l_{gj}(k,\varepsilon,n,n_{TANF},t)$ denote the consumption and leisure of the generation born in period *g* belonging to type *j* household, with capital holdings k, an employment opportunity ε, and *n*-period employment experience, n_{TANF}-period TANF benefit receipt record until the previous period, at period *t*. Since the first period of life is *g+1*, the age at period *t* of a person born at period *g* is *t-g*. θ, β and γ are the consumption share of utility, the discount factor and the inverse of the relative risk aversion coefficient, respectively, and expectations *E* are taken conditionally on information at the beginning of period *g+1*.

Agents are born without any assets and do not leave any bequests. Furthermore, agents are not allowed to borrow: $k_{gj}\ge 0$. Depending on capital holdings k_{gj}, an employment opportunity ε, the decision whether to work, and the number of

[4] The earning's disregard is allowed in order to provide work incentives by reducing the implicit tax rate of the AFDC (TANF) benefit from 100% to $1-rd_{AFDC}$ ($1-rd_{TANF}$).

employment periods *n*, the TANF benefit receipt record n_{TANF}, an agent of generation *g* earns non-capital income y^d and interest income at rate *r*.

$$k'_{gj}(k,\varepsilon,n,n_{TANF}t)+c_{gj}(k,\varepsilon,n,n_{TANF},t)=(1+r(1-\tau_y))k_{gj}+y^d_{gj}(k,\varepsilon,n,n_{TANF},t) \qquad (4)$$

where k' denotes capital holdings in the next period. τ_y is income tax rate. The non-capital income y^d is given by:

- if $\varepsilon=1,\eta'=1$, $y^d = we_{ij}\hat{h}(1-\tau_y-\tau_p-\tau_{UI})+EITC(we_{ij}\hat{h})$
- if $\varepsilon=1,\eta'=0$,
  - under AFDC regime, $y^d=\max(W_{AFDC},W_{UIij})$, if $k\le k^{\max}_{AFDC}$
    $y^d=W_{UIij}$, otherwise
  - under TANF regime, $y^d=\max(W_{TANF},W_{UIij})$, if $k\le k^{\max}_{TANF}$ and $n_{TANF}\le n^{\max}_{TANF}$
    $y^d=W_{UIij}$, otherwise
- if $\varepsilon=2,\eta'=1$, $y^d = we_{ij}\hat{h}(1-\tau_y-\tau_p-\tau_{UI})+EITC(we_{ij}\hat{h})$
- if $\varepsilon=2,\eta'=0$,
  - under AFDC regime, $y^d=W_{AFDC}$, if $k\le k^{\max}_{AFDC}$
    $y^d=0$, otherwise
  - under TANF regime, $y^d=W_{TANF}$, if $k\le k^{\max}_{TANF}$ and $n_{TANF}\le n^{\max}_{TANF}$
    $y^d=0$, otherwise
- if $\varepsilon=3$,
  - under AFDC regime, $y^d=\max(W_{AFDC},W_{UIij})$, if $k\le k^{\max}_{AFDC}$
    $y^d=W_{UIij}$, otherwise
  - under TANF regime, $y^d=\max(W_{TANF},W_{UIij})$, if $k\le k^{\max}_{TANF}$ and $n_{TANF}\le n^{\max}_{TANF}$
    $y^d=W_{UIij}$, otherwise
- if $\varepsilon=4$,
  - under AFDC regime, $y^d=W_{AFDC}$, if $k\le k^{\max}_{AFDC}$
    $y^d=0$, otherwise
  - under TANF regime, $y^d=W_{TANF}$, if $k\le k^{\max}_{TANF}$ and $n_{TANF}\le n^{\max}_{TANF}$
    $y^d=0$, otherwise
- if $\varepsilon=5$, $y^d=W_{Pij}(n)$

where τ_P, and τ_{UI} are public pension contribution rate and the unemployment

insurance contribution rate. $EITC(\cdot)$, W_{UIij} and $W_{Pij}(n)$ denote the EITC benefit, the unemployment insurance benefit and the public pension benefit respectively.

Agents of working ages ($\varepsilon = 1,\cdots,4$) make decisions on consumption and labor supply as follows. At the beginning of a period, an individual's employment opportunity state is revealed. Given this, current asset holdings, and the history of public pension contributions and TANF receipt record, individuals choose whether or not to work (η'). Second, agents who rejected an employment opportunity find out whether or not they can receive UI benefits. Short-term unemployed workers ($(\varepsilon = 1, \eta' = 0)$ or $\varepsilon = 3$) are eligible for UI benefits, but long-term unemployed workers are not ($(\varepsilon = 2, \eta' = 0)$ or $\varepsilon = 4$). After that, agents find out whether they are eligible for AFDC or TANF benefits. Eligibility depends on non-capital income, the amount of assets held, and the TANF benefit receipt record. Retired workers ($\varepsilon = 5$) make decision on consumption after they find out whether or not they are eligible for AFDC benefits. Given these kinds of information, agents choose asset holdings and consumption subject to Equation (4) and non-negativity constraints on asset holdings.

2.2. Firms

Firms produce consumption goods and investment goods with Labor *N* and Capital *K*, using a constant-returns-to-scale technology. Labor *N* is paid the wage *w*. Capital *K* is hired at rate r and depreciates at rate δ. The constant-returns-to-scale technology is represented by a Cobb-Douglas function.

$$F(K,N) = AK^{\alpha}N^{1-\alpha} \tag{5}$$

In the factor market equilibrium, factors are rewarded with their marginal products.

$$r = A\alpha\left(\frac{K}{N}\right)^{\alpha-1} - \delta \tag{6}$$

$$w = A(1-\alpha)\left(\frac{K}{N}\right)^{\alpha} \tag{7}$$

2.3. Government

The government provides the public pension System, Unemployment Insurance, a means-tested income maintenance program for the poor (AFDC or TANF benefits), and EITC. The formula for the public pension benefits and UI benefits are as follows.

$$W_{Pj} = \begin{cases} rt_1 \cdot LAI_j & if\ LAI_j < yb_1 \\ rt_1 \cdot yb_1 + rt_2 \cdot (LAI_j - yb_1) & if\ yb_1 \le LAI_j < yb_2 \\ rt_1 \cdot yb_1 + rt_2 \cdot yb_2 + rt_3 \cdot (LAI_j - yb_2) & if\ LAI_j \ge yb_2 \end{cases} \quad (8)$$

$$LAI_j = \sum_{i=1}^{T} we_{ij}\hat{h} \cdot 1(n'_{ij} = 1)/35 \quad (8\text{-}1)$$

$$W_{UIij} = \zeta we_{ij}\hat{h} \quad (9)$$

$$EITC_{ij} = \begin{cases} rc_1 \cdot we_{ij}\hat{h} & if\ we_{ij}\hat{h} < yc_1 \\ rc_1 \cdot yc_1 + rc_2 \cdot (we_{ij}\hat{h} - yc_1) & if\ yc_1 \le we_{ij}\hat{h} < yc_2 \\ rc_1 \cdot yc_1 + rc_2 \cdot yc_2 + rc_3 \cdot (we_{ij}\hat{h} - yc_2) & if\ yc_2 \le we_{ij}\hat{h} < yc_3 \\ 0 & if\ we_{ij}\hat{h} \ge yc_3 \end{cases} \quad (10)$$

Equation (8) shows that the value of public pension benefits is the sum of three separate percentages (rt_1, rt_2, rt_3) of portions of Lifetime Average Income (*LAI*), which is the annually adjusted value of Average indexed monthly earnings (AIME). Equation (9) shows that the UI benefit is proportional to the wage income that was earned in the most recent employment period by each individual. Equation (10) shows that the value of EITC is the sum of three separate percentages (rc_1, rc_2, rc_3) of portions of annual labor income ($rc_1>0$, $rc_2=0$, $rc_3<0$).

In order to finance its expenditures on public pension benefits and unemployment insurance benefits, the government uses the revenue from the public pension contributions and unemployment insurance contributions. For AFDC (TANF) and EITC benefits, the government uses income tax revenue. Budget constraints for the public pensions, UI, AFDC, TANF and EITC are as follows:

$$\tau_P wN = \sum_j \sum_k \sum_n \sum_{n_{TANF}} \sum_g W_{Pj}(n) \cdot \phi_{gj}(k,5,n,n_{TANF},t) \tag{11}$$

$$\tau_{UI} wN = \sum_j \sum_k \sum_n \sum_g \sum_{n_{TANF}} \sum_{\varepsilon \in \{1,3\}} W_{UIgj}(n) \cdot (1 - 1(\eta'_{gj}(k,\varepsilon,n,n_{TANF},t) = 1)) \cdot \phi_{gj}(k,\varepsilon,n,n_{TANF},t) \tag{12}$$

• under AFDC regime

$$\begin{aligned}
&\tau_y(wN + rK) \\
&= \sum_j \sum_k \sum_n \sum_g \sum_{\varepsilon \in \{1,3\}} \max(W_{AFDC} - W_{UIgj}, 0) \cdot 1(k \le k_{AFDC}^{\max}) \cdot (1 - 1(\eta'_{gj}(k,\varepsilon,n,t) = 1)) \\
&\qquad \cdot \phi_{gj}(k,\varepsilon,n,t) \\
&+ \sum_j \sum_k \sum_n \sum_g \sum_{\varepsilon \in \{2,4\}} W_{AFDC} \cdot 1(k \le k_{AFDC}^{\max}) \cdot (1 - 1(\eta'_{gj}(k,\varepsilon,n,t) = 1)) \cdot \phi_{gj}(k,\varepsilon,n,t) \\
&+ \sum_j \sum_k \sum_n \sum_g \sum_{\varepsilon \in \{1,3\}} EITC_{gj} \cdot \phi_{gj}(k,\varepsilon,n,t)
\end{aligned} \tag{13}$$

• under TANF regime

$$\begin{aligned}
&\tau_y(wN + rK) \\
&= \sum_j \sum_k \sum_n \sum_{n_{TANF}} \sum_g \sum_{\varepsilon \in \{1,3\}} \max(W_{TANF} - W_{UIj}, 0) \cdot 1(k \le k_{TANF}^{\max}) \cdot (1 - 1(\eta_{gj}'(k,\varepsilon,n,n_{TANF},t) = 1)) \\
&\qquad \cdot 1(n_{TANF} \le n_{TANF}^{\max}) \cdot \phi_{gj}(k,\varepsilon,n,n_{TANF},t) \\
&+ \sum_j \sum_k \sum_n \sum_{n_{TANF}} \sum_g \sum_{\varepsilon \in \{2,4\}} W_{AFDC} \cdot 1(k \le k_{AFDC}^{\max}) \cdot (1 - 1(\eta'_{gj}(k,\varepsilon,n,n_{TANF},t) = 1)) \\
&\qquad \cdot 1(n_{TANF} \le n_{TANF}^{\max}) \cdot \phi_{gj}(k,\varepsilon,n,n_{TANF},t) \\
&+ \sum_j \sum_k \sum_n \sum_{n_{TANF}} \sum_g \sum_{\varepsilon \in \{1,3\}} EITC_{gj} \cdot \phi_{gj}(k,\varepsilon,n,n_{TANF},t)
\end{aligned} \tag{14}$$

$$N = \sum_j \sum_k \sum_n \sum_{n_{TANF}} \sum_g \sum_{\varepsilon \le \{1,2\}} \phi_{gj}(k,\varepsilon,n,n_{TANF},t) \cdot 1(\eta'_{gj}(k,\varepsilon,n,t) = 1) \cdot e_{gj} \hat{h} \tag{15}$$

$$K = \sum_j \sum_k \sum_n \sum_{n_{TANF}} \sum_g \sum_{\varepsilon} \phi_{gj}(k,\varepsilon,n,n_{TANF},t) \cdot k \tag{16}$$

where $1(\eta'(\cdot) = 1) = \begin{cases} 1 & if\ \eta'(\cdot) = 1 \\ 0 & otherwise \end{cases}$ and $\phi_{gj}(k,\varepsilon,n,n_{TANF},t)$ denotes the measure of people in generation g belonging to income class j with n-period employment experience, n_{TANF} -period TANF benefit receipt, wealth k, and employment opportunity ε.

2.4. Stationary Equilibrium

The concept of equilibrium used in this paper uses a recursive representation of the consumer's problem following Stokey et. al. (1989). Let $v_{gj}(k,\varepsilon,n,n_{TANF},t)$ be the value of the objective function of a generation-*g* agent in period *t* with asset holdings *k* and employment status ε, working experience *n*, TANF benefit receipt record n_{TANF}, $v_{gj}(k,\varepsilon,n,n_{TANF},t)$ is defined as the solution to the dynamic programming:

$$v_{gj}(k,\varepsilon,n,n_{TANF},t) = \max_{c,l,n',n_{TANF}} \left(u(c,l) + \beta E_t \left\{ v_{gj}(k',\varepsilon,n',n'_{TANF},t+1) \right\}\right) \qquad (17)$$

$$l = (1-\hat{h}) \cdot 1(n' = n+1) + 1 \cdot 1(n' = n)$$

subject to the budget constraint (4) and the non-borrowing constraint.

A stationary equilibrium for a given set of government policy parameters $\Omega = \{W_{Pj}, W_{Ulj}, W_{AFDC}, W_{AFDC}^{\max}, k_{AFDC}^{\max}, W_{TANF}, W_{TANF}^{\max}, k_{TANF}^{\max}, n_{TANF}^{\max}\}$ is a collection of value functions $v_{gj}(k,\varepsilon,n,n_{TANF},t)$, individual's policy rules $c_{gj}(k,\varepsilon,n,n_{TANF},t)$, $k'_{gj}(k,\varepsilon,n,n_{TANF},t)$, $\eta'_{gj}(k,\varepsilon,n,n_{TANF},t)$, time-invariant measures of agent types $\phi_{gj}(k,\varepsilon,n,n_{TANF},t)$ for each generation and income class, and relative prices of labor and capital $\{w, r\}$, such that:

1. Individual and aggregate behaviors are consistent, i.e. aggregate capital stock and labor are determined by Equations (15) and (16).
2. Relative prices $\{w, r\}$ solve a firm's optimization problem by satisfying Equations (6) and (7).
3. Given relative prices $\{w, r\}$ and the government social expenditure program Ω, the individual policy rules $c_{gj}(k,\varepsilon,n,n_{TANF},t)$, $k'_{gj}(k,\varepsilon,n,n_{TANF},t)$, $\eta'_{gj}(k,\varepsilon,n,n_{TANF},t)$ solve the consumer's dynamic programming of Equations (17) subject to the constraint of Equation (4) and the non-borrowing constraint.
4. The goods market clears:

$$AK^{\alpha}N^{1-\alpha} = C + \delta K \qquad (18)$$

5. Let $k_{gj}(k',\varepsilon,n,n_{TANF},t)$ denote the inverse function of the *j*-class *(t-g)*-year-old

agent's policy function $k'_{gj}(k,\varepsilon,n,n_{TANF},t)$. The collection of age-dependent, income-class-dependent measures $\phi_{gj}(k,\varepsilon,n,n_{TANF},t)$ satisfy the following transition equations:

$$\begin{aligned}\phi_{gj}(k',1,n,n_{TANF},t) = (1-sp_j(t-g)) \sum_{\varepsilon\in\{1,2\}} \sum_{k(k',\varepsilon,n-1,n_{TANF},t)} \phi_{gj}(k,\varepsilon,n-1,n_{TANF},t-1) \\ \cdot 1(\eta'_{gj}(k,\varepsilon,n-1,n_{TANF},t-1)=1)\end{aligned} \tag{19}$$

$$\begin{aligned}\phi_{gj}(k',2,n,n_{TANF},t) = fp_j(t-g) \sum_{\varepsilon\in\{1,2\}} \sum_{k(k',\varepsilon,n,n_{TANF},t)} \phi_{gj}(k,\varepsilon,n,n_{TANF},t-1) \\ \cdot (1-1(\eta'_{gj}(k,\varepsilon,n,n_{TANF},t-1)=1)) \\ + fp_j(t-g) \sum_{\varepsilon\in\{1,2\}} \sum_{k(k',\varepsilon,n,n_{TANF}-1,t)} \phi_{gj}(k,\varepsilon,n,n_{TANF}-1,t-1)\cdot 1(n'_{TANF}=n_{TANF}) \\ + fp_j(t-g) \sum_{\varepsilon\in\{3,4\}} \sum_{k(k',\varepsilon,n,n_{TANF},t)} \phi_{gj}(k,\varepsilon,n,n_{TANF},t-1) \\ + fp_j(t-g) \sum_{\varepsilon\in\{3,4\}} \sum_{k(k',\varepsilon,n,n_{TANF}-1,t)} \phi_{gj}(k,\varepsilon,n,n_{TANF}-1,t-1)\cdot 1(n'_{TANF}=n_{TANF})\end{aligned} \tag{20}$$

$$\phi_{gj}(k',3,n,t) = sp_j(t-g) \sum_{\varepsilon\in\{1,2\}} \sum_{k(k',\varepsilon,n-1,t)} \phi_{gj}(k,\varepsilon,n-1,t-1)\cdot 1(\eta'_{gj}(k,\varepsilon,n-1,t-1)=1) \tag{21}$$

$$\begin{aligned}\phi_{gj}(k',4,n,n_{TANF},t) = \left(1-fp_j(t-g)\right) \sum_{\varepsilon\in\{1,2\}} \sum_{k(k',\varepsilon,n,n_{TANF},t)} \phi_{gj}(k,\varepsilon,n,n_{TANF},t-1) \\ \cdot (1-1(\eta'_{gj}(k,\varepsilon,n,n_{TANF},t-1)=1)) \\ + \left(1-fp_j(t-g)\right) \sum_{\varepsilon\in\{1,2\}} \sum_{k(k',\varepsilon,n,n_{TANF}-1,t)} \phi_{gj}(k,\varepsilon,n,n_{TANF}-1,t-1)\cdot 1(n'_{TANF}=n_{TANF}) \\ + \left(1-fp_j(t-g)\right) \sum_{\varepsilon\in\{3,4\}} \sum_{k(k',\varepsilon,n,n_{TANF},t)} \phi_{gj}(k,\varepsilon,n,n_{TANF},t-1) \\ + \left(1-fp_j(t-g)\right) \sum_{\varepsilon\in\{3,4\}} \sum_{k(k',\varepsilon,n,n_{TANF}-1,t)} \phi_{gj}(k,\varepsilon,n,n_{TANF}-1,t-1)\cdot 1(n'_{TANF}=n_{TANF})\end{aligned} \tag{22}$$

$$\phi_{gj}(k',5,n,n_{TANF},t) = \sum_{k(k',\varepsilon,n,t)} \phi_{gj}(k',5,n,n_{TANF},t-1) \tag{23}$$

The distribution of the new-born generation and the first-year retired are given as follows:

$$\phi_{gj}(k,\varepsilon,0,0,g+1) = \begin{cases} fp_j(g+1)\cdot pop_j & for\ \varepsilon=2,\ k=0 \\ (1-fp_j(g+1))\cdot pop_j & for\ \varepsilon=4,\ k=0 \\ 0 & otherwise \end{cases} \tag{24}$$

$$\phi_{gj}(k',5,n,n_{TANF},t)=\sum_{\varepsilon}\sum_{n}\sum_{n_{TANF}}\sum_{k(k',\varepsilon,n,t)}\phi_{gj}(k,\varepsilon,n,n_{TANF},t-1) \quad (25)$$

6. The budget constraints of the public pensions, UI, EITC, and AFDC (or TANF) system are satisfied, i.e. Equations (11) - (14) are satisfied.

3. Calibration and Computing Procedure

3.1. Calibration

We divide households into 7 classes: upper 20 percentile (class I); 20-50 percentile (class II); lower 20-50 percentile (class III); lower 10-20 percentile (class IV); lower 5-10 percentile (class V); lower 2-5 percentile (class VI); and lower 2 percentile (class VII). The division of the income class is based on the lifetime income. The wage profile of each income classes is imputed using wage equations estimated by Fullerton and Rogers (1993) (see Figure 2). In each income class, 60 generations coexist, since we set the length of a period is 1 year and consider the agents aged 21-80.

The job finding rates and job separation rates across ages and income classes, $fp_j(t-g)$, are imputed using the recent record of the duration of unemployment by age[5] based on the assumption that the duration of unemployment is distributed exponentially. The job separating rates across income classes are imputed using the recent record of unemployment rate across educational attainment[6] and the estimates of average number of years of education across income classes by Fullerton and Rogers (1993). We assume that the job finding rates across age is the same for all the income classes, thus, the difference in the job status stability across income classes is reflected in the differing level of job separating rate (see Table 1).

The discount rate (β) is assumed to be 0.96. The inverse of the coefficient of risk aversion, γ, is assumed to be 0.25, which is a standard value for the inter-temporal substitution elasticity in overlapping generations models where the length of a period is

[5] The average duration of employment as of 2004 is 15.1 weeks for the aged 20-24 (20.3 weeks for those aged 25-34, 23.8 weeks for the aged 35-44, 27 weeks for the aged 45-54, 26.5 weeks for the aged 55-64, 24.4 weeks for the aged 65 and older).

[6] The average level of unemployment rate for the period 2001-2004 (1st quarter) is 2.8% for Bachelor's degree and higher degree holders, 4.2% for those with some college education, 5.0% for those with high

one year. The preference of the agent is represented by a Cobb-Douglas utility function, $c^{\theta}l^{1-\theta}$, and the consumption share (θ) of the utility function is assumed to be 0.33. This value is a standard value for the consumption share taken in computable general equilibrium models. We set $\hat{h}$=0.45 by assuming that individuals have 98 hours a week of substitutable time not spent eating, sleeping, or engaged in other personal care. If employed agents spend 45 hours a week working and commuting, $\hat{h}$ is approximately equal to 0.45.

The production parameters, α and δ are assigned values from Cooley and Prescott (1995) and other computable general equilibrium studies. We set α=0.4, and δ=0.05. The value for A is assumed to be 1.

The social welfare policies in the model consist of Public Pension (OASDI), the UI, the EITC, and the TANF (or AFDC). Table 2 summarizes the social welfare policy parameters. The value of benefits, income eligibility, asset eligibility in Table 2 are the ratio to the average income[7]. The U.S. states specify different level of the basic benefits guaranteed, earning's disregard rates, the income- and asset- eligibility for AFDC and TANF. We adopt the national average values computed using the values for each state reported in Gallapher et al. (1998) and DHHS (1998)[8]. The work requirement for the TANF benefit receipt is set to be 50% of work hours of regular workers, based on the fact that the PRWORA (Personal Responsibility and Work Opportunity Reconciliation Act, 1996) specifies that in order to count as working the non-exempt TANF recipients must participate in work activities for minimum 30 hours per week, which is 2/3 of working hours of regular workers. Considering that there are TANF recipients exempt from work participation and that the work intensity is relatively weak compared with that of regular workers, we assume a lower value for the work requirement.

The replacement ratio of the UI is assumed based on the fact that most of U.S. states pays an eligible UI recipient 50% of this individual's earnings over a recent 52-week period for a maximum 26 weeks. We set the replacement value is 25% because the

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school graduates, and 8.2% for those with less than a high school diploma.

[7] The ratios are computed using the values as of 2000. The average income is the average value of the income tax base reported in the Income Tax Return 2000.

[8] We convert the values reported in Gallapher et al. (1998) and DHHS (1998) to the values as of 2000 using CPI.

length of period in the model is 1 year[9]. The phase-in and Phase-out rate and income intervals of the EITC are for the case of a household with 2 and more children.

3.2. The Solution Algorithm

Algorithms to solve heterogeneous-agent models with an endogenous distribution have only recently been introduced in the Economics literature. Notable studies include Aiyagari (1994), den Haan (1996), Hansen and Imrohoroglu (1992), Hugget (1993), Imrohoroglu et al. (1995) and Heer (1999). Like most of these studies, we will only focus on the steady state of the economy of the model constructed. The solution algorithm is described by the following steps.

1) Choose the policy parameters:

$$W_{Pj}, W_{UIj}, W_{AFDC}, W_{AFDC}^{\max}, k_{AFDC}^{\max}, W_{TANF}, W_{TANF}^{\max}, k_{TANF}^{\max}, n_{TANF}^{\max}$$

2) Make initial guesses of $K, N, \tau_P, \tau_{UI}, \tau_y$.

3) Compute *w* and *r* from the firm's optimization behavior.

4) Compute the agents' decision functions by backwards induction.

5) Compute the steady-state distribution of assets, employment status, and entitlement of public pension, UI, EITC and TANF (AFDC) benefits.

6) Compute the values $K, N, \tau_P, \tau_{UI}, \tau_y$, which solve the government budget and the aggregate consistency conditions.

7) Update $K, N, \tau_P, \tau_{UI}, \tau_y$, and return to Step 3) until convergence.

In step 4) a finite-time dynamic programming problem is solved by iterating the value function $v_{gj}(k, \varepsilon, n, n_{TANF}, t)$ of an agent of generation *g* from type *j* household, with wealth *k*, employment status ε, *n*-period work experience and n_{TANF}-period TANF receipt record in period *t*. We divide the feasible range $[0, k^{\max}]$ for capital *k* each period into 1,000 nodes. The decision rules of an agent can be found by recursion, working backwards from the last period of life. In step 5) the steady-state distribution is computed by forward iteration starting with the 21-year old who has no wealth and

[9] This assumption may over-evaluate the UI benefit level, since we implicitly assume that all the states pay the UI for 26 weeks. In addition, we do not take into account the maximum limits of the UI benefit,

employment status ε=2 or 4 (see Equations (19)-(25)).

4. Results

We simulate 9 different economies, shown in Table 3. We begin with an economy with neither AFDC nor TANF (Economy [1]). The economies [2]-[4] are simulated to evaluate the economic effects of AFDC, TANF, and EITC. The Economies [5]-[9] are simulated to evaluate the effects of components of TANF.

Measurement of an agent's welfare in each economy is the wealth equivalent of the welfare that each agent enjoys during his/her lifetime. The wealth equivalent of each agent's welfare for economy [1] is normalized to be 1, therefore the welfare of each agent in other economies is the relative level of welfare compared with that in economy [1]. In order to calculate the wealth equivalent of the welfare for a given policy arrangement (Ω), we first compute the expected discounted utility of the newborn generation:

$$W_{gj}(\Omega) = fp_j(1)\,V_{gj}(0,2,0,0,g+1) + (1-fp_j(1))\,V_{gj}(0,4,0,0,g+1) \qquad (26)$$

And then, the wealth equivalent of the welfare is calculated using the following equation:

$$\widetilde{W}(\Omega) = \left(\frac{W(\Omega)}{W(\Omega=1)}\right)^{\frac{1}{1-1/\gamma}} \qquad (27)$$

Our benchmark case, economy [1] shows typical lifecycle pattern of asset holdings and labor supply (see Figures 2-3). The differing pattern of asset holdings and labor supply across income classes is primarily determined by the difference in the labor productivity and job status stability. The magnitude of asset holdings is accounted for by the difference in labor productivity. Table 4 and Figure 3 show that the overall level of labor supply is lower for lower income classes, which reflects the higher level of job separating rates for lower income classes.

The introduction of AFDC causes substantial decrease in aggregate capital and Labor

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which lowers the replacement ratio for the high-income workers.

supply. The decrease in asset holdings and labor supply is common for all the income classes. The magnitude of their reduction is much larger for lower income classes, because AFDC decreases the precautionary savings motive and high level of implicit income taxes[10] are imposed. The reduction in the savings and labor supply of higher income classes is due to increase in the tax rates, which provides disincentive to save and work. Increase in government transfer payment in the form of AFDC raises the effective income tax rate from 0.1% to 3.2%. The OASDI (UI) contribution rate rises from 24.6% (7.1%) to 24.7% (7.9%)[11]. The introduction of AFDC deteriorates wealth distribution, however, it improves welfare of low-income classes due to the decease in their supply. It is remarkable that the welfare improvement of low-income classes is primarily due to the decrease in labor supply, which is the result of moral hazard of low-income workers. The overall level of low-income classes' consumption decreases because of decrease in their labor income, which implies that the welfare improvement by risk-pooling effects of AFDC is not substantial.

The replacement of AFDC with TANF increases aggregate capital and labor supply. In particular there is substantial increase in the labor supply, which is primarily due to the increase in the labor increase of low-income classes. A rise in OASDI and the UI contribution rates[12] reduces the labor supply of high-income classes. The TANF somewhat improves wealth and consumption distribution, because the wage income of lower income classes increases due to its introduction. Even though decrease in the income tax rate provides gains to higher income classes with larger asset holdings, their asset-holdings of high-income classes (in particular classes I and II) do not increase because slight decrease in their income tax burden is compensated by increase in UI contribution burden, which is primarily due to the fact that the strong work requirement of TANF induces some of preexisting AFDC benefit recipients to exploit the UI system without work requirement for benefit receipts. Replacement of AFDC with TANF has

[10] In our model economy, AFDC marginally imposes 67% implicit income tax on low-income worker's labor.

[11] The UI benefit expenditure increases since some of the temporarily unemployed are supported by UI.

[12] Rise in public pension contribution rate is due to the fact that the internal rate of return of OASDI is higher for lower income classes because of redistributive elements in the benefit formula. Table 2 shows that the benefit proportion out of LAI decreases with the LAI level. Inclusion of larger proportion of low-income workers will result in the overall increase in replacement ratio of OASDI benefits. The UI benefit increase is due to the strict work requirement and benefit receipt period of TANF, which makes the UI benefit more favorable to the unemployed.

regressive welfare effects, since it reduces the redistribution from high-income classes to low-income classes[13] and the room for pooling of low-income classes' income risks resulting from uncertain job opportunity.

Even though elimination of EITC does not affect the macroeconomic variables much, it has substantial distributive effects. Comparison of economy [4] with economy [1] shows deterioration of wealth distribution. The magnitude of asset holdings of lower income classes decreases with decrease of their labor income, while there is a slight increase in asset holdings of higher income classes with some decrease in the tax rates. The decrease in the labor income of lower income classes together with decrease in their asset holdings substantially reduces their consumption, which results in fall in their welfare level. The consumption and welfare of higher income classes are not affected much by the EITC.

The elimination of work requirement and lifetime receipt period limit for TANF beneficiaries has different macroeconomic and distributive effects. Comparison of economy [5] with economy [6] shows that the lifetime receipt period limit for TANF eligibility is much stricter constraint of low-income classes than the work requirement. The elimination of work requirement, i.e. the switch from economy [3] to economy [5] somewhat reduces the labor supply of low-income classes and asset-holdings of the lowest income class (class VII), that comprises most of TANF recipients, even though asset holdings of middle-income and low-income classes (classes III, IV, V, VI) increases, primarily due to the increase in disposable income resulting from wage rate increase and UI contribution rate reduction. The magnitude of reduction of labor supply and asset holdings of low-income classes due to the elimination of lifetime receipt period limit from economy [5], i.e. the switch to economy [6], is much larger than that due to the elimination of work requirement. Figure 4 shows that the distribution of TANF benefit recipients of lower income classes are concentrated on low-age groups, which implies that relaxation of the lifetime limit provides a wider range of low-income workers an opportunity to be a TANF benefit recipient. The elimination of the lifetime limit has much more adverse distributional effects in terms of asset-holdings and consumption than that of work requirement. Macroeconomic effects of the former are

[13] The income tax rate decreases from 3.7% to 1.1%, which implies that government expenditure for public assistance to low-income classes substantially decreases.

also much larger than the latter. The magnitude of aggregate labor supply reduction is much larger in the latter case. The elimination of work requirement increase aggregate capital a little, due to the increase in asset-holdings of middle-income classes, while the elimination of lifetime limit substantially reduce aggregate capital. It is remarkable that there is interaction between UI and TANF. Comparison of economy [5] with economy [3] shows that relaxation of work requirement for TANF benefits induces some of UI benefit recipients to exploit the new TANF system without work requirement. In order to eliminate the interaction between UI and TANF and to investigate the pure TANF effects, we simulate economies [7]-[9], which eliminate the UI and EITC system. The elimination of UI and EITC does not produce qualitatively different results of relaxation of TANF requirements, except for the fact that the elimination of work requirement reduces the aggregate capital in the economy without UI and EITC, while the relaxation of the requirement increases the aggregate capital in the economy with UI and EITC.

The changes in welfare level of low-income workers due to the relaxation of requirements for TANF benefits show that the effects on work incentives and savings are more important determinants of income workers' welfare than the risk-pooling effects of social minimum guarantee by public assistance programs. The welfare improvement of low-income classes due to the elimination of work requirement and lifetime limit of TANF benefit receipt period is primarily due to the decrease in labor supply resulting from low-income workers' work incentive reduction[14]. Even though relaxation of TANF requirement substantially increases room for risk-pooling of low-income workers' income risks through cross-sectional resource redistribution, the revision does not increase the overall level of consumption of low-income classes, which implies that the risk-pooling effects of social minimum guarantee by public assistance programs do not dominate the distortionary effects of the system.

5. Conclusion

This paper has investigated the economic effects of work-oriented social welfare

[14] The welfare improvement by the relaxation of TANF requirements should be interpreted with reservation, because we assume exogenous age-wage profiles. Inclusion of endogenous human capital accumulation processes, where the wage rates are determined by the job experiences, may produce qualitatively different welfare implications.

policies, such as EITC and TANF, using a general equilibrium stochastic OLG model. We tried to investigate the effects of a regime switching from the minimum-living-expense-guarantee policies, such as AFDC, to improving-work-incentive policies. We also investigated the effects of the components, which make up the TANF system, such as strict requirement of work activity participation and lifetime limit of benefit receipt period.

We found that the replacement of AFDC with TANF substantially increases the labor supply of low-income workers, which improves the wealth distribution. We also found that EITC provides strong work incentive to low-income workers, in the form of negative implicit income tax. Among the two major components of the TANF, the benefit receipt period limit has much stronger effects on the behavior of low-income workers. It was also shown that the effects on work incentives and savings are more important determinants of welfare of low-income workers than the risk-pooling effects of social minimum guarantee by public assistance programs.

Even though there seems no strong direct effect of changes in public-assistance-to-the-poor policies on their economic behavior, high-income workers' decision on work and savings are shown sensitive to the changes in tax rates and change in factor prices, resulting from the change in social insurance expenditure due to revision of public-assistance-to-the-poor programs. The magnitude of behavior changes due to the tax rate and factor price changes is not trivial, in fact quite large, since the distortional effects of additional change in tax rates are quite large in the situation where there already exists heavy tax burden.

In this paper, we focus on the analysis on economic behavior in a stationary economy. The simulation model specified that the agents face only idiosyncratic risks. For a future research, we need to extend the model to a business cycle economy, because the work-oriented social welfare policies are susceptible to the income risks due to macroeconomic fluctuation, in an economy without complete insurance market, as well as individuals' idiosyncratic risks. Inclusion of business cycle properties in the model may produce some important implications of the work-oriented social welfare policies, since the amplified income risks due to business cycle mitigate the welfare improving effects of work-oriented social welfare policies through enhancement of incentives to work and save.

Another direction to the future research is to incorporate the human capital accumulation procedure, where the wage rates are determined by the job experience. The welfare improvement effects of the work incentives provided by the work-oriented welfare policies will be enhanced, since the increase in labor supply induced by the work incentives, which increases job experience and in turn wage rate, will increase the lifetime resources and further reduces moral hazards of low-income workers.

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Table 1. Job Stability Parameters (%)

	Income classes		
	I	II	III – VII
Job Separating Rate ($sp_j(i)$)	3.5	4.4	8.0
Job Finding Rate ($fp_j(i)$)			
age 21-24	96.8		
age 25-34	92.3		
age 35-44	88.8		
age 45-54	85.4		
age 55-66	85.9		

Table 2. Social Welfare Policy Parameters

OASDI	Entitlement Age		67
	Basis for Benefits (*LAI*)	1st bend point (yb_1)	15.8%[1)]
		2nd bend point (yb_2)	95.0%[1)]
		Maximum income	188.4%[1)]
	Benefit Proportion out of *LAI*	rt_1, $LAI < yb_1$	90%
		rt_2, $yb_1 \le LAI < yb_2$	32%
		rt_3, $LAI \ge yb_2$	15%
UI	Replacement Ratio (ς)		25%
AFDC	Basic Benefit Level (W^B_{AFDC})		12.8%[1)]
	Lump-sum Earning's Disregard (W^{BED}_{AFDC})		3.6%[1)]
	Earning's Disregard Rate (rd_{AFDC})		33%
	Income Eligibility ($W^{\max}_{AFDC}$)		23.5%[1)]
	Asset Eligibility ($k^{\max}_{AFDC}$)		21.3%[1)]
TANF	Basic Benefit Level (W^B_{TANF})		12.9%[1)]
	Lump-sum Earning's Disregard (W^{BED}_{AFDC})		3.0%[1)]
	Earning's Disregard Rate (rd_{TANF})		40%
	Income Eligibility ($W^{\max}_{TANF}$)		27.3%[1)]
	Asset Eligibility ($k^{\max}_{TANF}$)		35.1%[1)]
	Benefit Receipt Period Limit ($n^{\max}_{TANF}$)		5 years
	Work Participation Requirement		0.5* $\hat{h}$
EITC	Phase-in Rate (rc_1)		40.0%
	Phase-out Rate (rc_3)		-21.06%
	Phase-in Interval Limit (yc_1)		24.0%[1)]
	Flat Interval Limit (yc_2)		31.4%[1)]
	Phase-out Interval Limit (yc_3)		77.0%[1)]

Note: 1) ratio to average income

Table 3. Policy Simulations

Economy	Social Welfare Policies	Remarks
[1]	Public Pension, UI, EITC	Neither AFDC nor TANF
[2]	Public Pension, UI, EITC, AFDC	System before 1996
[3]	Public Pension, UI, EITC, TANF	Current system of TANF
[4]	Public Pension, UI	No EITC Neither AFDC nor TANF
[5]	Public Pension, UI, EITC, TANF	Elimination of Work Requirement ($\hat{h}_{TANF}$=0)
[6]	Public Pension, UI, EITC, TANF	Elimination of Work Requirement ($\hat{h}_{TANF}$=0) Elimination of Lifetime Benefit Receipt Limit ($n_{TANF}^{\max}$=66)
[7]	Public Pension, TANF	Current system of TANF
[8]	Public Pension, TANF	Elimination of Work Requirement ($\hat{h}_{TANF}$=0)
[9]	Public Pension, TANF	Elimination of Work Requirement ($\hat{h}_{TANF}$=0) Elimination of Lifetime Benefit Receipt Limit ($n_{TANF}^{\max}$=66)

Table 4. Simulation Results

	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]	[9]
	Macroeconomic Effects								
GDP	158.43	135.53	142.55	157.95	143.28	133.42	170.69	158.91	145.91
K	523.16	420.91	437.82	519.54	452.07	414.89	534.43	503.13	452.46
N	71.45	63.67	67.47	71.41	66.60	62.62	79.75	73.70	68.62
w	1.331	1.277	1.268	1.327	1.291	1.278	1.284	1.294	1.276
r	0.071	0.079	0.080	0.072	0.077	0.079	0.078	0.076	0.079
τ_p	0.246	0.247	0.250	0.246	0.250	0.246	0.248	0.250	0.246
τ_{UI}	0.065	0.072	0.080	0.063	0.064	0.071	0.000	0.000	0.000
τ_y	0.010	0.037	0.011	0.000	0.020	0.046	0.003	0.012	0.048
Income Class	Distributional Effects (per capita value)								
	Wealth								
I	14.62	13.43	12.27	15.14	10.76	13.39	16.66	13.21	15.73
II	8.99	8.30	7.84	9.58	7.24	8.25	9.53	8.11	8.17
III	7.53	4.50	4.95	6.51	6.74	4.61	6.04	7.30	5.29
IV	6.54	3.25	5.44	4.75	6.40	1.95	5.22	6.53	1.83
V	5.59	1.68	4.84	3.44	5.69	1.94	4.49	4.93	1.80
VI	4.96	1.56	4.63	3.43	5.64	1.84	4.41	4.73	1.78
VII	3.62	1.47	4.56	2.46	4.41	1.75	3.77	3.80	1.77
	Labor Supply[1)]								
I	0.312	0.301	0.301	0.312	0.294	0.297	0.344	0.321	0.322
II	0.299	0.283	0.278	0.299	0.283	0.284	0.342	0.326	0.325
III	0.292	0.243	0.274	0.294	0.269	0.243	0.328	0.290	0.262
IV	0.275	0.203	0.256	0.275	0.245	0.151	0.300	0.259	0.139
V	0.276	0.071	0.281	0.273	0.236	0.062	0.273	0.238	0.035
VI	0.263	0.062	0.258	0.256	0.225	0.044	0.254	0.222	0.026
VII	0.284	0.044	0.247	0.262	0.227	0.026	0.250	0.221	0.000
	Consumption								
I	4.30	3.95	3.96	4.39	3.77	3.88	4.88	4.35	4.39
II	2.73	2.51	2.54	2.81	2.58	2.46	3.41	3.04	2.83
III	2.00	1.69	1.91	2.01	1.92	1.63	2.43	2.13	1.86
IV	1.63	1.25	1.60	1.46	1.53	1.06	1.76	1.60	1.02
V	1.37	0.75	1.42	1.16	1.31	0.75	1.30	1.13	0.71
VI	1.35	0.73	1.34	1.03	1.22	0.71	1.05	1.03	0.69
VII	1.11	0.66	1.10	0.83	1.01	0.67	0.92	0.86	0.68
	Welfare[2)]								
I	1.000	0.983	0.990	1.005	0.999	0.980	1.028	1.028	1.007
II	1.000	0.979	0.988	1.005	0.994	0.976	1.025	1.024	1.004
III	1.000	0.988	0.986	0.993	0.999	0.987	1.009	1.017	1.003
IV	1.000	0.999	0.988	0.961	1.002	0.998	0.977	0.991	0.994
V	1.000	1.042	0.987	0.915	1.015	1.046	0.940	0.971	1.036
VI	1.000	1.048	0.988	0.905	1.014	1.054	0.929	0.958	1.042
VII	1.000	1.150	1.027	0.881	1.069	1.160	0.955	0.985	1.150

Note: 1) Proportion of Time devoted to labor
2) Wealth equivalent compared with [1]

Figure 1. Transition Process of Job Status

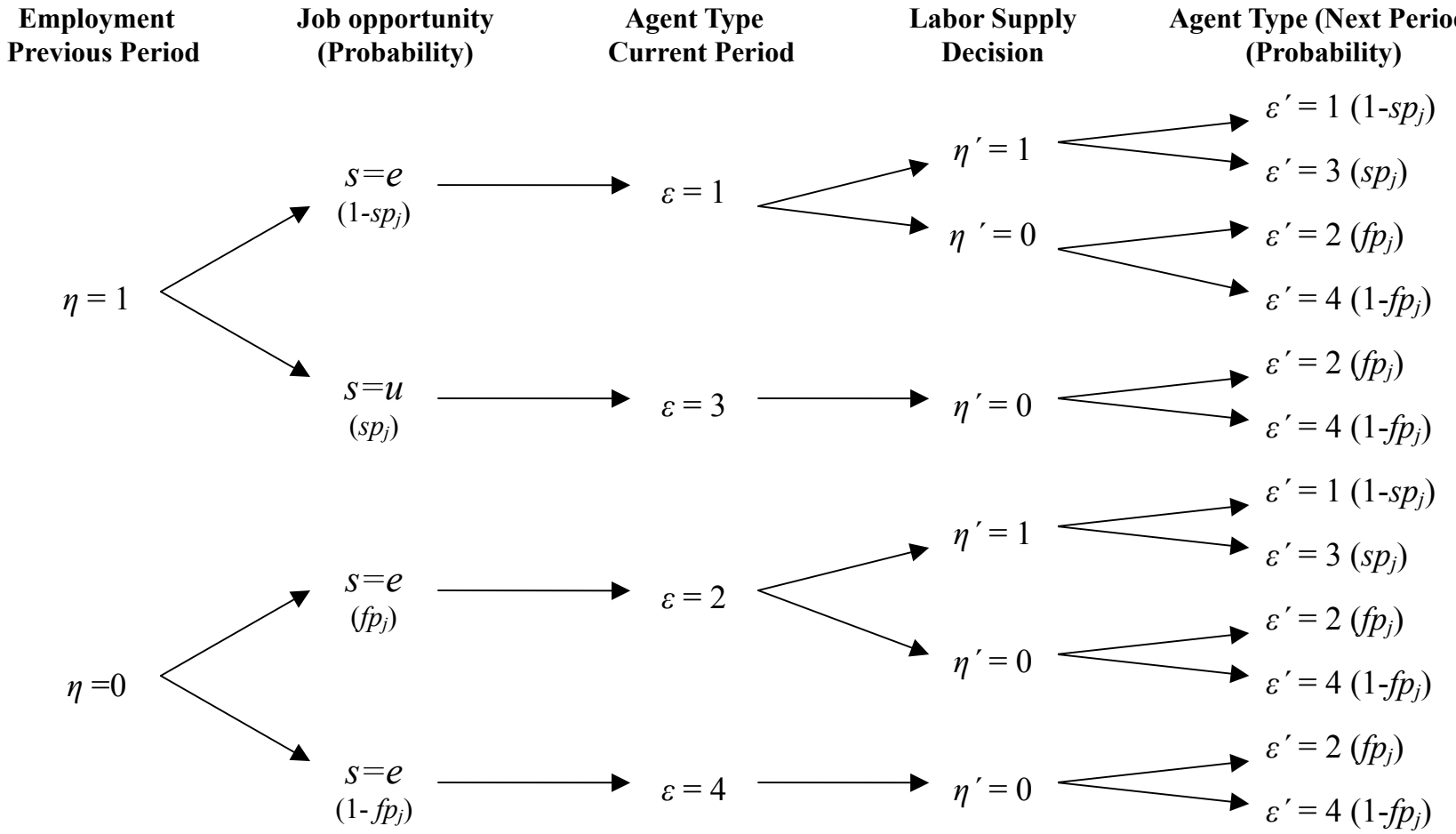

Figure 2. Wage Rates

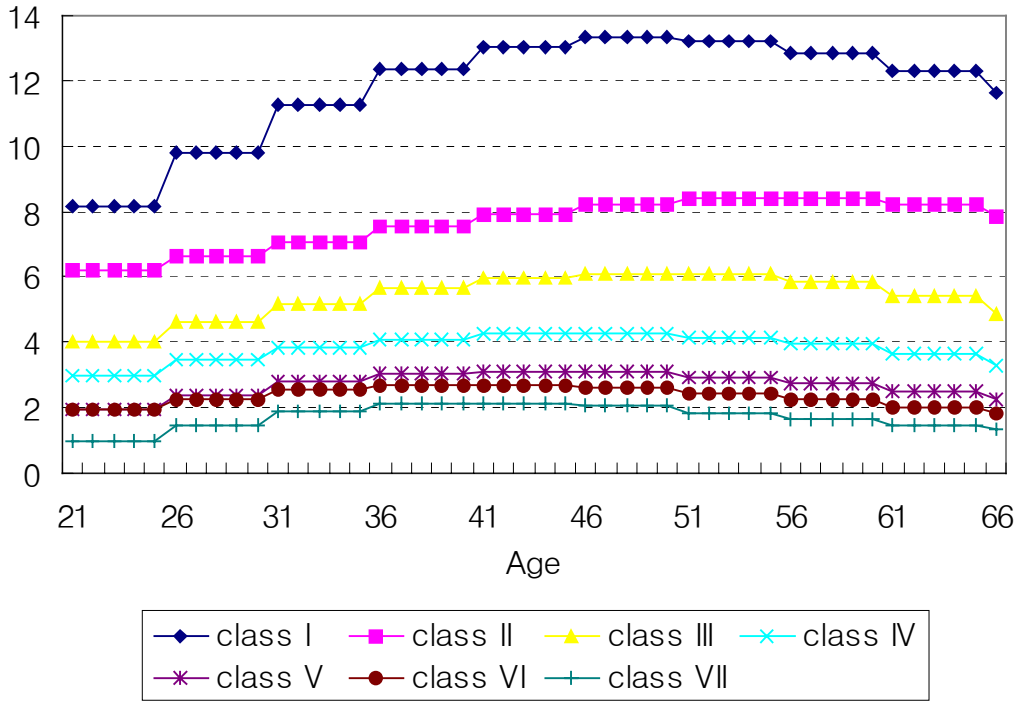

Figure 3. Wealth Profiles of Selected Income Classes
(Economy [1])

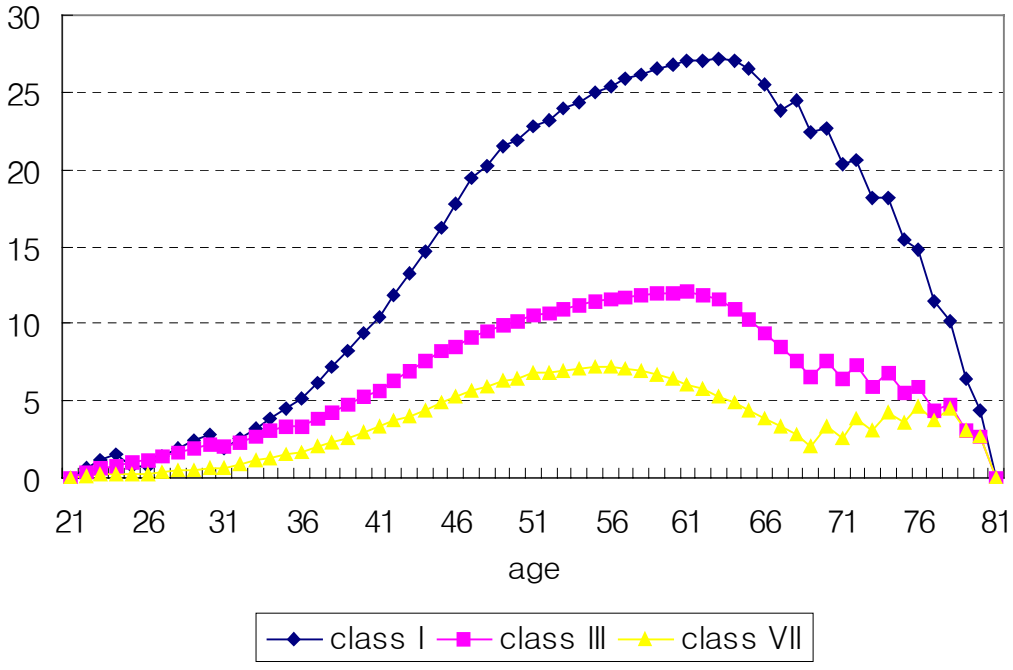

Figure 4. Labor Supply of Selected Income Classes (Economy [1])

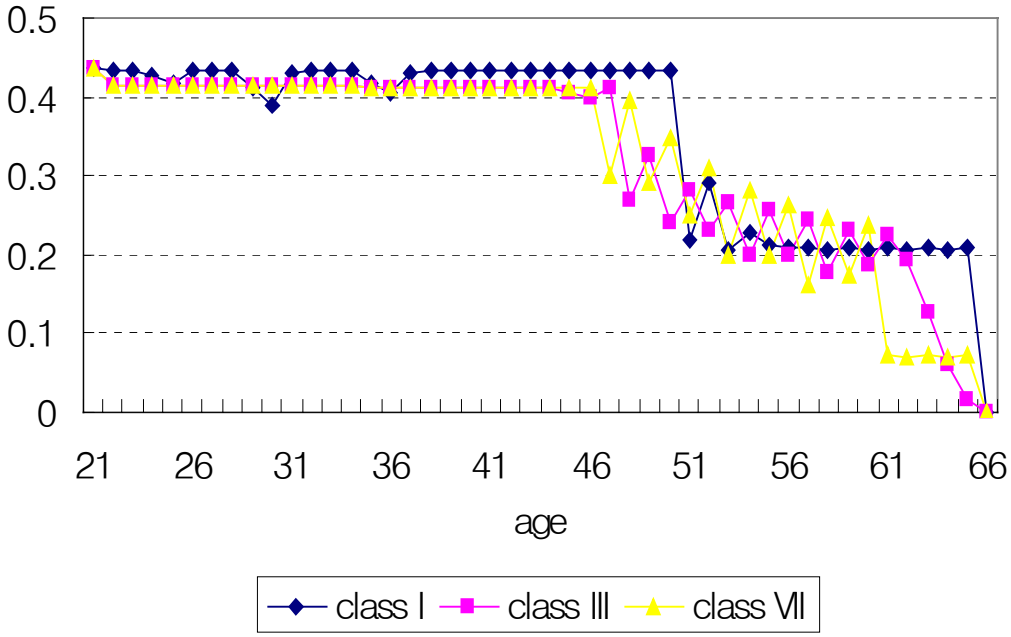

Figure 5. TANF Benefit Profile of Selected Income Classes (Economy [3])