Health Insurance and Labor Markets

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Section 5.2: Interaction Between Health Insurance and Labor Markets

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Summers (1989): Some Simple Economics of Mandated Benefits

- Why should government get involved in the health care market?
- If the government decides to get involved, how should it go about it?

Levels of government intervention in the health care market:

- Do not get involved
- Mandated benefits (e.g. Obamacare)
- Tax-financed public provision of health care

Why should government mandate benefits / provide health care?

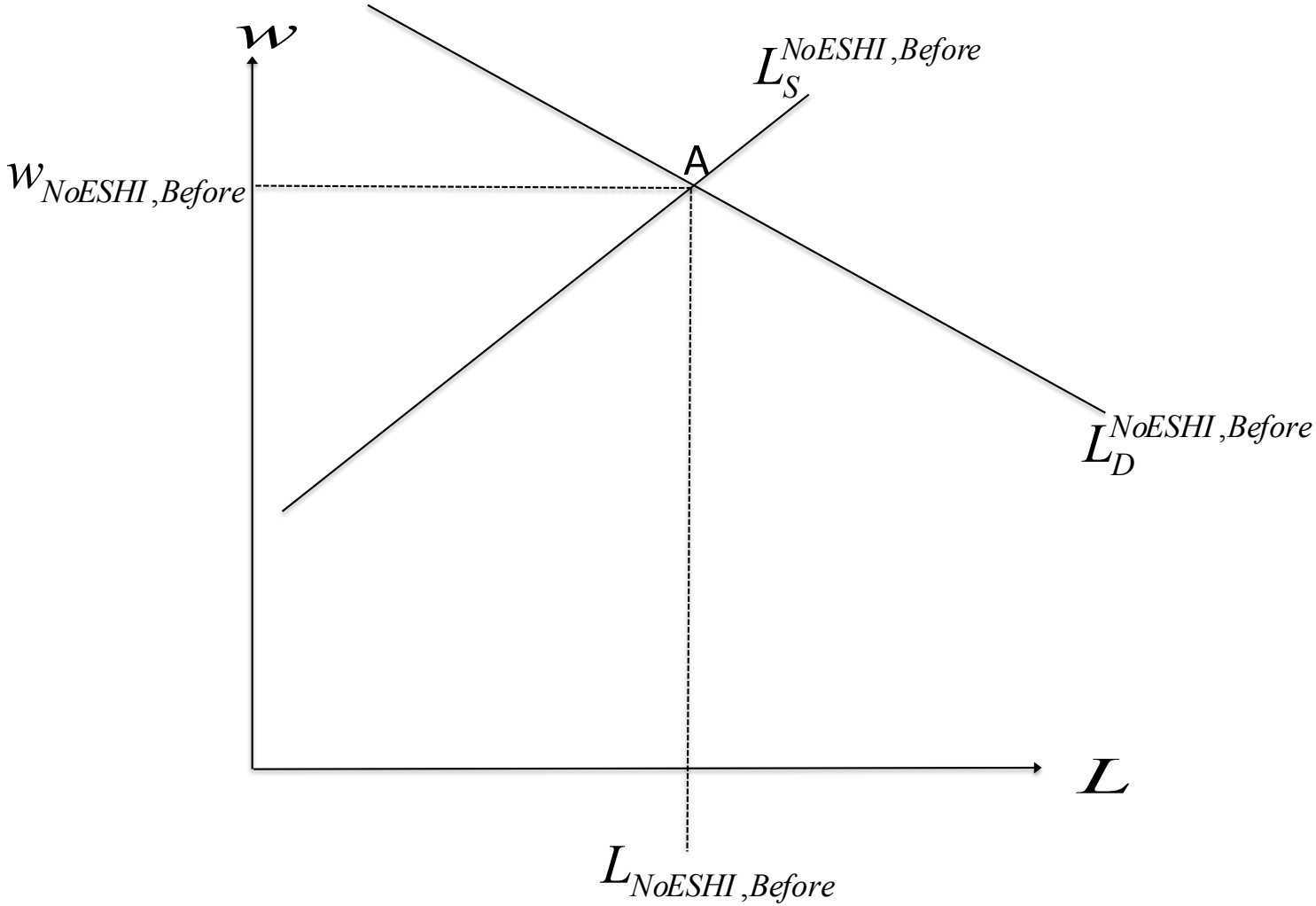
- **Paternalistic argument**: people value health insurance too little, they irrationally underestimate the probability of catastrophic health expenses, illness, etc.
- **Externalities argument:** people don't fully internalize all the benefits such as the prevention of spreading contagious diseases. Also: free emergency care for the uninsured.
- **Adverse selection argument:** workers choose their employer based on the health care benefits offered. This may lead to **no** market solution with universal insurance even if all individuals are willing to pay the cost of insuring themselves.

Mandated benefits or public provision?

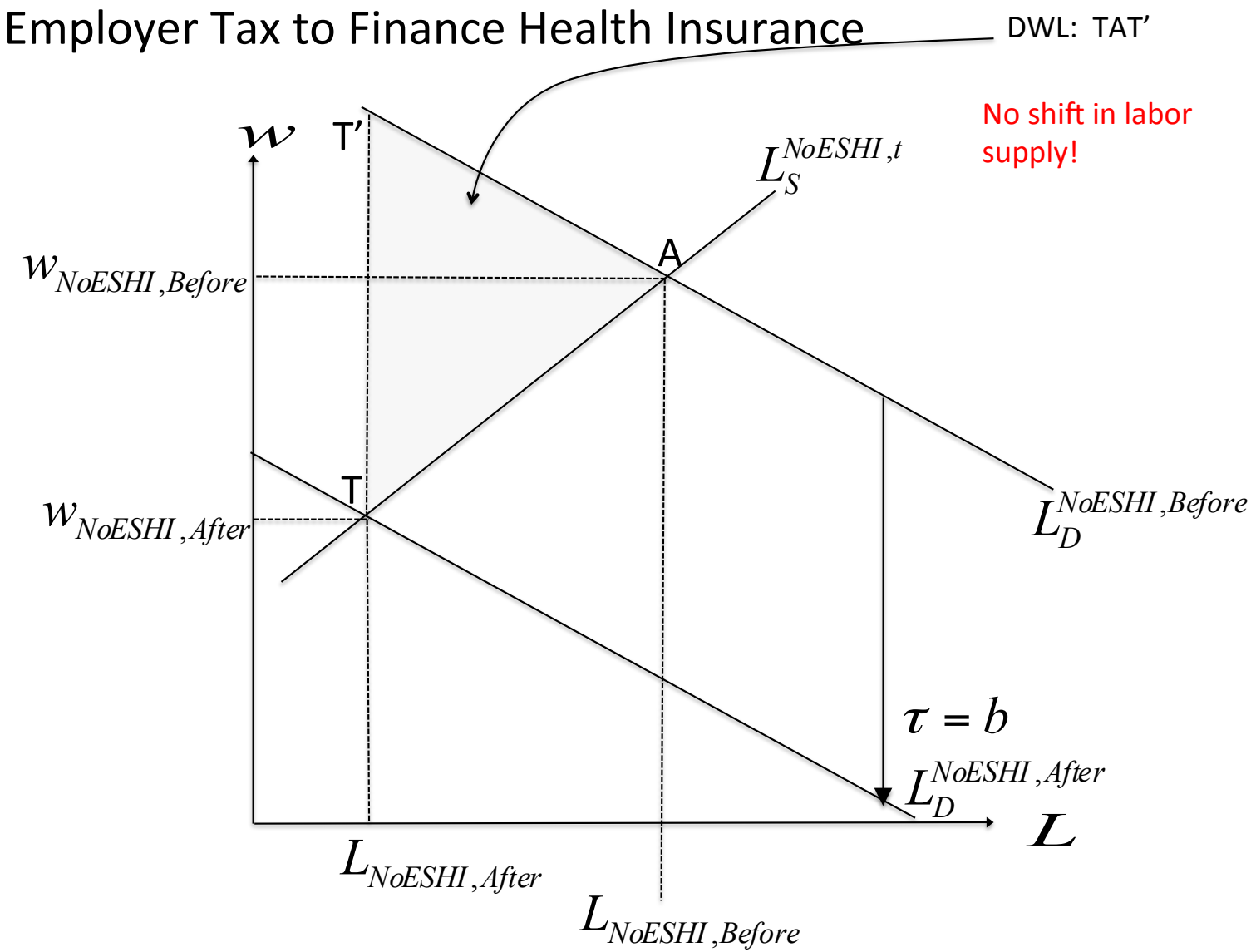
- **Practical argument:** employers can tailor health insurance policies to the needs of their employees.
- **Efficiency argument:** mandated benefits avoid the deadweight loss of tax-financed provision.

Free market without employer sponsored health insurance

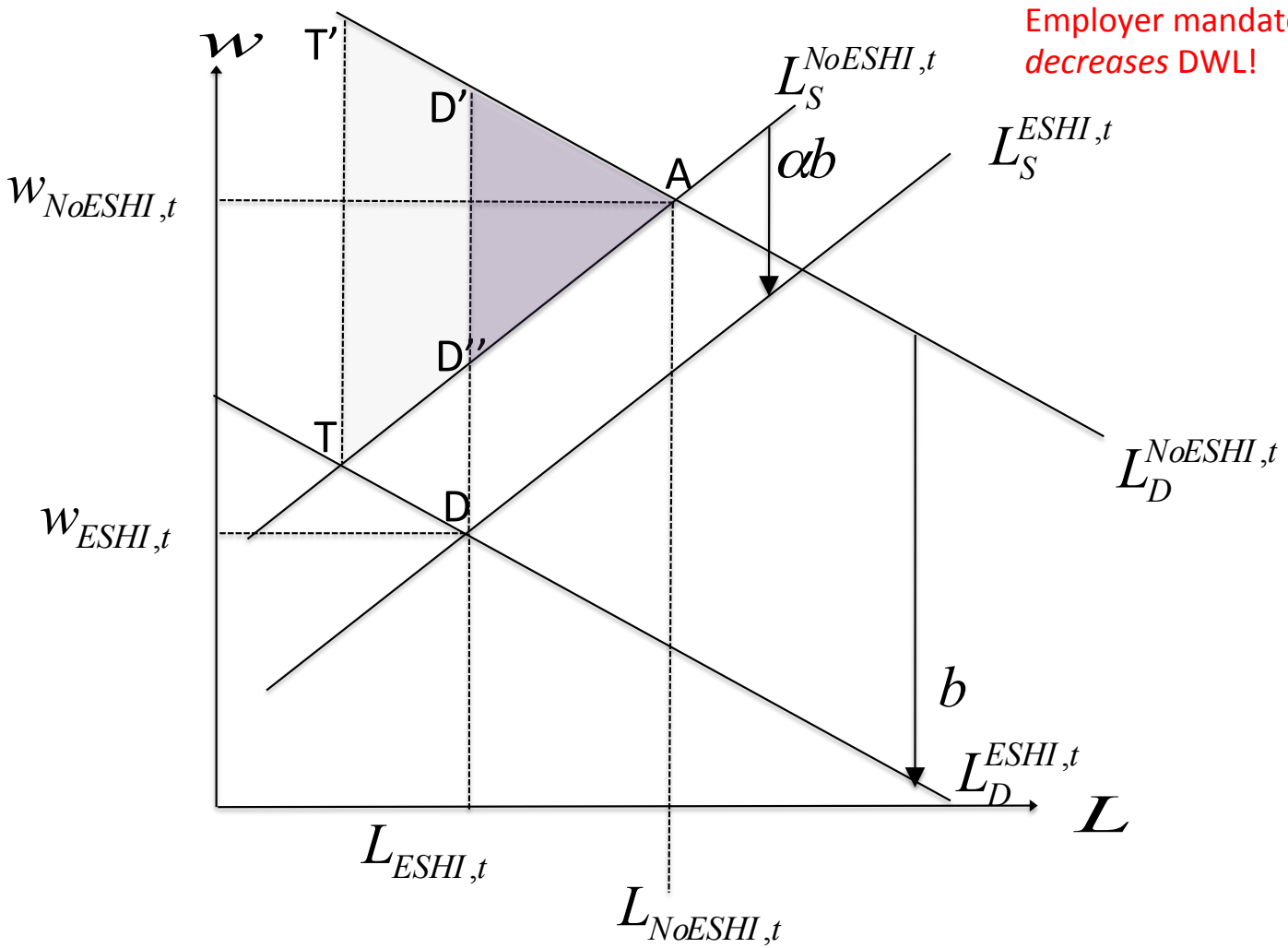
Graphical Model – No Employer-Sponsored Health Ins (ESHI)



Market with tax financed public provided health insurance



Market with mandated employer sponsored health insurance



Market with mandated employer sponsored health insurance

- Mandated benefits shift labor demand down by the cost of providing health insurance, b.
  - Those employers who have employees who value insurance at more than b will not be affected (they will already have health insurance).
  - Those employers who have employees who value insurance at αb (for $\alpha < 1$) will see that employees shift their labor supply downward by αb.
- **Caveat:** health insurance does not increase in the hours worked, i.e. mandating employer health insurance should not affect an employee's decision to work a marginal hour.

Conclusion

- Mandated benefits reduce the deadweight loss relative to public provision of health care.
- Typically, mandated benefits will allow more choice, because employers can tailor insurance plans to the specific needs of their employees.
- Mandating health insurance does not solve any problems related to the lack of insurance among the unemployed.

Structural Approach to Policy Evaluation

- Associated with Cowles Foundation: Trygve Haavelmo's classical paper, The Probability Approach in Econometrics, Econometrica, 1944.
- The observed data is the random draw from an underlying *data generating process, DGP*;
- The goal of econometrics is to recover the DGP;
- The DGP in economics is the equilibrium of the market, which is determined by the consumers' preferences, firms' production technologies, and various constraints faced by the decision makers
- Note that these primitives are policy invariant, thus not subject to "Lucas Critique".

Structural Approach to Policy Evaluation

- Once the primitives of the model are estimated, we are in a position to use counterfactual policy experiments to evaluate the impact of the policy, **before the policy is implemented,** thus the name Ex Ante Policy Evaluations, as supposed to *Ex post policy evaluations using reduced form analysis*.
- Structural approach to policy evaluation also can account for the **general equilibrium effects**!
- Structural approach is also suited to study the **mechanisms** of the policy effects.
- Structural approach forces researchers to be explicit about the underlying assumptions about the economic environment, thus easy to be criticized.

Aizawa and Fang (2020, JPE): Equilibrium Labor Market Search and Health Insurance Reform

Introduction

- Affordable Care Act represents the most significant reforms to the U.S. health insurance and health care market since the establishment of Medicare in 1965.
- There are many provisions in the ACA; some of the most significant changes will take effect from 2014.

Major Components of ACA

- **(Individual Mandate)** All individuals must hold health insurance or face a penalty of $695 or 2.5 percent of income, whichever is higher;
- **(Employer Mandate)** Employers with more than 50 employees must provide health insurance or pay a fine of $2,000 per worker each year if they do not offer health insurance.
- **(Insurance Exchanges)** State-based health insurance exchanges will be established where the uninsured and those employed without insurance can purchase insurance from the exchange where premium will be based on community rating.
- **(Premium Subsidies)** Subsidies will be provided to individuals and families whose income is between the 133% and 400% of the federal poverty level. Individuals with income below 133% will receive Medicaid.

Goal of This Paper

- ... is to understand **how** the health care reform will affect the health insurance and labor markets.
- Would the ACA significantly reduce the uninsured rate?
- Would more employers be offering health insurance to their employees?
- How would the reform affect wage, health, productivity, employment, and employer size distributions?
- What is the impact on total health expenditures and on government budget?

Goal of the Paper

- We are also interested in several counterfactual policies, e.g.,
  - How would the remainder of the ACA perform, had the individual mandate been struck down by the Supreme Court?
  - What would happen if the current tax exemption status of employer-provided insurance premium is eliminated?
  - Can we identify alternative reforms that can improve welfare relative to the ACA?

Labor Market and Health Insurance Market

- To address these questions, it is important to have an equilibrium model that integrates the labor and health insurance market (e.g., Dey and Flinn 2005).
- The U.S. is unique among industrialized nations in that it lacks a national health insurance system and most of the working age populations obtain health insurance coverage through their employers.
- There have been many well-documented connections between firm sizes, wages, health insurance offerings and worker turnovers:

	all employers	with HI	w/o HI
employer size	24.43	33.89	8.83
annual wage	$25,863.72	$29,077.49	$20,560.4
annual worker separation rate	0.163	0.158	0.173

- Workers in firms that offer health insurance also tend to have better self-reported health: 95.36% (HI) vs. 93.89% (No HI) are Healthy in our data.

In this paper ...

- We present and empirically implement an equilibrium labor search model where employers make decisions to offer health insurance.
  - we incorporate health and health insurance to Burdett and Mortensen's (1998) model with heterogenous firm productivity.
  - wage, insurance provision, employment, employer size, and worker's health status are endogenously determined.
- Use structural estimates to assess the impact the ACA on health insurance and labor market outcomes.

The Model: Worker

- Ex ante homogenous except health.
- Preference: risk averse.
- Health status: {**healthy**, **unhealthy**}
- Health insurance status: {**uninsured**, **insured**}
- Health insurance has two effects:
  1. insure medical expenditure shocks.
  2. affect the law of motion for health status.
- Health insurance is only available through employers.
- Given the offer distribution of compensation **(wage, health insurance provision)**, both unemployed and employed individuals decide whether to accept a new offer, if any.

The Model: Employer

- Ex ante heterogenous with respect to productivity p.
- Production technology:
  - linear with labor inputs;
  - an unhealthy worker produces d fraction of output, $d \leq 1$.
- Choose **wage** and **health insurance coverage** to maximize the steady state profit flow subject to the constraint that all workers in the same firm are equally treated (HIPAA).
- In each firm that offers health insurance, the health insurance premium is set to cover the total expected medical expenditure by its workforce, plus a fixed administrative cost C.

Worker's Preference and Health

- Utility function: $u(c) = -\exp(-\gamma c)$.
- **Health status**: $h \in \{H, U\}$; **Health insurance status**: $x \in \{0, 1\}$.
- Medical Expenditure:
  - prob of a medical shock:

$$\Pr(m > 0|h, x) = \Phi(\alpha_0 + \beta_0 1\{h = U\} + \gamma_0 x), \tag{1}$$

  - conditional on a medical shock, medical expenditure is drawn from:

$$m|\,(h, x) \sim \exp\left(\alpha_m + \beta_m 1\{h = U\} + \gamma_m x + \epsilon_{hx}\right),$$

    where $\epsilon_{hx} \sim N(0, \sigma^2_{hx})$ and iid across time periods.
- Health status follows Markov process, which depends on insurance status x:

$$\boldsymbol{\pi}^x = \begin{pmatrix} \pi^x_{HH} & \pi^x_{UH} \\ \pi^x_{HU} & \pi^x_{UU} \end{pmatrix},$$

where $\pi^x_{UH} = 1 - \pi^x_{HH}$ and $\pi^x_{HU} = 1 - \pi^x_{UU}$.

Worker's Problem: Expected Flow Utility

- A worker's flow utility with income y and insurance status x is:

$$v_h(y,x) = \begin{cases} u\left(T\left(y\right)\right) & \text{if } x = 1 \\ \mathbf{E}_{\tilde{m}_h^0}[u\left(T(y) - \tilde{m}_h^0\right)] & \text{if } x = 0, \end{cases}$$

where $T(y)$ is after tax income:

$$T(y) = \tau_0 + \tau_1 \frac{y^{(1+\tau_2)}}{1+\tau_2},$$

where $\tau_0 > 0, \tau_1 > 0, \tau_2 < 0.$

Unemployed Worker's Problem

- Let $F(w,x)$ be the job offer distribution that each worker faces. It is endogenously determined in an equilibrium.
- The value function of the unemployed with health status h, U_h, is:

$$\frac{U_h}{1-\rho} = v_h(b,0)$$
$$+\beta \mathbf{E}_{h'|(h,0)} \left[\lambda_u \int \max\{V_{h'}(w,x), U_{h'}\} dF(w,x) + (1-\lambda_u) U_{h'} \right]$$

- **Job acceptance decision**: let $\underline{w}_h^x$ be

$$V_h(\underline{w}_h^x, x) = U_h.$$

An unemployed worker accepts an job offer (w,x) if $w \geq \underline{w}_h^x$.

Employed Worker's Problem

- The value function of the employed:

$$\frac{V_h(w,x)}{1-\rho} = v_h(w,x)$$
$$+\beta\lambda_e \left\{ \begin{array}{c} (1-\delta)\mathrm{E}_{h'|(h,x)}\left[\int \max\{V_{h'}(\tilde{w},\tilde{x}), V_{h'}(w,x), U_{h'}\} dF(\tilde{w},\tilde{x})\right] \\ +\delta\mathrm{E}_{h'|(h,x)}\left[\int \max\left\{U_{h'}, V_{h'}(\tilde{w},\tilde{x})\right\} dF(\tilde{w},\tilde{x})\right] \end{array} \right\}$$
$$+\beta(1-\lambda_e) \left\{ \begin{array}{c} (1-\delta)\mathrm{E}_{h'|(h,x)}\left[\max\left\{U_{h'}, V_{h'}(w,x)\right\}\right] \\ +\delta\mathrm{E}_{h'|(h,x)}\left[U_{h'}\right] \end{array} \right\}.$$

Employed Worker's Problem

- **Job-to-job switching decision:** $\underline{s}_h^x(\cdot,\cdot)$;
- **Job quitting decision**: $\underline{q}_h^x$.

Steady State Condition

- Worker distribution is characterized by $\left(u_h, e_h^x, G_h^x(w)\right)$ where
  - u_h is the measure of unemployed workers with health status h;
  - e_h^x is the measure of employed workers with health status h and health insurance status x;
  - $G_h^x(w)$ is the fraction of employed workers with health status h working on jobs with insurance status x and wage below w; $g_h^x(w)$ is the associated density.
- We require that worker distribution must satisfy the steady state conditions: Given $F(w,x)$,
  1. the inflow and outflow of u_h are equalized.
  2. the inflow and outflow of $e_h^x g_h^x(w)$ are equalized.
  3. $\sum_{h\in\{U,H\}}(u_h + e_h^0 + e_h^1) = M$.

Employer's Problem

- An employer draws the health insurance offering preference shock $\sigma_f \epsilon$, which is persistent over time.

$$\max\{\Pi_0(p), \Pi_1(p) + \sigma_f \epsilon\},$$

$$\begin{aligned}
\Pi_0(p) &= \max_{w_0} (p - w_0)\, n_H(w_0, 0) + (pd - w_0)\, n_U(w_0, 0) \\
\Pi_1(p) &= \max_{\{w_1\}} \Pi(w_1, 1) \equiv \left[\begin{array}{c} (p - w_1 - m_H^1)\, n_H(w_1, 1) \\ + (pd - w_1 - m_U^1)\, n_U(w_1, 1) \end{array} \right] - C.
\end{aligned}$$

- Assuming that ϵ follows i.i.d. Type-I extreme value distribution, the fraction of employers offering health insurance among those with productivity p is

$$\Delta(p) = \frac{\exp(\frac{\Pi_1(p)}{\sigma_f})}{\exp(\frac{\Pi_1(p)}{\sigma_f}) + \exp(\frac{\Pi_0(p)}{\sigma_f})}. \tag{2}$$

The Definition of Equilibrium

A *steady state equilibrium* is

$\left\langle \left(\underline{w}_h^x, \underline{s}_h^x(\cdot,\cdot), \underline{q}_h^x \right), \left(u_h, e_h^x, G_h^x(w) \right), \left(w_x(p), \Delta(p) \right), F(w,x) \right\rangle$ s. t.

- **(Worker Optimization)** Given $F(w,x)$, for each $(h,x) \in \{U,H\} \times \{0,1\}$, $\left(\underline{w}_h^x, \underline{s}_h^x(\cdot,\cdot), \underline{q}_h^x \right)$ solves worker's optimization problem.
- **(Steady State Worker Distribution)** Given $\left(\underline{w}_h^x, \underline{s}_h^x(\cdot,\cdot), \underline{q}_h^x \right)$ and $F(w,x)$, $\left(u_h, e_h^x, G_h^x(w) \right)$ satisfies the steady state flow conditions.
- **(employer Optimization)** Given $F(w,x)$ and the steady state employee sizes implied by $\left(u_h, e_h^x, G_h^x(w) \right)$, $\left(w_0(p), w_1(p), \Delta(p) \right)$ solves employer's optimization problem.
- **(Equilibrium Consistency)** $F(w,x)$ must satisfy:

$$F(w,1) = \int_{\underline{p}}^{\overline{p}} \mathbf{1}(w_1(p) < w) \Delta(p) d\Gamma(p),$$

$$F(w,0) = \int_{\underline{p}}^{\overline{p}} \mathbf{1}(w_0(p) < w) \left[1 - \Delta(p) \right] d\Gamma(p).$$

Why Are Large Firms More Likely to Offer Health Insurance?

Statistics	Low-Prod. Firms		High-Prod Firms	
	HI	No HI	HI	No HI
Frac. of Unhealthy in SS	0.0494	0.096	0.037	0.107
	Adverse Selection Effect			
Frac. of Unhealthy (New Hires)	0.080	0.074	0.051	0.050
	Health Insurance Effect on Health			
One-Period Ahead	0.067	0.084	0.046	0.067
Nine-Period Ahead	0.038	0.109	0.037	0.107
	Retention Effect			
J-to-J Transition for Healthy	0.109	0.126	8.29E-9	4.03E-14
J-to-J Transition for Unhealthy	0.104	0.126	8.29E-9	5.91E-5

Data Sets

- Worker-side Data
  - **1996 Panel of Survey of Income and Program Participation** (SIPP 1996): labor market dynamics, wage, health insurance, and health variables.
  - **1997-1999 Panels of Medical Expenditure Panel Survey** (MEPS 1997-1999): medical expenditure, health, and health insurance.
- Employer-side Data:
  - **1997 Robert Wood Johnson Foundation Employer Health Insurance Survey** (RWJ-EHI 1997): employer size distribution, health insurance coverage, and wage.

Sample Selection for SIPP and MEPS

- We restrict the samples which satisfy the following criteria:
  - Men, aged between 26-46
  - at most high school graduates
  - do not attend in school, military service, and any government welfare program (AFDC, WIC, Food Stamps)
  - do not work as a self-employed or in public agency.
  - are not covered by other sources (Medicaid, individual insurance, and spouse insurance).
  - wage is between 3-97 percentiles.
- Sample size for SIPP is 5,309.
- Sample size for MEPS 1997-1999 are 4,815.

Sample Selection for RWJ-EHI 1997

- Sample selection:
  - belong to private sector.
  - at least 3 workers.
- The sample size is 19,089.

Summary Statistics: SIPP

Variable	Mean	Std. Dev.
Fraction of Insured Among Employed Workers	0.7619	0.4260
Average (4-Month) Wages for Employed Workers	0.8538	0.3532
... for insured employees	0.9240	0.3462
... for uninsured employees	0.6187	0.2750
Fraction of Unemployed Workers	0.0318	0.1758
Fraction of Healthy Workers	0.9511	0.2177
... among insured workers	0.9536	0.2103
... among uninsured workers	0.9389	0.2398

Summary Statistics: RWJ-EHI

Variable Name	Mean	Std. Dev.
Average Establishment Size	19.92	133.40
... for those that Offer Health Insurance	30.08	177.24
... for those that Do Not Offer Health Insurance	6.95	11.03
Health Insurance Coverage Rate	0.56	0.50
... for those with less than 50 workers	0.53	0.50
... for those with 50 or more workers	0.95	0.23
Average Annual Wage Compensation, in $10,000	2.53	2.44
... for those that Offer Health Insurance	2.92	2.50
... for those that Do Not Offer Health Insurance	2.03	2.27

Two-Step Estimation Strategy

- In First Step, we estimate parameters of the medical expenditure distributions $\langle \alpha_0, \beta_0, \gamma_0, \alpha_m, \beta_m, \gamma_m, \sigma_{hx} \rangle$, as well as the health transitions $\boldsymbol{\pi}$ without explicitly using the model.
- In Second Step, we estimate the remaining parameters by Generalized Method of Moments (Imbens and Lancaster, 1994), where moments are constructed from:
  - likelihood of **worker-side** labor market transitions.
  - **firm-side** characteristics (size distribution, coverage rate...).

First Step

- We estimate the parameters in medical expenditure distributions $\langle \alpha_0, \beta_0, \gamma_0, \alpha_m, \beta_m, \gamma_m, \sigma_{hx} \rangle$ by GMM using the MEPS.
- We estimate the parameters in health transition matrix, π^1_{HH}, π^1_{UU}, π^0_{HH}, and π^0_{UU}, using SIPP 1996 based on maximum likelihood.
- We calibrate some of other parameters:
  - discount factor $\beta = 0.99$;
  - exogenous retirement rate $\rho = 0.001$ (from mortality rate);
  - Parameterization of after-tax income, $T(y) = \tau_0 + \tau_1 \frac{y^{(1+\tau_2)}}{1+\tau_2}$ (from Kaplan's 2011).

Second Step

- Estimate $\theta = [\theta_1 \ \theta_2]$ where $\theta_1 = (\lambda_u, \lambda_e, \delta, \gamma, \mu, b)$ and $\theta_2 = (C, d, M, \mu_p, \sigma_p, \sigma_f)$ by minimum distance estimation:

$$\min g(\theta)' \Omega g(\theta)$$

where

$$g(\theta) = \begin{bmatrix} \frac{\sum_i \partial \log(L_i(\theta))}{\partial \theta} \\ \mathbf{s} - \mathrm{E}[\mathbf{s}; \theta] \end{bmatrix},$$

  - $L(\theta_1)$ is likelihood of workers' labor market transitions.
  - $\mathrm{E}[\mathbf{s}; \theta]$ is other firm-side moments.

Firm-Side Moments

- Mean establishment size;
- Fraction of firms less than 50 workers;
- Mean size of establishments that offer health insurance;
- Mean size of establishment that do not offer health insurance;
- Health insurance coverage rate;
- Health insurance coverage rate among employers with more than 50 workers;
- Health insurance coverage rate among employers with less than 50 workers;
- Average wages of firms with less than 50 workers;
- Average wages of firms with more than 50 workers.

Likelihood Components from Worker-Side Labor Market Transitions

- An *unemployed workers can transition to a job* $(\tilde{w}, x)$ after l periods;
- An *employed workers at job* (w, x) can experienece one of the four job transitions after l periods,
  - [Event *"Job Loss"*] the individual experienced a job loss at period $l+1$;
  - [Event *"Switch 1"*] the individual transitioned to a job $(\tilde{w}, x')$ such that $x' = x$ and the accepted wage is $\tilde{w} > w$;
  - [Event *"Switch 2"*] the individual transitioned to a job $(\tilde{w}, x')$ such that $x' = x$ and the accepted wage is $\tilde{w} < w$;
  - [Event *"Switch 3"*] the individual transitioned to a job $(\tilde{w}, x')$ such that $x' \neq x$ and the accepted wage is $\tilde{w}$.

Details in the Second Step

1. Initialize a guess of θ;
2. Given the guess, solve equilibrium numerically, by using the numerical algorithm. Obtain the offer distribution $\hat{F}(w, x)$ from the equilibrium.
3. We will then use $\hat{F}(w, x)$ and other parameters to evaluate the moments.

Counterfactual for ACA

- **Insurance Exchange (EX):**
  - Health insurance effect on health between ESHI and individual health insurance is the same.
  - Premium in the insurance exchange is determined via community rating;
  - Set loading factor ξ to 25% (ACA stipulates that the medical loss ratio should at least 80%).
- **Individual Mandate (IM):**

$$P_W^{ACA}(y) = \max\{0.025 \times (y - \text{TFT\_2011}), \$695\}, \tag{3}$$

Counterfactual for ACA

- **Employer Mandate (EM):** If $n \geq 50$,

$$P_E^{ACA}(n) = (n - 30) \times \$2,000. \tag{4}$$

- **Premium Subsidies (Sub):**
  - If an individual's income is at 133% of the FPL, his contribution to the premium is equal to 3.5% of his income;
  - When an individual's income is at FPL400, his premium contribution is set to be 9.5% of the income.
  - When his income is below FPL133, he will receive insurance with zero premium contribution.
  - If his income is above FPL400, he is no longer eligible for premium subsidies.

Main Results from Counterfactual Experiments

TABLE 16
COUNTERFACTUAL POLICY EXPERIMENTS: KEY STATISTICS UNDER THE BENCHMARK MODEL, THE ACA, AND OTHER HEALTH CARE REFORM PROPOSALS

	Benchmark (1)	ACA (2)	ACA without Individual Mandate (3)	ACA without Employer Mandate (4)	ACA without Premium Subsidy (5)
A. Labor market statistics:					
Fraction of firms offering ESHI	.525	.459	.419	.438	.564
(If firm size is at least 50)	.935	.989	.965	.918	.998
(If firm size is fewer than 50)	.480	.400	.357	.383	.515
Unemployment rate	.079	.079	.079	.079	.078
Average wages of the employed	.989	.992	.997	.995	.969
(Among firms offering ESHI)	1.070	1.110	1.126	1.109	1.045
(Among firms not offering ESHI)	.798	.766	.798	.797	.701
B. Distribution of health insurance status:					
Uninsured	.213	.066	.114	.075	.157
ESHI	.595	.580	.536	.555	.681
Individual insurance	.034	.112	.098	.121	.000
Medicaid	.050	.099	.102	.101	.037
Spousal insurance	.108	.143	.150	.147	.125
Premium in exchange ($10,000)	NA	.150	.175	.151	.419
C. Worker's utility, firm profit, and government expenditure and revenues ($10,000):					
Average worker utility (consumption equivalent)	.597	.611	.610	.610	.602
Average firm profit	.572	.579	.577	.578	.580
Average tax subsidies to ESHI	.021	.020	.018	.019	.023
Average exchange/Medicaid subsidies	.005	.021	.022	.021	.004
Revenue from penalties	.000	.001	.0002	.002	.003

NOTE.—Panel C values are per capita and expressed at the 4-month level. NA = not applicable.

Adverse Selection Effect

TABLE 17
ADVERSE SELECTION EFFECT UNDER THE ACA: LOW-PRODUCTIVITY VS. HIGH-PRODUCTIVITY FIRMS

	Low-Productivity Firms		High-Productivity Firms	
	ESHI	No ESHI	ESHI	No ESHI
Fraction of unhealthy (unobserved) among new hires	.443	.434	.400	.402

Early Impact of the ACA: Model vs. Data

TABLE 18
EARLY IMPACT OF THE ACA: MODEL VS. DATA

	DATA		MODEL	
	Pre-ACA (2012)	ACA (2015)	Pre-ACA (2004–7)	ACA (2015)
Uninsured	.386	.280	.213	.119
ESHI	.480	.521	.703	.685
Individual insurance	.037	.071	.034	.118
Medicaid	.097	.127	.050	.078
Unemployment rate	.116	.080	.079	.079

NOTE.—In this table, we define the ESHI as the fraction of individuals who have ESHI either through their own employers or through their spouses. We make this choice because the ACS data does not distinguish whether the source of ESHI coverage is one's own or spousal ESHI.

Counterfactual Policy Experiments of Various Components of the ΔCΔ

TABLE 19
COUNTERFACTUAL POLICY EXPERIMENTS: EVALUATION OF VARIOUS COMPONENTS OF THE ACA AND NO ESHI

	EX (1)	EX + Sub (2)	EX + IM (3)	EX + EM (4)	No ESHI EX + Sub + IM (5)
A. Labor market statistics:					
Fraction of firms offering ESHI	.521	.410	.562	.523	.000
(If firm size is at least 50)	.980	.828	.990	.996	.000
(If firm size is fewer than 50)	.469	.362	.513	.469	.000
Unemployment rate	.080	.079	.078	.080	.080
Average wages of the employed	.986	1.001	.969	.986	1.045
(Among firms offering ESHI)	1.077	1.116	1.046	1.078	NA
(Among firms not offering ESHI)	.745	.845	.707	.733	1.045
B. Distribution of health insurance status:					
Uninsured	.191	.129	.158	.186	.387
ESHI	.632	.507	.680	.639	.000
Individual insurance	.000	.107	.000	.000	.427
Medicaid	.041	.104	.037	.040	.185
Spousal insurance	.136	.153	.126	.135	.000
Premium in EX ($10,000)	.425	.175	.426	.414	.160
C. Worker's utility, firm profit, and government expenditure and revenues ($10,000):					
Average worker utility (consumption equivalent)	.607	.608	.602	.610	.615
Average firm profit	.576	.577	.579	.577	.568
Average tax subsidies to ESHI	.022	.018	.023	.022	.000
Average exchange/Medicaid subsidies	.004	.023	.004	.004	.053
Revenue from penalties	.000	.000	.003	.000	.009

NOTE.—Panel C values are per capita and expressed at the 4-month level. EM = employer

Counterfactual Policy Experiments: Modifications of the ACA

TABLE 20

COUNTERFACTUAL POLICY EXPERIMENTS: EVALUATING THE EFFECTS OF ELIMINATING THE TAX EXEMPTION FOR EHI PREMIUM UNDER THE BENCHMARK AND THE ACA

	BENCHMARK		ACA	
	Exempt (1)	No Exempt (2)	Exempt (3)	No Exempt (4)
A. Labor market statistics:				
Fraction of firms offering ESHI	.525	.326	.459	.342
(If firm size is at least 50)	.935	.617	.989	.842
(If firm size is fewer than 50)	.480	.290	.400	.278
Unemployment rate	.079	.081	.079	.080
Average wages of the employed	.989	1.013	.992	1.014
(Among firms offering ESHI)	1.070	1.130	1.110	1.186
(Among firms not offering ESHI)	.798	.919	.766	.839
B. Distribution of health insurance status:				
Uninsured	.213	.318	.066	.124
ESHI	.595	.383	.580	.429
Individual insurance	.034	.072	.112	.182
Medicaid	.050	.057	.099	.115
Spousal insurance	.108	.169	.143	.150
C. Worker's utility, firm profit, and government expenditure and revenues ($10,000):				
Average worker utility (consumption equivalent)	.597	.598	.611	.603
Average firm profit	.572	.570	.579	.574
Average tax subsidies to ESHI	.021	.000	.020	.000
Average exchange/Medicaid subsidies	.005	.006	.021	.029
Revenue from penalties	.000	.000	.001	.003

Conclusion

- We presented a structural estimation of an equilibrium labor market search model with endogenous health insurance provision.
- The implementation of the full version of the ACA would significantly reduced the uninsured rate from 20.12% in the benchmark economy to 7.27%.
- This large reduction of the uninsured rate is mainly driven by low-wage workers participating in the insurance exchange with their premium supported by the income-based subsidies.

Conclusion

- We find that the ACA would also have achieved significant reduction in the uninsured rate even if its individual mandate component were removed: the uninsured rate would be 12.18%.
- If the subsidies were removed from the ACA, the insurance exchange will suffer from severe adverse selection problem, resulting in a much more modest reduction in the uninsured rate to $17.14 - 17.28\%$.
- Interestingly, we find that the current version of ACA *without* employer mandate ismore efficient than the one with employer mandate.
- We also find that eliminating the tax exemption for employer-sponsored health insurance (ESHI) premium both under the benchmark and under the ACA would increase uninsured rates both under the benchmark and under the ACA, but quite modestly.

Directions for Future Research

- Introduce richer worker heterogeneity (including life cycle) in the equilibrium labor market model – Naoki's job market paper *"Labor Market Sorting and Health Insurance System Design"*, QE 2019.
- Explore richer channels through which firms can respond to the health reform: changing the capital/labor substitutions or change the skill intensity of the production function.
- Incorporating time-varying firm productivity (say, AR(1) process) and assess how health care reform affects the reallocations between workers and firms as firm productivities change.
- Incorporating Medicaid, the free public health insurance for the poor, into a model with endogenous asset accumulation decisions and study the interactions between health insurance exchange and Medicaid. – Naoki Aizawa and Chao Fu's recent work.