Health Care Reform or Labor Market Reform? A Quantitative Analysis of the Affordable Care Act

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Obamacare's Part-Time Nation

Whether or not we're done with Obamacare, it's certainly not done with us.

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U.S. NEWS

Health Law To Cut Into Labor Force

CBO Report Forecasts More People Will Opt to Work Less as They Seek Coverage Through Affordable Care Act

ACA Creates Part-Time Nation?

- Patient Protection and Affordable Care Act (ACA) – aka Obamacare.
  - Signed into law in 2010.
  - Aims to provide near-universal coverage.
  - Will cost $1.4 trillion over the next decade, according to CBO.

- One component of the ACA (Employer Mandate) states that firms with more than 50 FTE (Full-Time Equivalent) employees have to offer health insurance to full-time employees or pay penalty.
  - Replace full-time (FT) workers by part-time (PT) workers?
  - Stay below 50 FTE?
  - CBO forecasts a decline in FTE by 1.5-2.0% (2.3 mil).
  - Data so far are mixed. Too early to tell.

Goal of the Paper

- Predict how ACA affects PT and FT employment, with a model.
- We construct a macroeconomic model that captures key features of the ACA.
- In particular, our model needs rich features of the labor market.
  - Both firms and workers choose between PT and FT.
  - Both firms and workers make health insurance decision.
  - Firms with different size.

What We Also Do

- Our model can be used to answer many interesting questions.
  - What are the macro implications of the ACA?
  - How do components of the ACA interact with each other?
  - Is the ACA worth the cost?
  - How to improve on the ACA?
  - Are model's implications consistent with what happened in MA?

- We take into account the costs of the ACA when evaluating it.
  - Government budget balance.
  - Financed by proportional income tax.

US Healthcare System, Pre-ACA

- Types of insurance: Mainly private and employer-provided.
  - Private: Employer-provided, individually-purchased.
  - Public: Medicaid, Medicare, etc.
- In 2004-2006, 23% in labor force (age 16-64) were uninsured.
- 2/3 in the labor force obtain health insurance from employers.

Insurance Composition among the Working Age (March CPS, 2004-2006)

	Full-Time	Part-Time	Unemp	Total
% EHI-Policyholder	46.5	2.4	0.4	49.3
% EHI-Dependent	9.6	5.5	2.1	17.2
% PHI-Policyholder	2.5	0.6	0.2	3.3
% PHI-Dependent	0.4	0.3	0.2	0.8
% Medicaid	2.5	1.4	0.7	4.6
% Other Public	1.3	0.5	0.2	2.0
% Uninsured	16.4	4.5	1.8	22.7
% Total	79.2	15.2	5.6	100.0

- Overall uninsured rate of 23%.
- 67% obtain health insurance from employers.
- 4% purchase individually.
- 15% work as part-time.

The Affordable Care Act (ACA): Key Components

1. Health Insurance Exchange
   - State- or federal-based market place for private insurance.
   - Insurance premium cannot depend on pre-existing conditions.
   - Community rating enforced.
2. Employer Mandate
   - Firms with more than 50 (FTE) employees have to insure all FT workers or pay penalty of $\$2000(\text{Employment (FTE)} - 30)$.
   - HI subsidies for firms hiring less than 25 employees.
3. Individual Mandate
   - Individuals have to own health insurance to avoid penalty.
   - Penalty: $\max(\$695, 2.5\% \text{ of income})$
4. Medicaid Expansion
   - Medicaid is provided if current income is below 133% of FPL.
5. Health Insurance Subsidies
   - For income 133-400% of FPL, subsidies are provided to buy HI.
6. Financing of the ACA

Related Literature

- Macro analysis of the health insurance system in the US:
  - Jeske and Kitao (2009), Feng (2009), Hansen et al. (2011), Fang and Gavazza (2011).
- Empirical analysis of the MA healthcare reform:
  - Kolstad and Kowalski (2012), Hackmann et al. (2012, 2013).
- Macro analysis of the ACA:
  - Brügeman and Manovskii (2010), Aizawa and Fang (2013), Pashchenko and Porapakkarm (2013), Jung and Tran (2014), Janicki (2014)
- Inefficient allocation due to size-dependent policies:
  - Restuccia and Rogerson (2008), Guner, Ventura and Xu (2008)
- Part-Time vs Full-Time:
  - Montgomery (1988), Owen (1978).

Comparison with Closely Related Literature

- No paper analyzes PT vs FT.
- Pashchenko and Porapakkarm (2013), Jung and Tran (2014), Janicki (2014)
  - Focus on the worker-side. No decision by the firms.
  - Our paper: Firms decide employment and insurance provision.
- Brügeman and Manovskii (2010), Aizawa and Fang (2013)
  - Both workers and firms make decisions.
  - Focus on positive analysis.
  - No government budget constraint.
  - Our paper: Welfare analysis. Government budget constraint.

Model: Overview

- Heterogeneous firms decide:
  - How many full-time (FT) and part-time (PT) workers to hire.
  - Whether to offer health insurance (EHI) to FT employees.
- Heterogeneous workers decide:
  - Which island (U, FT with or without insurance, or PT) to be.
  - Whether to purchase private health insurance (PHI).
- Equilibrium.
  - Competitive labor market clears on each island.
  - Health insurers make zero profits.
  - Government budget balance.

Model: Firms

- Type: (a, z).
  - a: "Preferences" for offering health insurance.
  - z: Individual productivity.

- Decision: (i, n, m).
  - i: Offer EHI $(i = 2)$ or not $(i = 1)$ to FT workers?
  - (n, m): Number of FT and PT workers.

Model: Firm's Problem

$$p(a,z) = \max\left\{\max_{n,m} p(a,z,n,m;i=1),\ \max_{n,m} p(a,z,n,m;i=2)\right\}$$

$$p(a,z,n,m;i=1) = zF(p_1 n, \psi p_3 m) - w_1 p_1 n - w_3 \psi p_3 m$$

$$p(a,z,n,m;i=2) = zF(p_2 n, \psi p_3 m) - w_2 p_2 n - w_3 \psi p_3 m - q_0 - \gamma q_2 n + a$$

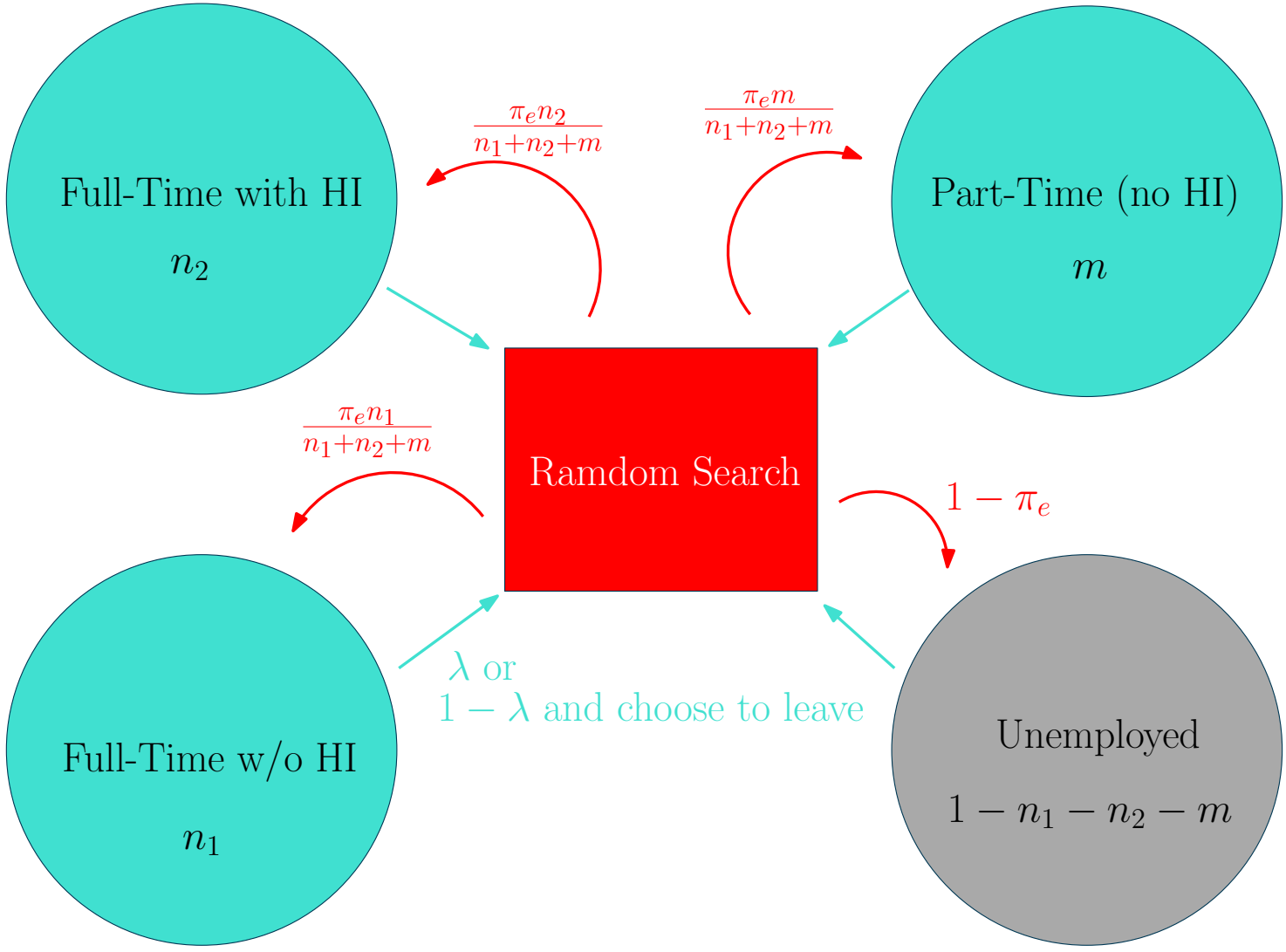
- $y = zF(n,m) = z\left[\alpha n^{\epsilon} + (1-\alpha)m^{\epsilon}\right]^{\frac{\theta}{\epsilon}}$
- PT works $\psi \in (0,1)$ hours.
- p_1, p_2, p_3: Average productivity.
- q_0: Per-employer HI cost.
- q_2: Per-employee HI cost.
- γ: Employer's contribution.

Model: Workers

- Type: (d, x, s, e).
  - d: Disutility of labor. Permanent.
  - x: Medical expenditures. Markov.
  - s: Individual productivity. Markov.
  - $e \in \{0, 1, 2, 3\}$: Island.
    0=unemp, 1=FT w/o insurance, 2=FT with insurance, 3=PT

- Decision: (j, e').
  - j: Whether to buy private insurance ($j = 1$) or not ($j = 0$).
  - e': Whether to leave the current island ($e' = 1$) or not ($e' = 0$).

Model: Islands



- Wage is determined to clear labor market on each island.

Model: Worker's Problem (FT with Insurance)

$$V(d,x,s,e=2)=\sum_{x'}\sum_{s'}\pi_{x,x'}\pi_{s,s'}\Big[u(d,\max\{c(x,x',s,2),\underline{c}\},1)$$
$$+\beta\left((1-\lambda)\max\left\{V(d,x',s',2),\widetilde{V}(d,x',s')\right\}+\lambda\widetilde{V}(d,x',s')\right)\Big]$$

$$c(x,x',s,2)=(1-\tau_w)sw_2-(1-\gamma)q_2-(1-\phi_2)x'$$

- $u(d,c,\ell)=\frac{c^{1-\sigma}}{1-\sigma}-d\ell$.
- $\underline{c}$: Welfare program (consumption floor).
- $\ell=1$: Full-time.
- λ: Exogenous job destruction rate.
- $\widetilde{V}(.)$: Value of leaving the current island.
- τ_w: Payroll tax rate.
- ϕ_2: Coverage ratio of EHI.

Model: Worker's Problem (FT without Insurance)

$$V(d,x,s,1) = \max\{V_0(d,x,s,1),\, V_1(d,x,s,1)\}$$

$$V_j(d,x,s,1) = \sum_{x'}\sum_{s'} \pi_{x,x'}\pi_{s,s'}\Big[u(d,\max\{c_j(x,x',s,1),\underline{c}\},1)$$
$$+\beta\left((1-\lambda)\max\left\{V(d,x',s',1),\widetilde{V}(d,x',s')\right\}+\lambda\widetilde{V}(d,x',s')\right)\Big]$$

$$c_0(x,x',s,1) = (1-\tau_w)sw_1 - x'$$
$$c_1(x,x',s,1) = (1-\tau_w)sw_1 - q_{1,x} - (1-\phi_1)x'$$

- $V_j(.)$: Value conditional on purchasing PHI ($j=1$) or not ($j=0$).
- Private health insurance: $q_{1,x}$: Premium. ϕ_1: Coverage.
- Notice that PHI premium depends on current x.

Model: Worker's Problem (PT)

$$V(d,x,s,3) = \max\{V_0(d,x,s,3),\, V_1(d,x,s,3)\}$$

$$V_j(d,x,s,3) = \sum_{x'}\sum_{s'} \pi_{x,x'}\pi_{s,s'}\Big[u(d,\max\{c_j(x,x',s,3),\underline{c}\},\psi)$$
$$+\beta\left((1-\lambda)\max\left\{V(d,x',s',3),\widetilde{V}(d,x',s')\right\}+\lambda\widetilde{V}(d,x',s')\right)\Big]$$

$$c_0(x,x',s,3) = (1-\tau_w)\psi s w_3 - x'$$
$$c_1(x,x',s,3) = (1-\tau_w)\psi s w_3 - q_{1,x} - (1-\phi_1)x'$$

- $\ell = \psi < 1$: Part-time.

Model: Worker's Problem (Unemployed)

$$V(d,x,s,0) = \max\{V_0(d,x,s,0),\, V_1(d,x,s,0)\}$$

$$V_j(d,x,s,0) = \sum_{x'}\sum_{s'} \pi_{x,x'}\pi_{s,s'}\Big[u(d,\max\{c_j(x,x',s,0),\underline{c}\},0)$$
$$+\beta\left((1-\lambda)\max\left\{V(d,x',s',0),\widetilde{V}(d,x',s')\right\}+\lambda\widetilde{V}(d,x',s')\right)\Big]$$

$$c_0(x,x',s,0) = sb - x'$$
$$c_1(x,x',s,0) = sb - q_{1,x} - (1-\phi_1)x'$$

- $\ell = 0$: Not working.
- b/w_1: UI replacement rate.

Model: Health Insurance Premia

Private health insurance (PHI)

- Workers with different medical expenditures in the previous period (remember x follows Markov) pay different premia.

$$q_{1,x} = \sum_{x'} \pi_{x,x'} \phi_1 x' + \kappa_1$$

- ϕ_1: Coverage ratio.
- κ_1: Fixed cost.

Employer-provided health insurance (EHI)

- All workers are pooled.
- Costs consist of fixed portion (q_0 per firm, κ_2) and variable portion (q_2 per insured worker, $1 - \kappa_2$).
- ϕ_2: Coverage ratio.

Model: Government

$$\int \sum_{x'} \pi_{x,x'} \left[\max\{\underline{c} - c_{h_j(d,x,s,e)}(x, x', s, e), 0\} + \mathbb{1}_{e=0} sb \right] d\mu_{d,x,s,e}$$

$$= \tau_w \int \left[\mathbb{1}_{e=1} sw_1 + \mathbb{1}_{e=2} sw_2 + \mathbb{1}_{e=3} \psi sw_3 \right] d\mu_{d,x,s,e}$$

- Finance two programs:
  - Welfare program (consumption floor).
  - UI benefits.
- Revenue: Proportional payroll tax with tax rate τ_w.
- τ_w is adjusted to satisfy budget balance.

Model: Steady-State Equilibrium

1. Firms choose $i = g_i(a, z)$, $n = g_n(a, z)$, and $m = g_m(a, z)$ to maximize profits.
2. Workers choose $j = h_j(d, x, s, e)$ and $e' = h_e(d, x, s, e)$ to maximize value.
3. Distribution of firms $\chi_{a,z}$ is time-invariant.
4. Distribution of workers $\mu_{d,x,s,e}$ is time-invariant.
5. Health insurance premia $q_{1,x}$, q_0, and q_2 satisfy zero profit conditions.
6. Labor market on each island clears, with w_1, w_2, and w_3.
7. Government budget balances, with τ_w.

Calibration: Parameterization

- Production function: $y = z\left[\alpha n^{\epsilon} + (1-\alpha)m^{\epsilon}\right]^{\frac{\theta}{\epsilon}}$
- Utility function: $u(d, c, \ell) = \frac{c^{1-\sigma}}{1-\sigma} - d\ell$
- a is uniformly distributed over $[\underline{a}, \overline{a}]$.
- $\log z$ is distributed according to (discretized) truncated log-normal.
- d is uniformly distributed over $[0, \eta]$.
- Medical expenditure shock x is constructed using MEPS (Medical Expenditure Panel Survey) 2009-2010.
- $\log s$ follows an AR(1) process with persistence ρ_s and standard deviation of innovation σ_s. The AR(1) process is discretized.

Calibration: Parameters 1/2

Parameter	Description	Value
Worker		
β	Time discount factor	0.96
σ	Coefficient of relative risk aversion	2.00
η	Disutility of leisure	17.0
ψ	Hours for part-time job	0.54
ρ_s	Persistence of productivity shock	0.90
σ_s	S.D. of productivity shock	0.10
b	UI replacement rate	0.20
λ	Probability of leaving island	0.20
π_e	Probability of employment	0.86
$\underline{c}$	Consumption floor	0.10

Calibration: Parameters 2/2

Parameter	Description	Value
Firm		
ϵ	CES: Elasticity of substitution=1.5	0.33
α	Share parameter of production function	0.80
θ	Curvature of production function	0.64
$\underline{a}$	Lowerbound of insurance preference shock	-15.0
$\overline{a}$	Upperbound of insurance preference shock	18.0
σ_z	S.D. of productivity shock	1.20
τ_z	Threshold level of productivity shock	1.50
Insurance		
ϕ_1	Insurance coverage ratio (private)	0.75
ϕ_2	Insurance coverage ratio (employer)	0.75
γ	Proportion of premium paid by employer	0.80
κ_0	Fixed cost of private HI	0.03
κ_2	Proportion covered by fixed cost per firm	0.10

Calibration: Matching Moments

Target	Data	Model
% of unemployed workers	5.6	5.6
% of FT workers without EHI	16.4	15.7
% of FT workers with EHI	62.8	63.6
% of PT workers	15.2	15.1
% of workers purchasing private insurance	12.1	12.2
% of firms offering health insurance	55.7	55.1
% of firms with less than 50 employees	95.0	94.7
% of firms with more than 1000 employees	0.002	0.003
% of firms with more than 50 employees offering HI	95.8	67.9

- η, π_e, $\underline{a}$, $\overline{a}$, σ_z, τ_z, κ_0, κ_2 are calibrated to match 8 targets above. (unemployment rate is obtained as the residual)
- We adjust calibration targets to make data consistent with model.
  - Firms do not offer HI to PT workers.
  - No dependents.

Design of Experiments

- Baseline model is calibrated to US before ACA (2004-2006).
- Introduce the stylized version of the ACA into the baseline model.
  - Also introduce each component of the ACA one by one.
  - Later introduce the MA healthcare reform.
- Compare aggregate implications.
  - PT vs FT. Uninsured rate. Unemployment rate. Output.
- Compare welfare implications.
  - Defined as the average life-time utility in the steady-state.
  - Converted into CEV (percentage change in flow consumption).

Six Components of the ACA

1. Health Insurance Exchange (EX)
2. Employer Mandate (EM)
3. Individual Mandate (IM)
4. Medicaid Expansion (ME)
5. Insurance Subsidies (SU)
6. Taxation (TX)

Aggregate Implications of the ACA

	Base (Pre-ACA)	ACA	ACA (no TX)
% unemployed	5.6	6.5	6.4
% FT without EHI	15.7	20.0	20.2
% FT with EHI	63.6	54.1	53.6
% PT	15.1	19.3	19.8
% buying private HI	12.2	27.3	27.0
% uninsured	24.2	5.0	4.9
% firms offering HI	55.1	54.5	54.5
% of firms $<$ 50 FTE	95.0	95.7	95.7
Avg firm size	21.9	21.7	21.7
Output	8.65	8.45	8.44
Premium in Exchange	–	1304	1303
τ_w (%)	2.58	6.37	2.58

- PT employment rises from 15% to 19%.
- Less firms offer HI.
- Uninsured rate declines from 24.2% to 5.0%.
- Labor supply declines by 3.3%.

Health Insurance Choice under the ACA

	Uninsured	Employer HI	Private HI	Medicaid
Base (pre-ACA)				
Unemployed	100.0	0.0	0.0	0.0
Full-Time	9.6	80.2	10.2	0.0
Part-Time	73.1	0.0	26.9	0.0
Total	24.2	63.6	12.1	0.0
ACA				
Unemployed	0.0	0.0	0.0	100.0
Full-Time	6.7	73.0	20.3	0.0
Part-Time	0.2	0.0	63.0	36.9
Total	5.0	54.1	27.3	13.7

- Unemployed obtain HI through Expanded Medicaid.
- Part-Timers obtain HI through subsidized PHI or Medicaid.

Wage and Consumption

	Wage	Consumption
Base (pre-ACA)		
Unemployed	–	0.050
Full-Time without HI	0.280	0.244
Full-Time with HI	0.240	0.221
Part-Time	0.290	0.142
ACA		
Unemployed	–	0.057
Full-Time without HI	0.268	0.227
Full-Time with HI	0.255	0.227
Part-Time	0.243	0.120

- Shift away from EHI, with PHI subsidies and Medicaid.
- Wage and consumption for FT without HI and PT go down with the ACA, reflecting higher labor supply.
- Wage and consumption for FT with HI go up with the ACA, reflecting lower labor supply.

Aggregate Implications of the ACA: Each Component

	Base	ACA	EX	EM	IM	ME	SU
% unemployed	5.6	6.5	5.6	5.6	5.1	7.0	5.9
% FT without EHI	15.7	20.0	14.2	12.7	15.2	14.6	44.4
% FT with EHI	63.6	54.1	65.3	66.7	65.5	61.2	30.4
% PT	15.1	19.3	14.9	15.0	14.2	17.2	19.2
% buying private HI	12.2	27.3	2.4	10.6	23.8	11.1	51.2
% uninsured	24.2	5.0	32.3	22.7	10.7	15.9	18.4
% firms offering HI	55.1	54.5	55.2	55.3	55.1	55.1	54.3
% of firms $<$ 50 FTE	95.0	95.7	95.0	95.6	95.0	95.1	95.0
Avg firm size	21.9	21.7	21.9	21.9	22.0	21.6	21.8
Premium	–	1304	2924	–	–	–	–

- IM, ME, and SU lower the uninsured rate.
- ME and SU reduces employment (firm size).
- HI Exchange does not function without SU and IM.
- SU and ME shift jobs from FT with HI to PT.

Welfare Implications of the ACA

	Base	ACA	no TX	EX	EM	IM	ME	SU
Welfare	–	+3.19	+4.66	-0.25	-0.09	-1.59	+4.07	+4.30
Uninsured	24.2	5.0	4.9	32.3	22.7	10.7	15.9	18.4
τ_w	2.58	6.37	2.58	2.58	2.58	2.58	2.58	2.58
Output	8.65	8.45	8.44	8.66	8.65	8.70	8.50	8.50

- Positive welfare effect (+3.2%) from the ACA.
  - Negative effect from lower aggregate output.
  - Positive effect from providing HI to more workers.
  - Negative effect from a higher τ_w.

Aggregate Implications of the ACA: Interaction

	Base	ACA	no EX	no EM	no IM
% unemployed	5.6	6.5	6.5	6.6	6.5
% FT without HI	15.7	20.0	20.3	42.7	21.3
% FT with HI	63.6	54.1	53.8	31.7	52.9
% PT	15.1	19.3	19.3	19.0	19.3
% buying private HI	12.2	27.3	32.0	43.5	22.6
% uninsured	24.2	5.0	0.5	11.2	10.9
% firms offering HI	55.1	54.5	54.5	54.0	54.4
% of firms $<$ 50 FTE	95.0	95.7	95.7	94.7	95.7
Avg firm size	21.9	21.7	21.7	21.6	21.7
Output	8.65	8.45	8.45	8.43	8.45
Premium in Exchange	–	1304	–	1387	1517
τ_w	2.58	6.37	6.53	8.63	6.51
Welfare	–	+3.19	+3.13	+2.98	+3.16

- Without EX, uninsured rate becomes even lower, but welfare declines, with less transfers from more healthy to less healthy.
- Without EM, substantially less jobs are offered without HI and uninsured rate goes up.
- Without IM, pool in Exchange becomes less healthy.

Part-Time Nation?

- With the ACA, the proportion of PT workers increases from 15.1% to 19.3% (6.6 million workers).
- Without the Employer Mandate, the proportion of PT workers is 19.0%. Only 0.3% are *forced* by EM.
- The rest is induced by workers not clinging to FT jobs with EHI, under the ACA.
- Consistent with the recent increase in *voluntary* PT employment.

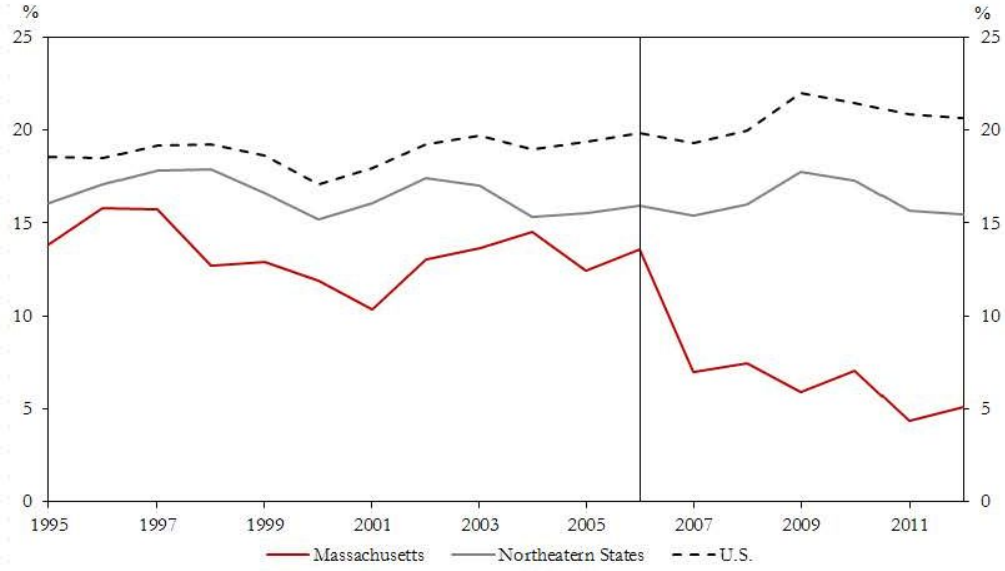
MA Healthcare Reform

	ACA	MA
EX	Establishing the Exchange	Same (the Connector)
EM	Applied: firms with 50+ employees Penalty: \$2000(Employment-30)	11+ employees \$295 per employee
IM	Individuals have to own HI Penalty: max(\$695, 2.5% of income)	Same Half of PHI premium
ME	Medicaid expanded to all with income <133% FPL	Fully subsidized PHI with income < 150% FPL
SU	Subsidies for PHI available Eligibility: Income 133-400% FPL	Same Income 150-300%

- Enacted in 2006, to achieve near-universal coverage.
- Model for the ACA.

Declining Uninsured Rate in MA

Figure 1: Uninsured Rate of the Working-Age Population in Massachusetts, the Northeastern states, and the United States



Notes: The comparison groups (other Northeastern states and the United States) do not include Massachusetts. Data are restricted to individuals ages 16 to 64 who do not work in agriculture or the military. Source: CPS Annual Social and Economic Supplement (ASEC) and authors' calculations.

- Uninsured rate dropped to 5% immediately after the reform.
- Came from an increased coverage through Medicaid and EHI.

ACA vs MA Healthcare Reform

	Base	ACA	MA	MA (no TX)
% unemployed	5.6	6.5	6.6	6.3
% FT without HI	15.7	20.0	32.3	32.7
% FT with HI	63.6	54.1	41.7	40.9
% PT	15.1	19.3	19.4	20.0
% buying private HI	12.2	27.3	36.0	35.7
% uninsured	24.2	5.0	4.7	4.8
% firms offering HI	55.1	54.5	54.4	54.4
% of firms $<$ 50 FTE	95.0	95.7	95.0	95.0
Avg firm size	21.9	21.7	21.7	21.7
Output	8.65	8.45	8.45	8.44
Premium in Exchange	–	1304	1289	1298
τ_w (%)	2.58	6.37	7.73	2.58
Welfare	–	+3.19	+3.24	+5.24

- Model also predicts a decline in the uninsured rate.
- But not from an increase from EHI.
- The effects of the MA reform are quite similar to ACA.
- More firms stop offering HI to FT workers (lower EM penalty).

Summary 1/2

- We construct a macroeconomic model to analyze the ACA.
  - Focus on PT vs FT.
  - Can analyze response of both workers and firms.
  - Honor government budget constraint.

- Part-Time Nation!
  - PT employment increases moderately, from 15.1% of LF to 19.3% (6.6 mil more PT).
  - Only 0.3% due to Employer Mandate.
  - Mainly because workers no longer need FT jobs to stay insured at reasonable costs.

Summary 2/2

- Large welfare gain from the ACA: CEV +3.2%.
  - Larger than other estimates. Lack of saving? Role of the firm side?
- The components of the ACA work well together.
  - Exchange basically subsidizes less healthy.
  - IM and SU induces participation of the healthy in the Exchange.
  - SU and ME redistribute recourses to the lower-income.
  - EM induces firms to keep offering HI.
  - Output declines as labor supply declines.
  - Fiscal burden is not large enough to overturn positive welfare effect.

Going Forward

- Introduce saving/capital.
- Richer heterogeneity.
- Optimal design of the healthcare reform.
- Dependents.