

Do employment contract reforms affect welfare?

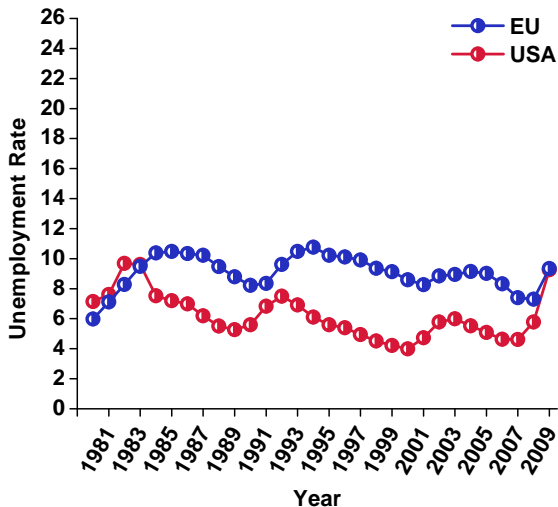
Cristina Tealdi

IMT Lucca
Institute for Advanced Studies

April 26, 2013

Motivation:

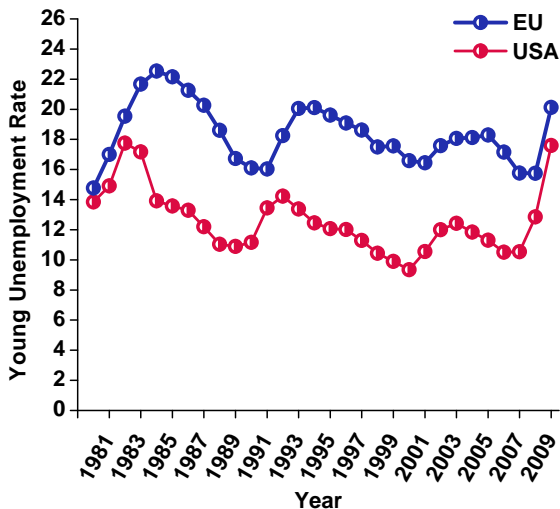
EU unemployment rate much higher than US levels



- After 25 years EU unemployment rate much higher than US levels

Motivation:

Youth unemployment rate very high in EU



- EU youth unemployment rate (15-24) very high
- Introduction of short-term contracts in mid-80s to increase flexibility

Motivation:

Share of short-term contracts increased substantially

	Unemployment Rate		Short-Term Contracts (Share)	
	Total	Youth	1985	2006
France	10.3	25.6	4.7	14.1
Germany	7.2	9.9	10.0	14.5
Italy	10.4	33.9	4.8	13.1
Netherlands	13.2	22.9	7.6	16.6
Portugal	8.9	19.0	14.4	20.6
Spain	21.3	43.8	15.6	34.0
EU 15	10.7	22.3	8.6	14.7

Source: OECD (1985)(2006)

Objectives

- 1 **Who** are the workers hired short-term?
- 2 Are workers **better** off?
- 3 Do young workers **benefit**?
- 4 How **flexible** should the system be?

Without answering these questions we will not be able to

- Design new labor market **policy interventions**

Characteristics of workers hired on a short-term basis: Female

Probit regression

		Short-term	Short-term	Short-term	Short-term	Short-term
Gender						
	Female	0.045***	0.047***	0.056***	0.061***	0.061***
Region						
	South	0.122***	0.121***	0.115***	0.109***	0.110***
Occupation						
	Manager	-0.051***	-0.057***	-0.046***	-0.072***	-0.071***
	White Collar				-0.066**	-0.068***
	Teacher				-0.055***	-0.049***
Age						
	Age	-0.004***				
	Age Group 15 - 24		0.191***	0.202***	0.184***	
	Age Group 25 - 34		0.068***	0.076***	0.070***	
Education						
	Master's			0.043	0.059	
	Bachelor's	0.013	0.016			
	5 Year Bachelor's			0.056***	0.072***	
	3 Year Bachelor's			0.033	0.046	
	Primary/Junior High			0.052***		
	Primary				0.048***	
	No Education			0.260***	0.144***	
	Bachelor's <30					0.121***
	Number of observations	6193	6055	6055	6055	6055

Source: Survey on Household Income and Wealth (SHIW) 2006.

Characteristics of workers hired on a short-term basis: Blue Collars, Not Managers and White Collars

Probit regression

		Short-term	Short-term	Short-term	Short-term	Short-term
Gender	Female	0.045***	0.047***	0.056***	0.061***	0.061***
Region	South	0.122***	0.121***	0.115***	0.109***	0.110***
Occupation	Manager	-0.051***	-0.057***	-0.046***	-0.072***	-0.071***
	White Collar				-0.066**	-0.068***
	Teacher				-0.055***	-0.049***
Age	Age	-0.004***				
	Age Group 15 - 24		0.191***	0.202***	0.184***	
	Age Group 25 - 34		0.068***	0.076***	0.070***	
Education	Master's			0.043	0.059	
	Bachelor's	0.013	0.016			
	5 Year Bachelor's			0.056***	0.072***	
	3 Year Bachelor's			0.033	0.046	
	Primary/Junior High			0.052***		
	Primary				0.048***	
	No Education			0.260***	0.144***	
	Bachelor's <30					0.121***
	Number of observations	6193	6055	6055	6055	6055

Source: Survey on Household Income and Wealth (SHIW) 2006.

Characteristics of workers hired on a short-term basis: Young

Probit regression

		Short-term	Short-term	Short-term	Short-term	Short-term
Gender	Female	0.045***	0.047***	0.056***	0.061***	0.061***
Region	South	0.122***	0.121***	0.115***	0.109***	0.110***
Occupation	Manager	-0.051***	-0.057***	-0.046***	-0.072***	-0.071***
	White Collar				-0.066**	-0.068***
	Teacher				-0.055***	-0.049***
Age	Age	-0.004***				
	Age Group 15 - 24		0.191***	0.202***	0.184***	
	Age Group 25 - 34		0.068***	0.076***	0.070***	
Education	Master's			0.043	0.059	
	Bachelor's	0.013	0.016			
	5 Year Bachelor's			0.056***	0.072***	
	3 Year Bachelor's			0.033	0.046	
	Primary/Junior High			0.052***		
	Primary				0.048***	
	No Education			0.260***	0.144***	
	Bachelor's <30					0.121***
	Number of observations	6193	6055	6055	6055	6055

Source: Survey on Household Income and Wealth (SHIW) 2006.

Characteristics of workers hired on a short-term basis: Poorly educated

Probit regression

		Short-term	Short-term	Short-term	Short-term	Short-term
Gender	Female	0.045***	0.047***	0.056***	0.061***	0.061***
Region	South	0.122***	0.121***	0.115***	0.109***	0.110***
Occupation	Manager	-0.051***	-0.057***	-0.046***	-0.072***	-0.071***
	White Collar				-0.066**	-0.068***
	Teacher				-0.055***	-0.049***
Age	Age	-0.004***				
	Age Group 15 - 24		0.191***	0.202***	0.184***	
	Age Group 25 - 34		0.068***	0.076***	0.070***	
Education	Master's			0.043	0.059	
	Bachelor's	0.013	0.016			
	5 Year Bachelor's			0.056***	0.072***	
	3 Year Bachelor's			0.033	0.046	
	Primary/Junior High			0.052***		
	Primary				0.048***	
	No Education			0.260***	0.144***	
	Bachelor's <30					0.121***
	Number of observations	6193	6055	6055	6055	6055

Source: Survey on Household Income and Wealth (SHIW) 2006.

Characteristics of workers hired on a short-term basis: Recent college graduates

Probit regression

		Short-term	Short-term	Short-term	Short-term	Short-term
Gender	Female	0.045***	0.047***	0.056***	0.061***	0.061***
Region	South	0.122***	0.121***	0.115***	0.109***	0.110***
Occupation	Manager	-0.051***	-0.057***	-0.046***	-0.072***	-0.071***
	White Collar				-0.066**	-0.068***
	Teacher				-0.055***	-0.049***
Age	Age	-0.004***				
	Age Group 15 - 24		0.191***	0.202***	0.184***	
	Age Group 25 - 34		0.068***	0.076***	0.070***	
Education	Master's			0.043	0.059	
	Bachelor's	0.013	0.016			
	5 Year Bachelor's			0.056***	0.072***	
	3 Year Bachelor's			0.033	0.046	
	Primary/Junior High			0.052***		
	Primary				0.048***	
	No Education			0.260***	0.144***	
	Bachelor's <30					0.121***
	Number of observations	6193	6055	6055	6055	6055

Source: Survey on Household Income and Wealth (SHIW) 2006.

Earnings:

Earnings are higher among permanent workers

	Log earnings	Log earnings	Log earnings	Log earnings	Log earnings
Permanent	0.223***	0.194***	0.194***	0.205***	0.205***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Male	0.271***	0.261***	0.253***	0.249***	0.249***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
South	-0.122***	-0.113***	-0.100***	-0.094***	-0.094***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.011)
Manager		0.238***	0.232***	0.237***	0.235***
		(0.027)	(0.018)	(0.018)	(0.018)
Age	0.228***	0.893***	0.856***		
	(0.000)	(0.003)	(0.003)		
Age ²		-0.688***	-0.655***		
		(0.000)	(0.000)		
Age Group 15 - 24				-0.167***	-0.167***
				(0.020)	(0.020)
Age Group 25 - 34				-0.141***	-0.140***
				(0.012)	(0.012)
Master's					0.050***
					(0.093)
Bachelor's	0.235***	0.175***	0.176***	0.173***	
	(0.014)	(0.014)	(0.014)	(0.014)	
5 Year Bachelor's					0.163***
					(0.015)
3 Year Bachelor's					0.052***
					(0.041)
Firm Size			0.084***	0.087***	0.087***
			(0.011)	(0.011)	(0.011)
Constant	6.314***	5.818***	5.830***	6.742***	6.742***
	(0.023)	(0.066)	(0.066)	(0.017)	(0.017)
Number of observations	5795	5696	5694	5694	5694
R ²	0.254	0.315	0.322	0.314	0.314

Source: Survey on Household Income and Wealth (SHIW) 2006.

Turnover:

Sequences of short-term employment and unemployment

Percentage of workers hired short-term

	1995	2000	2003
First job	0.3137	0.0391	0.0307
Panel A: Transitions to the short-term contract			
Non-employment	0.4702	0.0686	0.0754
Short-term ⇒ Short-term	0.0777	0.8384	0.8549
Long-term	0.1384	0.0539	0.0390
Panel B: Transitions from the short-term contract			
Short-term (first job) ⇒ Non-employment	0.4730	0.4037	0.4596
Short-term (first job) ⇒ Short-term	0.2952	0.4754	0.4350
Short-term (first job) ⇒ Long-term	0.2317	0.1209	0.1054
Short-term (not first job) ⇒ Non-employment	0.4804	0.2787	0.2977
Short-term (not first job) ⇒ Short-term	0.2917	0.4635	0.4717
Short-term (not first job) ⇒ Long-term	0.2279	0.2579	0.2307
Number of observations	1004	12467	14505

Source: *Work Histories Italian Panel (WHIP)*.

The Model

- Extension of the standard Mortensen-Pissarides search model
 - ▶ **Differentiated** contracts
 - ▶ Workers **heterogeneity**
 - ▶ Two labor markets: **junior and senior workers**
 - ▶ **Pre and post** reforms setup

- **Essential** to derive welfare conclusions

- **Counterfactuals** → To design policy interventions

The Model: General Features (I)

- Workers
 - ▶ Measure 1
 - ▶ **Heterogeneous** with respect to productivity:
 - ★ *H* – type → productivity y^H (with probability p)
 - ★ *L* – type → productivity $y^L < y^H$ (with probability $1 - p$)
 - ▶ Can be:
 - ★ Employed
 - ★ Unemployed
 - ★ Out of the labor force
 - ▶ **Entry level productivity** y_0 when they are born
 $y_0 < y^L < y^H \rightarrow \textit{Junior}$
 - ▶ At rate λ productivity shock $\rightarrow \textit{Senior}$

The Search Model: General Features (II)

- Firms

- ▶ Hire both *junior & senior* workers
- ▶ When they open a position → **vacancy cost** c
- ▶ When they hire a worker → **welfare and social security cost** τ

- Matching

- ▶ Workers and firms come together through a **matching function** $q(u, v)$
- ▶ Wages set with Nash Bargaining between **representatives of workers and firms** (not contingent on productivity, but on type of contract and seniority)

The Search Model: Types

1 **Benchmark** pre-reforms: **ONLY** permanent contracts

- ▶ Firing is **not** allowed
- ▶ *Junior* and *senior* workers are hired **permanently**

▶ functions-pre

2 **Post-reforms**: both permanent **AND** short-term contracts

- ▶ Firms can offer permanent or short-term contracts **every time they open a vacancy**
- ▶ Associated with short-term contracts
 - ★ **No** firing cost at expiration
 - ★ **No** possibility of renewal
 - ★ **Lower costs** of vacancies and social security fees

▶ functions-post

The Search Model: Equilibrium

- Optimal for the firm to
 - ▶ **Hire** *junior* workers **short-term**
 - ▶ **Upgrade** *senior* h-type workers to a **permanent** contract
 - ▶ **Offer** *senior* l-type workers a short-term contract
- This decision is driven by:
 - ▶ **Lower cost** of welfare and social security fees associated with short-term contracts ($\tau_o^P > \tau_o^S$)
 - ▶ **Lower vacancy cost** associated with short-term contracts ($c_o^P > c_o^S$)
 - ▶ **No firing** associated with permanent contracts

Model Testing: Calibration

- Parameter values selected
 - 1 According to the literature
 - 2 To match employment, unemployment, labor force participation rates and wages in the data
 - 3 According to Italian regulations

▶ calib
- The model fits well the data
 - ▶ For *junior* workers
 - ▶ For *senior* workers

Model Testing: Welfare changes by worker's types

Junior workers worse off

	Pre-reforms	Post-reforms
Average working income while in the labor force (1000 €)		
<i>Junior</i>	21.1	21.7
<i>Senior H – type</i>	453.0	625.0
<i>Senior L – type</i>	453.0	278.3
Average time in the labor force (in months)		
<i>Junior</i>	20.7	26.8
<i>Senior H – type</i>	300.0	308.8
<i>Senior L – type</i>	300.0	283.2
Present discounted value of total income while in the labor force (1000 €)		
<i>Junior</i>	19.0	18.4
<i>Senior H – type</i>	133.6	175.8
<i>Senior L – type</i>	133.6	52.4

Model Testing: Lifetime income changes by worker's types

More productive workers better off

	Pre-reforms	Post-reforms
Average working income while in the labor force (1000 €)		
<i>H – type</i>	440.7	247.4
<i>L – type</i>	440.7	113.3
Average time in the labor force (in months)		
<i>H – type</i>	307.4	327.0
<i>L – type</i>	307.4	282.4
Present discounted value of total income while in the labor force (1000 €)		
<i>H – type</i>	136.7	188.9
<i>L – type</i>	136.7	70.8

Policy interventions

① Changing the **length of the short-term contract**

- ▶ Longer short-term contracts are beneficial for junior and senior workers

② Adopting an **American-style** system

- ▶ Junior workers benefit
- ▶ Senior workers may not be better off

Changing the length of the contract

Longer contracts benefit junior workers



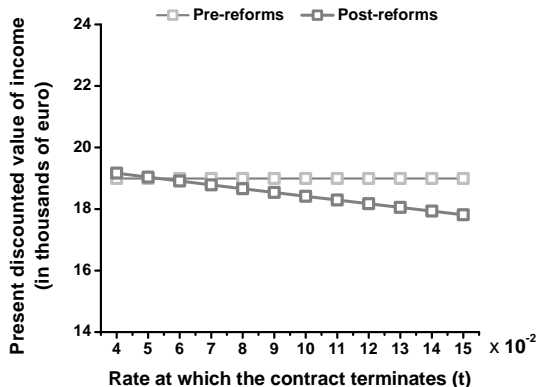
Changing the length of the contract

Minimal effect for senior workers



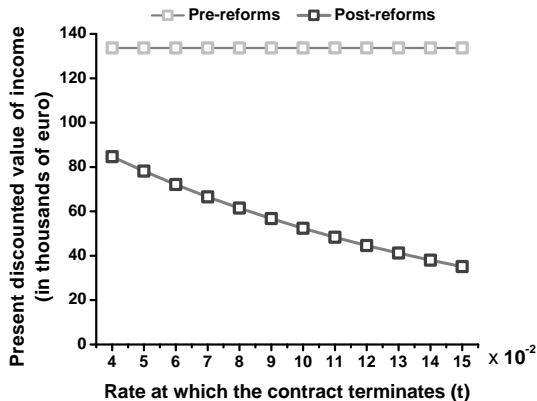
Changing the length of the contract

Junior workers might be as good as before



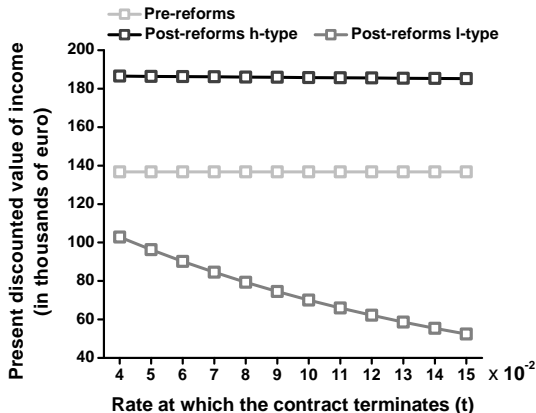
Changing the length of the contract

Senior L-type workers are worse off



Changing the length of the contract

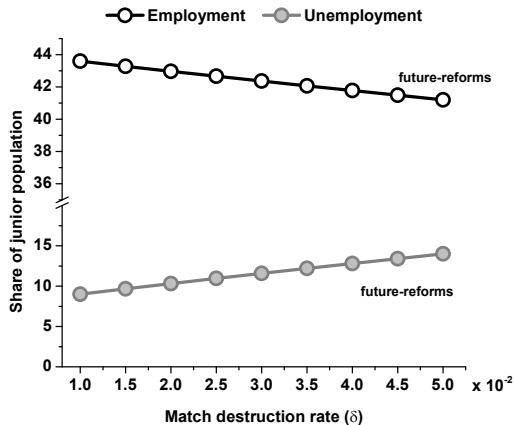
Increased inequality



Adopting an American-style system

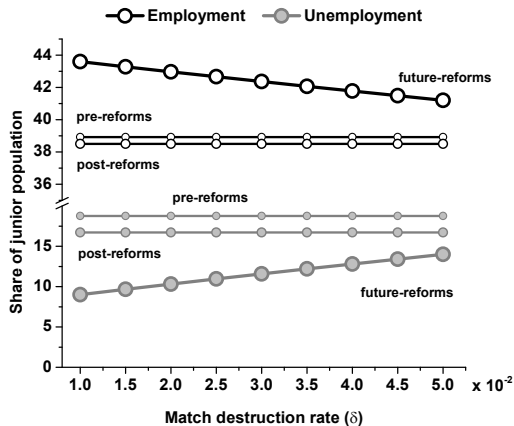
- Only **one type** of contract available (open-end)
- Possibility of firing **any time** at no cost
- **Worker-firm** bargaining

Adopting an American-style system

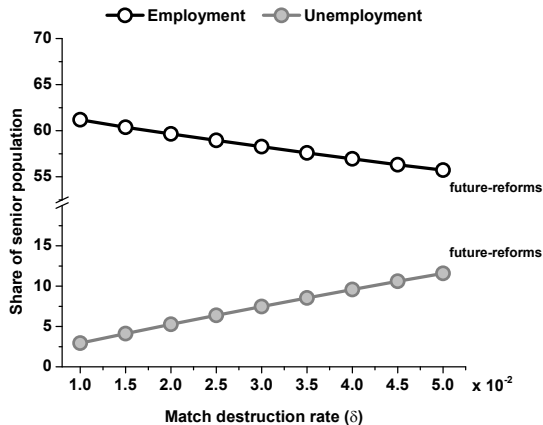


Adopting an American-style system

Better outcome for junior workers

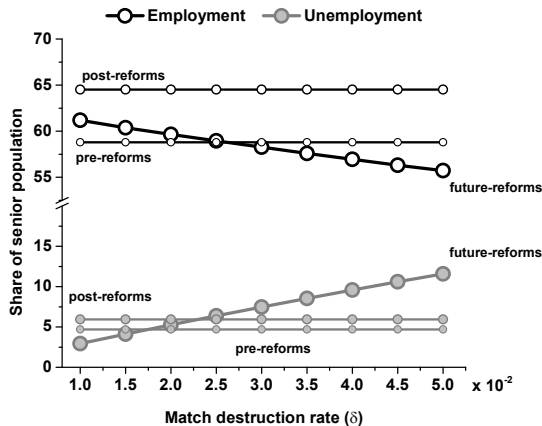


Adopting an American-style system



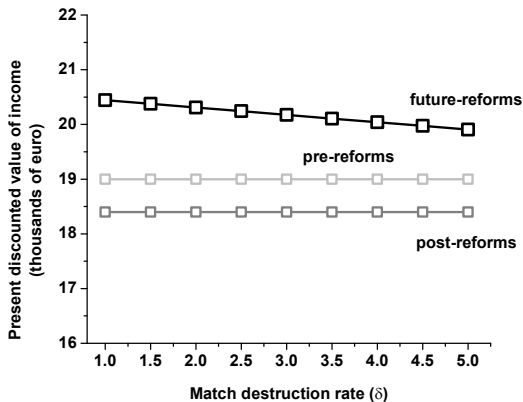
Adopting an American-style system

Senior workers might face more unemployment



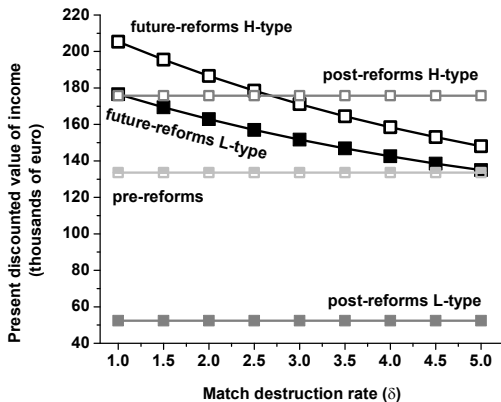
Adopting an American-style system

Junior workers are better off



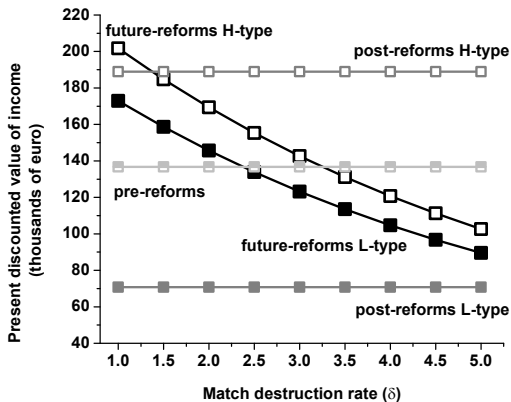
Adopting an American-style system

Senior workers might be worse off



Adopting an American-style system

Overall less inequality



Conclusions

- *Junior* workers are **worse off** after the reforms
- **More** productive workers are **better off**
- **Less** productive workers are **worse off**

Policy for the future:

- **Longer** short-term contracts may improve the labor market
- An American style system may
 - ▶ **Improve** the dual market problem
 - ▶ **Improve** the conditions of **junior** people
 - ▶ **Reduce** the of **senior** people

Thank you!

Email: cristina.tealdi@imtlucca.it

The Search Model: Pre-reforms

Value functions

- Vacancies

$$rJ_Y^V = -c_y^p + \alpha_y^p[J_Y^E - J_Y^V]$$

$$rJ_O^V = -c_o^p + \alpha_o^p[(pJ_O^{EH} + (1-p)J_O^{EL}) - J_O^V]$$

- Filled positions

$$rJ_Y^E = y_0 - w_y - \tau_y^p + \lambda[p(J_O^{EH} - J_Y^E) + (1-p)(J_O^{EL} - J_Y^E)] \\ + \delta(J_Y^V - J_Y^E)$$

$$rJ_O^{EH} = y - w_o - \tau_o^p + \delta(J_O^V - J_O^{EH}) + s^p(J_O^V - J_O^{EH})$$

$$rJ_O^{EL} = y_0 - w_o - \tau_o^p + \delta(J_O^V - J_O^{EL}) + s^p(J_O^V - J_O^{EL})$$

The Search Model: Post-reforms

Value functions

- Vacancies

$$rJ_Y^V = \max\{-c_{2y}^s + \alpha_{2y}^s[J_Y^{ES} - J_Y^V], -c_{2y}^p + \alpha_{2y}^p[J_Y^{EP} - J_Y^V]\}$$

$$rJ_O^{VH} = \max\{-c_{2o}^s + \alpha_{2o}^s[J_Y^{ESH} - J_O^{VH}], -c_{2o}^p + \alpha_{2o}^p[J_O^{EPH} - J_O^{VH}]\}$$

$$rJ_O^{VL} = \max\{-c_{2o}^s + \alpha_{2o}^s[J_O^{ESL} - J_O^{VL}], -c_{2o}^p + \alpha_{2o}^p[J_O^{EPL} - J_O^{VL}]\}$$

The Search Model: Post-reforms

Value functions

- Filled positions

$$rJ_Y^{EP} = y_0 - w_y - \tau_y^p + \lambda[p(J_O^{EPH} - J_Y^{EP}) + (1-p)(J_O^{EPL} - J_Y^{EP})] + \delta[J_Y^V - J_Y^{EP}]$$

$$rJ_Y^{ES} = y_0 - w_y - \tau_y^s + \lambda[p(\max\{J_O^{EPH}, J_O^{ESH}\} - J_Y^{ES}) + (1-p)(\max\{J_O^{EPL}, J_O^{ESL}\} - J_Y^{ES})] + \delta[J_Y^V - J_Y^{ES}] + t[J_Y^V - J_Y^{ES}]$$

$$rJ_O^{EPH} = y - w_o^h - \tau_o^p + (\delta + s^p)[J_O^{VH} - J_O^{EPH}]$$

$$rJ_O^{ESH} = y - w_o^h - \tau_o^s + (\delta + t + s^s)[J_O^{VH} - J_O^{ESH}]$$

$$rJ_O^{EPL} = y_0 - w_o^l - \tau_o^p + (\delta + s^p)[J_O^{VL} - J_O^{EPL}]$$

$$rJ_O^{ESL} = y_0 - w_o^l - \tau_o^s + (\delta + t + s^s)[J_O^{VL} - J_O^{ESL}]$$

Equilibrium Wages

← wages

- Pre-reforms

$$w_o = \beta[py + (1-p)y_0 - \tau_o^p] + \left(\frac{r+s^p}{r}\right) ((1-\beta)b + \beta c_o^p \theta_o^p)$$
$$+ (1-\beta)[s^p] \left(\frac{u}{r+d}\right)$$
$$w_y = \beta[y_0 - \tau_y^p] + \frac{(r+\lambda)}{r} \beta c_y^p \theta_y^p - \frac{\lambda}{r} ((1-\beta)b + \beta c_o^p \theta_o^p)$$

- Post-reforms

$$w_o^h = \beta[y - \tau_o^p] + \frac{(r+s^p)}{r} ((1-\beta)b_h + \beta c_{2o}^p \theta_{2o}^p) - (1-\beta)s^p \left(\frac{u}{r+d}\right)$$
$$w_o^l = \beta[y_0 - \tau_o^s] + \frac{(r+s^s)}{r} (\beta c_{2o}^s \theta_{2o}^s) - (1-\beta)s^s \left(\frac{u}{r+d}\right)$$
$$w_y = \beta[y_0 - \tau_y^s] + \beta \frac{(r+\lambda)}{r} c_{2y}^s \theta_{2y}^s - \frac{\lambda}{r} \left[p((1-\beta)b_h + \beta c_{2o}^p \theta_{2o}^p) \right. \\ \left. + (1-p)(1-\beta)(c_{2o}^s \theta_{2o}^s) \right]$$

Calibration

◀ calibration

Parameter	Pre reforms	Post reforms
r	0.01	0.01
β	0.4	0.4
p	0.85	0.85
k	500	500
y_0	1500	1500
y	2500	2500
C^p	1500	1500
C^s	—	750
C^y	—	1000
τ^p	500	500
τ^s	—	200
τ^y	300	—
τ^s	—	100
b	800	1000
u	100	100
m	0.046	0.043
d	0.0058	0.0058
s^p	0.0036	0.0034
s^s	—	0.005
q^p	0.004	0.004
q^s	—	0.002
t	—	0.1
λ	0.05	0.05
μ_y	0.11	0.3
μ_o	0.18	—
μ^h	0.05	0.08
μ^l	—	0.25
α^p	0.06	—
α^y	—	0.13
α^o	0.25	0.14
α^s	—	0.11