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Unemployment Insurance as a Subsidy to Risky Firms

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The views expressed in this work are those of the authors and do not necessarily reflect those of the Banco Central or its members.

Motivation:

- Risk-taking in pursuit for profitable investment opportunities is essential for growth
 - Macro view: firms' idiosyncratic risk is irrelevant in the aggregate
 - Risk-averse worker's view: firm-specific risk is highly relevant
- A wedge in optimal risk-level between the micro (risk-averse) and the macro (risk neutral) views
 - Extensive literature on the manager-shareholder conflict
 - Limited evidence on workers' risk tolerance (despite labor being a key input): One mechanism: unemployment insurance (UI)
- This paper: UI affects labor allocation between safe and risky firms
 - Risky firms hire fewer workers and pay a risk premium with weaker insurance (lower labor supply)
 - Risky firms do worse when UI coverage weakened (UI as a subsidy)

Empirical Challenge:

- **Endogeneity:** How to randomize a firm's risk for a sample of workers?
 - Firm-worker selection – risk preferences or risk compensation (supply vs demand)
- Ideal experiment: multiple firms, shock to a subset of workers (more unemployment risk)
- Solution:
 - Shock: unanticipated UI reform
 - A subset of workers less insured against unemployment risk

Data:

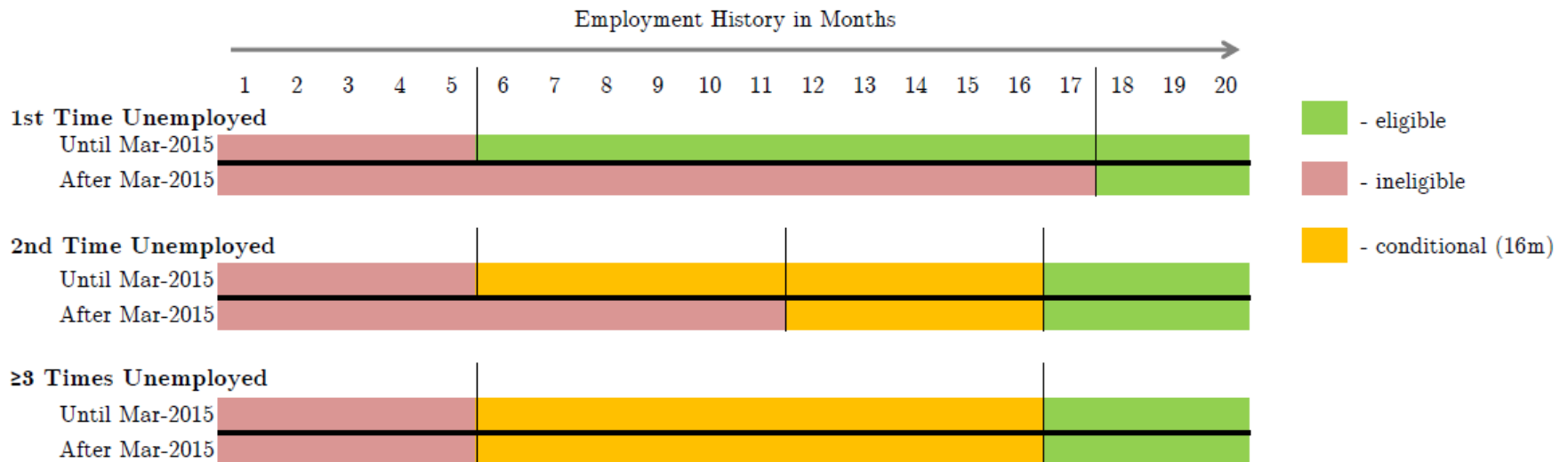
- Entire population of formal private employment contracts in Brazil – RAIS (Ministry of Labor)
- History of all UI benefit payments (Ministry of Labor)
- Credit registry data on all Brazilian firms (CBB)
- Firms' cash inflows and outflows at the transaction-level (CBB)
- Natural disasters data (Ministry of Integration)
- Stock Exchange data (Bovespa)

UI System in Brazil

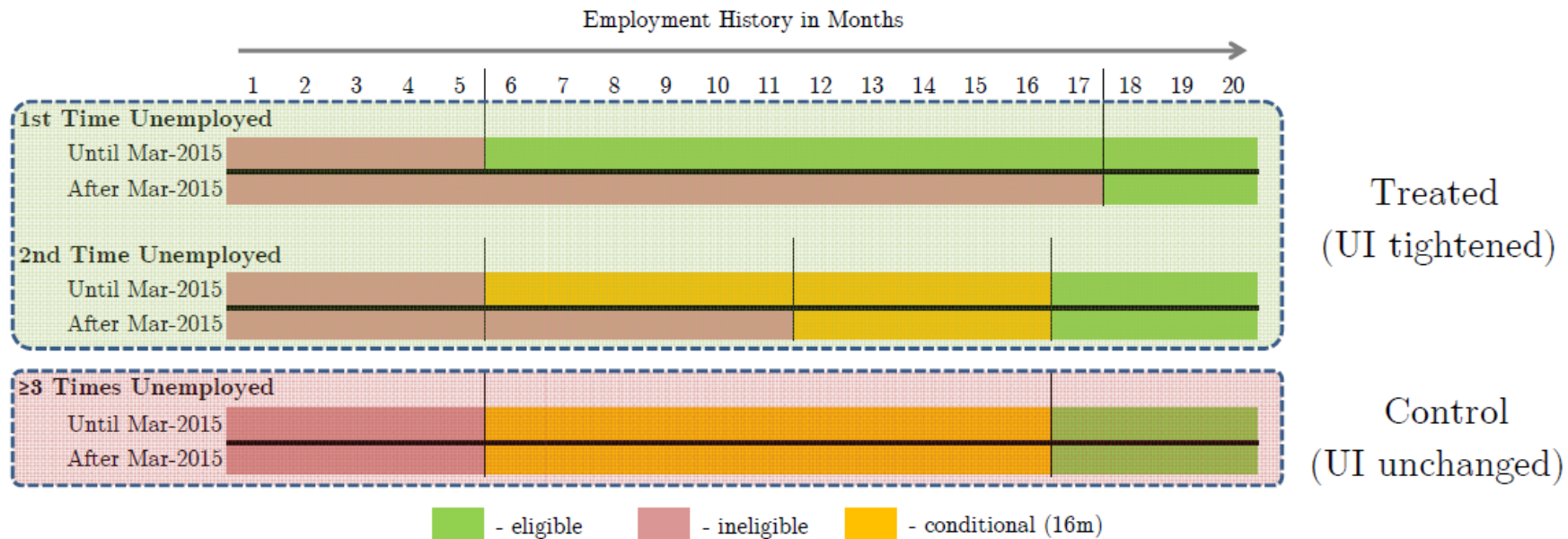
- **Financing:** payroll taxes + taxes on sales and profits (by industry)
- **Eligibility:** depends on the tenure
- **Duration:** 3 - 5 months, depending on the tenure
- **Value of payments:**
 - At least the minimum wage
 - Worker with average salary would receive 70% of the gross wage
- **Penalty:** 10-20% of expected benefits
 - 80% allocated to the worker

Unemployment Benefits Reform

- Sudden announcement: 30-Dec-2014 (Measure MP 665)



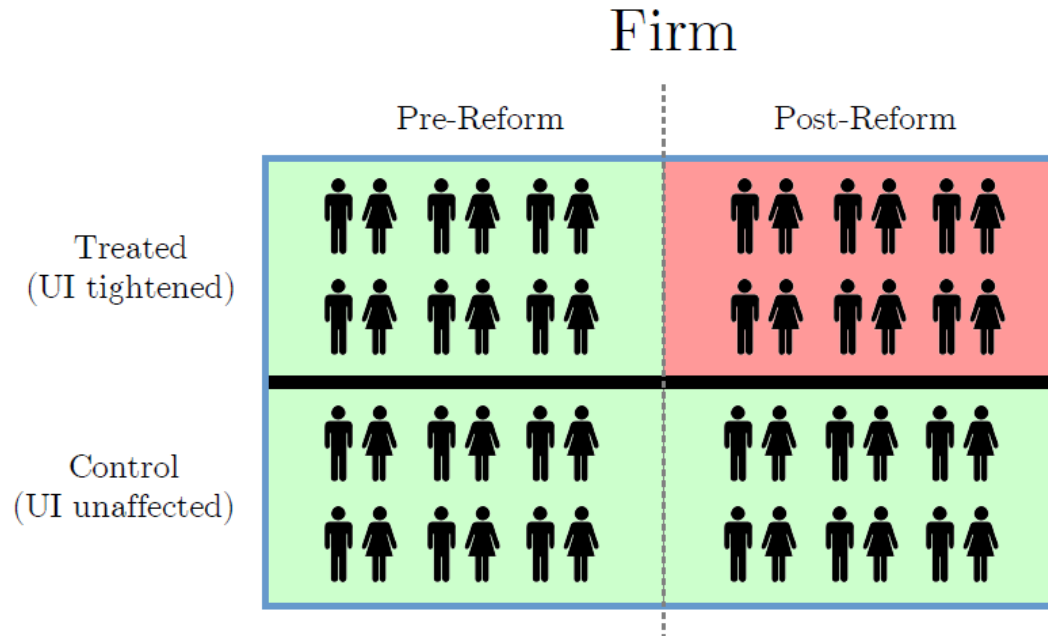
Unemployment Benefits Reform



- Important:

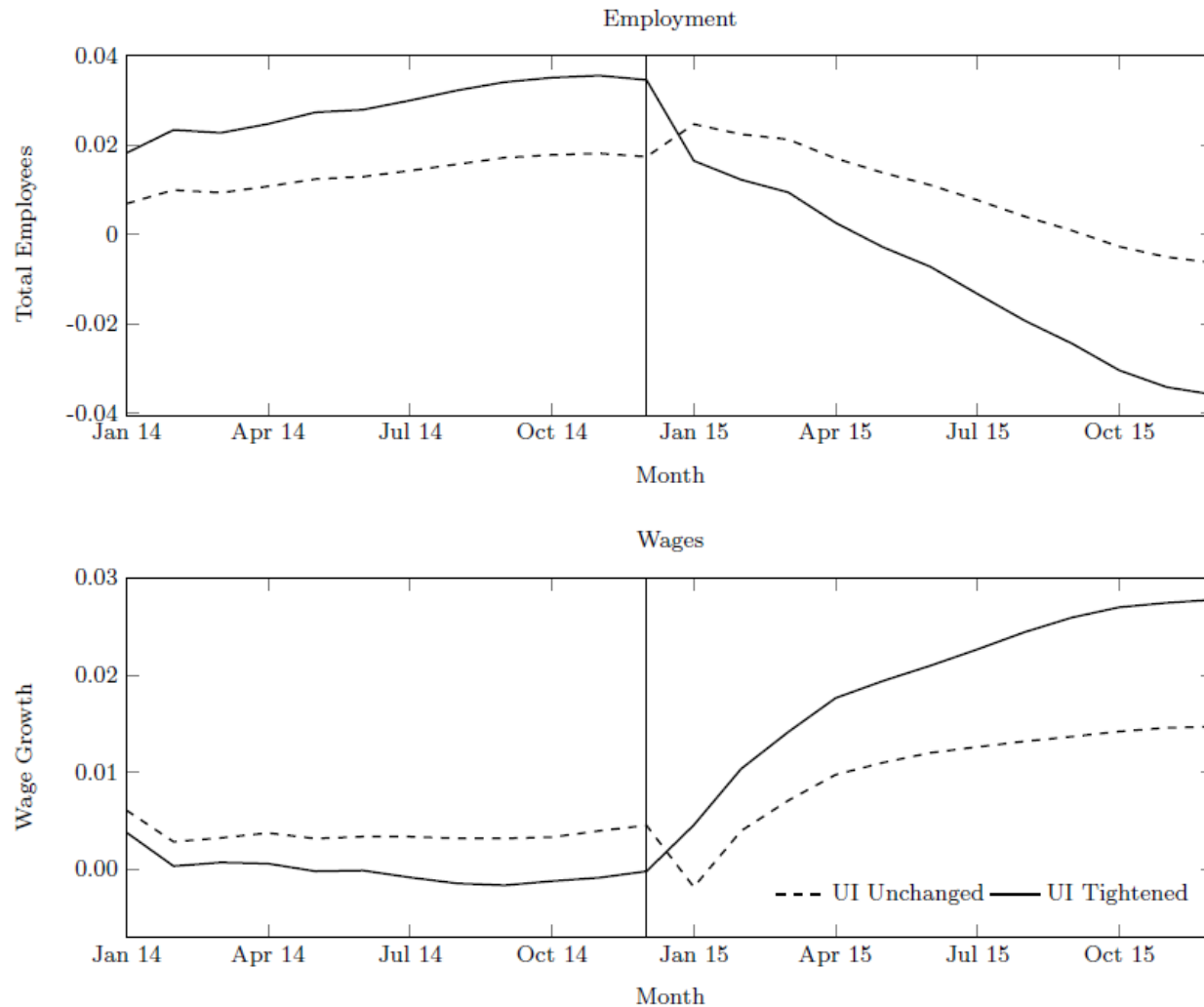
- Nothing changed on the firm's side (taxes, penalties, etc.)
- Benefit size did not change as well

Identification: Within-Firm:

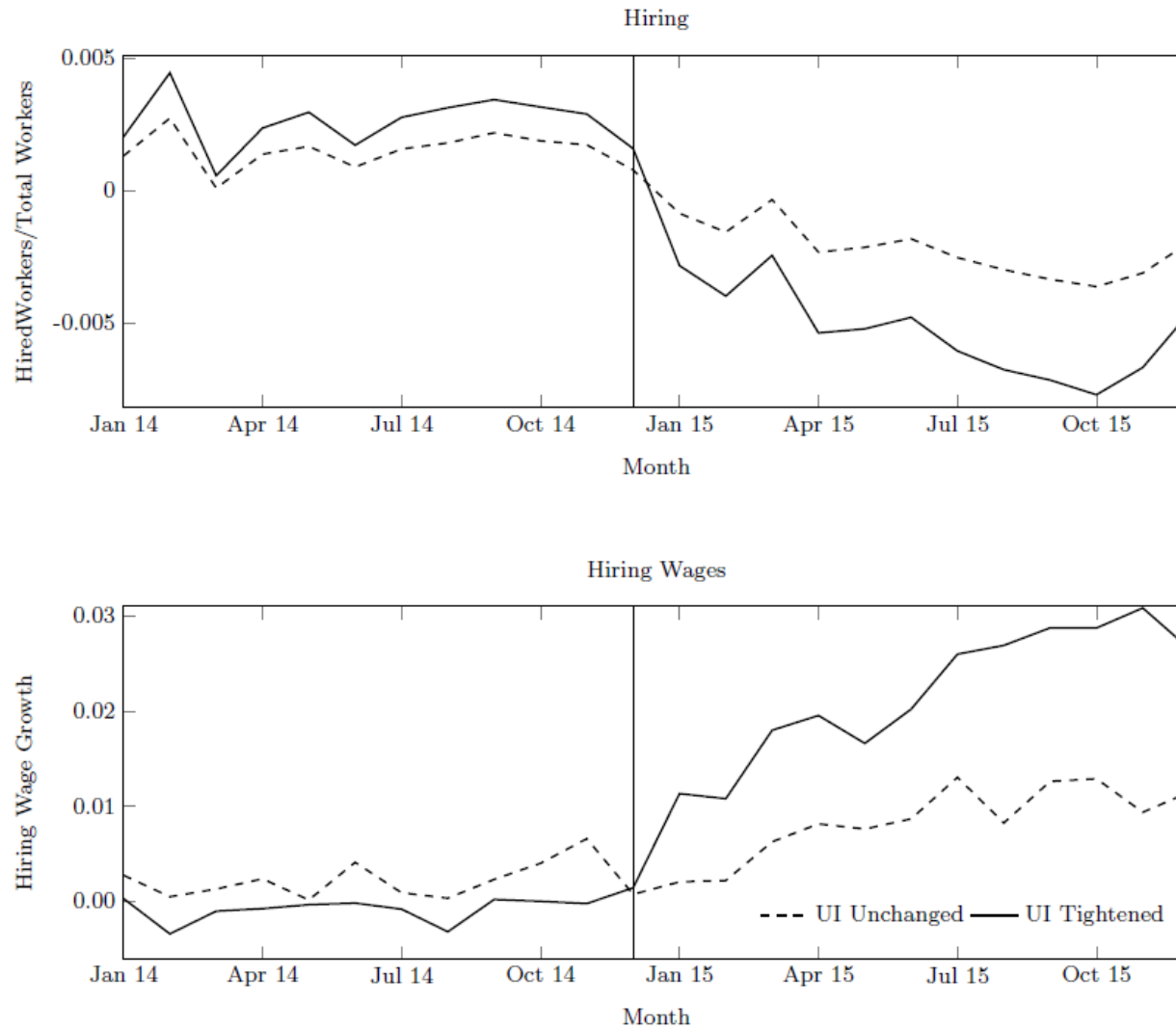


- **Within-Firm variation:** Control for all firm level shocks
- **Identification:** compare insured vs less insured within the same firm and month

Employment and Wages



Hiring and Hiring Wages

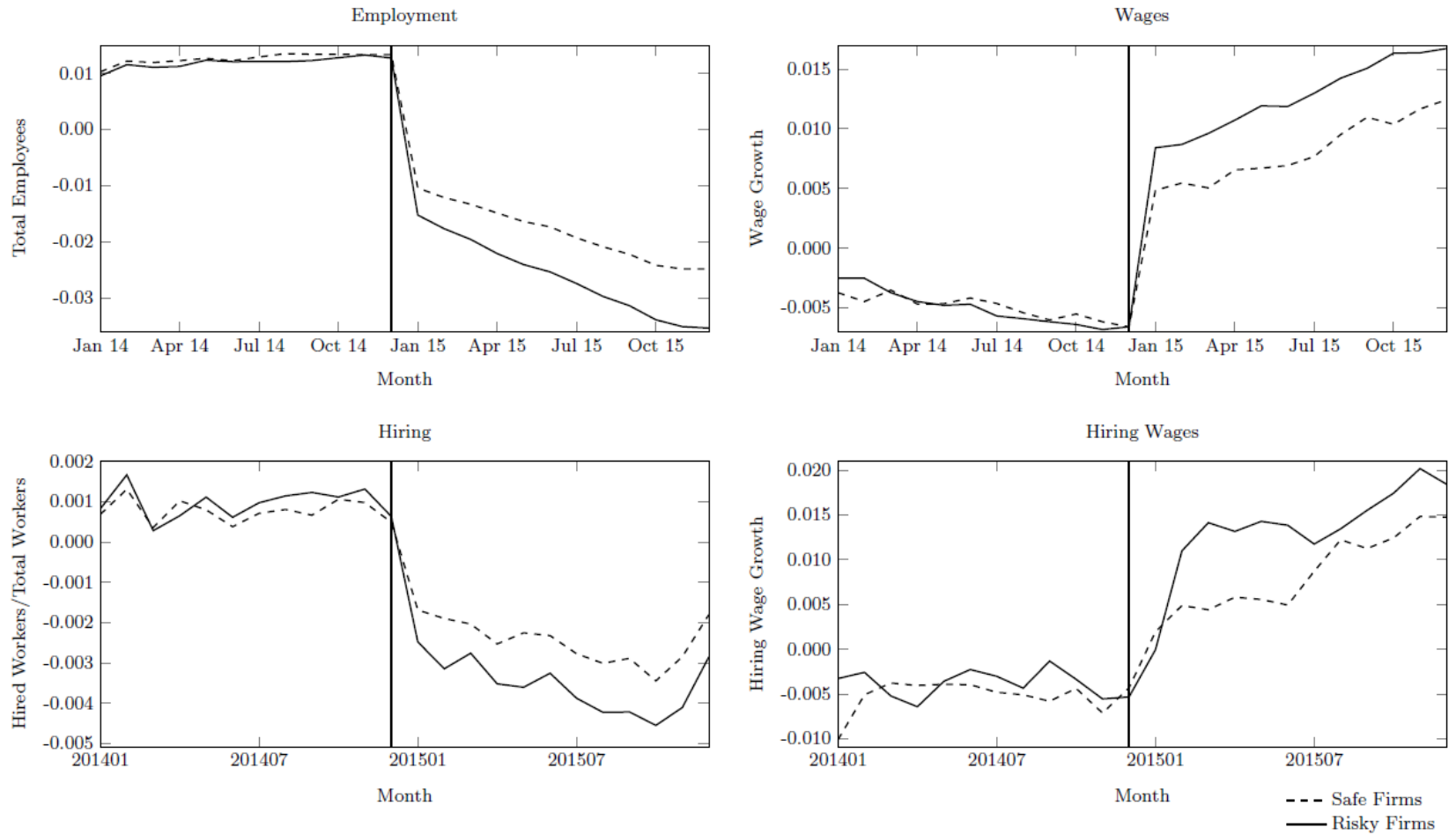


$$employment_{igt} = \delta \cdot Affected_{gt} * Reform_t + \tau_{it} + \tau_{ig} + \epsilon_{igt}$$

Employment, Hiring, and Wages

Dep. Var.:	Employed Workers		Hired Workers		
	<i>EmployRate</i>	<i>ln(wage)</i>	<i>HiringRate</i>	<i>ln(wage)</i>	$\Delta wage$
	I	II	III	IV	V
Panel A: Basic Tests					
<i>Affected_{gt} * Reform_t</i>	-0.0295*** (0.0006)	0.0143*** (0.0006)	-0.0046*** (0.0001)	0.0126*** (0.0008)	0.0054*** (0.0007)
Firm*Affected FE	yes	yes	yes	yes	yes
Firm*Month FE	yes	yes	yes	yes	yes
Clustered SE	firm	firm	firm	firm	firm
Observations	2,926,080	2,855,855	2,926,080	2,159,088	1,853,115
<i>R</i> ²	0.276	0.984	0.734	0.722	0.238

Firm Risk and Labor Supply



$$employment_{igt} = \delta \cdot Affected_{gt} * Reform_t + \mu \cdot Risk_i * Affected_{gt} * Reform_t \\ + \tau_{it} + \tau_{ig} + \epsilon_{igt},$$

Firm Risk and Labor Supply - Employment

Risk Measure:	Credit Spread		Default Provisions		Layoff Risk	
Dep. Var.:	<i>EmployRate</i>	<i>ln(wage)</i>	<i>EmployRate</i>	<i>ln(wage)</i>	<i>EmployRate</i>	<i>ln(wage)</i>
	I	II	III	IV	V	VI
Panel A: Main Tests						
<i>Affected_{gt} * Reform_t</i>	-0.0143*** (0.0015)	0.0104*** (0.0013)	-0.0197*** (0.0016)	0.0126*** (0.0016)	-0.0159*** (0.0002)	-0.0056*** (0.0014)
<i>Affected_{gt} * Reform_t * Risk_i</i>	-0.0032*** (0.0002)	0.0012*** (0.0002)	-0.0017*** (0.0003)	0.0006*** (0.0002)	-0.0025*** (0.0002)	0.0034*** (0.0002)
Firm*Affected FE	yes	yes	yes	yes	yes	yes
Firm*Month FE	yes	yes	yes	yes	yes	yes
Clustered SE	firm	firm	firm	firm	firm	firm
Observations	2,274,624	2,238,801	2,274,624	2,238,801	2,892,600	2,833,968
R ²	0.926	0.984	0.926	0.984	0.919	0.984

$$\begin{aligned}
employment_{igt} = & \delta \cdot Affected_{gt} * Reform_t + \mu \cdot Shocked_{it} * Affected_{gt} \\
& + \gamma \cdot Shocked_{it} * Affected_{gt} * Reform_t + \tau_{it} + \tau_{ig} + \epsilon_{igt},
\end{aligned}$$

Exogenous Shocks to Firm Risk

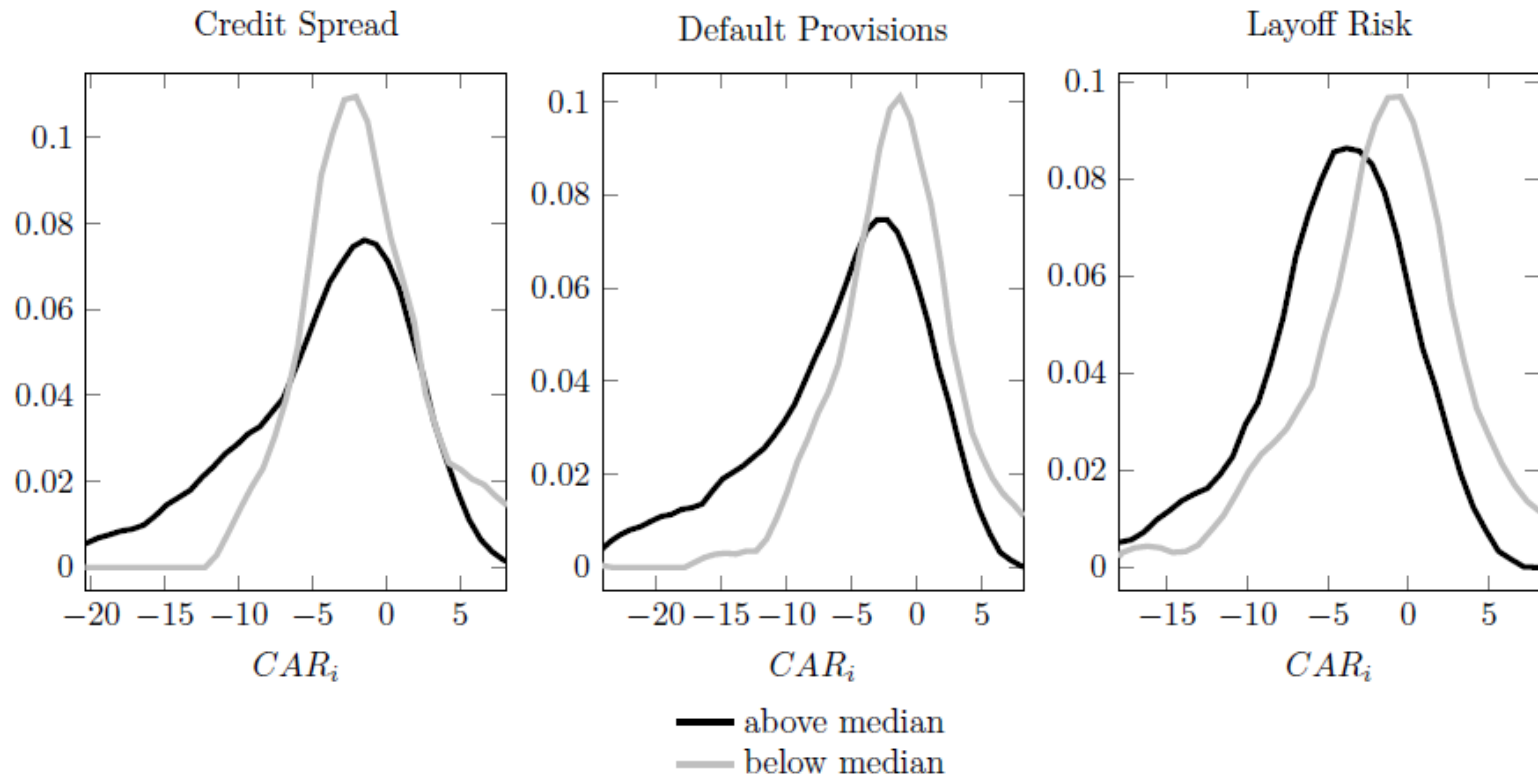
Dep. Var.:	Employed Workers		Hired Workers		
	<i>EmployRate</i>	<i>ln(wage)</i>	<i>HiringRate</i>	<i>ln(wage)</i>	$\Delta wage$
	I	II	III	IV	V
Panel A: Worker Age Groups					
<i>Affected_{gt} * Reform_t</i>	-0.0044*** (0.0001)	0.0067*** (0.0007)	-0.0007*** (0.0001)	0.0138*** (0.0011)	0.0042*** (0.0008)
<i>Affected_{gt} * Shocked_{it}</i>	0.0006*** (0.0001)	-0.0030*** (0.0011)	-0.00004** (0.00001)	-0.0024 (0.0020)	0.0022* (0.0013)
<i>Affected_{gt} * Reform_t * Shocked_{it}</i>	-0.0021*** (0.0002)	0.0093*** (0.0017)	-0.0002*** (0.00002)	0.0086** (0.0032)	0.0040** (0.0019)
Firm*Affected FE	yes	yes	yes	yes	yes
Firm*Month FE	yes	yes	yes	yes	yes
Age Group*Month FE	yes	yes	yes	yes	yes
Clustered SE	firm	firm	firm	firm	firm
Observations	17,556,480	14,013,251	17,556,480	4,009,299	3,964,678
<i>R</i> ²	0.520	0.772	0.414	0.719	0.434

$$\Delta firm\ risk_{jt} = \delta \cdot Affected_{jt} * Reform_t + \tau_{it} + \tau_{ig} + \epsilon_{jt}$$

Firm Risk and Labor Supply - Job Transitions

Dep. Var.: $\Delta firm\ risk$	I	II	III	IV	V	VI
Risk Measure:	Credit Spreads		Default Provisions		Layoff Risk	
$Affected_{jt} * Reform_t$	0.0009*** (0.0003)	-0.0003 (0.0006)	0.0008*** (0.0003)	-0.0012** (0.0005)	0.0007** (0.0003)	-0.0014* (0.0007)
$Affected_{jt} * Reform_t * Risk_i$		0.0002* (0.0001)		0.0004*** (0.0001)		0.0003*** (0.0001)
Firm*Treated FE	yes	yes	yes	yes	yes	yes
Firm*Month FE	yes	yes	yes	yes	yes	yes
Clustered SE	firm	firm	firm	firm	firm	firm
Observations	629,128	629,128	629,128	629,128	765,557	765,557
R^2	0.704	0.704	0.707	0.707	0.711	0.711

Cumulative Abnormal Returns by Firm Risk



$$CAR_i = \alpha + \delta \cdot Risk_i + \epsilon_i$$

Unemployment Insurance and Firm Value

Dep. Var.: $CAR[-1; +3]$	I	II	III	IV	V	VI	VII	VIII	IX
Risk Measure:	Credit Spread			Default Provisions			Layoff Risk		
$Risk_i$	-1.72*** (0.48)	-1.72** (0.54)	-2.02** (0.69)	-1.19 (0.93)	-1.23 (0.86)	-2.35** (0.95)	-1.83*** (0.52)	-2.07*** (0.62)	-2.38** (0.85)
Observations	140	127	111	140	127	111	155	140	121
R^2	0.031	0.031	0.042	0.012	0.013	0.044	0.028	0.036	0.046

Conclusion

In this paper we examine the role of unemployment insurance for the allocation of labor

- **UI and employment:**
 - Workers with weaker insurance are employed (hired) by 3 (.5) percent less
 - Salaries increase by roughly 1.5 percent for workers with less generous insurance
- **Firm Risk:** riskiest firms vs safest firms
 - Employ by 2.2 percent fewer workers and pay by 1.8 percent higher wages
 - Hire by 4.5 percent less and pay by 0.7 percent more in hiring wages
- **Real effects:** after the reform, riskier firms:
 - Have lower cash flows
 - Employ fewer workers
 - Have more delinquent debt
- **Policy implications:** safe firms subsidize risky firms through UI (experience rating mechanism?)