Labor Regulation and Temporary Agency Workers

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Labor Markets: Growth, Productivity and Inequality

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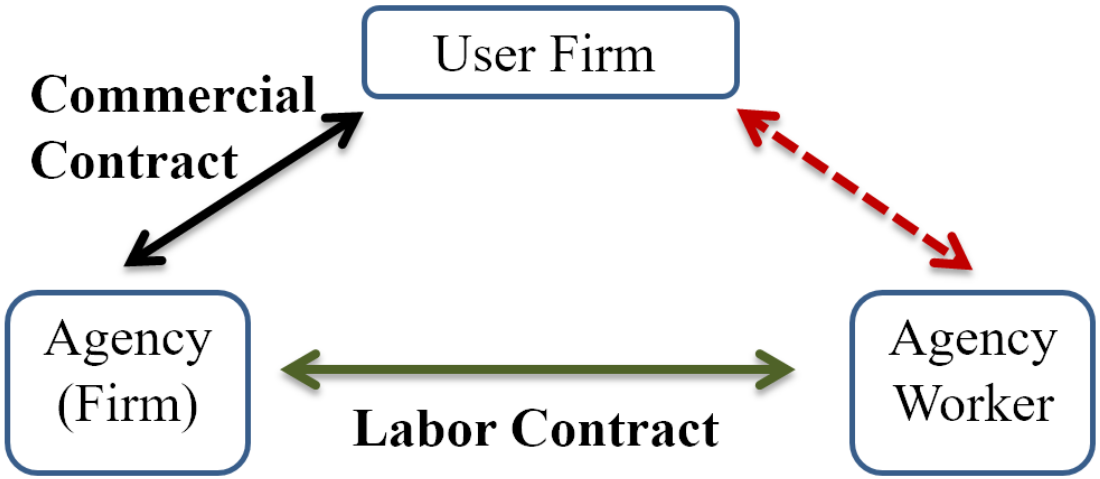
Motivation

- Temporary work agency employment has become a central topic of employment policy in the last decade (OECD, 2013).
  1. Achieve flexibility.
  2. Reduce unemployment.



Chilean Regulation on TAW (Enacted in January, 2007)

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Joint Liability

The user firm becomes accountable for labor rights of agency workers. In case of a Labor Code violation, **agency workers may sue either the agency or the user firm.**

Subsidiary Responsibility

The user firms have the **right to request information** from temporary-work agencies and to withhold the agency fee in order to accomplish with agency workers labor rights. In this case, **agency workers may sue the user firm only after suing the agency.**

Equitable Treatment

The **user firms must guarantee the health and safety of agency workers**. User firms become responsible of effectively protect the life and health of all workers at their work, whatever their dependence.

Similar to the DIRECTIVE 2008/104/EC on TAW passed by the European Commission (EC).

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  3. Increased their inventory share (+10%).
  4. Did not reduce their levels of value added and production.

Data: Chilean Annual Manufacturers Survey (ENIA)

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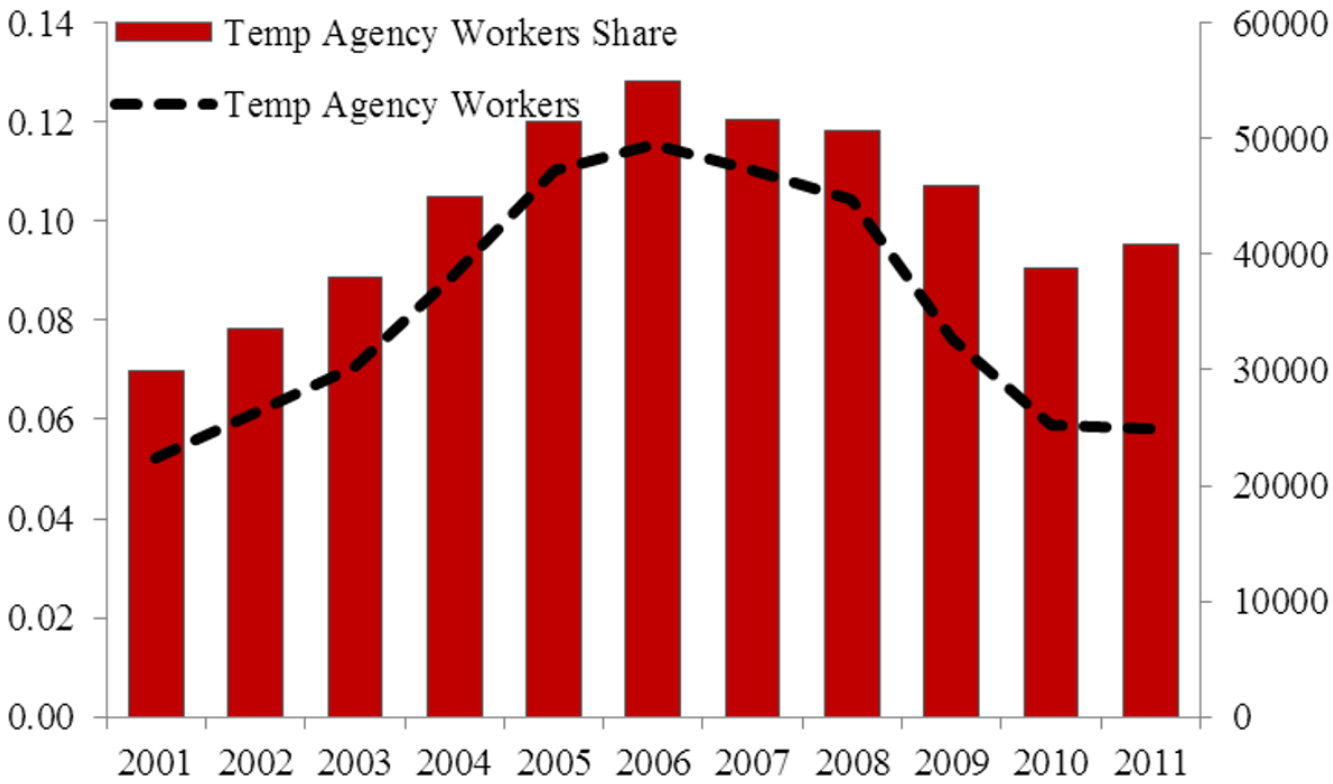
- Measure of Volatility: 7-years standard deviation of log change in log value added (period before the regulation).
  $\rightarrow$ We exclude plants that do not exist for at least two consecutive periods.

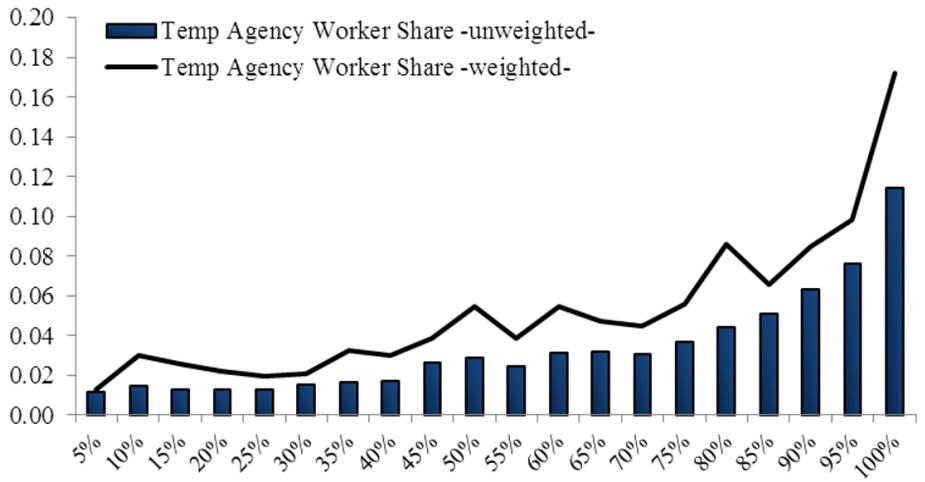
Number and Share of Temporary Agency Workers



*Note: Agency Workers Share is defined as the sum of TAW divided by the total of workers.

Characteristics of the Plants and Share of TAW

Quantiles of Plant Size (log VA) and Share of TAW:



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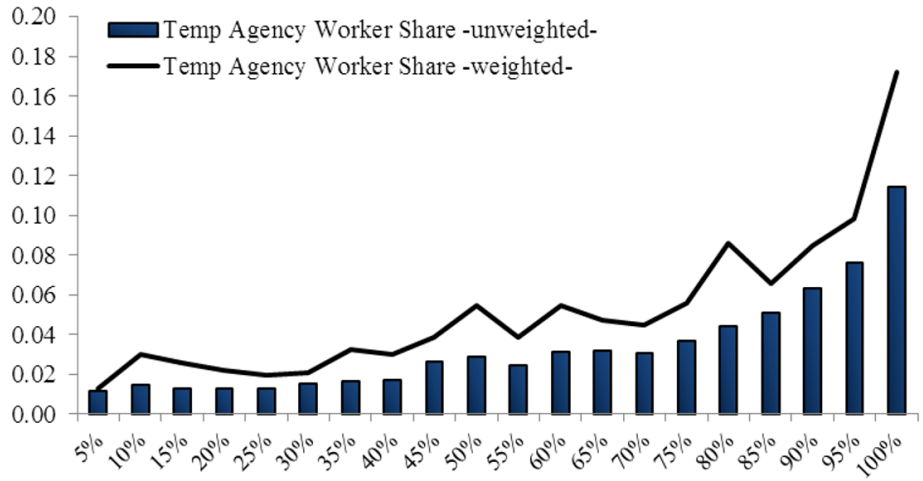
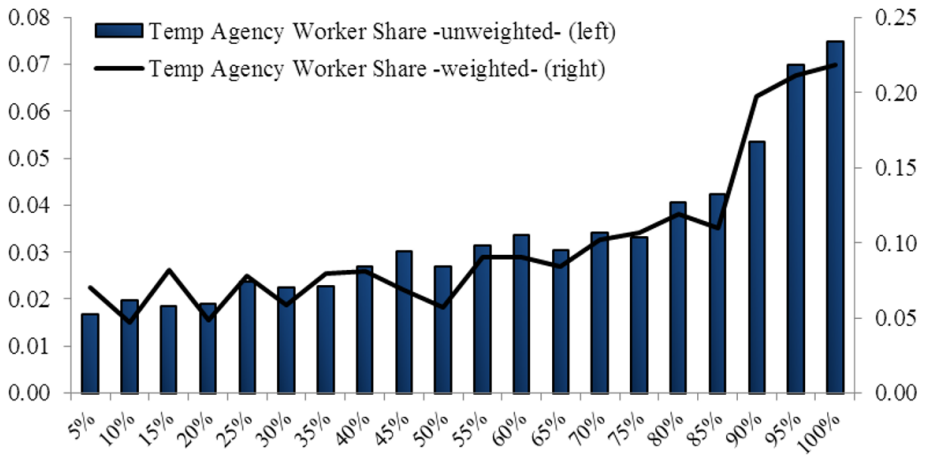


Quantiles of Plant Volatility (SD Δlog VA) and Share of TAW:



Share of Temporary Agency Workers and Inventories

- Hypothesis: Plants use TAW as a volatility-buffer.
  $\rightarrow$ Idea: Inventories are also used as a volatility-buffer.
- Test: Effect of the TAW regulation on plant's inventories share.

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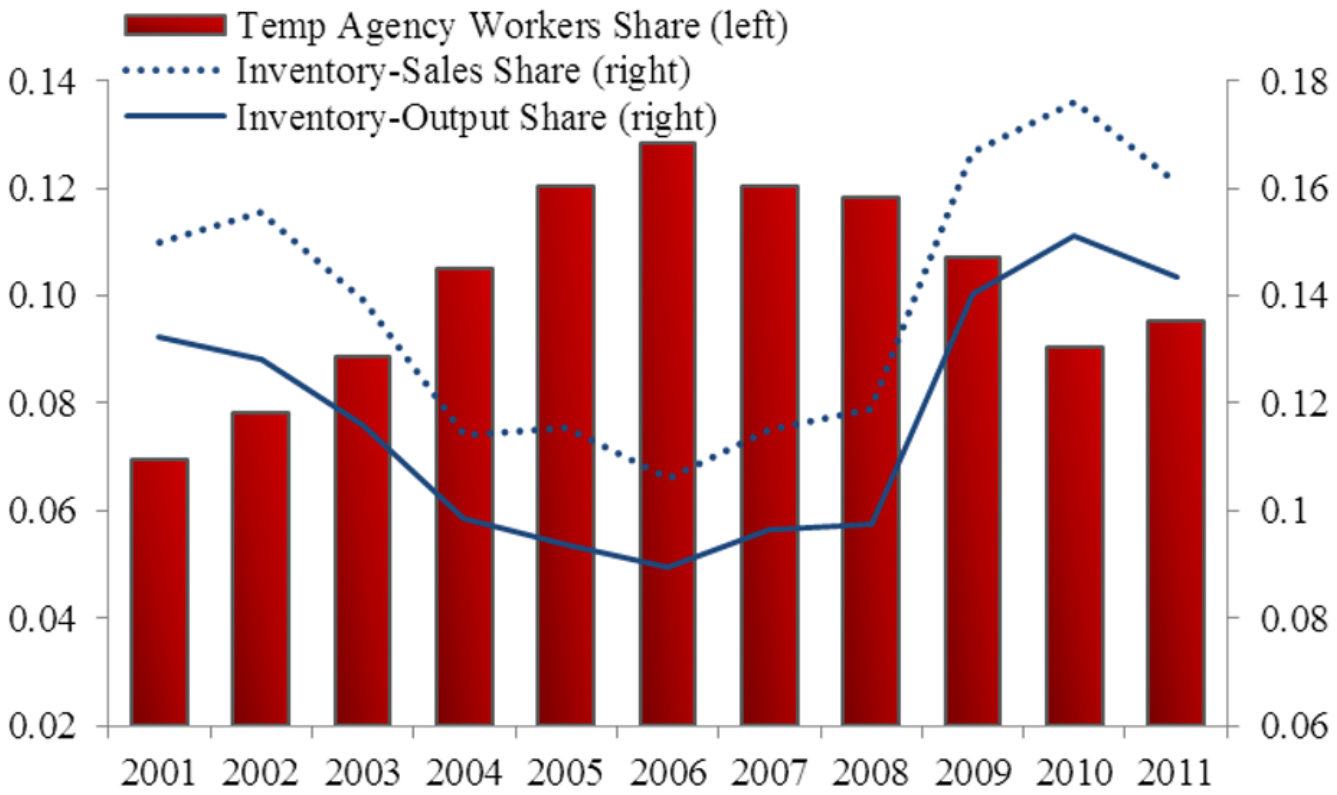


Empirical Strategy: Effects of the Regulation

- **Treatment**:
  Regulation on TAW, effective since 2007 ($D_{t>2006} = 1$).

- Treated Group:
  Plants that used TAW before the regulation ($DTAW_{2006} = 1$).

- Control Groups:
  Plants that did not use TAW before the regulation ($DTAW_{2006} = 0$).

  (i) All Sample: All other Plant that did not use TAW before the regulation.
  (ii) Selected Sample: All other Plants that did not use TAW before the regulation **and** had a similar probability of using TAW, based on observables.

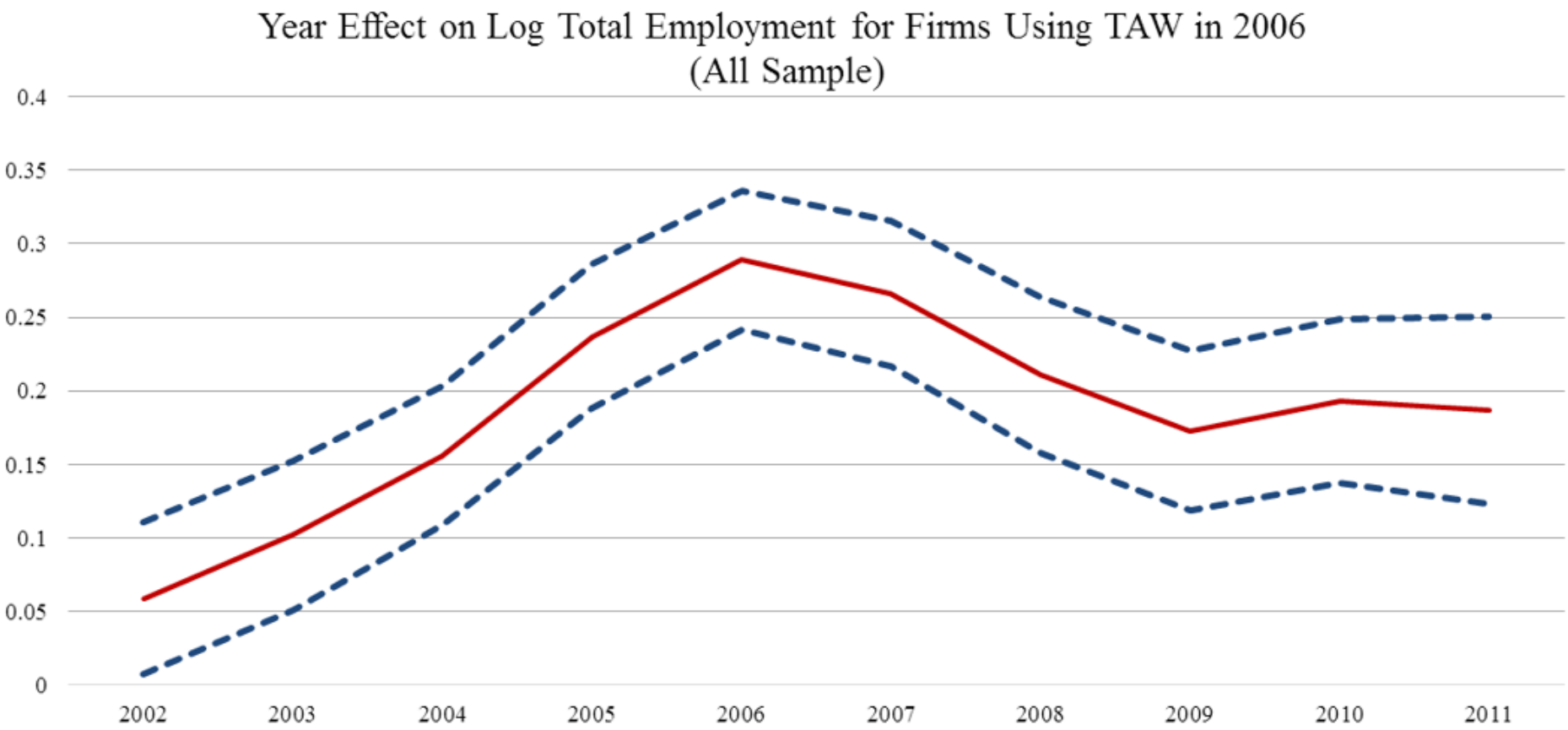
Results: Total Employment

$$\log(Y_{ijt}) = \beta_0 + \beta_1 DTAW_{2006} \times t + \beta_2 DTAW_{2006} \times D_{t>2006} \times t + \gamma_i + \chi_t + \mu_{ijt}$$

	Total Employment (Ln)	
	A: All Sample	**B:** Selected Sample
Dummy TAW in 2006 * Year*Post Reform	-0.0234***	-0.0162***
	(0.00245)	(0.00320)
Dummy TAW in 2006 * Year	0.0475***	0.0243***
	(0.00389)	(0.00511)
Constant	3.427***	4.251***
	(0.00651)	(0.0137)
Observations	34,310	9,042
R-squared	0.951	0.944
Year Fixed Effects	Yes	Yes
Plant Fixed Effects	Yes	Yes

Results: Total Employment

$$\log(Y_{ijt}) = \beta_0 + \sum_{t=2002}^{2011} \beta_{t-2001} DTAW_{2006} \times Year_t + \gamma_i + \chi_t + \mu_{ijt}$$



Results: Regular Employment

$$\log(Y_{ijt}) = \beta_0 + \beta_1 DTAW_{2006} \times t + \beta_2 DTAW_{2006} \times D_{t>2006} \times t + \gamma_i + \chi_t + \mu_{ijt}$$

	Regular Employment (Ln)	
	A: All Sample	**B:** Selected Sample
Dummy TAW in 2006 * Year*Post Reform	0.00610**	0.0143***
	(0.00251)	(0.00320)
Dummy TAW in 2006 * Year	0.0168***	-0.00647
	(0.00390)	(0.00505)
Constant	3.393***	4.177***
	(0.00646)	(0.0133)
Observations	34,310	9,042
R-squared	0.950	0.944
Year Fixed Effects	Yes	Yes
Plant Fixed Effects	Yes	Yes

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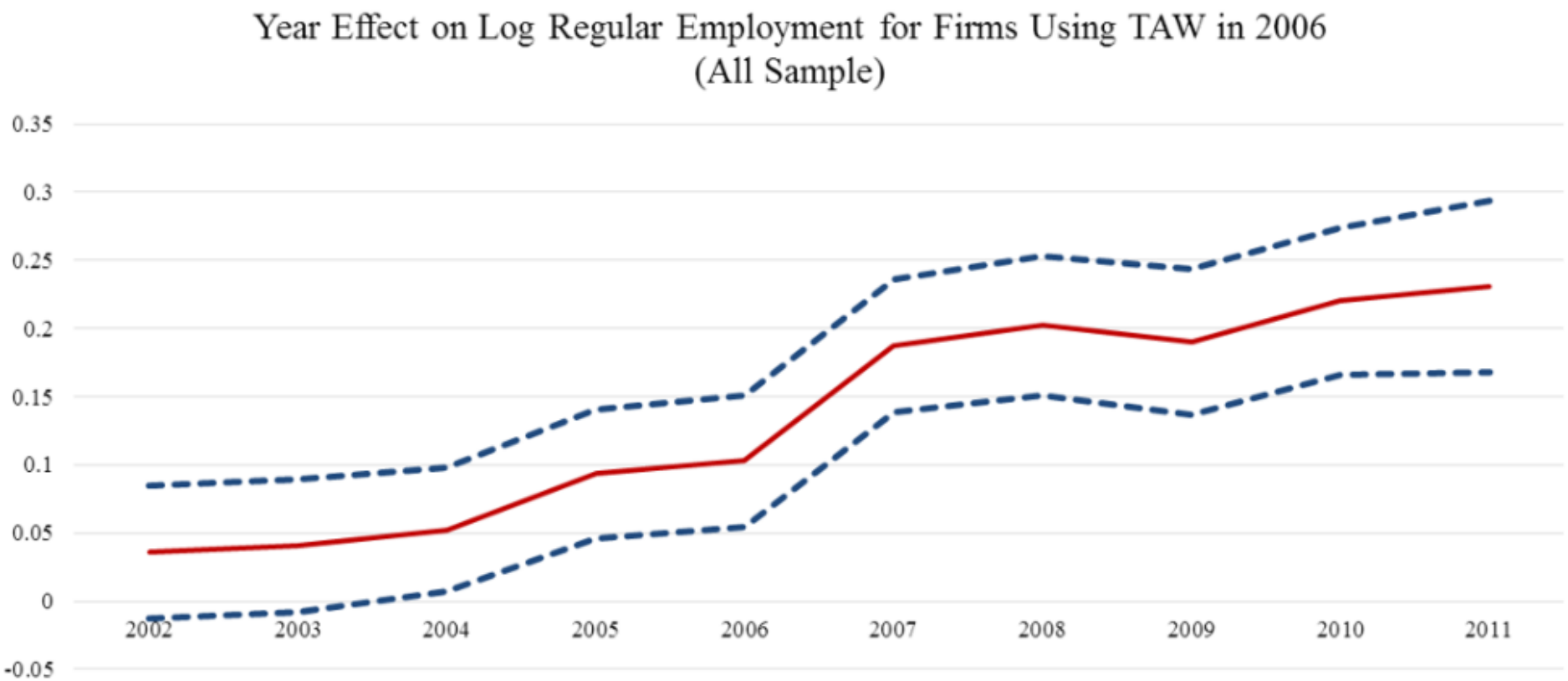

Results: Value of Production

$$\log(Y_{ijt}) = \beta_0 + \beta_1 DTAW_{2006} \times t + \beta_2 DTAW_{2006} \times D_{t>2006} \times t + \gamma_i + \chi_t + \mu_{ijt}$$

	Product (Ln)	
	A: All Sample	**B:** Selected Sample
Dummy TAW in 2006 * Year*Post Reform	-0.00879***	-0.000328
	(0.00241)	(0.00304)
Dummy TAW in 2006 * Year	0.0262***	-0.00161
	(0.00385)	(0.00494)
Constant	13.40***	14.61***
	(0.00688)	(0.0140)
Observations	34,307	9,041
R-squared	0.978	0.976
Year Fixed Effects	Yes	Yes
Plant Fixed Effects	Yes	Yes

Results: Value Added

$$\log(Y_{ijt}) = \beta_0 + \beta_1 DTAW_{2006} \times t + \beta_2 DTAW_{2006} \times D_{t>2006} \times t + \gamma_i + \chi_t + \mu_{ijt}$$

	Value Added (Ln)	
	A: All Sample	**B:** Selected Sample
Dummy TAW in 2006 * Year*Post Reform	0.00111	0.00637
	(0.00465)	(0.00592)
Dummy TAW in 2006 * Year	0.00209	-0.0133
	(0.00693)	(0.00909)
Constant	12.32***	13.53***
	(0.0117)	(0.0230)
Observations	34,310	9,042
R-squared	0.926	0.918
Year Fixed Effects	Yes	Yes
Plant Fixed Effects	Yes	Yes

Results: Inventories and TAW

$$\left(\frac{Inv.}{Sales}\right)_{ijt} = \beta_0 + \beta_1 \delta_{ij} + \beta_2 DTAW_{2006} + \beta_3 \delta_{ij} \times D_{t>2006} + \beta_4 DTAW_{2006} \times D_{t>2006} + \chi_t + \rho_j + \mu_{ijt}$$

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	Inventories/Sales				
	(1) OLS (All Sample)		(2) OLS (Selected Sample)		(3) Plant FEs
	A	B	A	B	A
Volatility (SD dlva)	0.0664***	0.0843***	0.0660***	0.0782***	
	(0.00496)	(0.00675)	(0.0100)	(0.0142)	
Dummy TAW in 2006		-0.00599		-0.0396***	
		(0.00742)		(0.00891)	
Volatility*Post Reform		-0.0466***		-0.0301*	-0.0288***
		(0.00910)		(0.0173)	(0.00671)
Dummy TAW in 2006 *Post Reform		0.0254**		0.0309**	0.0187***
		(0.0103)		(0.0133)	(0.00666)
Lag Valued Added	-0.00451***	-0.00450***	-0.00577***	-0.00586***	
	(0.00127)	(0.00132)	(0.00203)	(0.00202)	
Constant	0.735***	0.724***	0.146***	0.146***	0.218***
	(0.0213)	(0.0224)	(0.0306)	(0.0306)	(0.00401)
Observations	31,654	31,654	8,814	8,814	32,994
R-squared	0.135	0.136	0.133	0.135	0.793
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes
Sector Fixed Effects	Yes	Yes	Yes	Yes	.

Conclusions and Final Comments

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- **Using Dif-in-Dif we find that** plants using TAW previous to the regulation:
  1. Diminished the **total employment** level after regulation (-2%).
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  4. **BUT** did not diminish the value of the **output** produced or the **value added**.
- These results are consistent with the idea that **Income Effect** was attenuated by a **Substitution Effect**.
- Furthermore, this result also contributes new evidence to the hypothesis that firms use **temporary agency workers as a buffer to deal with volatility**.