

Do employment Subsidies Work? Evidence from Regionally Targeted Subsidies in Turkey

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Objective of this paper

- Estimate employment and earnings effects of two regionally targeted employment subsidies programs.
- Programs instituted by the government of Turkey to encourage investment and employment in low income provinces.

Motivation

- Subsidies very popular in OECD countries.
About 25% of expenditures on ALMP in OECD.
- Becoming increasingly popular outside of OECD countries to increase overall employment or for certain groups (youth, women, workers with disabilities)
 - Interest particularly high with the financial crisis
- But do they? And at what cost?
- Very few (and mixed) evaluations of their effects.

Estimating impact of subsidies

- Policymakers equate number of beneficiaries with net effects of program
 - But rarely consider deadweight loss, substitution or displacement effects.
- Estimating effects requires building a counterfactual which is difficult when subsidies affect all workers.

Literature

- Compared to other programs, relatively few evaluations
 - Katz (1998), Galasso et al (2001), Gerfin et al (2005)
 - Muhlau and Salverda (2000), Bishop (1981)
- Existing estimates affected by lack of good counterfactuals
- Sparse measurement of deadweight losses. Most come from employment surveys, and even so they are large

This paper

- In this paper we attempt to cover some of these gaps in the literature by examining:
 - Impact of subsidies on new hires of two different programs in Turkey
 - Emphasis on building the appropriate counterfactuals
 - Examine:
 - Effects on employment (intensive, extensive margins)
 - Effects on wages (pass through)
 - Importance of program design. Which design is better?
 - Formalization versus new employment creation

Main Results

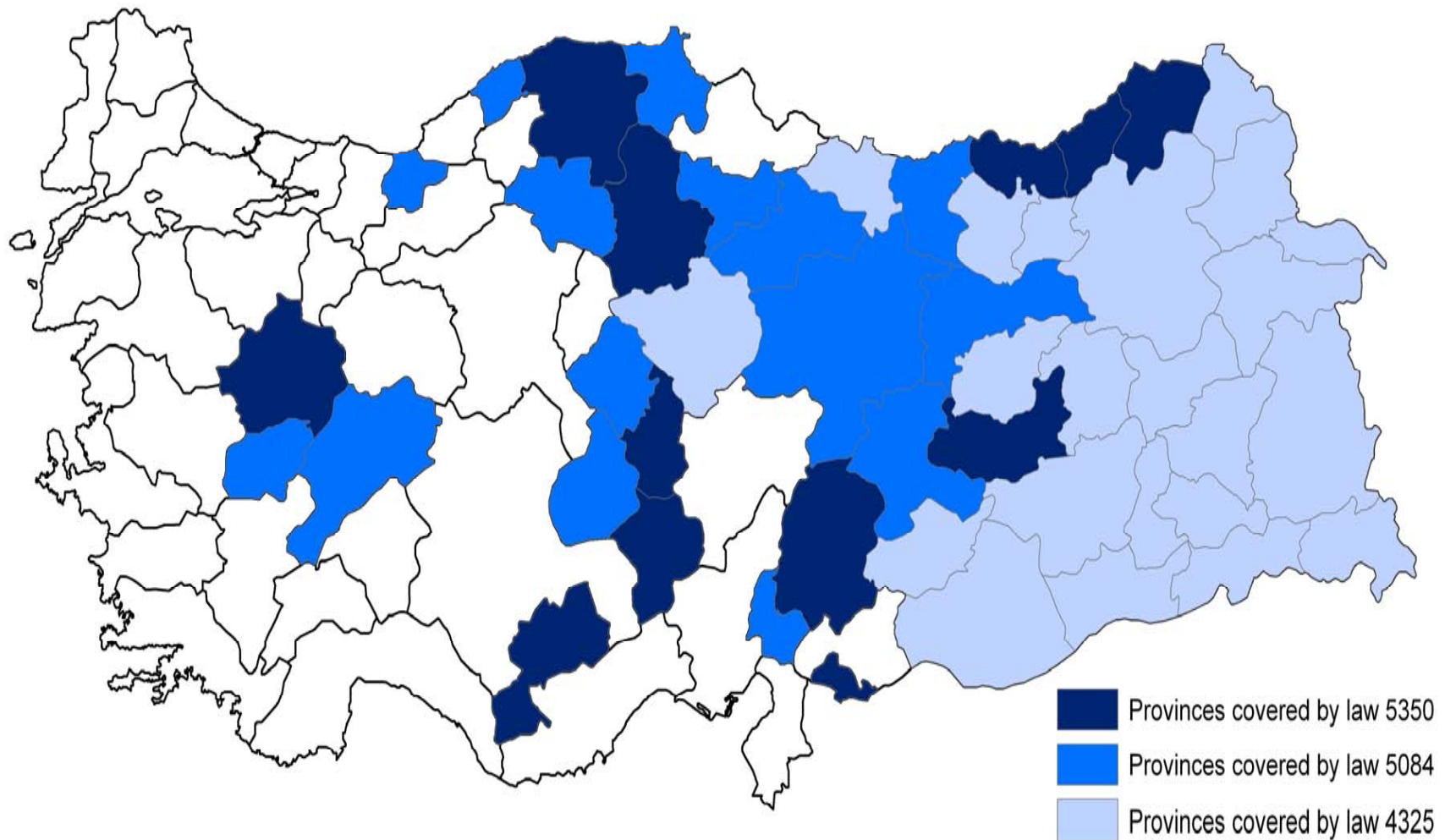
- The paper finds:
 - Both subsidy programs lead to significant effects on L
 - But large deadweight losses (DL)
 - Design matters. One program had larger effects at lower DL
 - No effect on wages—No “pass through”?
 - Formalization could be the main effect (rather than creating new jobs)

Regional subsidies in Turkey

- Law 4325 (1998)– 22 provinces
- Law 5084 (January 2004)—15 additional provinces covered
 - Duration set to be five years
 - All provinces with per capita GDP less than US\$1500 (2001) or special development provinces
- Law 5350 (May 2005) –13 additional provinces covered

Due to data availability we focus on effects of Law 5084 and Law 5350

Subsidy Schemes in Turkey



Common components of subsidy schemes:

- Subsidy for employers' social security contributions (amount due at the contribution base)
 - 100% for firms in special enterprise zones (SEZ)
 - 80% for firms outside of SEZ
- Waiver on income taxes on wages (amount due at the minimum wage)
 - 100% for firms in special enterprise zones (SEZ)
 - 80% for firms outside of SEZ
- Subsidies on electricity consumption
- Land subsidies

Differences between Law 5084 and Law 5350

		Law 5084	Law 5350
SS. and income tax subsidies	New Establishments	All registered workers Subsidy= $t \cdot w$	All registered workers [Min. 30 workers] Subsidy= $3 \cdot t \cdot w$ Max No. of subsidized workers= L_0
	Existing Establishments	New L above threshold Subsidy= $t \cdot w$	New L above threshold if $\Delta L > 20\%$ and $L > 30$ Subsidy= $3 \cdot t \cdot w$ Max No. of subsidized workers= L_0
Energy subsidies	New Establishments	All registered workers [Min. 10 workers]	All registered workers
	Existing Establishments	New L above threshold if $\Delta L > 20\%$ and $L > 10$	New L above threshold if $\Delta L > 20\%$ and $L > 30$

Energy subsidies: (20% of energy costs+0.5% for each $L > 10$ up to 40-50%)

Data

- Two main data sources:
 - Social Security Administration (SSK) : registered employment, workplaces, total taxable earnings subject to contribution, and SSK premiums
 - Turkish Treasury :
 - Number of subsidized workers & workplaces
 - Cost of energy incentives
- Monthly provincial panel data for April 2002 – December 2005
- Sample restricted to 79 of 81 provinces due to data problems

Methodology: Diff-in-differences

Define:

- Y_{jt} : Registered employment, workplaces and average taxable earnings (in log levels or in growth rates)
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- ***D_5084***: 15 provinces *added* under Law 5084
- ***D_5350***: 13 provinces *added* under Law 5350
- ***D_never***: rest of provinces that were never subsidized
- ***Period_0***: April 2002 – January 2004 [only Law 4325 is in effect]
- ***Period_1***: January 2004 – April 2005 [4325 & 5084 in effect]
- ***Period_2***: May 2005 – December 2005 [All three laws are in effect]

Control groups

- 2 “natural” controls
 - For *D_5084* provinces controls are *D_5350* and *D_never*
 - For *D_5350* provinces control is *D_never*
- 2 constructed controls'
 - [*Evans and Lien (2005)*]
 - Choose provinces that replicate pre-treatment trends of *D_5084* and separately of *D_5350*
 - *Alt_5084*
 - *Alt_5350*

Econometric Specification: Diff-in-Diff

For law D_5084 we estimate specification below with treatment and control provinces for periods 0 and 1.

$$Y_{jt} = \theta_1 + \delta_1 \text{Period_1} + \delta_2 D_{5084} + \delta_3 D_{5084} * \text{Period_1} + \eta_{jt}$$

The effect of Law 5084 is given by the coefficient δ_3

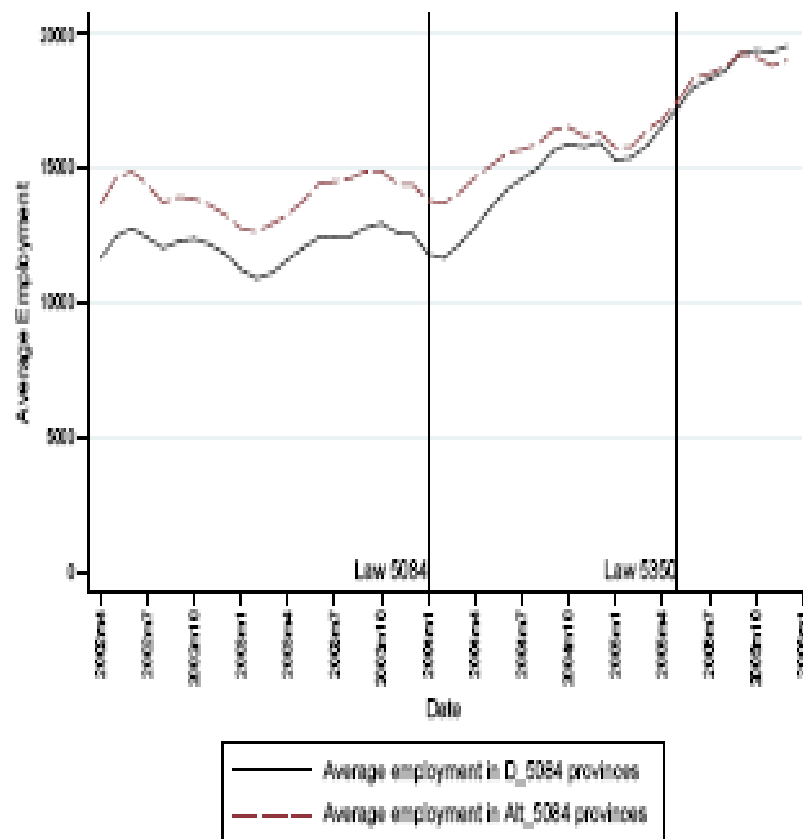
- Similarly for Law D_5350 we estimate specification below with treatment and control provinces for periods 1 and 2.

$$Y_{jt} = \gamma_0 + \gamma_1 \text{Period_2} + \gamma_2 D_{5350} + \gamma_3 D_{5350} * \text{Period_2} + \varepsilon_{jt}$$

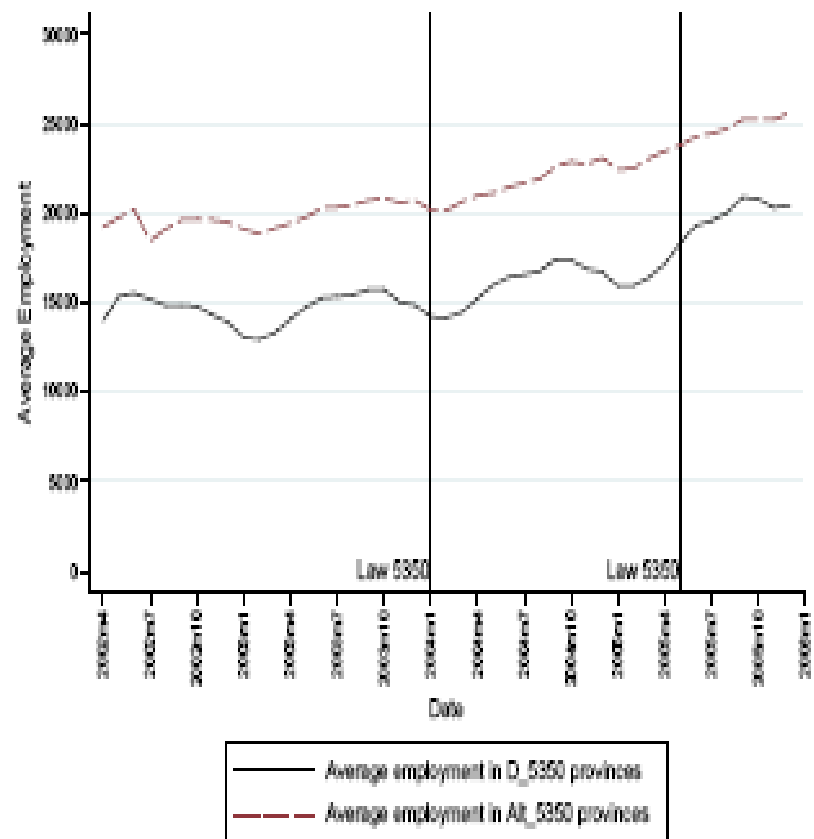
- Effect of Law 5350 is given by the coefficient γ_3

- We enrich the basic specification by adding:
 - Full set of province, month dummies
 - Province specific time trends
- Following Bertrand et al (2004) we allow the error term to be auto-correlated within provinces

Preliminary Evidence



(a) Employment in *D_5084* and *Alt_5084*



(b) Employment in *D_5350* and *Alt_5350*

Effects of Law 5084 on D_5084

Table 6: Results: Employment

Effects of Law 5084 in Period 1 (relative to Period 0)				
	Log(employment)			Growth of employment
	1. period dummies 2. group dummies	1. date dummies 2. province dummies	1. date dummies 2. province specific trend	1. date dummies 2. province dummies
<i>Control Group: Alt_5084</i>				
Law Dummy * Period Dummy	0.086*** (0.026)	0.086*** (0.027)	0.054* (0.029)	0.008** (0.003)
Law Dummy	-0.243 (0.189)			
Period Dummy	0.099*** (0.017)			
Observations	925	925	925	900
Adjusted R-squared	0.058	0.985	0.989	0.524

Effects of Law 5350 on D_5350

	Effects of Law 5350 in Period 2 (relative to Period 1)			
	Log(employment)			Growth of employment
	1. period dummies 2. group dummies	1. date dummies 2. province dummies	1. date dummies 2. province specific trend	1. date dummies 2. province dummies
<i>Control Group: Alt_5350</i>				
Law Dummy * Period Dummy	0.110*** (0.027)	0.110*** (0.028)	0.153*** (0.035)	0.011* (0.006)
Law Dummy	-0.608* (0.319)			
Period Dummy	0.133*** (0.019)			
Observations	576	576	576	552
Adjusted R-squared	0.119	0.994	0.995	0.330

Larger effects of Law 5350 which should be assessed against its costs

Also in the paper:

- Look at the effects of wages and number of establishments
 - No effects on wages
 - Positive effects on # establishments for Law 5084 but inconclusive effects for Law 5350
 - Law 5350 had larger employment effects on intensive rather than extensive margin—less manipulation of employment?

Formalization versus employment creation

- We don't have provincial data on total employment or GDP
- Use provincial electricity consumption data to proxy economic activity (highly correlated)
- No evidence of increase in use of electricity → All formalization, no actual employment creation?

Cost-benefit analysis

- We add:
 - SS subsidies (data from SSK)
 - Energy subsidies (data from Treasury)
 - Tax subsidies (inferred as a proportion of SS subsidies)
 - Do not include land costs –underestimate of costs

Cost benefit analysis

Expenditures under law 5084 in the 15 newly subsidized provinces and cost per job creation under different assumptions January 2004 to April 2005.

	Number of job-months	Deadweight loss %	Cost/job created % of minimum wage
Number of jobs subsidized	739,767		25.59%
Estimated net jobs created (low)	165,661	77.61	118.12%
Estimated net jobs created (high)	392,031	47.01	49.83%

We do the same for law 5350 and we find lower deadweight losses (22-44%)

Costs

- These calculations assume that subsidies create new jobs. If only formalization, then benefits much lower.

Conclusions

- Examine impact of subsidies taking advantage of pseudo-experimental design
- Substantial effects on L and number of establishments. No positive effects on Earnings.
- Results appear robust to changes of specification, time period, or control group.
- Formalization rather than employment creation?
- Subsidies quite costly because high deadweight losses
- Design matters. Lower deadweight losses for Law 5350