Do targeted wage subsidies help long-term unemployed in finding a job?

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Introduction

- **Goal**: evaluate the effectiveness of the Hungarian START programs in improving employment chances of long-term unemployed
  - These programs offer a two-year reduction in payroll tax to the employer
  - The tax reduction is 17-27 percentage points in the first year
- Goal of the START programs:
  - Improve employment chances of long-term unemployed individuals
  - Improve job stability of those who are hired

Introduction

- Dependent variable: one-month ahead probability of an individual switching from unemployed to employed status
- I use administrative data from Hungary

Summary

- I study a universal program
  - very few papers in the literature on universal programs
- I exploit the eligibility threshold
  - Individuals become eligible upon reaching 12 months of registered unemployment
- Employment effects:
  - I find not very large effects
  - But these effects are statistically significant and econmically meaningful

Outline

- Motivation
- Institutional Framework
- Literature
- Data
- Estimation
- Results
- Extensions

Motivation

- Existing literature does not study programs for all long-term unemployed
- In other programs, the eligible individuals are not a random subset of long-term unemployed
- Example: Hungary 1990s
  - Some registered unemployed were subsidized conditional on employment center deciding to grant a wage subsidy
- Result: selection bias in other programs

Motivation

- Unique features of the Hungarian administrative data allow more thorough study of displacement effects
- Linked employer-employee data
- We are able to study whether the firm that hires a long-term unemployed person simultaneously fires another worker

Institutional Framework

- Long-term unemployed individual:
  - registered unemployed individual with a history of 12 months of registered unemployment in the preceding 16 months
- Two wage subsidy programs for long-term unemployed:
  - Wage subsidy program administered by employment centers
  - START tax reduction scheme

Employment centers' wage subsidies

- Available during the whole period for which administrative data is available (2003-2011)
- To obtain a subsidy, the employer is required to:
  - fill out an application
  - wait to find out whether they receive a subsidy
  - agree to keep employing the worker for at least the duration of the subsidy

Employment centers' wage subsidies

- No such subsidy targeted specifically at long-term unemployed people
- However, a subsidy was available under the conditions that:
  - The firm increases the number of workers with similar jobs as the subsidized worker
  - The worker has been registered unemployed for at least 6 months
- The amount of the subsidy is between 50 and 100 percent of the individual's gross wage
  - Within this range, it is determined by the employment center
- Maximum duration of subsidy: 1 year

START Programs

- START card programs provide a payroll tax reduction to the employer
- The START Plusz and START Extra tax reduction schemes were introduced on July 1, 2007

Program	Eligible Individuals	Duration	Payroll Tax Reduction*	
			1st year	2nd year
START Plusz	- individuals on parental leave or care allowance - all long-term unemployed	2 years	17%	7%
START Extra	- long-term unemployed aged over 50 - long-term unemployed with at most primary school education	2 years	27%	17%

* Payroll tax reduction is here expressed as a percentage of gross wage. Firms in 2007 pay 28.5% of gross wage as payroll taxes (plus a flat rate health contribution of 1,950 HUF which is waived in both years in both programs).

Table 1: Differences between the START Plusz and START Extra programs

START Programs

- Ceiling on subsidy: 2 times minimum wage
- START card claimed by the worker
  - Issued by tax authorities for a small fee
- Card must be handed over to the employer before subsidy could be claimed
- Individual can switch employer during the 2 years and still use the START card

Flexibility of START programs

- START programs are unique in their flexibility towards the employer
- only condition for employer: employ individual for at least 20 hours a week
  - employer need only ask the worker it is hiring to request a card
  - employer faces no uncertainty as to whether the subsidy will be granted
  - need not commit to employing the worker for any length of time

Unemployment benefits

- long-term unemployed individuals unlikely to be unemployment benefit recipients

days employed in past 4 years	duration of unemployment insurance
0-199	0 days
200-1350	(days employed in past 4 years)/5
1351-1440	270 days

Table 2: Duration of unemployment insurance

Literature

- Wage subsidy programs cannot be mandated
  - Worker must be hired to receive it
- This suggests the effect of eligiblity is the relevant policy parameter
  - not the effect of program participation
- One study exists where subsidy is mandated
  - Swedish program studied by Saez et al. (2017)
  - All individuals under 26 years old get a payroll tax reduction, even those already employed
  - Eligible individuals automatically participate
  - But this results in a positive employment effect only for already employed

Literature

- Few universal programs studied in the literature
- Swedish program studied by Saez et al. (2017)
- US experiment by Dubin and Rivers (1993)
  - Control for any form of self-selection into programs
- These are very different institutional setups from that of the START subsidy

Literature

- In the literature, evidence is mixed on the effectiveness of wage subsidies
- This suggests that details are important concerning
  - How easily the subsidy can be claimed
  - What groups of individuals are eligible

Literature

- Matching approaches
  - Bernhard et al. (2008) define treated individuals as actual subsidy recipients
  - Finding: 40 percentage point increase in employment chances
  - Many other studies using similar approaches find such large effects

Literature

- Schünemann et al. (2015) use eligibility as the treatment effect they study
  - They use a regression discontinuity design framework
  - They exploit the eligibility threshold of 12 months of accumulated unemployment
  - They find no effect on employment

Literature

- Shünemann et al. argue matching approaches overestimate employment effects
  - "matching on observables is unlikely to be sufficient to correct for selection into employment"
  - because the resulting control group has lower employment chances even in absence of the subsidy
  - They also run Bernhard et al.'s matching approach on their own data
  - They find large effects using the matching approach, contradicting their RD estimates

Data

- Hungarian Administrative Dataset
- Linked employer-employee dataset
- 50% random sample of people aged 5-74 in 2003
  - 4.6 million observations
- Monthly, panel data for years 2003-2011
- Source data for linked database:
  - National Pension Insurance records
  - National Health Insurance Fund records
  - Tax Authorities
  - The Unemployment Register

Data

- Variables include:
  - Age and gender of individuals
  - Employment spells
  - Wages
  - Registered unemployed status
  - Welfare provisions (including unemployment benefits)
  - Four-digit occupation code
  - Number of employees of firms

Data

- Data available on worker participation in employment centers' wage subsidies
- However, START card ownership of workers not observed in the data
- No information on work history before 2003

Take-up

- Take-up:
  - Ratio of those participating in a wage subsidy program to those eligible for a subsidy
- I compute this for:
  - long-term unemployed over 50 years of age
  - for July 2007 - December 2008
- In this period, 34,236 long-term unemployed persons over 50 years of age found a new job
- All these individuals were eligible for either an employment centers' wage subsidy or a START Extra subsidy

Take-up results

	number of individuals	fraction of total eligible individuals
START Extra	4,817	0.14
employment centers' subsidies	2,836	0.08
total subsidized individuals	7,653	0.22
total eligible individuals	34,236	1

Take-up of the two subsidy programs for July 2007 to December 2008

Take-up

- One other study has documented take-up results for wage subsidy programs similar to my results above
- Dubin and Rivers (1993) use experimental data to measure the impact of wage subsidies
  - Individuals randomly assigned to treatment or control groups
  - Studied individuals filing initial unemployment claims

Take-up

- 2 treatment groups
- Wage subsidy group
  - Members of this group offered a voucher which the worker could present to a potential employer
  - The employer of the worker could then submit the voucher for a payment of $500
  - Take-up: 7.4%
- Search bonus group
  - Members also offered a voucher of $500
  - But they could claim the amount themselves without involving the employer
  - Take-up: 33.4%

Estimation

- **Goal**: evaluate the effectiveness of the START programs in improving employment chances
- Eligible individuals can be precisely identified in the data
- I exploit the eligibility threshold
  - 12 months of registered unemployment in the previous 16 months required for eligibility
  - I use almost eligible individuals as a control group
  - I use a difference-in-differences framework

Employment Chances

- Dependent variable: one-month ahead probability of an individual switching from unemployed to employed status

$$Y_{it} = \alpha + \beta D_{it} + \gamma T_t + \delta D_{it} \times T_t + \varepsilon_{it}$$

, where

$$D_{it} = \begin{cases} 1 & for\ treatment\ group \\ 0 & for\ control\ group \end{cases}$$

$$T_t = \begin{cases} 1 & for\ August\ 2007 - July\ 2008 \\ 0 & for\ May\ 2006 - April\ 2007 \end{cases}$$

Employment Chances

- **Treatment group**:
  - Individuals with 12 months of registered unemployment in past 16 months
- **Control group**:
  - Individuals with 11 months of registered unemployment in past 16 months
- T=0 period included to capture any differences in outcome variables that may exist between the treatment and control groups even in absence of the program

Employment Chances

- **I restrict the sample to**:
  - Individuals starting out as unemployed
  - Not recipients of employment centers' wage subsidies
  - Not unemployment benefit recipients

Employment Chances

- The parameter of interest is δ
  - It shows the difference in mean outcomes of eligible and ineligible individuals at the threshold in the period in which the subsidy was available minus the same difference for the period before the subsidy was in place

Estimation results

Dependent var.	jfprob
constant	0.0692***
	(0.000)
Treat	0.0036***
	(0.002)
After	0.0050***
	(0.000)
Treat x After	**0.0042****
	(0.013)
Mean jfprob	0.0741
N (observations)	388,035

(p-values in parantheses)
*** p<0.01 **p<0.05 *p<0.1

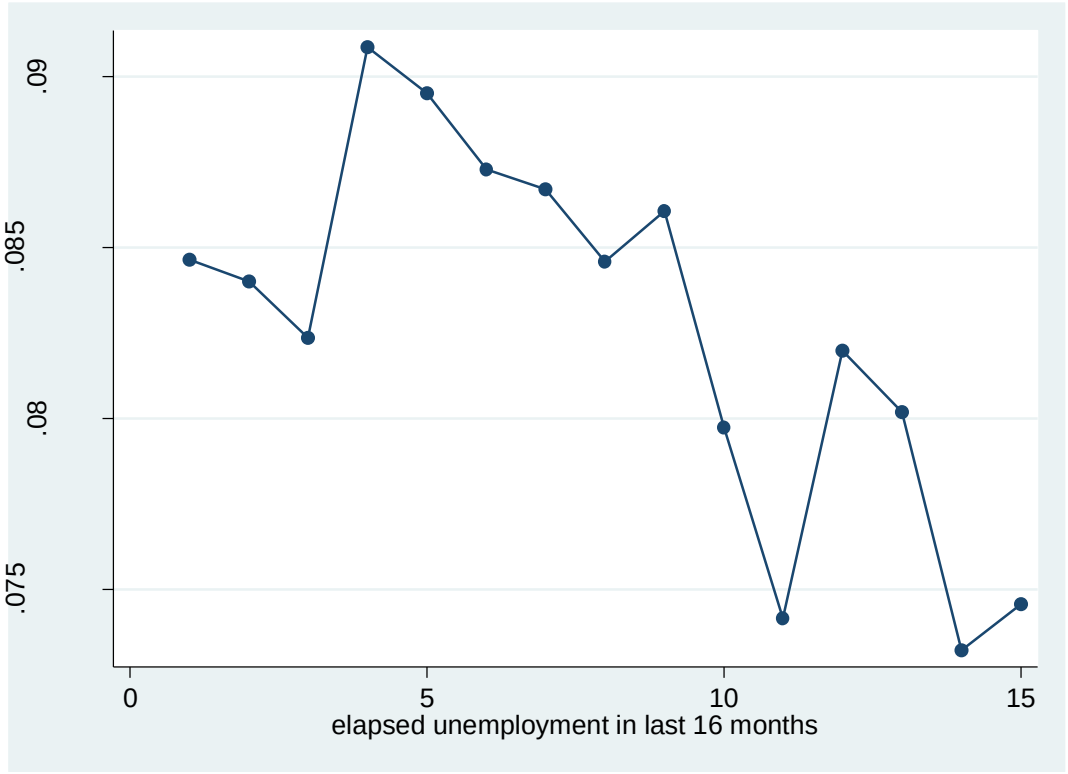
Estimation results

- The point estimate implies that the switch to the START program increased job finding probabilities by 6.1%
- The effect is statistically significant
- Thus the START program is estimated to have had a positive effect on job finding probability

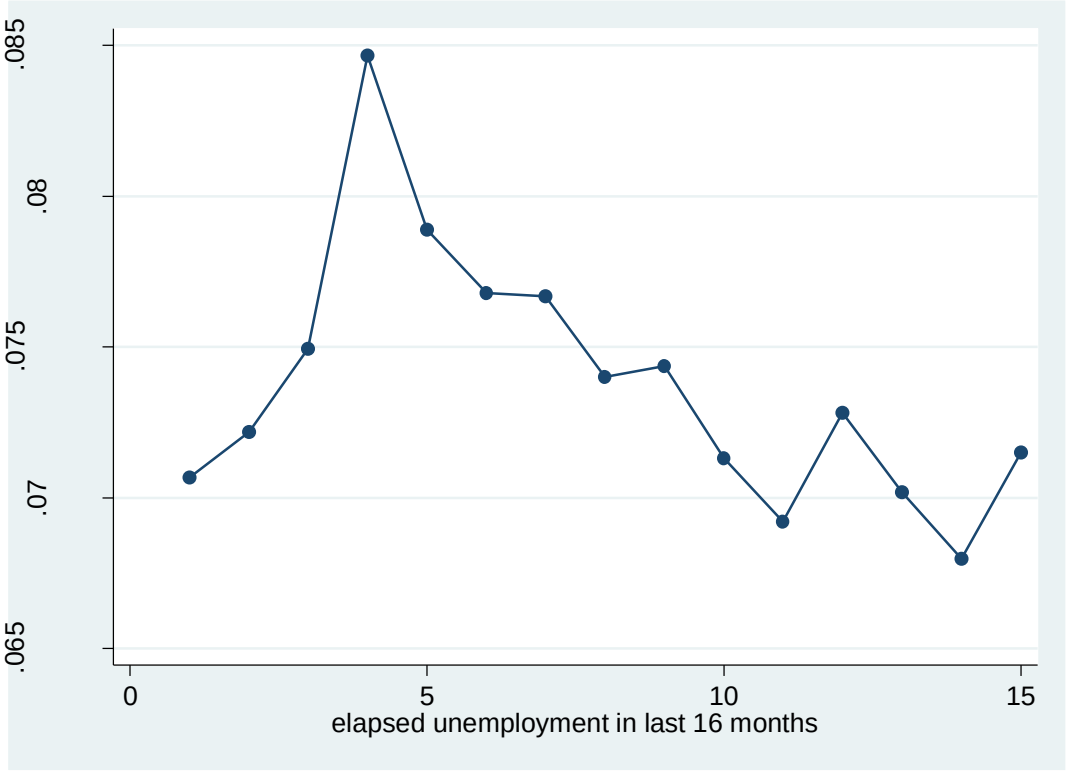
Employment Chances

- **Identifying assumption**:
  - Were it not for the program, the change in job finding probability at the threshold would have been the same in T=1 as it was in T=0

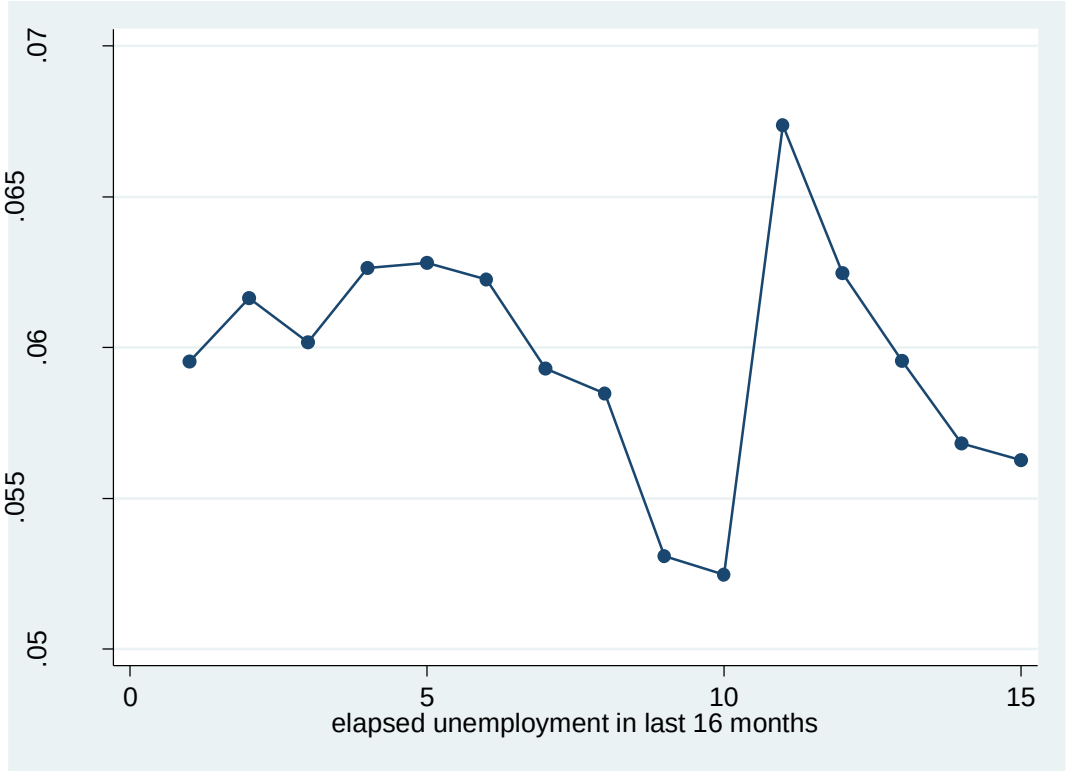
jfprob means by elapsed unemployment in T=1 (August 2007-July 2008)



jfprob means by elapsed unemployment in T=0 (May 2006-April 2007)



jfprob means by elapsed unemployment in January 2007



Extensions

- Sharp regression discontinuity framework instead of the above difference-in-differences framework
- Same specification with wages as the dependent variable
- Differences in results by:
  - firm size
  - individual's level of education

Extensions

- Displacement effects:
  - Do firms hiring eligible individuals simultaneously fire workers with similar occupation codes?
- Employment stability
  - duration of employment spells of eligible vs. ineligible individuals in T=1
  - probability of being employed in 3 years in treatment vs. control group

Thanks for your attention!