

An Evaluation of the Swedish System of Active Labour Market Programs in the 1990s

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The Swedish Labor Market Policy

- Unemployment insurance system
 - UI benefit
 - Need to fulfil *membership requirement* and *work requirement*
 - 80% of previous wage
 - Last for 60 calendar weeks
 - Cash Assistance (CA)
- Active labor market programs
 - The main purpose is to prevent long periods out of regular employment.
 - Most programs have a maximum duration of 6 months, though participants stay on average for 4 months.

Evaluation Approach

- treatment receipt at time u : $D^{(u)}$

$$\begin{aligned} D^{(u)} &= 1 && \text{if joining a program} \\ &= 0 && \text{if not joining a program} \end{aligned}$$

- outcome of interest: $\{Y_t^{(u)}\}_{t=u}^T$
- treatment effect (on treated) $\{\Delta_t^u\}_{t=u}^T$

$$\begin{aligned} \Delta_t^u &\equiv E(Y_t^{1(u)} - Y_t^{0(u)} | D^{(u)} = 1) \\ &= E(Y_t^{1(u)} | D^{(u)} = 1) - E(Y_t^{0(u)} | D^{(u)} = 1) \end{aligned}$$

Conditional Independence Assumption (CIA)

$$Y_t^{0(u)} \perp D^{(u)} | X = x \quad \text{for } t = u, u + 1, \dots$$

Under CIA

$$\begin{aligned} E(Y_t^{0(u)} | D^{(u)} = 1) &= E_{X|D^{(u)}=1}[E(Y_t^{0(u)} | X, D^{(u)} = 1)] \\ &= E_{X|D^{(u)}=1}[E(Y_t^{0(u)} | X, D^{(u)} = 0)] \end{aligned}$$

Remarks

- CIA requires to observe *all* those variables X that, conditional on having spent a given amount of time in unemployment u , influence both $D^{(u)}$ and $Y_t^{0(u)}$
- treatment group and comparison group should have the same X

Propensity Score Matching

- X is chosen to be a whole set of variables intended to characterize the individual's past employment history as well as his current employment prospects, including his assessment thereof.
- Instead of matching the highly dimensional X , we can match the conditional probability of being treated at u given the value of observed characteristics X , $P(D(u) = 1|X) \equiv e(X; u)$ (i.e., *propensity score*).
- Probit model is used to estimate the probability of joining a program in month u , conditional on X and on having reached an unemployment duration of u months.

Implementation

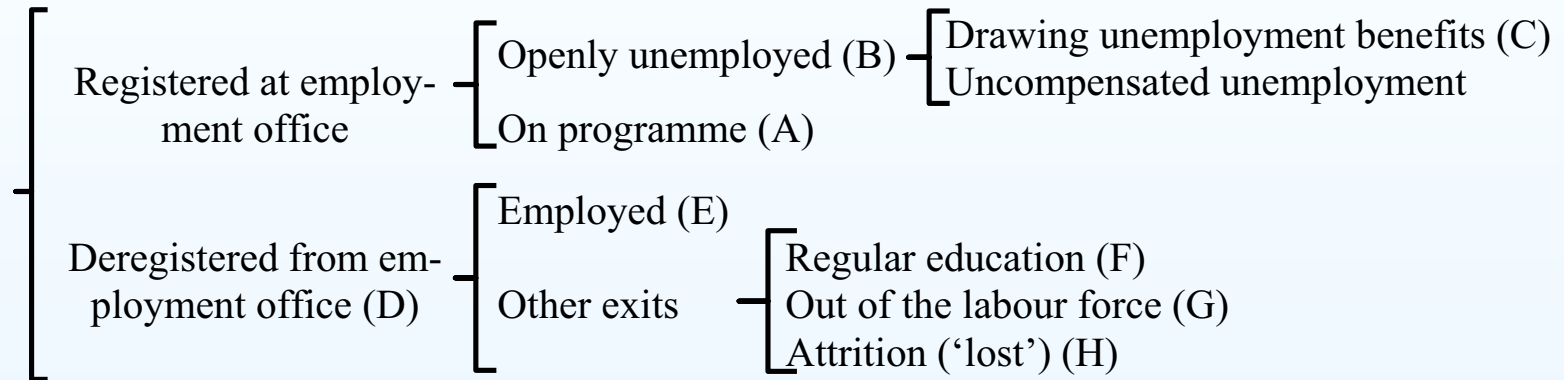
- In implementation, we set $u = 1, 2, \dots, 18$, so that they look at the impact of entering a program for groups of individuals that join within one and a half year of first registration.
- Define $\{D = 1\} \equiv \bigcup_{u=1}^{U_{max}} \{D^{(u)} = 1\}$. The average effect given by

$$E_U(\Delta_t^u | D = 1) = \sum_{u=1}^{U_{max}} E(Y_t^{1(u)} - Y_t^{0(u)} | D^{(u)} = 1) P(D^{(u)} = 1 | D = 1)$$

Labor Market States

Table 5.1 Labour market states

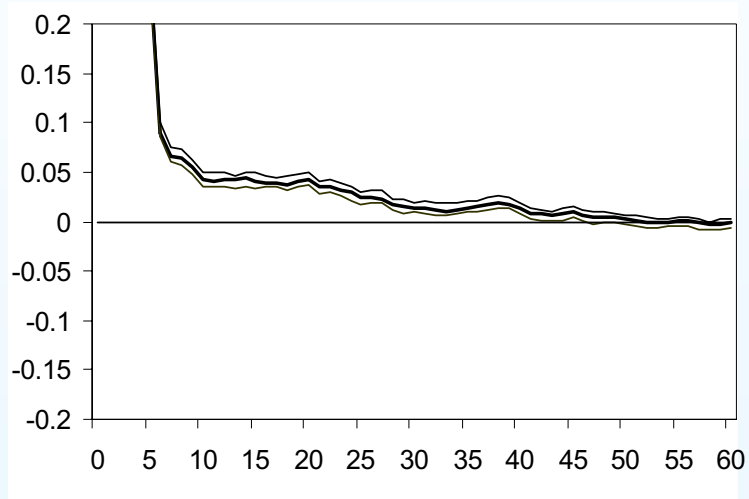
(in brackets, the panels of Figure 5.1 where the corresponding treatment effects are shown)



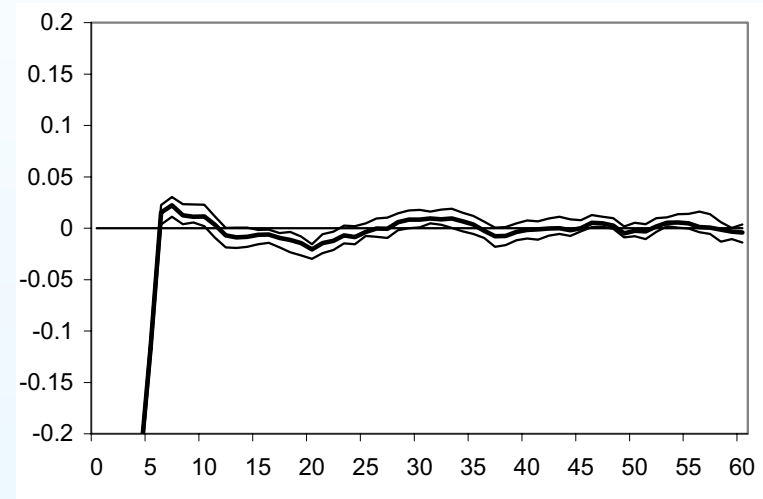
Average Treatment Effect

Figure 5.1 Treatment effect (% points) over time on the probability of

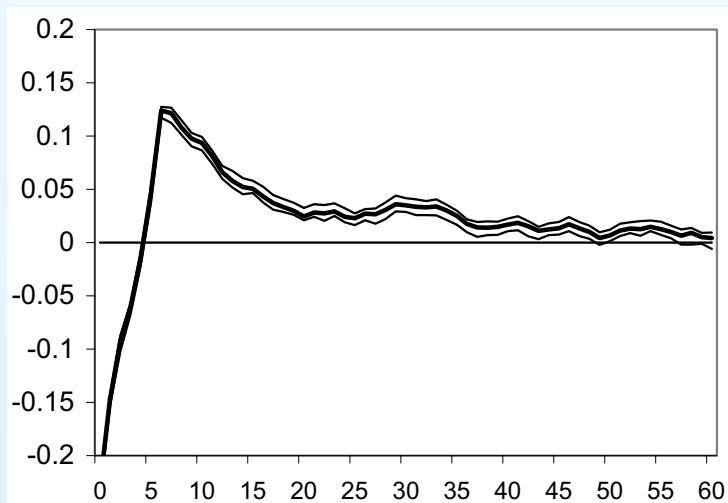
(A) Program participation



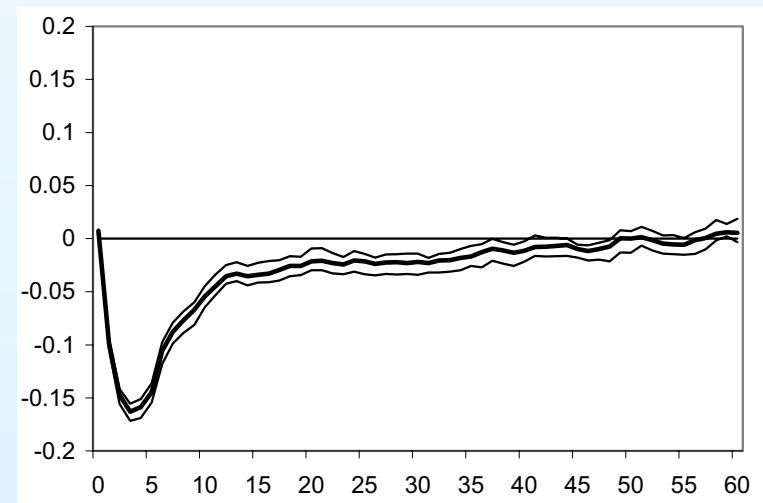
(B) Open unemployment



(C) Benefit collection

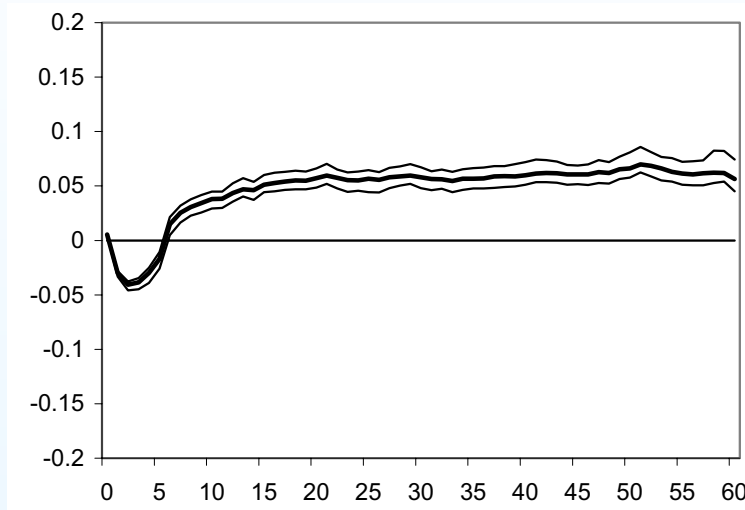


(D) De-registration

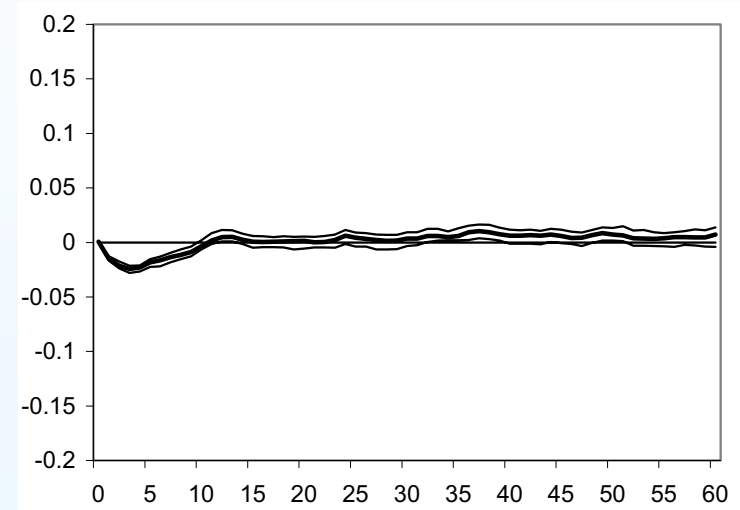


Average Treatment Effect

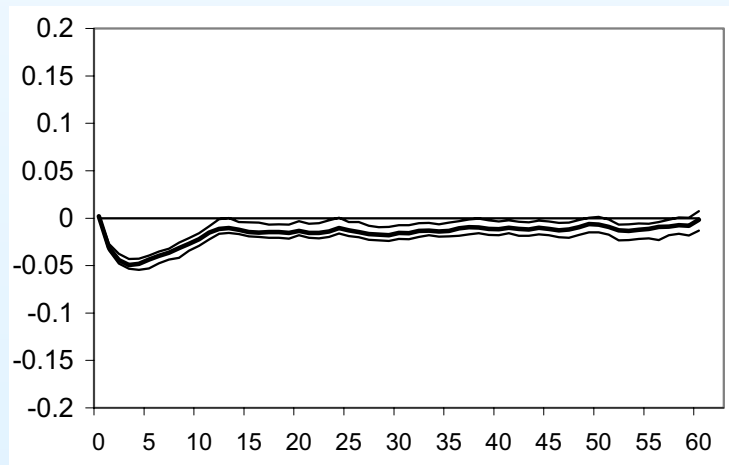
(E) Employment



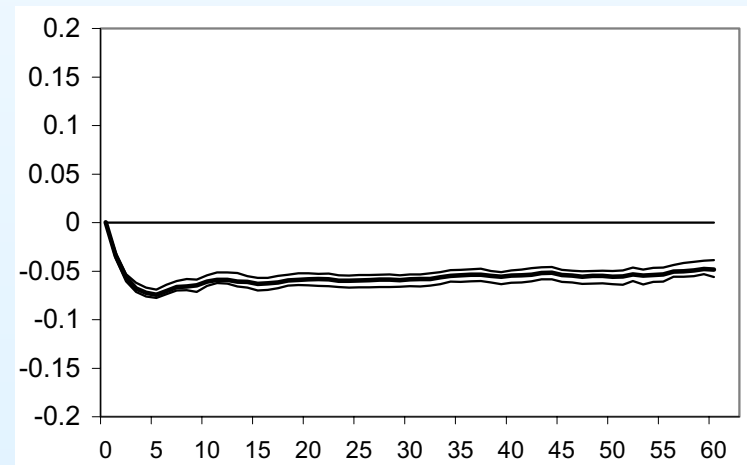
(F) Regular education



(G) Inactivity



(H) 'Lost'



Treatment Effects by Time into the Program

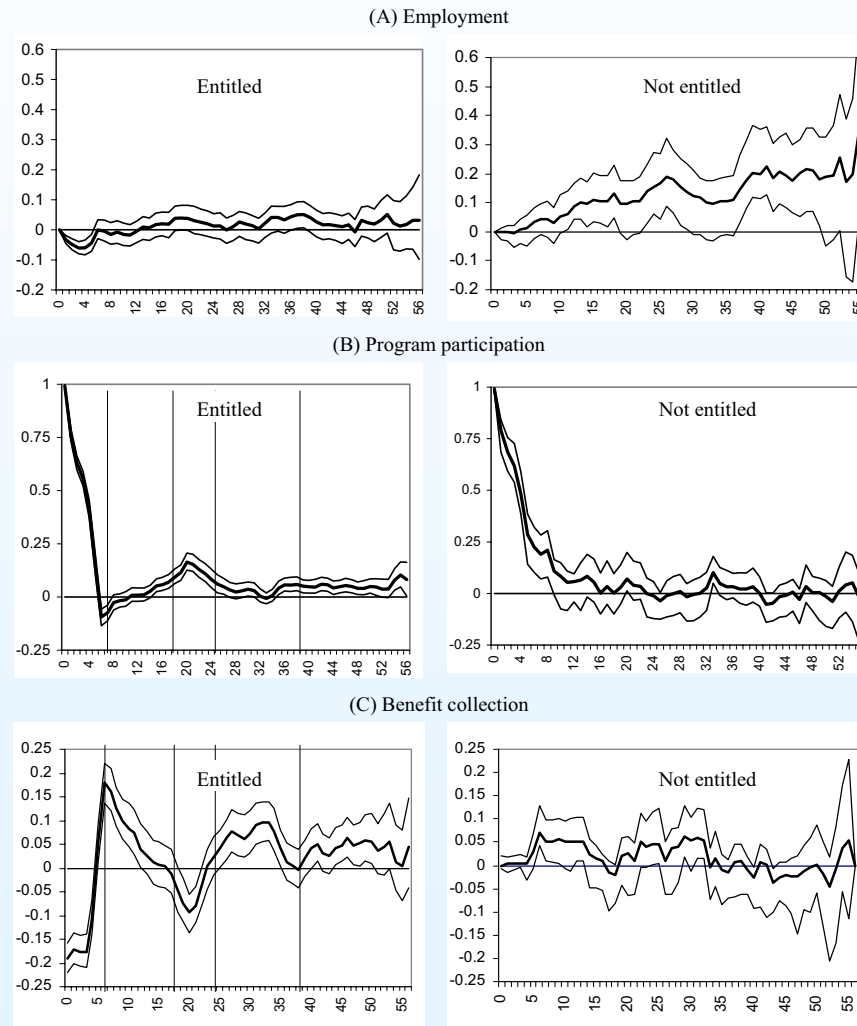
Table 5.3 Average treatment effects by month of placement into the program
(averaged over the 5-year horizon since the start of the program; % points)

Rates/Probabilities (% points)	Placement in u^{th} month:					
	1 to 18	1	3	6	15 *	18 *
On programs	7.7 (7.5; 8.0)	7.0 (6.4; 7.7)	7.0 (6.3; 7.3)	9.3 (9.1; 9.9)	9.5 (7.7; 10.9)	12.0 (9.3; 14.7)
Open unemployment	-4.7 (-5.1; -4.2)	-5.0 (-6.2; -4.0)	-4.5 (-5.8; -3.8)	-5.7 (-7.4; -4.1)	-2.4 (-4.8; 1.2)	-4.3 (-10.3; -0.2)
Benefit receipt	2.2 (2.1; 2.6)	1.9 (1.3; 2.7)	1.2 (0.6; 1.5)	1.8 (0.5; 3.0)	5.8 (3.8; 9.2)	5.2 (1.3; 8.7)
Deregistered	-3.1 (-3.7; -2.6)	-2.0 (-3.5; -0.6)	-2.5 (-3.3; -1.5)	-3.6 (-5.6; -2.1)	-7.1 (-11.9; -3.6)	-7.7 (-12.7; -0.5)
Employment: observed	4.7 (4.1; 5.4)	2.5 (0.5; 4.2)	4.8 (2.8; 6.1)	5.7 (3.1; 8.0)	2.9 (-1.6; 5.1)	4.1 (-3.4; 8.7)
imputed	2.3	0.2	2.3	3.2	0.9	1.2
worst-case; best-case	-1.6; 7.3	-4.0; 6.0	-2.6; 8.5	-0.8; 8.0	-1.5; 3.7	-0.8; 4.5
Lost	-5.6 (-6.1; -5.2)	-5.4 (-6.7; -3.9)	-6.8 (-7.4; -5.5)	-5.4 (-8.0; -3.9)	-4.7 (-6.6; -2.3)	-5.6 (-8.0; -1.6)
Inactivity	-1.6 (-2.1; -1.1)	0.9 (-0.6; 2.4)	-0.4 (-1.8; 1.0)	-3.4 (-5.9; -1.9)	-4.1 (-6.8; -1.4)	-3.8 (-7.6; 0.5)
On education	0.1 (-0.3; 0.4)	0.3 (-1.2; 1.0)	0.3 (-0.9; 1.4)	-0.7 (-2.2; 0.5)	-1.8 (-3.4; -1.4)	1.5 (0.1; 4.1)

Notes: * averaged over 56 and 54 months respectively.
95% bias-corrected percentile bootstrapped confidence intervals (500 reps).

Treatment Effects by Entitlement Status

Figure 5.7 Treatment effects over time (% points) for 15-month joiners by entitlement status



Time in month, $t=0$ at program entry; 95% bias-corrected percentile bootstrapped confidence intervals (500 reps).