

# The Knowledge Lift: The Swedish Adult Education Program that aimed to Eliminate Low Worker Skill Levels

- Evaluation study:

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# Outline of presentation

- Program description
- Evaluation question
- Data
- Identification strategy
- Estimation and results
- Conclusions + do I believe the results?

# KL program description

- Goal: raise general skills of low-skilled to medium level
- Target population: *all* age 25 to 55 who are
  - unemployed *or*
  - low-educated (below upper-secondary) and employed
- Treatment: classroom training for general skills (e.g. English), 1 or 2 semesters, full-time or part-time
- Organized locally, demand based courses
- No tuition costs, 30% with stipend (needs-based) or on UI
- 1997 to 2002
- Huge “success” in terms of participation
  - Eligible: 540 000 in 1997 (total population: 8m)
  - Of these treated: 330 000 (90 000 with stipend or on UI)
  - Compare: total upper secondary enrollment was 300 000
- The largest and most ambitious skill raising program ever...

# Evaluation question

- Average treatment effect on the treated ( $ATE_1$ )
- 2 outcome:
  - income
  - employment
- Long-run effects  
(2-year effects because of data availability)
- Equilibrium effects are likely to be large
  - not addressed in the evaluation I present here
  - a separate part of the paper builds a model and calibrates it
  - even that does not contain many GE elements  
(e.g. budget effects, schoolteacher mobility, effects on older / younger people, etc.)

# Data

- Four datasets
  - Swedish tax register (income and wealth), 1990-2000
  - UI fund register (UI benefits), 1994-2000
  - unemployment register (unemployment histories), 1991-2001
  - adult education register, 1990-2000
- Sample: 25 to 55 years old in 1997-1998
- Multiple treatment groups: 97-II, 98-I, 98-II and 2-semester subsets
- Control group: all eligible people but not in KL (may be working)
- Sample size
  - treated: 70 to 333 depending on comparison
  - small because treated in the analysis are required to not having participated in any related program (KOMVUX)
  - control: 30 000 - 40 000

# Data: sample selection

successive selection criterium	resulting sample size
from population aged between 16 and 65 in 1997	200,000
present in this age frame in 1994 and 2000	175,221
aged between 25 and 55 in August 1997	131,352
born in Sweden or other Nordic countries	120,060
low skilled in August 1997	69,414
no KOMVUX before or after 97-II	55,295
of which:	
→ in KOMVUX in 97-II	333
no dropout	254
not men aged 41-55 ( $\Rightarrow$ <i>treatment groups</i> )	225
→ not in KOMVUX in 97-II	54,962
not men aged 41-55 ( $\Rightarrow$ <i>control groups</i> )	38,670

# Measurement strategy

- Different treatment-control comparisons
  - by age groups and gender
  - by treatment period
- 1. Conditional DID (logit for employment)
  - stratified propensity score matching
  - within strata: DID
  - t0: 1994 (otherwise too large Ashenfelter's dip)
  - t1: 2000 (latest available data)
- 2. Pooled nonlinear parametric regression (income)
  - all groups and treatments
  - all income points from 1991 to 2000
  - allows for estimating Ashenfelter's dip
  - allows for gradual effect for the program

# Estimation results for income 0.

Raw income series for treatment and control groups

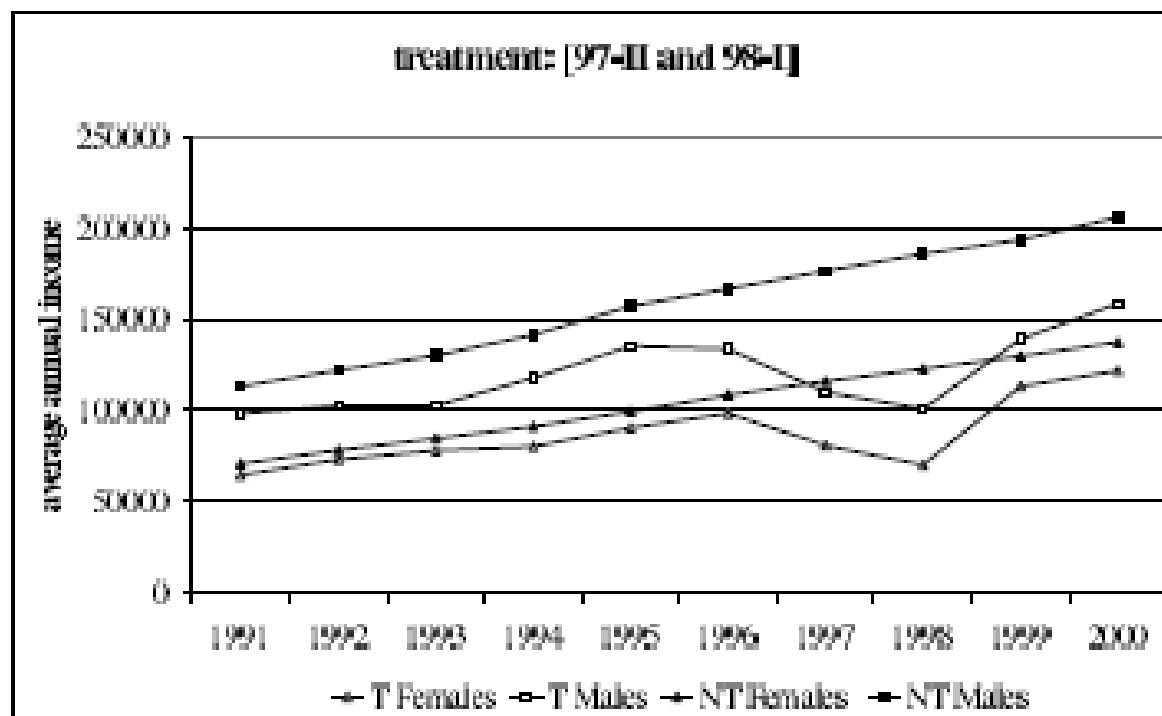


Figure 2: Average annual income for treated and controls aged 25–40, concerning treatment in [97-II and 98-I].

# Estimation results for income 1.

Table 2: *Estimates of the average treatment effects on the treated, concerning participation in KOMVUX in 97-II, using 1994 and 2000 as pre- and post-program years and annual income as outcome measure (in 1000 SEK in the year 2000).*

type of individual	ATET	(standard error)	$n_{treated}$	$n_{control}$
Male, aged 25–40	10.5	(13)	69	15061
Female, aged 25–40	0.6	(10)	96	9163
Female, aged 41–55	-3.6	(13)	60	14446

# Estimation results for income 2.

parameter	estimate	(standard error)
<i>constant term <math>c_0</math></i>		
all	36.6*	(11)
additional for male, aged 25–40	73.8*	(12)
additional for female, aged 25–40	25.2*	(12)
<i>time trend</i>		
$c_1$ male, aged 25–40:	8.8*	(0.6)
$c_1$ female, aged 25–40:	7.5*	(0.6)
$c_1$ female, aged 41–55:	43.1*	(4.3)
$c_7$ female, aged 41–55:	2.16*	(0.4)
<i>pre-program difference of treated <math>c_2</math></i>		
Male, aged 25–40	-27.7*	(3.3)
Female, aged 25–40	-4.3	(3.3)
Female, aged 41–55	0.0	(3.3)
<i>Ashenfelter dip</i>		
$c_3$ long treatment period	-50.1*	(4.0)
$c_4$ short treatment period	-19.8*	(3.5)
$c_5$ width of the dip	0.63*	(0.1)
<i>treatment effect <math>c_6</math></i>		
Male, aged 25–40	-6.0	(10)
Female, aged 25–40	-14.6	(10)
Female, aged 41–55	-1.4	(10)
R-squared	0.91	
# observations	180	

Note: \* denotes significance at the 5% level.

# Estimation results for employment

Table 4: *Estimates of the treatment effect on the employment probability, concerning participation in KOMVUX in 97-II, using 1994 and 2000 as pre- and post-program years.*

type of individual:	female, aged 25–40	female, aged 41–55	male, aged 25–40
fraction $U \rightarrow E$ among treated	0.74 (0.045)	0.39 (0.068)	0.90 (0.037)
number of transitions among treated	94	51	63
fraction $U \rightarrow E$ among controls	0.68 (0.0064)	0.42 (0.0062)	0.74 (0.0044)
number of transitions among controls	5347	6285	9977
probit estimate of $\beta_0$	0.47 (0.018)	-0.21 (0.016)	0.64 (0.013)
probit estimate of $\delta$	0.19 (0.14)	-0.064 (0.18)	0.67 (0.22)

# Conclusions of the evaluation study

- Insignificant average treatment effects on income
- Significant positive average treatment effects on employment probability for men
- How can we reconcile the two ?
  - Sample for income estimates may be too small
  - Swedish wages may not reflect productivity (at low end)
  - Program may serve more as job search assistance than productivity-enhancing training
  - Long DID ignores lost experience for treated
- Other interesting findings
  - Strong (negative) selection into the program for men
  - Large and long Ashenfelter dip
  - Equilibrium effects are probably important

# Do I believe the results?

- Yes for  $ATE_1$ 
  - conditional DID assumptions are too strong
  - but not much more could be done on the program and data
  - results seem to be robust to functional form assumptions
  - the men versus women story sounds
- Not for equilibrium analysis
  - focuses on labor market only
  - demand adjustment is driven by higher frequency of medium skill worker - employer contacts and that is the incentive for employers to increase number of medium skill jobs
  - calibration results are quantitatively (although not qualitatively) sensitive to parameters