# Immigration

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FDPE Labor Economics
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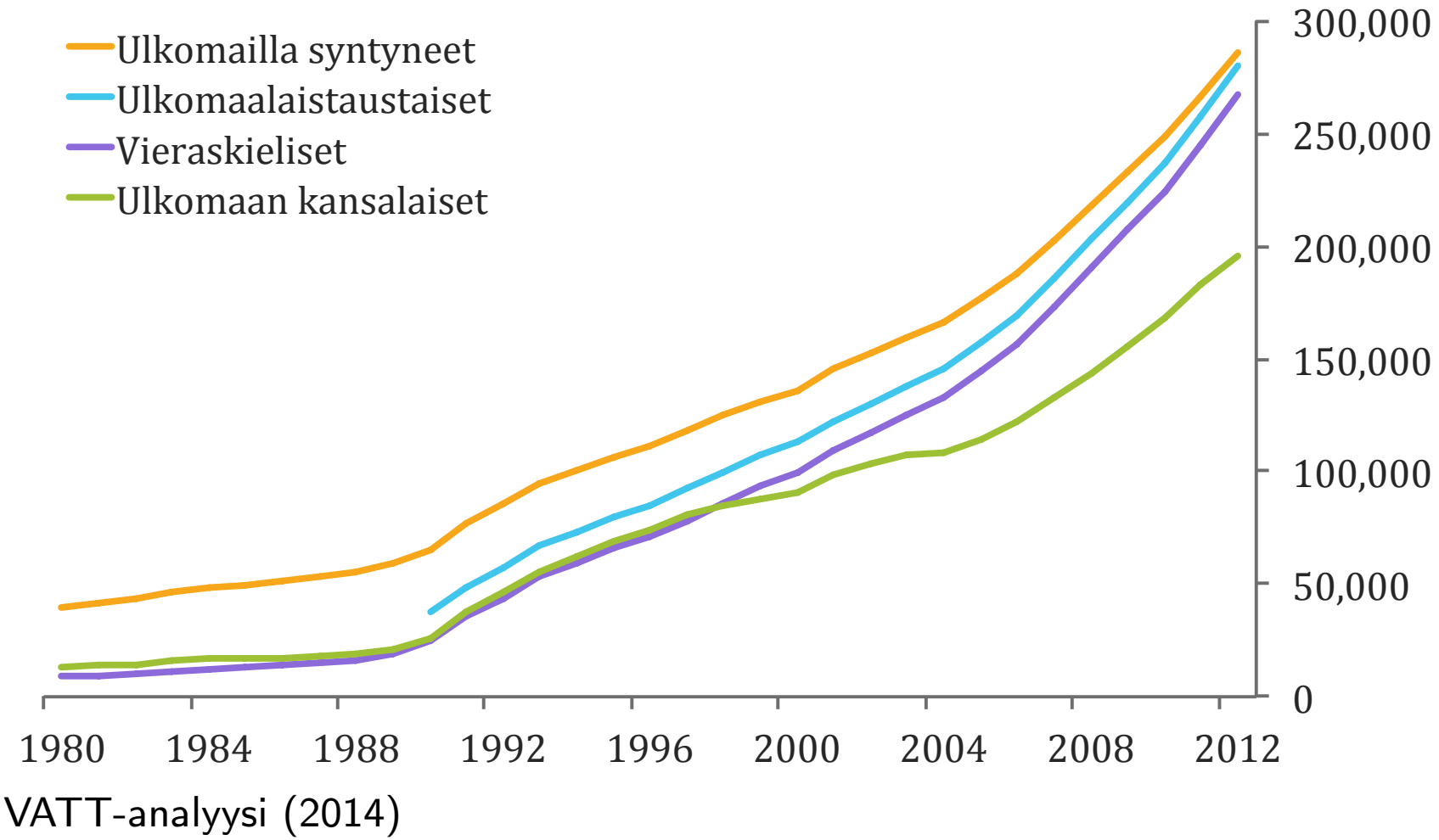
# Introduction

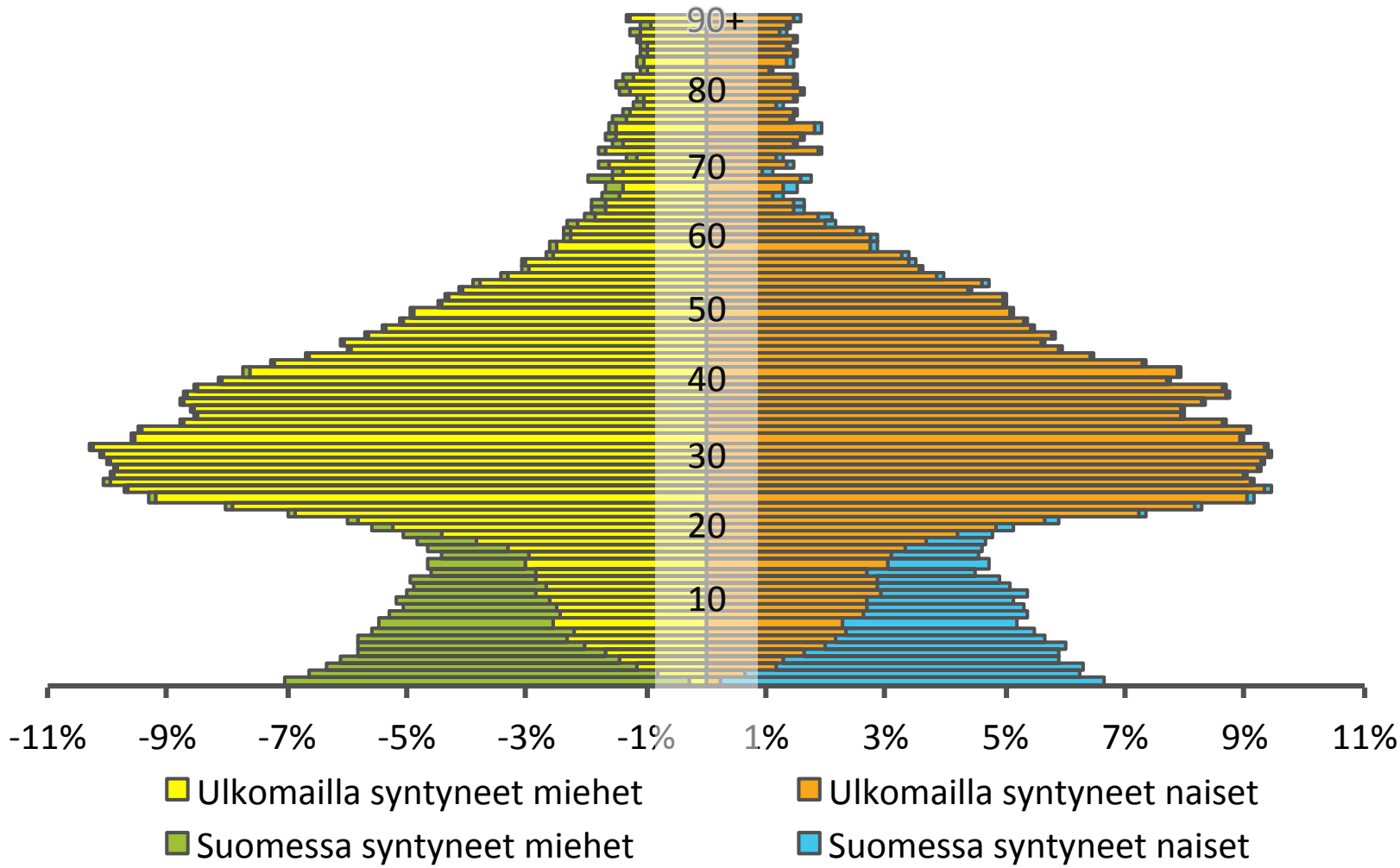
- Immigration is an important policy topic
  - much of the debate is about economic impacts → demand for economists from policy makers and media
- Migration largely driven by labor productivity differences
  - suggest that a more efficient allocation of labor would increase world output ... and have important distributional effects
- Immigration vs. trade
  - almost identical in simple economic models (FPE)
  - BUT: imports do not vote, do not collect welfare benefits nor become your neighbors/son-in-laws

# Immigrants in Finland




VATT-analyysi (2014)

# Immigrant share by age group, Finland 2012




VATT-analyysi (2014)

# Today

- This lecture will provide an overview of the two topics that have dominated economics research on immigration
  - "assimilation" to the host country labor markets
  - impact on native wages and employment
- I will also talk about evaluating integration policies
  - an example of work that has worked quite well both academically and in affecting (Finnish) policy debate
- Other areas of active research (not discussed today)
  - impact on host country prices, technology adoptation, industry mix, public finances; impacts on the sending countries; returns to immigration for the migrants; native attitudes; segregation and ethnic networks; children of immigrants

# Assimilation: Classics

- Chiswick (1978, JPE) using 1970 U.S. Census data
  - "Although immigrants initially earn less than the native born, their earnings rise more rapidly with U.S. labor market experience, and after 10 to 15 years their earnings equal, and then exceed, that of the native born"
- Borjas (1985, JoLE) using 1970 *and* 1980 U.S. Census data
  - "[...] within-cohort growth is significantly smaller than the growth predicted by cross-section regressions for most immigrant groups. This differential is consistent with the hypothesis that there has been a secular decline in the "quality" of immigrants admitted to the United States."

# Assimilation: Classics

## Borjas (1994, JEL)

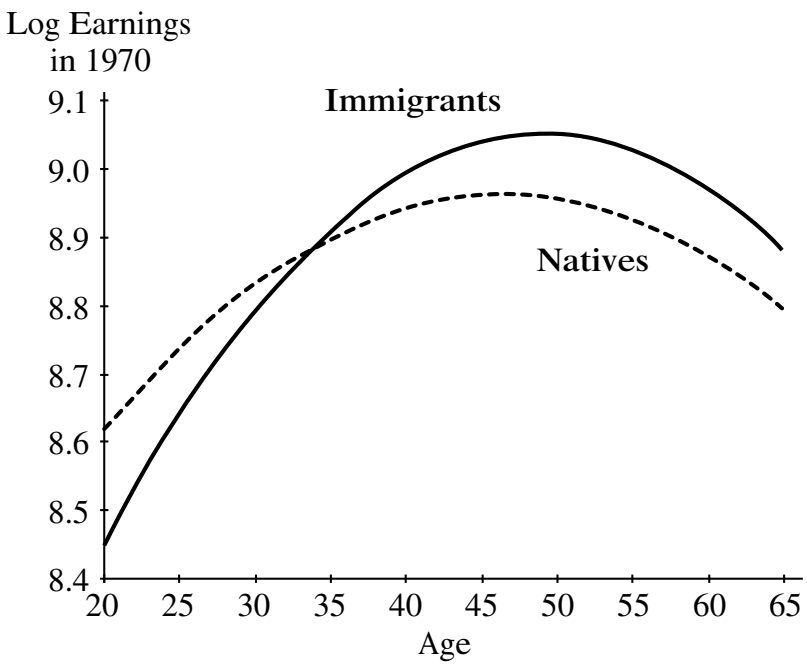



*Figure* 1. The Cross-Section Age-Earnings Profiles of Immigrants and Natives in the United States, 1970

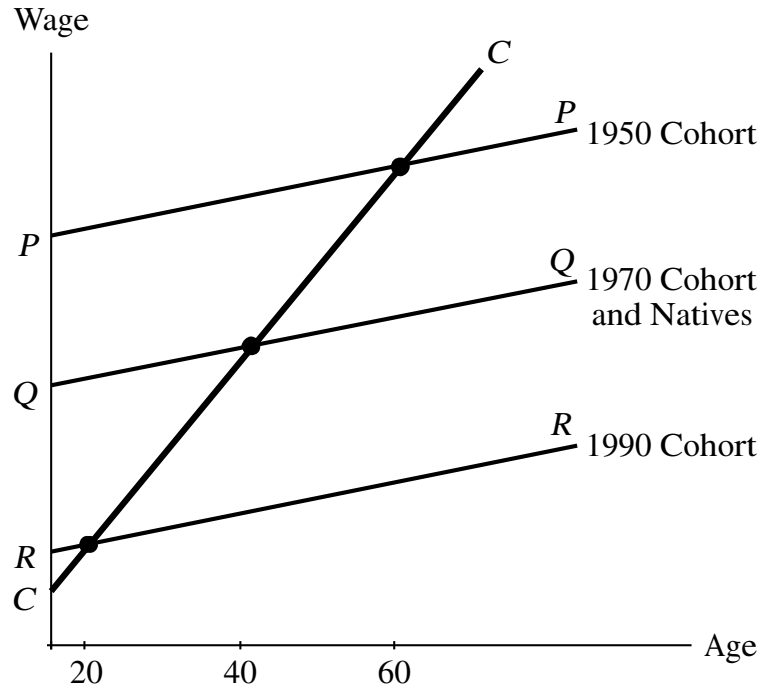



*Figure* 2. Cohort Effects and the Cross-Section Age-Earnings Profile of Immigrants

The left panel presents predictions for immigrants who enter the United States at age 20 based on Chiswick's (1978) results. The right panel presents Borjas's (1985) proposed interpreation of associations drawn from a single cross-section.

# Assimilation: Estimation

## Borjas (1999, HB)

- Estimation equation for immigrants

$$y_{jt} = YSM_{jt}\alpha + C_{jm}\beta_m + A_{jt}\delta^I + \gamma_t^I + \epsilon_{jt}$$

where $y_{jt}$ is the log wage of person $j$ at time $t$, $YSM$ is years-since-migration (polynomials or dummies), $C_{jm}$ is year of arrival fixed-effects, $A_{jt}$ is age, and $\gamma_t$ are calendar year fixed-effects.

- Similarly, the estimation equation for natives is

$$y_{jrt} = A_{jt}\delta^N + \gamma_t^N + \epsilon_{jt}$$

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- Questions
  - are the parameters identified (in mechanical sense)?
  - other things you worry about?

# Assimilation: Challenges

## Borjas (1999, HB)

- Years-since-migration, calendar year and year of arrival are perfectly collinear
  - typical solution: assume $\gamma_t^N = \gamma_t^I$, i.e. use the natives to identify the calendar year effects
  - Bratsberg, Barth, Raaum (2006, Restat): local unemployment allowed to have differential impact on immigrants and natives

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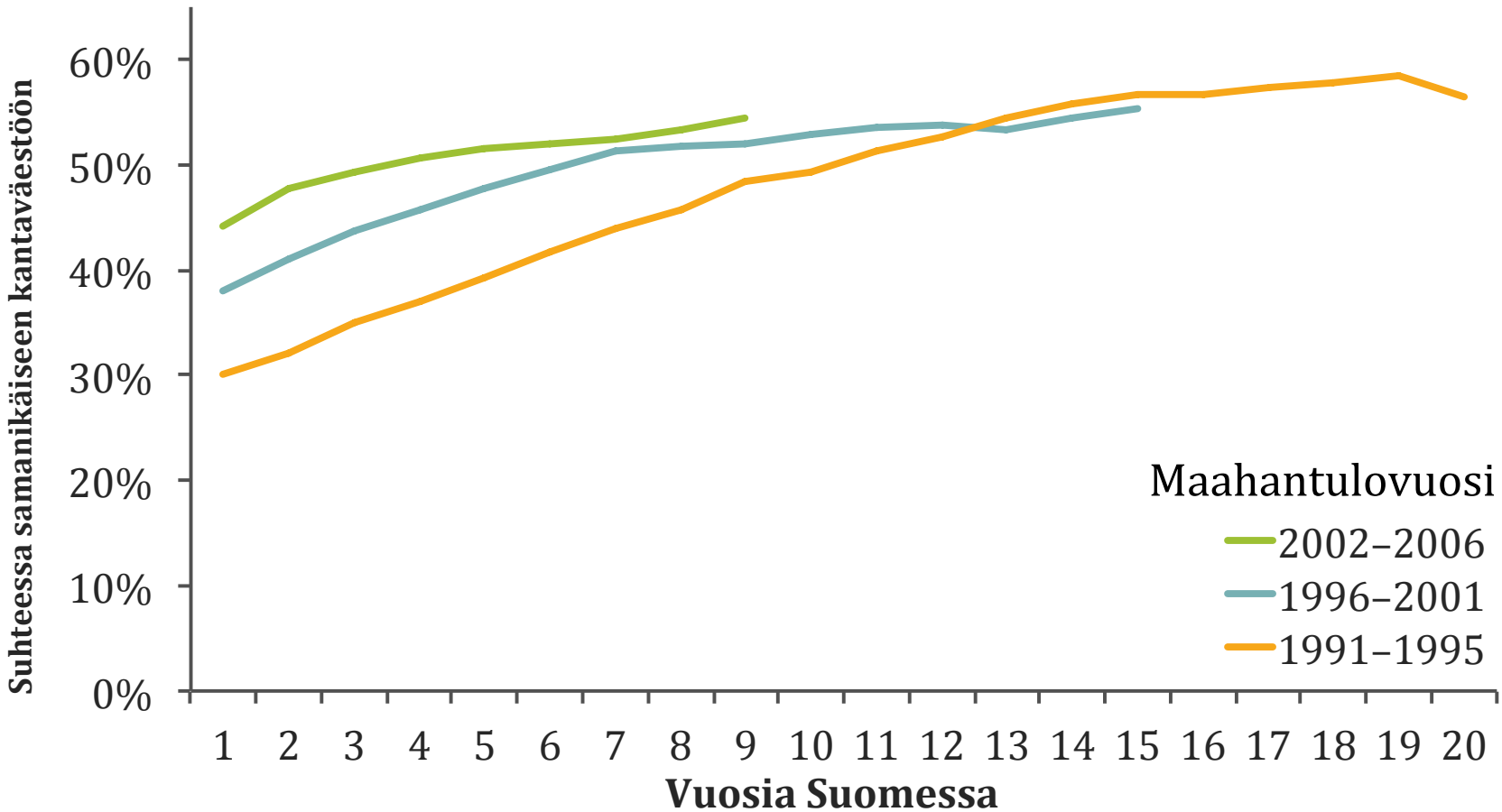
- Selection into employment
  - those finding employment later differ from those who find a job immediately
  - solution: examine annual earnings (including zeros)

# Assimilation to the Finnish labor markets

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# Integration policies: Finland's 1999 Reform

## Sarvimäki and Hämäläinen (forthcoming JOLE)

- New legislation into force in 1 May 1999
  - no new resources allocated to integration of immigrants
- Introduced "integration plans"
  - individualized sequence of training, subsidized work etc. based on the existing ALMP framework
  - obligatory for recently arrived immigrants who are unemployed or collect welfare benefits (non-complience sanctioned)

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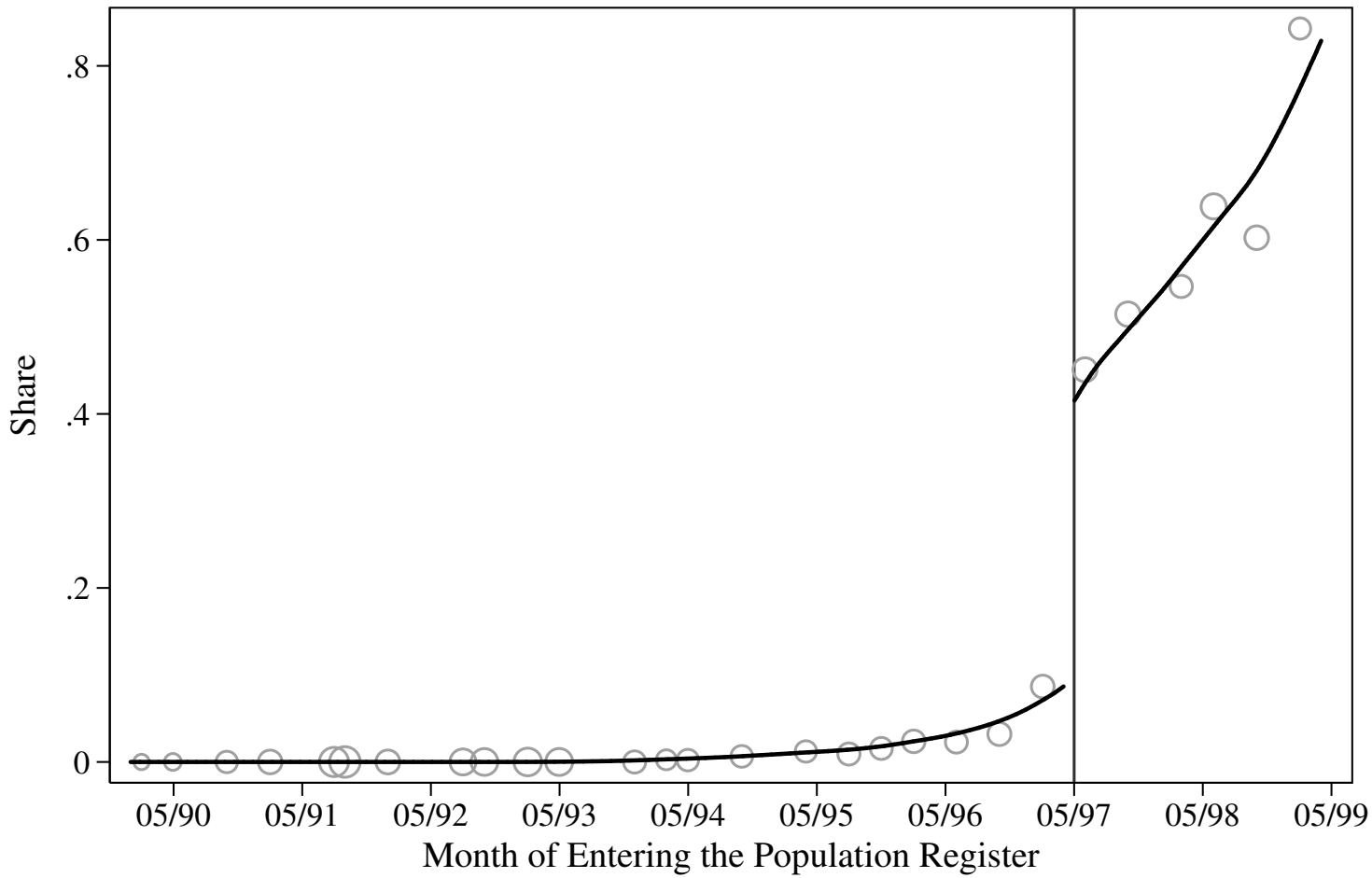
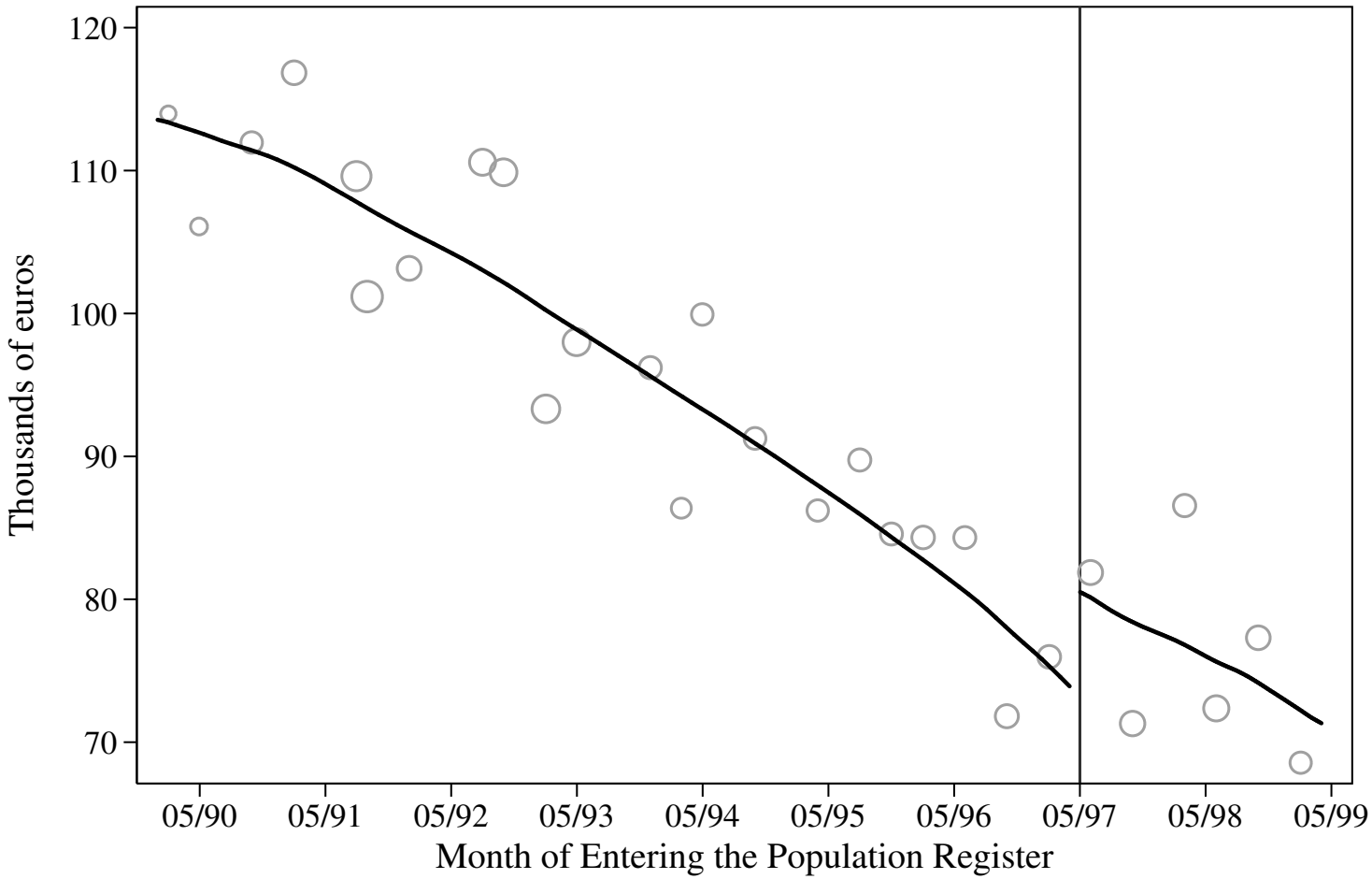
- Source of identification
  - those who arrived before 1 May 1997 exempted

# First-Stage: Integration Plans by Month of Arrival




Share of immigrants receiving an integration plan by month of entering the population register. The lines represent local linear estimates using the edge kernel and the optimal bandwidth selection algorithm of Imbens and Kalyanaraman (2012).

# Reduced form: Earnings by Month of Arrival




Total earnings between 2000–2009 by month of entering the population register. The lines represent local linear estimates using the edge kernel and the optimal bandwidth selection algorithm of Imbens and Kalyanaraman (2012).

# Main results

| | Earnings | | Benefits | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Reduced Form | 7,286 | 7,238 | -2,785 | -2,684 |
| | (4,094) | (3,091) | (1,758) | (1,281) |
| First-Stage | 0.35 | 0.35 | 0.35 | 0.35 |
| | (0.02) | (0.02) | (0.02) | (0.02) |
| Local Average Treatment Effect (LATE) | 20,916 | 20,702 | -8,017 | -7,698 |
| | (11,891) | (9,107) | (5,103) | (3,681) |
| Additional covariates | no | yes | no | yes |
| Bandwidth (months) | 42 | 42 | 40 | 40 |
| First-stage F-statistic for the excluded instrument | 322.0 | 390.1 | 318.1 | 384.5 |
| Observations | 16,615 | 16,615 | 16,173 | 16,173 |

▸ robustness

# Interpretation: Who are the compliers?

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- First-stage: 1/3 of the immigrants arriving around May 1997
  - Probably a negatively selected
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- The correct baseline: $E\left[Y_i\left(0\right)|D_{i1} \geq D_{i0}, R_i = r_0\right]$
  - i.e. expected outcome without the treatment for the "compliers at the threshold". Turns out that it is identified as

$$\frac{\lim_{r \downarrow r_0} E\left[Y_i\left(1-D_i\right)|R_i = r\right] - \lim_{r \uparrow r_0} E\left[Y_i\left(1-D_i\right)|R_i = r\right]}{\lim_{r \downarrow r_0} E\left[\left(1-D_i\right)|R_i = r\right] - \lim_{r \uparrow r_0} E\left[\left(1-D_i\right)|R_i = r\right]}$$

(Imbens and Rubin, 1997; Abadie, 2003; Frandsen et al. 2012)

- Estimated with standard RD techniques, but using $Y_i\left(1-D_i\right)$ as the outcome and $\left(1-D_i\right)$ as the treatment variable

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| Local Average Treatment | 20,916 | 20,702 | -8,017 | -7,698 |
| Effect (LATE) | (11,891) | (9,107) | (5,103) | (3,681) |
| Compliers' expected outcomes | 44,445 | 44,420 | 61,249 | 60,810 |
| in the absence of the treatment | (9,962) | (8,900) | (4,314) | (3,049) |
| LATE relative to the baseline | 0.47 | 0.47 | -0.13 | -0.13 |
| Additional covariates | no | yes | no | yes |
| Bandwidth (months) | 42 | 42 | 40 | 40 |
| First-stage F-statistic for | 322.0 | 390.1 | 318.1 | 384.5 |
| the excluded instrument | | | | |
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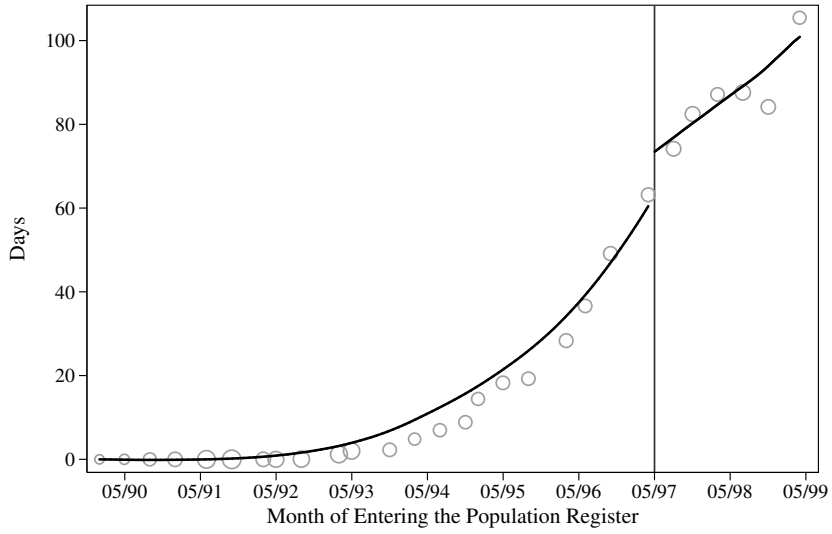
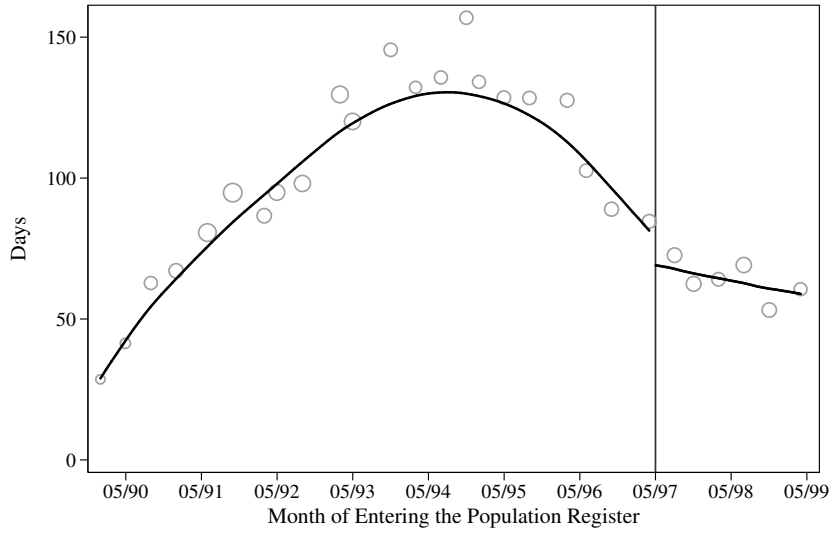
# Interpretation: What is the treatment?

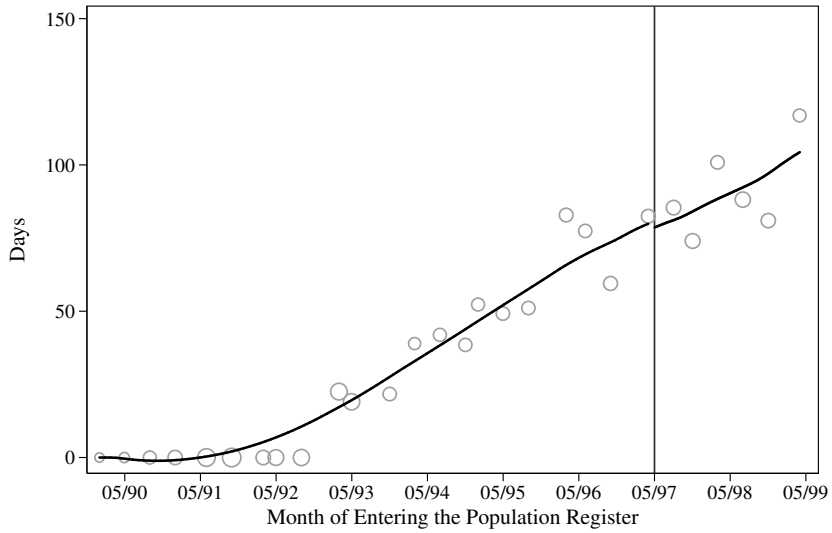
(a) Days in "Immigrant Training"



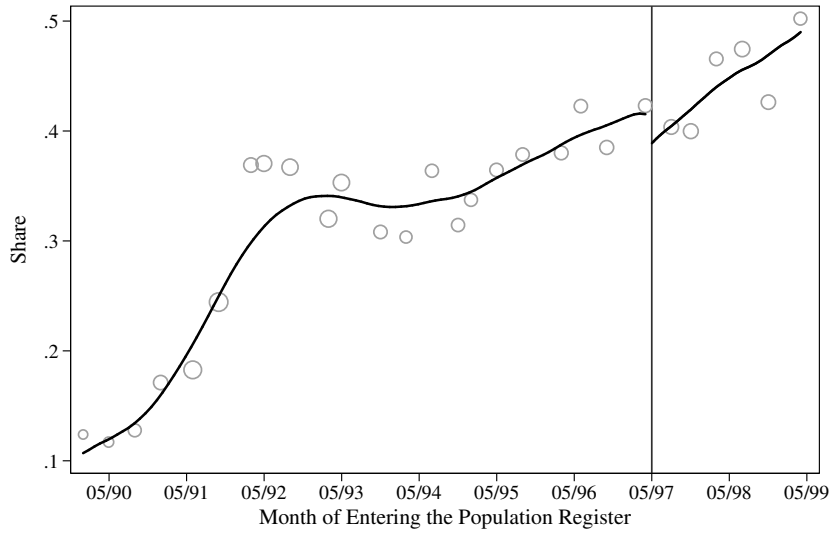

(b) Days in "Traditional Training"




(c) Days in Subsidized Job Placements




(d) Sanctions



# Integration policies: summary

- The Finnish reform
  - increased earnings, reduced benefits
  - had no impact on the total amount of training or sanctions
  - ... but affected the *content* of training
- General lessons: policy makers
  - cost-effective integration policies appear feasible
  - language training probably important
- General lessons: PhD students
  - bureaucrats sometimes create nice research designs
  - ... but *you* will have to recognize the opportunity

# Impact on natives: textbook model

- Case 1: Immigrants and natives have similar skills
  - decrease employment and wages of natives in the short run
  - ... but there is no long-run impact (capital adjusts)
- Case 2: Immigrants alter the skill mix
  - workers who are **gross substitutes** to immigrants **lose**
  - workers who are **gross complements** to immigrants **win**
    - gross complement = may be substitutes in production, but the scale effect exceeds the substitution effect
  - the winners win more than losers lose (immigration surplus)
  - empirical questions: who wins, who loses (and how much)?

# Estimating the Impact of Immigration

- Comparison of wages (or employment) across labor markets that have different immigrant shares

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- Comparison of wages (or employment) across labor markets that have different immigrant shares
- Hard to find valid treatment/control groups
  - immigrants move where wages high/grow fast
  - but work in occupations with low/stagnant wages
- Q: What is the ideal (hypothetical) experiment?

# Natural Experiments

- Mariel Boatlift (Card 1990, ILRR)
  - Apr. 1980, Cubans allowed to emigrate (through the port of Mariel)
  - Borders closed on Sept after 125,000 had left
  - Most went to the closest and most familiar city, Miami
    $\rightarrow$ Miami's labor force grew by 7 percent

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    $\rightarrow$ Miami's labor force grew by 7 percent
- Independence of former colonnies
  - Return migrants from Algeria (Hunt 1992, ILRR)
  - from Angola and Mozambique (Carrington and De Lima 1996, ILRR)
- Fall of the USSR
  - Mass migration to Israel (Friedberg 2001, QJE)
  - *Aussiedlers* to Germany (Glitz 2012 JOLE)
- Expansion of the European Union
  - Construction workers in Norway (Bratsberg and Raaum 2012, EJ)
  - Czech commuters to Germany (Dustmann, Schönberg, Sthuler, ongoing)

# Card (1990, ILRR)

| | The Mariel Flow | |
|---|---|---|
| | Before | After |
| Unemp. rate of blacks in | | |
| Miami | 8.3 | 9.6 |
| Comparison cities | 10.3 | 12.6 |
| Dif-in-Dif | **-1.0** | |

Card (1990) used Atlanta, Los Angeles, Houston, and Tampa-St. Petersburg to estimate *what would have happened* in Miami in the absence of the Mariel Boatlift.

# Card (1990, ILRR)

| | The Mariel Flow | | The Flow that did not Happen | |
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| | Before | After | Before | After |
| Unemp. rate of blacks in | | | | |
| Miami | 8.3 | 9.6 | 10.1 | 13.7 |
| Comparison cities | 10.3 | 12.6 | 11.5 | 8.8 |
| Dif-in-Dif | **-1.0** | | **+6.3** | |

Card (1990) used Atlanta, Los Angeles, Houston, and Tampa-St. Petersburg to estimate *what would have happened* in Miami in the absence of the Mariel Boatlift. In their 1999 Handbook chapter, Angrist and Krueger illustrate the limitations of Card's research desig using a second Mariel Boatlift in 1994 that *almost* took place (the Clinton administration ordered the Navy to divert the would-be immigrants to a base in Guantanamo Bay). There is a subtantial "impact" due to this "natural experiment".

# Problems with the spatial correlations approach

- Control group may not be valid
  - e.g. the Flow that did not happen
- Control areas may be affected by the treatment
  - trade (Rybczynski Theorem)
  - internal migration
  - capital flows

# Borjas (2003, QJE):The Labor Demand Curve *Is* Downward Sloping

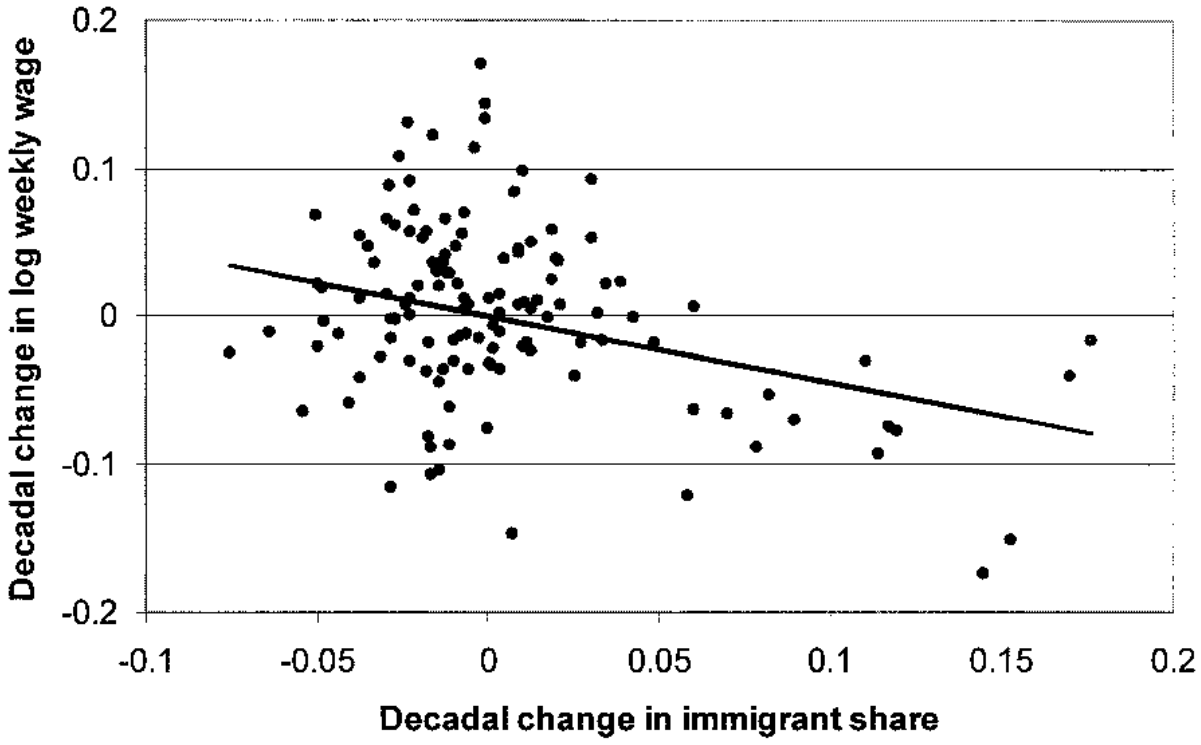


FIGURE II

Scatter Diagram Relating Wages and Immigration, 1960–2000

Each point in the scatter represents the decadal change in the log weekly wage and the immigrant share for a native education-experience group. The data have been adjusted to remove decade effects. The regression line in the figure weighs the data by $(n_0 n_1)/(n_0 + n_1)$, where $n_0$ is the sample size of the cell at the beginning of the decade, and $n_1$ the sample size at the end. The slope of the regression line is $-.450$, with a standard error of .172.

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- Defines labor markets by age and education at *national* level
  - 10% increase in labor supply $\rightarrow$ 3–4% decline in wages

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- Defines labor markets by age and education at *national* level
  - 10% increase in labor supply $\rightarrow$ 3–4% decline in wages
- Problems (Card 2009, Ottaviano and Peri 2010)
  - skill-bias technological change could lead to similar results
  - results sensitive to how education is defined

# Mass Migration to Israel (Friedberg, 2001 QJE)

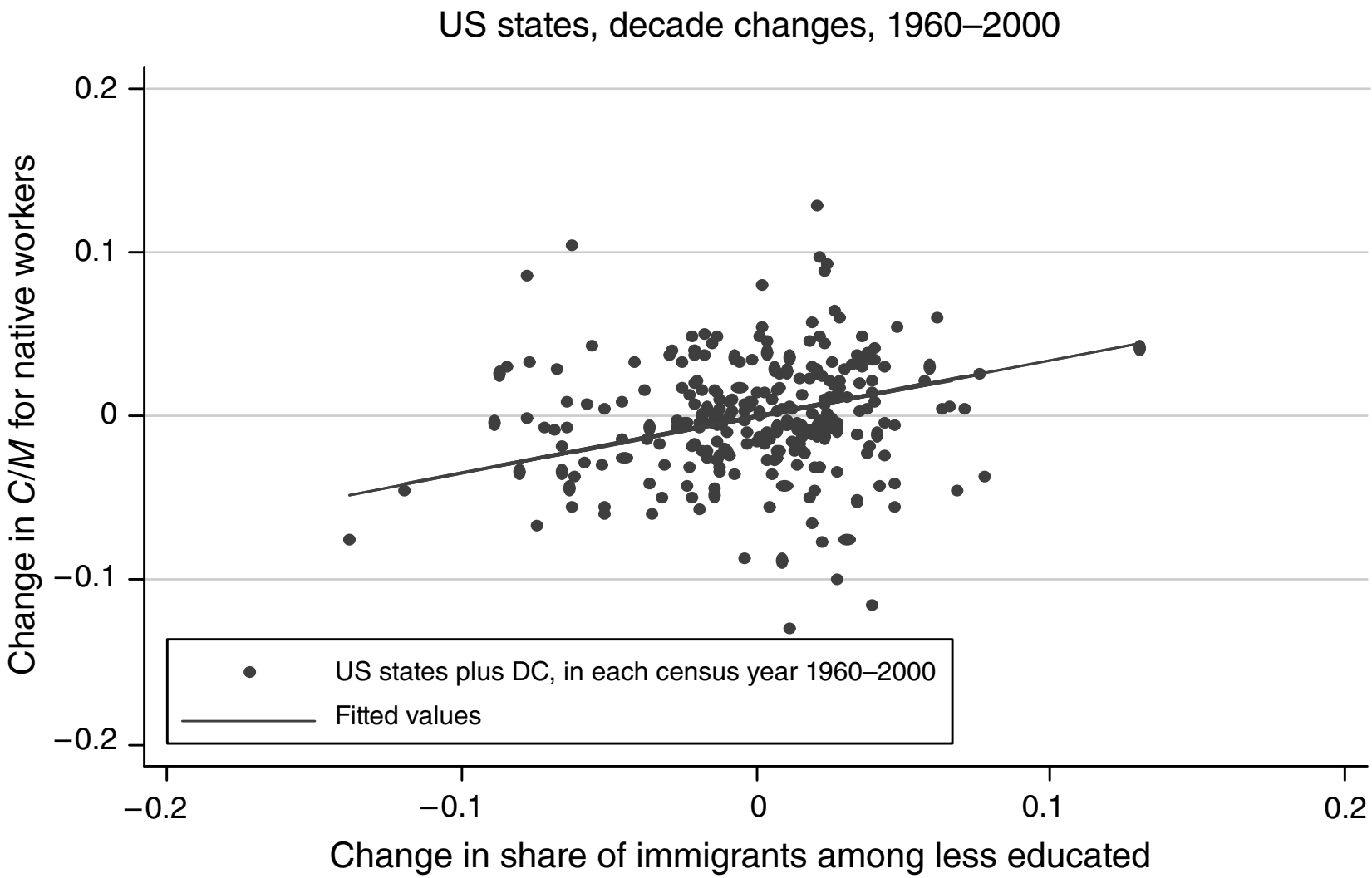
- Collapse of the Soviet Union $\rightarrow$ mass migration to Israel
  - increased the population of Israel by 13.6% in 1989–1995
  - mostly high-skilled workers (physicians, engineers etc)
- Identification strategy
  - define labor markets by occupation
  - use occupation in fSU as an instrument for occupation in Israel
- The key identifying assumption
  - occupational composition of Soviet immigrants independent of time-variant shocks affecting wages/employment at occupational level in Israel
- Main finding
  - "no adverse impact of immigration on native outcomes"
  - in fact, the estimates are *positive* and partly significant

# Immigrant-Native Complementarity

- Friedberg's results suggest immigrants and natives are complements even *within occupation*
  - Sussman and Zakai (1998): Russian physicians confined to generalists positions $\rightarrow$ Israeli physicians promoted to fill the higher-paying ranks of the health care system
- Systematical examination by Peri and Sparber (2009, AEJ: Applied) and D'Amuri and Peri (forthcoming, JEEA)
  - Immigrants replace "tasks", not workers
  - Immigrants typically supply manual skills $\rightarrow$ push natives to (higher-wage) jobs requiring communication skills

# Immigrant-Native Complementarity

## Peri and Sparber (2009, AEJ: Applied)



# Immigration vs. offshoring

## Ottaviano, Peri and Wrigth (forthcoming, AER)

- Examine the impact of immigration and offshoring on the employment of US *manufacturing* workers
- Main argument:
  - "immigrants and natives do not compete much with one another due to the fact that they tend to perform tasks at opposite ends of the task complexity spectrum, with offshore workers performing the tasks in the middle."
  - "both immigration and offshoring improve industry efficiency, thereby creating new jobs, some of which go to natives."

# Immigration vs. offshoring: Basic facts

## Ottaviano, Peri and Wrigth (forthcoming, AER)

1. no association between the *shares* of immigrant and native workers across 58 manufacturing industries
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3. native employment growth positively associated with immigrant employment growth (but not associated with offshore emploment growth)
4. immigrants overprepresented in low complexity occupations
5. increase in offshore workers associated with increasing native job complexity and decreasing immigrant job complexity

# Immigration vs. offshoring: Model

## Ottaviano, Peri and Wrigth (forthcoming, AER)

- Key assumption
  - offshore workers specialize in tasks of intermediate complexity
- Prediction 1: impact of a decline in immigration costs
  - task upgrading of immigrants (replace offshore workers)
  - no impact on natives
- Prediction 2: impact of a decline in offshoring costs
  - task upgrading of natives
  - task downgrading of immigrants
- Prediction 3: efficiency gains
  - if strong enough, employment *levels* may increase for everyone

# Immigration vs. offshoring: Estimates

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- Aim: test whether the model predictions hold
- OLS estimates likely to be biased $\rightarrow$ need instruments
  - offshoring: changes in tariffs (affect intermediate inputs differently across industries)
  - immigration: initial presence of immigrants from different countries in an industry

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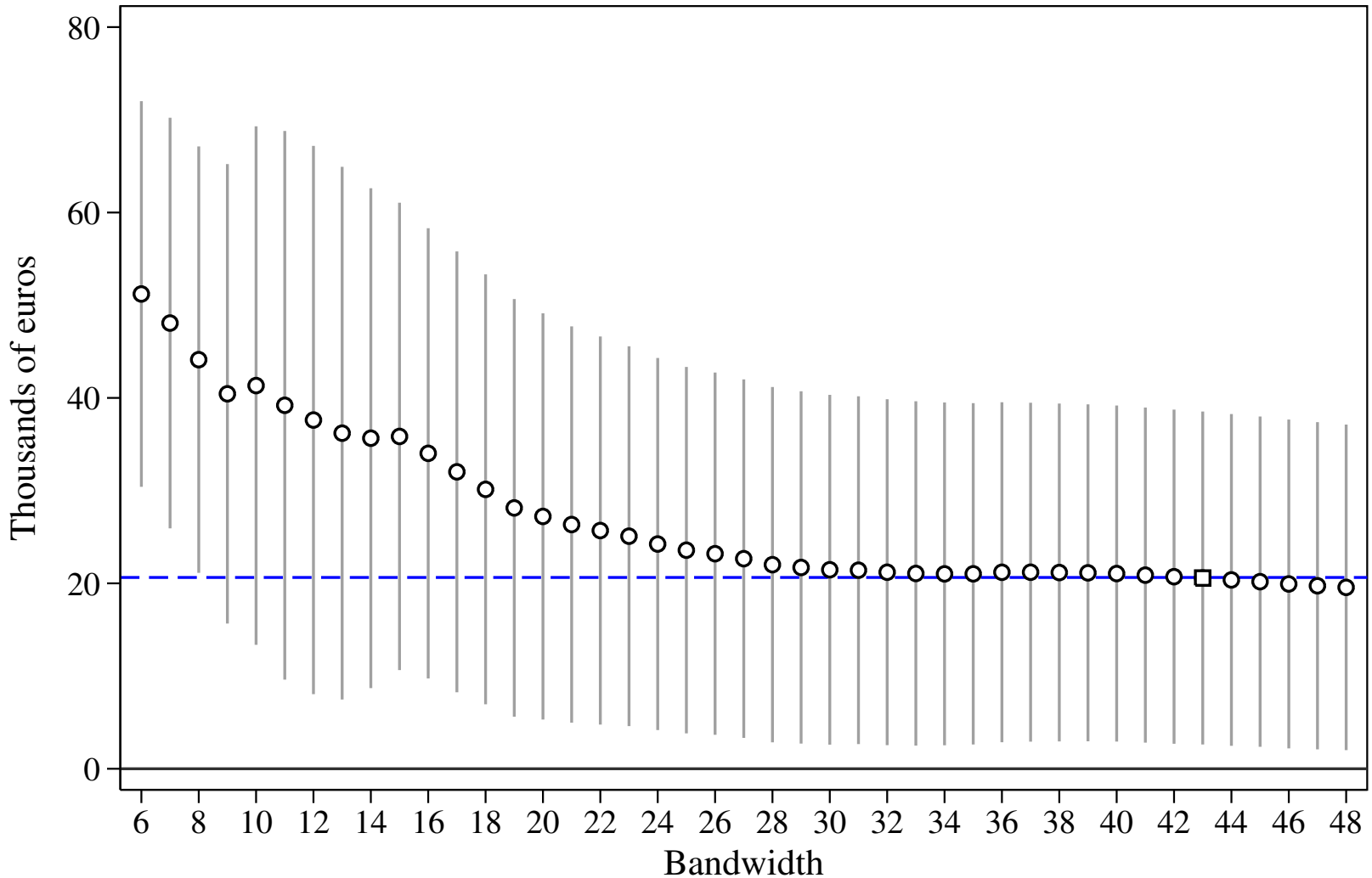
- Result 1: easier offshoring
  - employment *shares* of native and immigrant workers decrease
  - no impact on employment levels
- Result 2: easier immigration
  - employment share of offshore workers decrease
  - no impact on native employment share
  - positive impact on native employment level

# Impact on natives: summary

- Basic models suggest that immigration hurts some and benefits others
  - but *how many* are hurt and *how much* remains controversial (see Lowenstein: The Immigration Equation. *New York Times Magazine*)
- Impact on native wages/employment may be muted because
  - economies adjust in many ways (employment, wages, production structure, technology)
  - immigrants and natives are not perfect substitutes (even within narrow education/occupation categories)

# Appendix

# Robustness: Sensitivity to bandwidth



# Robustness: Discontinuities at Other Cutoffs