Gender differences in education

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Motivation

- Reversal of the gender gap in educational attainment in the past two or three decades
- Women dominate in most industrialized countries:
  1. Secondary school graduation
  2. Enrollment in tertiary education
  3. Tertiary graduates
- Coincides with increasing returns to education and the trend of labor market polarization

Motivation

- Aim of this paper:
  1. Overview of the trends in gender differences in education
  2. Cross-country analysis of potential causes
  3. Discussion of labor market implications

Changing gender differences in educational attainment

- Stock vs. flow measures of educational attainment
- Barro and Lee data
- Women have on average more years of education in:
  1. 11 countries (out of 146) in 1950
  2. 43 countries in 2010
- Wome are in majority among the university educated in:
  1. 7 countries (out of 146) in 1950
  2. 64 countries in 2010

Changing gender differences in educational attainment

- Gender differences are more dramatic in the flow measures
- In OECD, men born 1975-1979 had more years of education than women only in Austria, Germany, Switzerland, and Turkey
- Men in 1975-1979 cohorts were in majority among university graduates only in Germany, Switzerland, and Turkey
- Globally the ratio of female to male students at the tertiary level is 1.03
- The ratio is well above one also in many large, non-OECD countries such as the Philippines, Iran, and Thailand

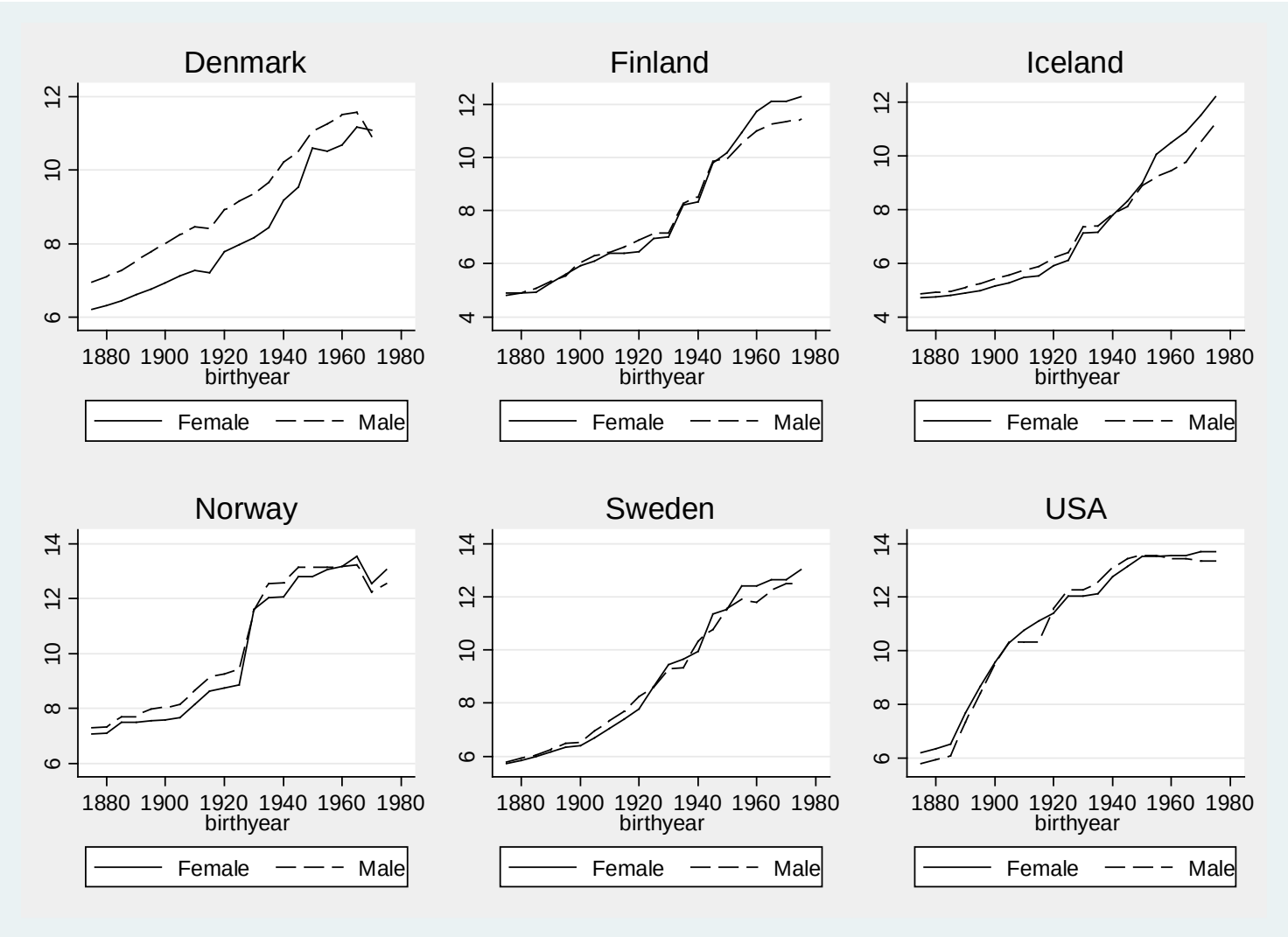


Figure 1: Average years of education by birth cohort and gender in the Nordic countries and in the United States. Source: Barr and Lee Data (2010)

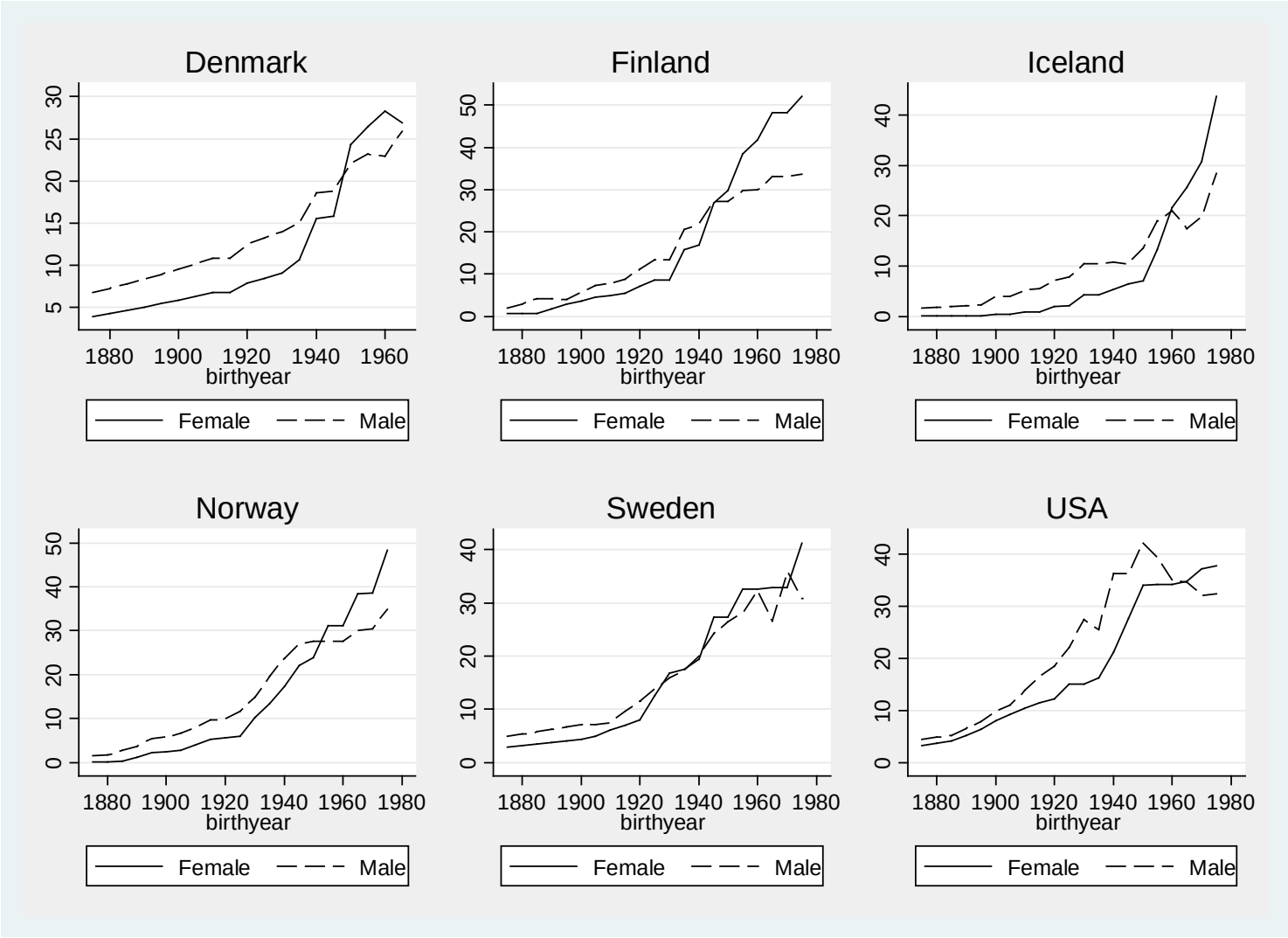


Figure 2: University completion rates by birth cohort and gender in the Nordic countries and in the United States. Source: Barro and Lee data (2010)

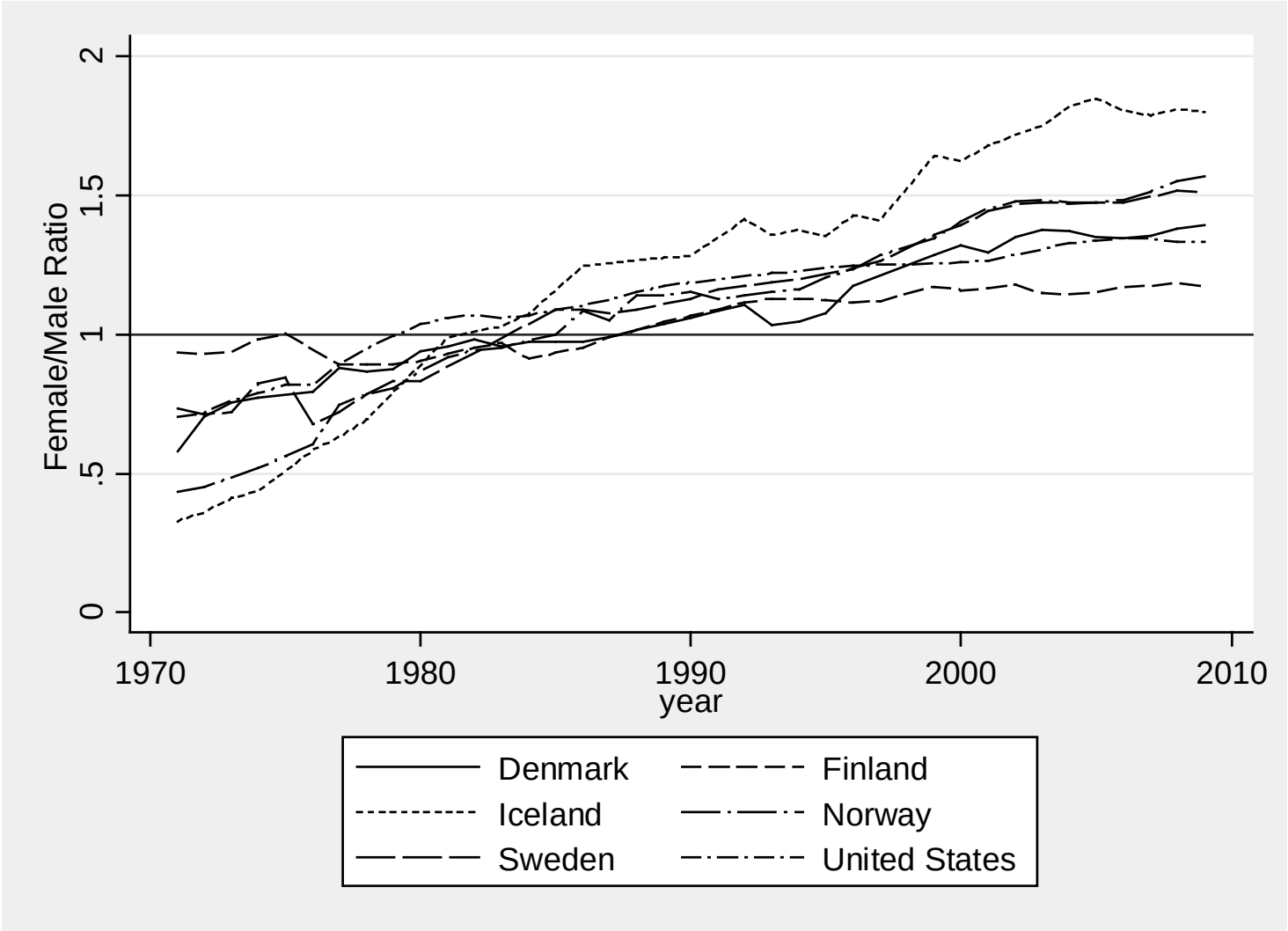


Figure 3: Ratio of female to male students at the tertiary level in the United States and Nordic countries, 1970-2009. Source: UNESCO

Changing gender differences in educational attainment

- There are signs that women are choosing increasingly similar majors as men: In the U.S the dissimilarity index dropped from 50 in 1970 to 20 in 1994
- Men have been traditionally overrepresented among the upper secondary school dropouts
- Women are in majority among the drop-outs only in Germany and Switzerland

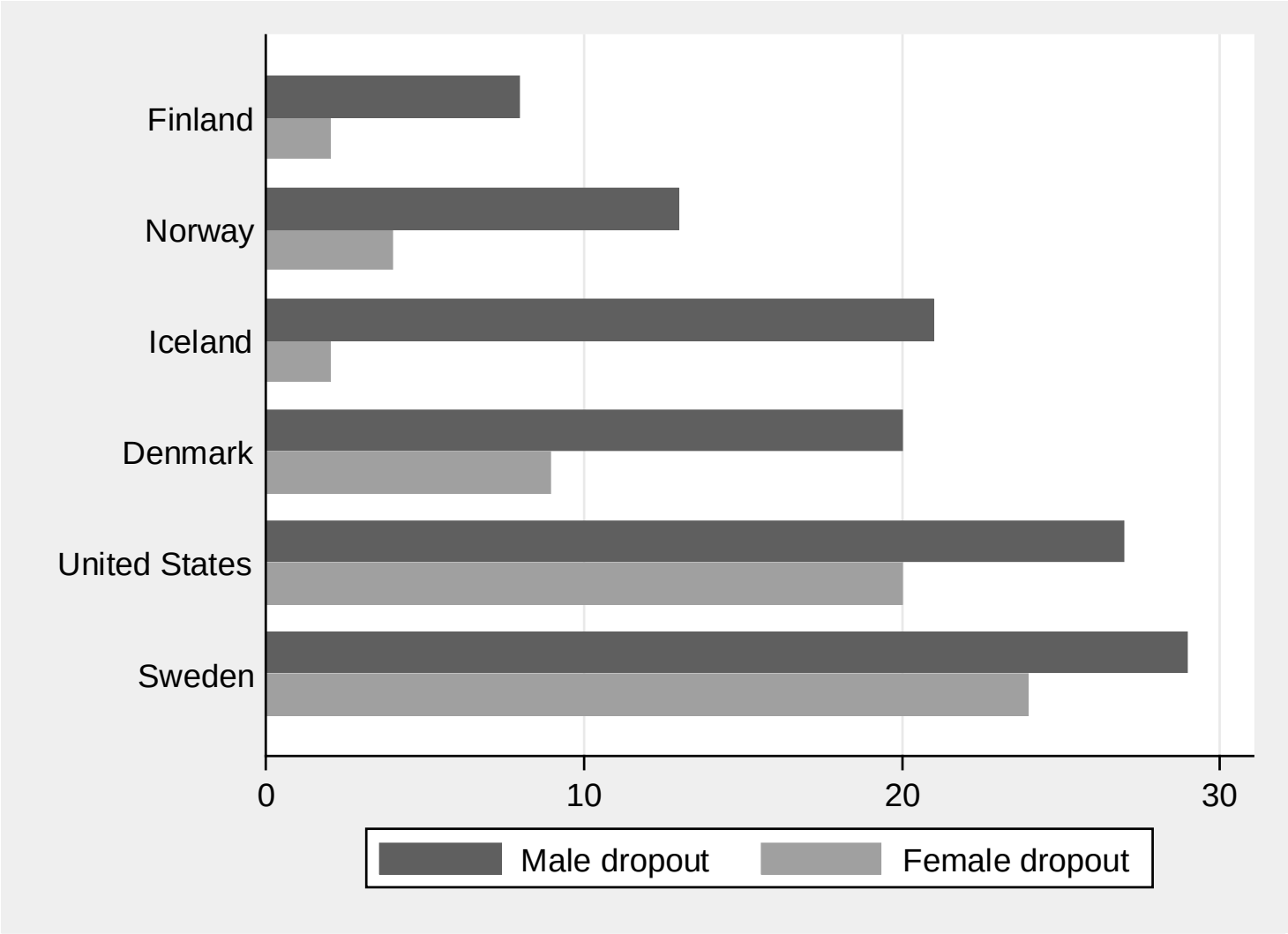


Figure 4: Fraction of cohort without upper secondary diploma by gender in the United States and Nordic countries in 2008. Source: OECD Education at glance 2011.

Causes of gender differences in education

- Standard textbook model of human capital investment
- Labor force participation is key for understanding gender differences in educational choice
- Goldin et al (2006) explanations for the U.S gap:
  1. Increasing labor force participation and delayed marriage
  2. Long-standing gender differences in preparedness for university education
- Any explanation of how U.S women have caught up with and suprassed men in educational attainment should be consistent with patterns found in other countries
- Cross-country patterns

Causes: Labor force participation

- Female labor force participation has become a norm in most indusrtrialized countries
- Composition of the female labor force participation changes: from negative to positive selection
- Cross-country pattern between female labor force participation and female/male enrollement ratio

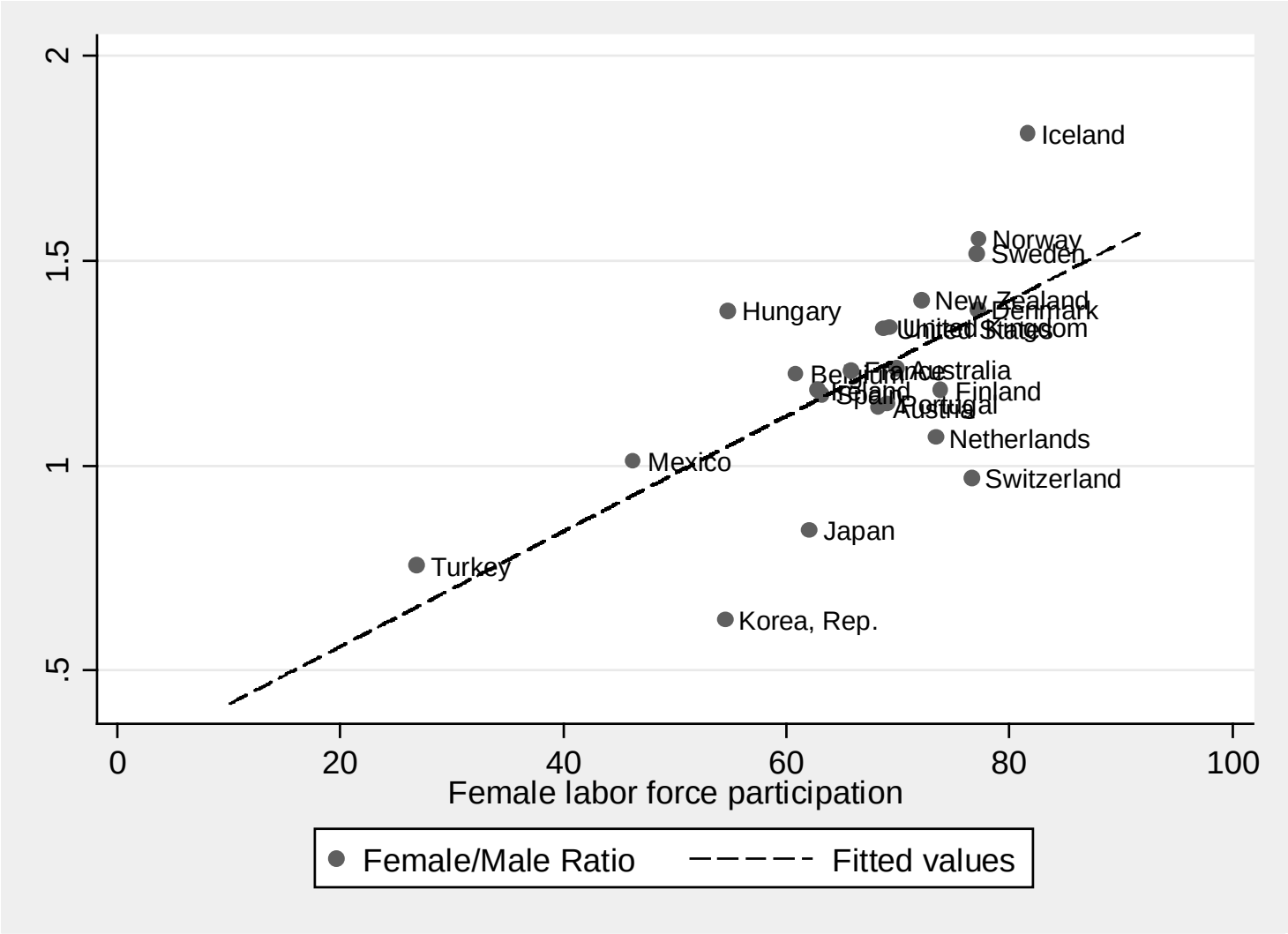


Figure 5: Female labor force participation and female/male ratio in tertiary enrollment, OECD countries in 2007. Source: World Bank.

Causes: Age at first marriage

- Postponement of marriage and increased divorce rates increased the value of economic independence for women
- Cross-country pattern between median age at first marriage and female/male enrollment ratio

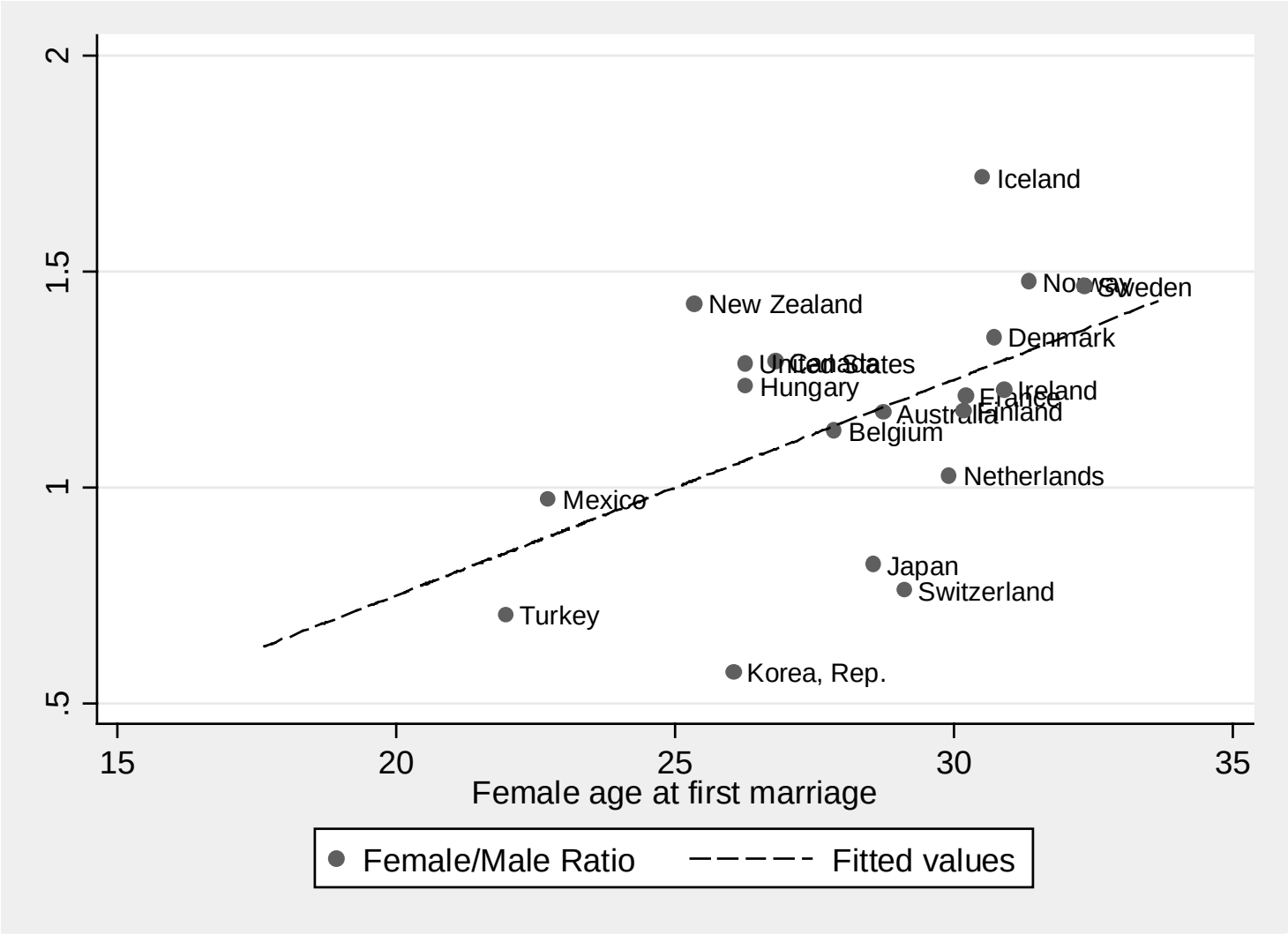


Figure 6: Median age at first marriage and female/male ratio in tertiary enrollment, OECD countries in 2002. Source: OECD Family Database.

Causes: University preparedness

- Girls have always been "better" at school
- Incidence of behavioral problems is higher among boys
- Gender differences in achievement tests in secondary school:
  1. Large differences in favor of females in reading
  2. Small difference in favor of males in math
- Gender gaps in achivement tests are highly correlated across subjects
- Cross-country pattern of average gender gap in test scores and female/male enrollment ratio

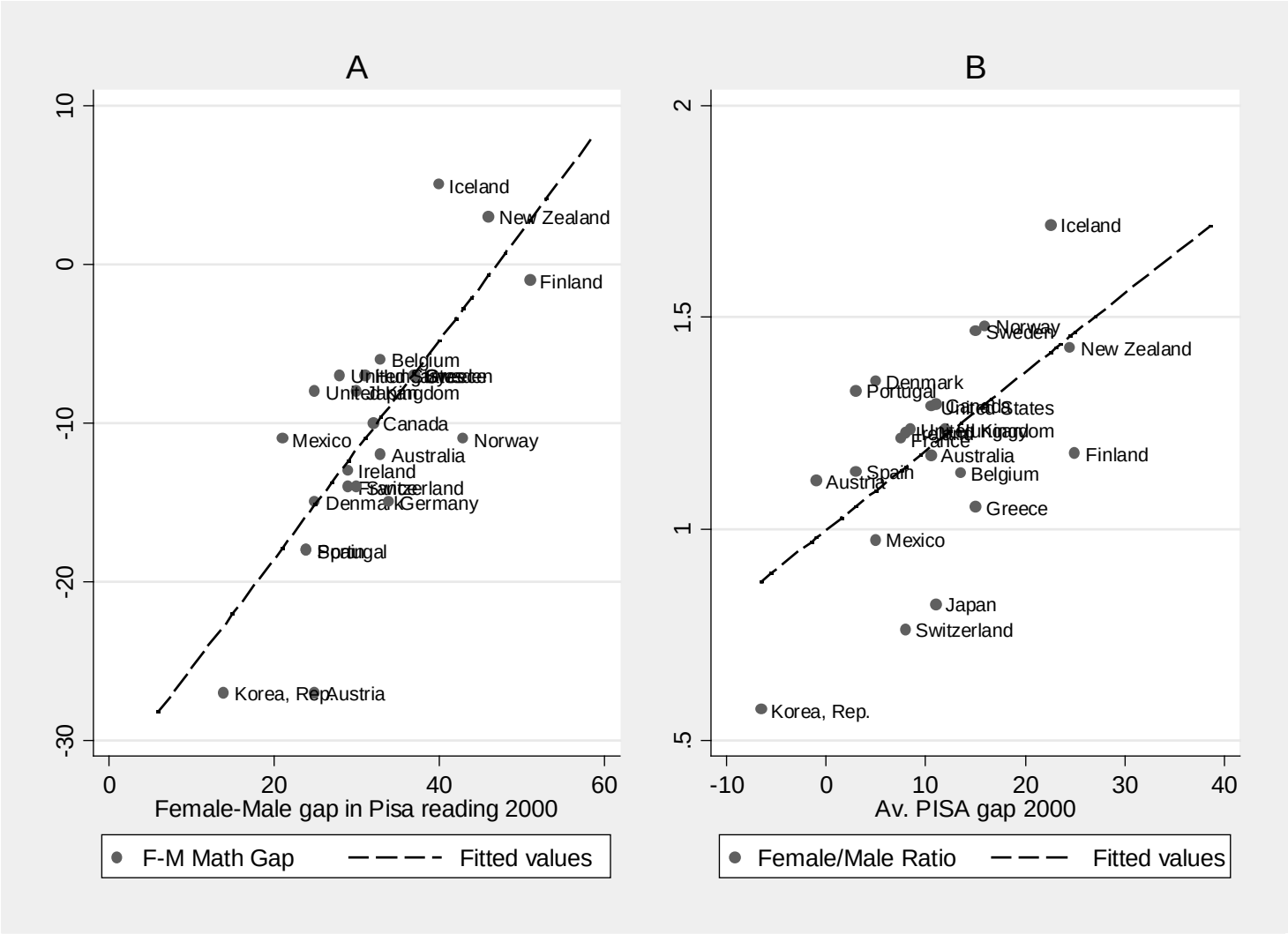


Figure 7: (A) Female-male gaps in reading and math in PISA 2000, (B) Average female-male gaps in PISA 2000 and female/male ratio in tertiary enrollment

Labor market consequences

- Gender gap in education partly reflects decelerating or stalling male education achievement
- This happens while returns to university education have increased
- Trend of employment and wage polarization
- Are men failing to adapt to the changes in labor market in recent decades?

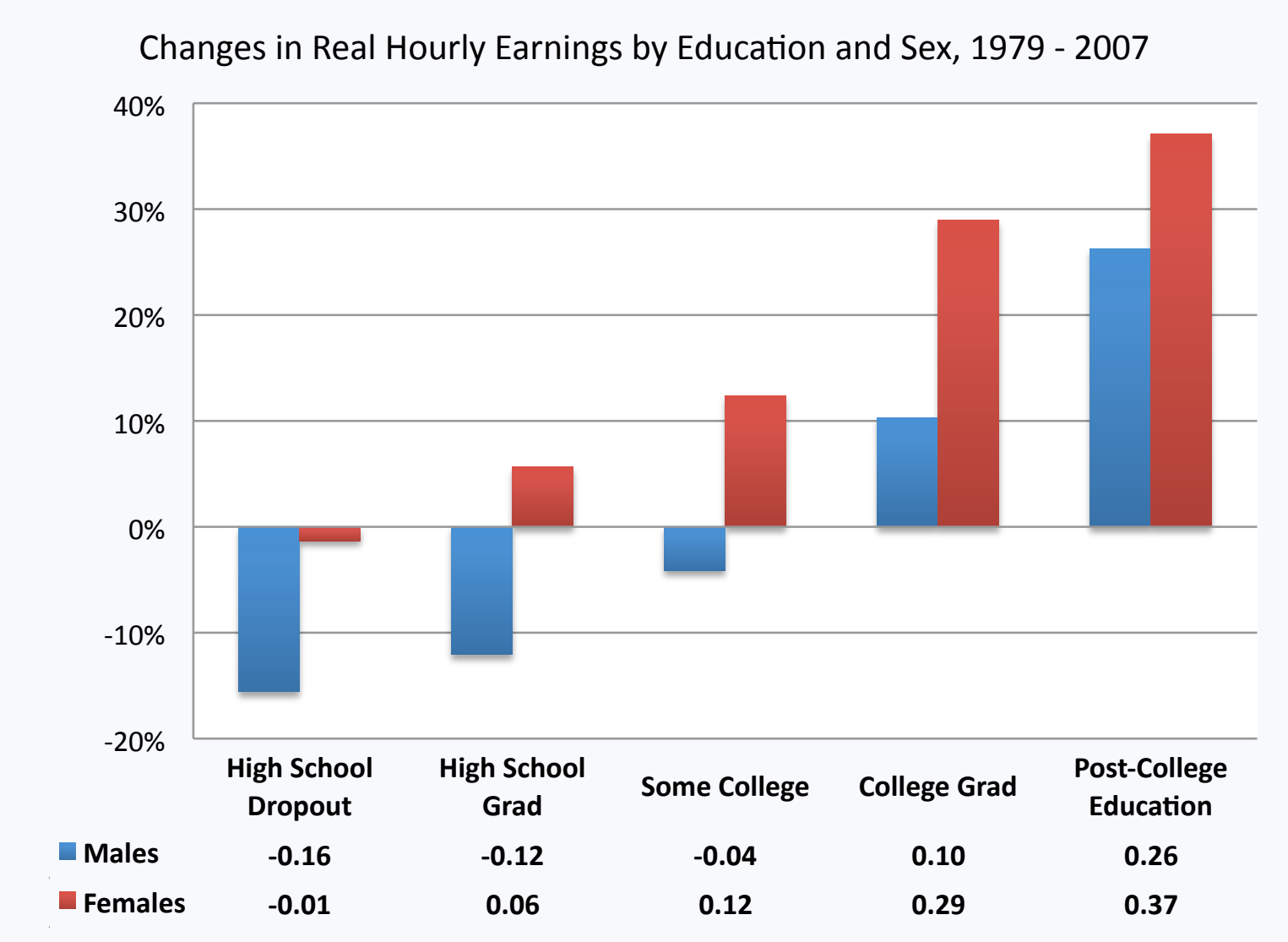
Consequences: Labor market polarization

- Employment has grown more in the low and high wage occupations relative to the middle
- Also wages have grown more in the low and high wage occupations relative to the middle
- Seems to be a common pattern in most industrialised countries
- Mostly likely explanation linked to techonlogical change and globalization

Consequences: Labor market polarization

- The disappearence of middle skill jobs has had different conseuqeunces for men and women
  1. Women have shifted predominantly to high skill professions
  2. Men have shifted more evenly to low and high skill professions
- Changes in wages show similar pattern
  1. U.S men 1997-2007: 10 percent decline for high school grads and 10 percent increase for college grads
  2. U.S women 1997-2007: 6 percent increase for high school grads and 30 percent increase for college grads
- Decreasing male and increasing female labor force participation
- In the U.S, the decline has been largest for the low educated men

When an Unstoppable Force Meets an Immovable Object: The Declining Occupational Stature of U.S. Males



Source: May/ORG CPS data for earnings years 1973-2009. The data are sorted into sex-race-age-

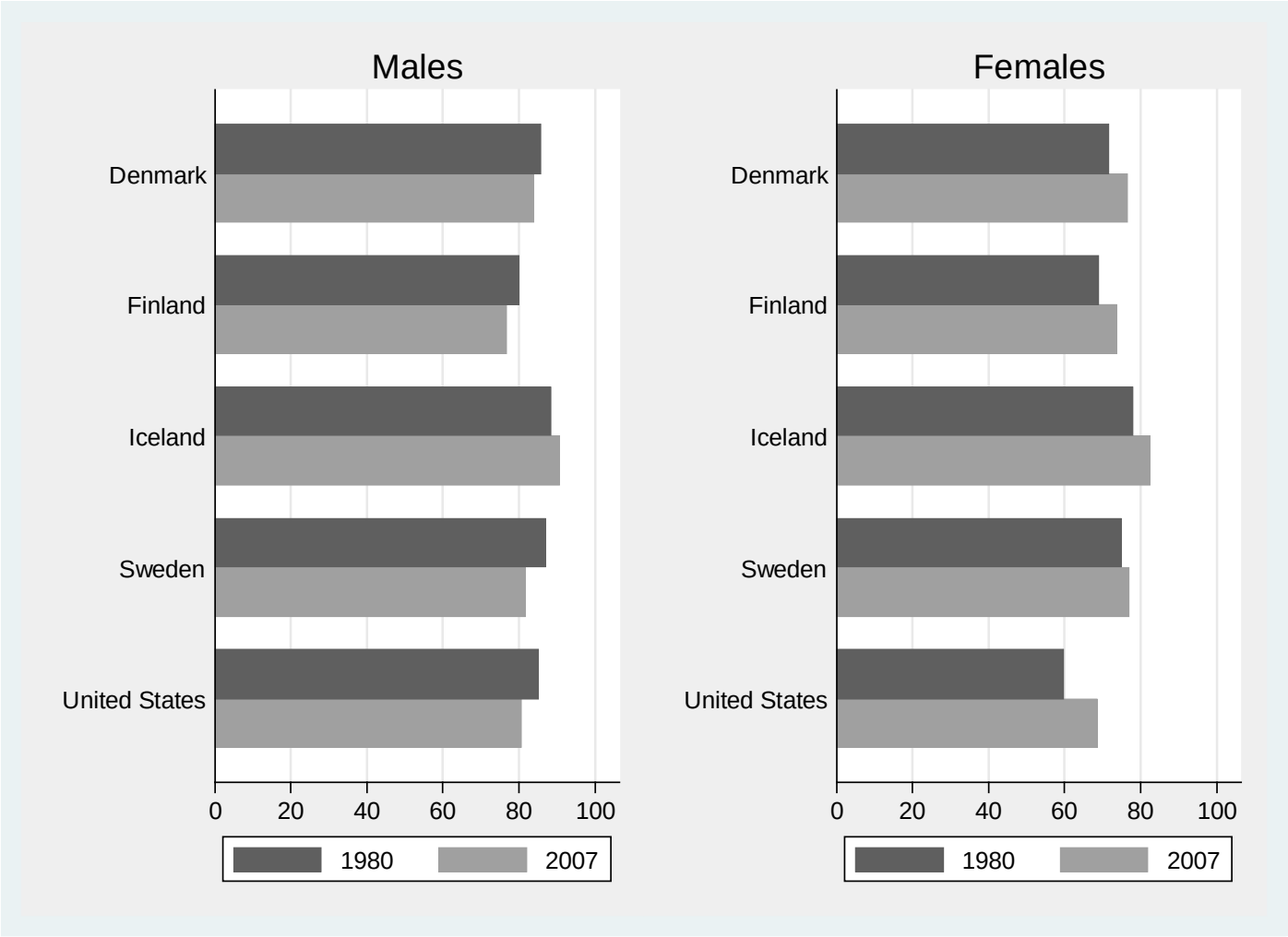


Figure 8: Male and female labor force participation rates in 1980 and 2007 in the United States and in the Nordic countries. Source: World Bank Data Bank.

Policy implications

- Increase in female educational attainment is a good thing
- The lower tail of the male attainment distribution is a problem
- Very few studies that would look at the effect of policies on gender differecences
- One should look for policies that have been effective in increasing university preparedness
- Focus on
  1. Teachers and peer groups
  2. School resources
  3. Early intervention

Policy implications: Teachers and peer groups

- Female overrepresentation in teacher presentation
- Conflicting evidence on discrimination in grading
- Signs of increasing popularity of single-sex schools
- Lavy and Schlosser (2011), Hoxby (2000): Female peers have a positive effect on both sexes
- Single-sex education likely to exacerbate sex differences

Policy implications: School resources

- Heated debate on the effectivness of policies that increase school resources
- Krueger (1999) finds that reducing class size has a positive effect on the boys' achievemnt and no effect on girls
- External valdity is questionable

Policy implications: Early intervention

- Strong consensus on the effectivness of early intervention programs in improving short- and long-term outcomes
- Controversy on their effect on gender gaps
- Latest studies [Anderson (2008), Ludwig and Miller (2008)] suggest that famous early interevention programs had larger effects on girls
- Need for non-U.S studies

Conclusions

- Female educational attainment dominates male attainment
- Gap is likely to increase in the coming decades
- Tradational female dominance in secondary schools has now moved up to tertiary education
- Likely causes are a combination of increasing returns and long-standing male disadvantage in school performance
- Lower tail of the male attainment distribution has adapted badlly to the recent changes in the labor market
- Policies that improve the university preparedness of boys would be effective in decreasing the gaps