Gender Wage Gap: Why Women Earn Less Than Men?

Economics and Gender

LECTURE 2

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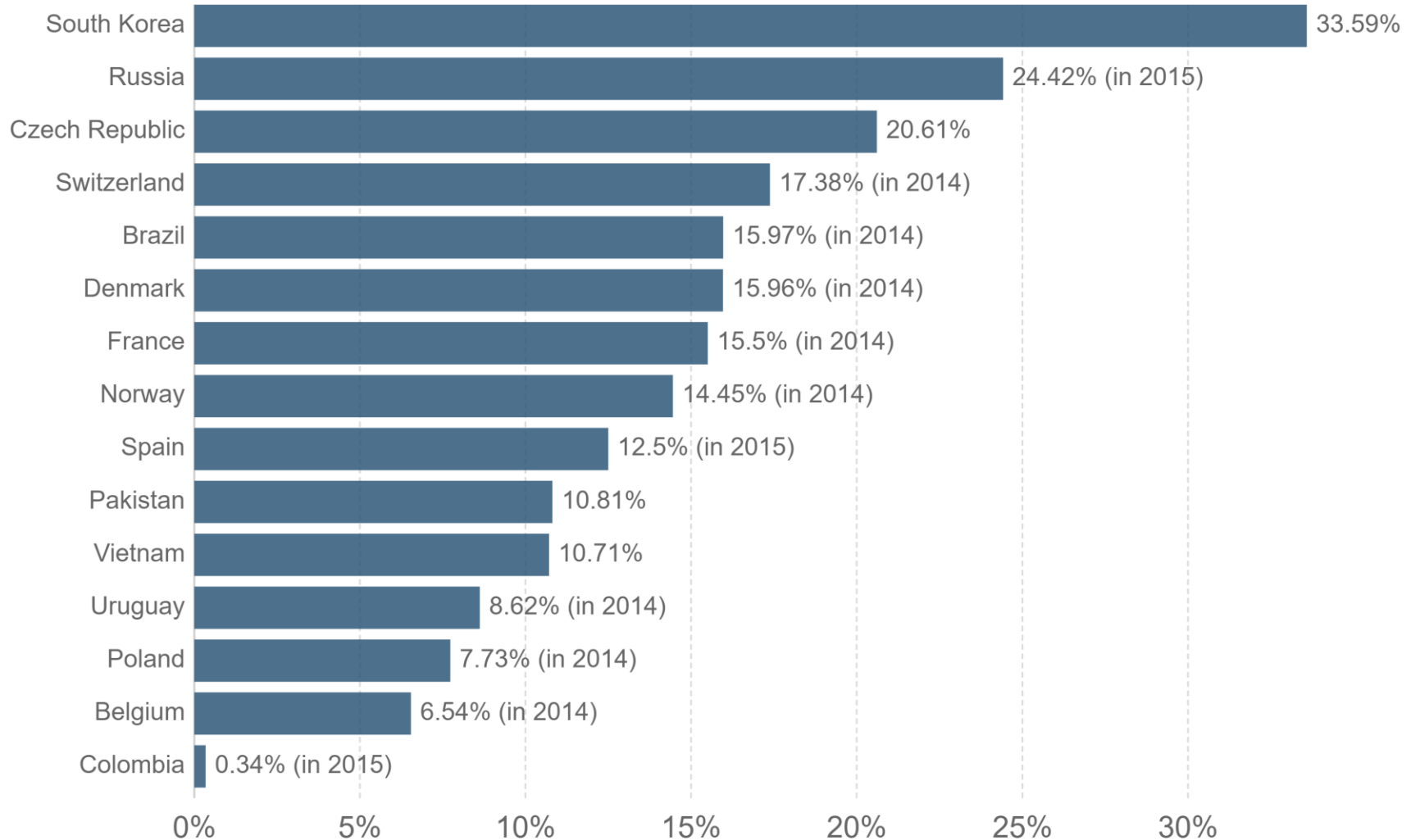
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Gender wage gap

- The difference in wages between women and men
  - Usually defined as the difference between average earnings of men and average earnings of women divided by the average earnings of men
  - It tells by how much women earn less, in percent of male average earnings
- What causes the difference between male and female wages/earnings?

Gender wage gap

- The gender pay gap measures inequality but not necessarily discrimination!
- It captures differences in education, experience, occupation, industry, working hours, …
- This is often referred to as the "raw" or "unadjusted" wage gap
  - In most countries, this gap is substantial, see next slide
- When the gap is calculated after accounting for underlying differences in education, experience, etc., then the result is the "adjusted" wage gap

Unadjusted gender gap in average hourly wages (%), 2016

Gender wage gap, unadjusted for worker characteristics. It is calculated as the difference between average earnings of men and average earnings of women expressed as a percentage of average earnings of men. The data corresponds to gross hourly earnings and includes both full-time and part-time workers.

| Country	Gender wage gap
South Korea	33.59%
Russia	24.42% (in 2015)
Czech Republic	20.61%
Switzerland	17.38% (in 2014)
Brazil	15.97% (in 2014)
Denmark	15.96% (in 2014)
France	15.5% (in 2014)
Norway	14.45% (in 2014)
Spain	12.5% (in 2015)
Pakistan	10.81%
Vietnam	10.71%
Uruguay	8.62% (in 2014)
Poland	7.73% (in 2014)
Belgium	6.54% (in 2014)
Colombia	0.34% (in 2015)

https://ourworldindata.org/six-facts-pay-gap

Evolution of the gender wage gap

- In most countries the gender pay gap has decreased in the last couple of decades
- In some cases the reduction is remarkable:
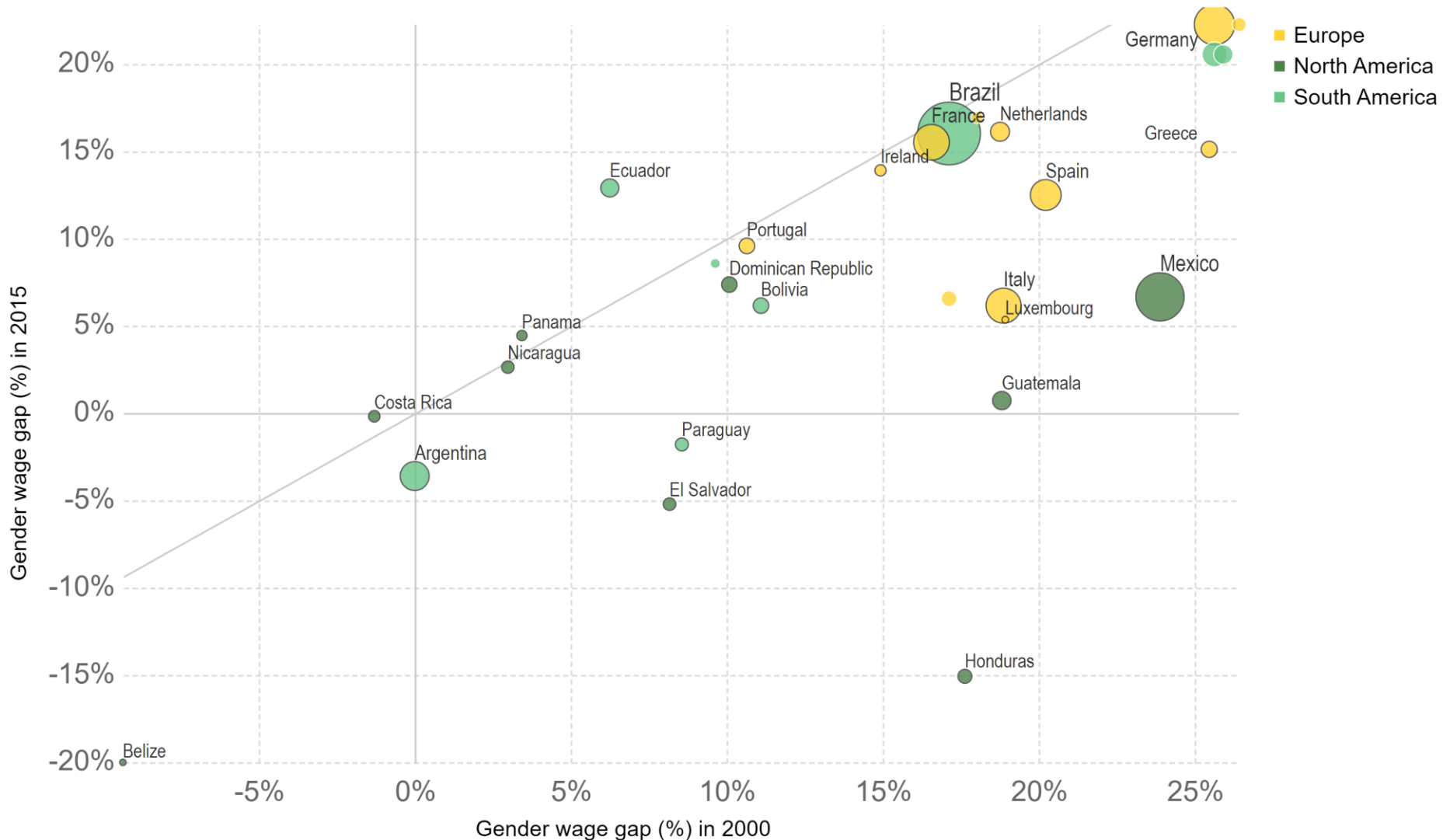 - UK: the gap went down from almost 50% in 1970 to about 17% in 2016.

Unadjusted gender gap in median earnings of full-time workers (%)

The gender wage gap is unadjusted and is defined as the difference between median earnings of men and women relative to median earnings of men. Data refer to full-time employees and to self-employed.

OurWorldInData.org • CC BY-SA
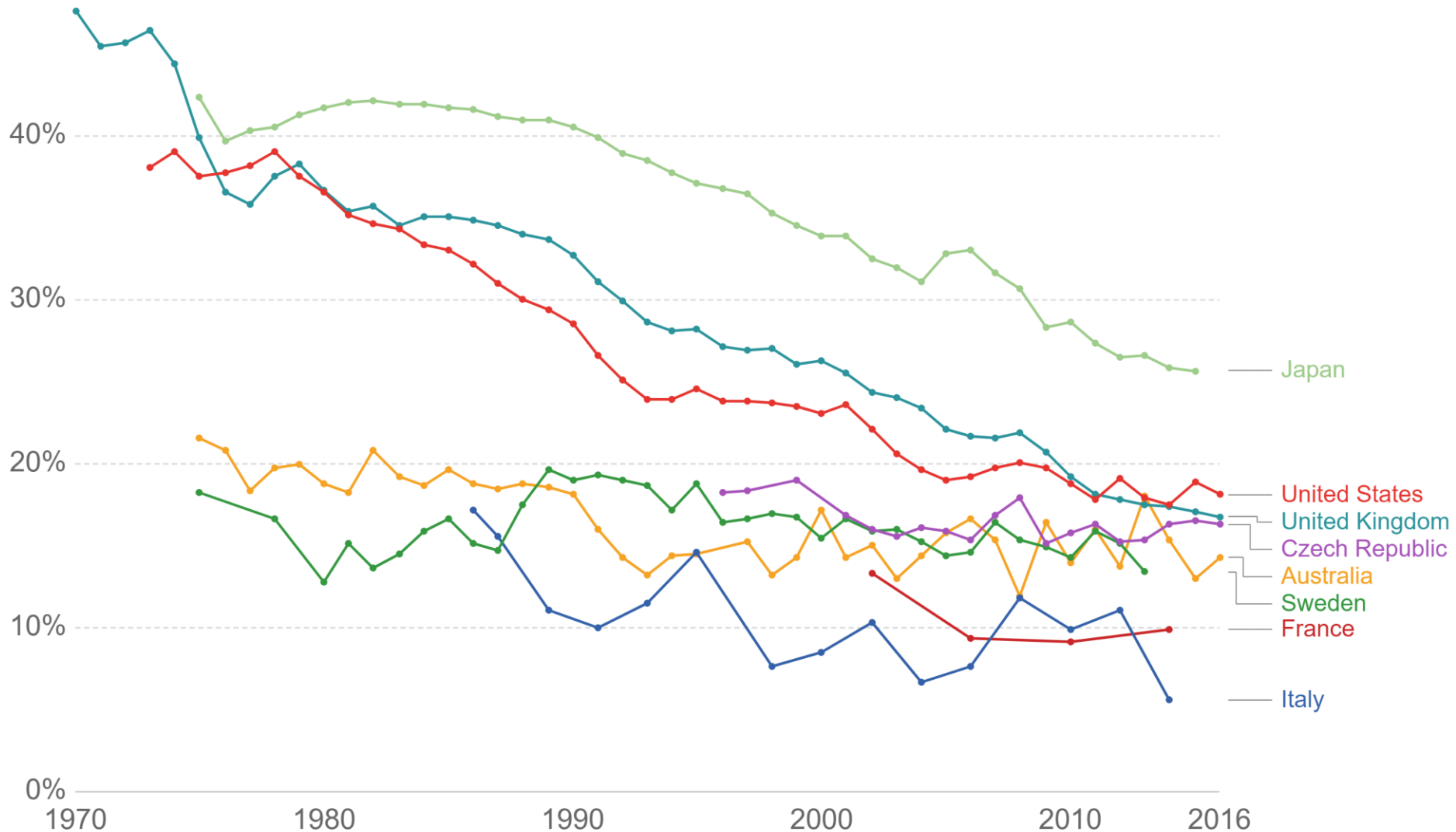
Gender gap in average wages, 2000 vs 2015

Difference between average earnings of men and average earnings of women expressed as a percentage of average earnings of men.

Legend:
- Europe
- North America
- South America

X-axis: Gender wage gap (%) in 2000
Y-axis: Gender wage gap (%) in 2015

Data labels visible: Germany, Brazil, France, Netherlands, Greece, Ecuador, Spain, Portugal, Ireland, Dominican Republic, Bolivia, Italy, Luxembourg, Mexico, Panama, Nicaragua, Guatemala, Costa Rica, Argentina, Paraguay, El Salvador, Honduras, Belize

Gender wage gaps and labor force participation

- Gender wage gaps tend to be smaller in middle-income countries than in high income countries

- Why?

- We calculate the wage gap based on a sample of men and women who work!

- In countries where only few women work, usually those who work have high wages (while the potentially low income women are at home) – this implies a low wage gap

- Low wage gap does not necessarily mean a good position of women in the labor market!

Gender gap in hourly wages vs. Ratio of female-to-male labor force participation, 2016

The vertical axis shows the unadjusted gender wage gap calculated as the difference between average hourly earnings of men and average hourly earnings of women expressed as a percentage of average hourly earnings of men. The horizontal axis shows the ratio of female to male labor force participation rates (participation rates correspond to the proportion of the population ages 15 and older that is economically active).

Legend:
- Asia
- Europe
- North America
- South America
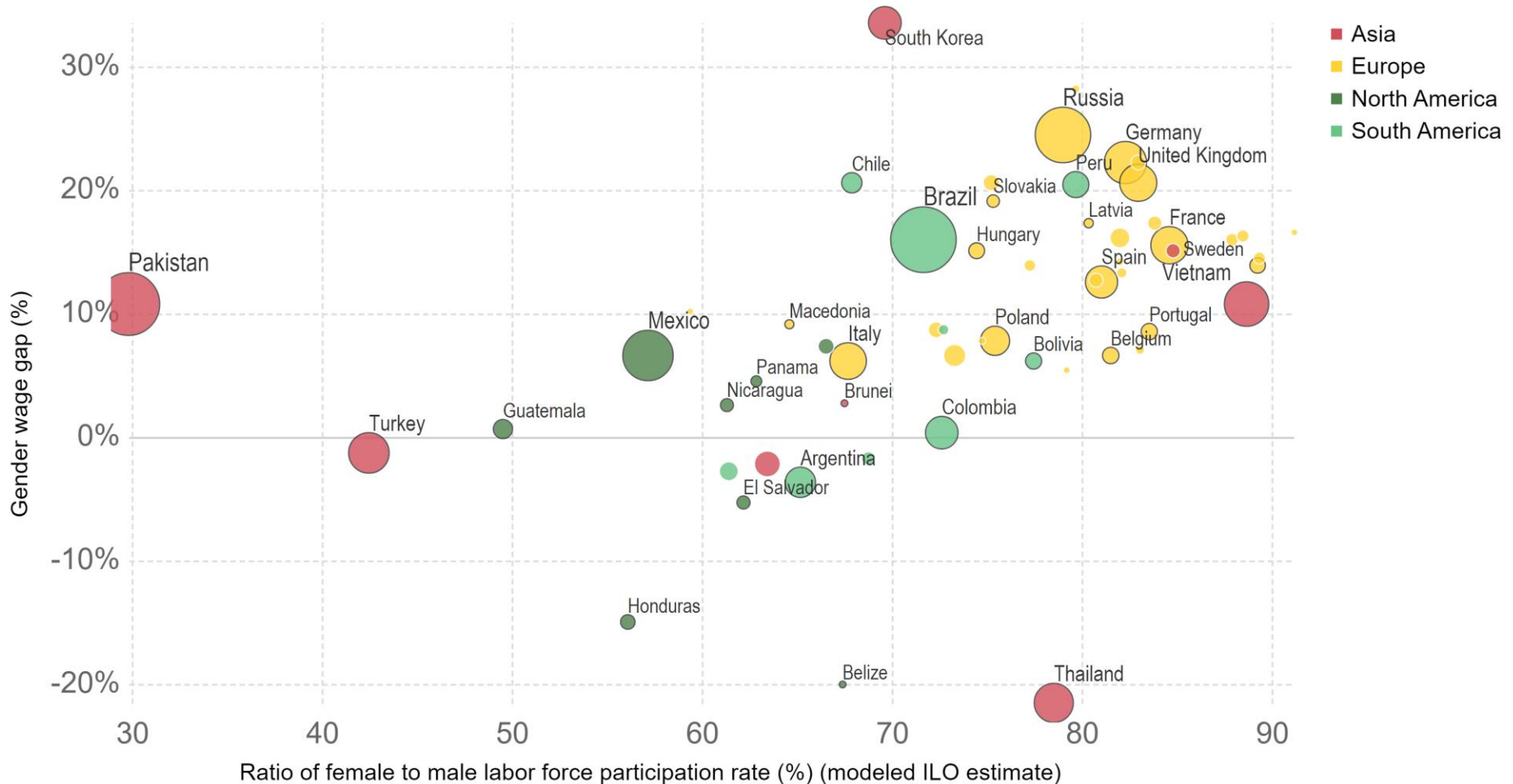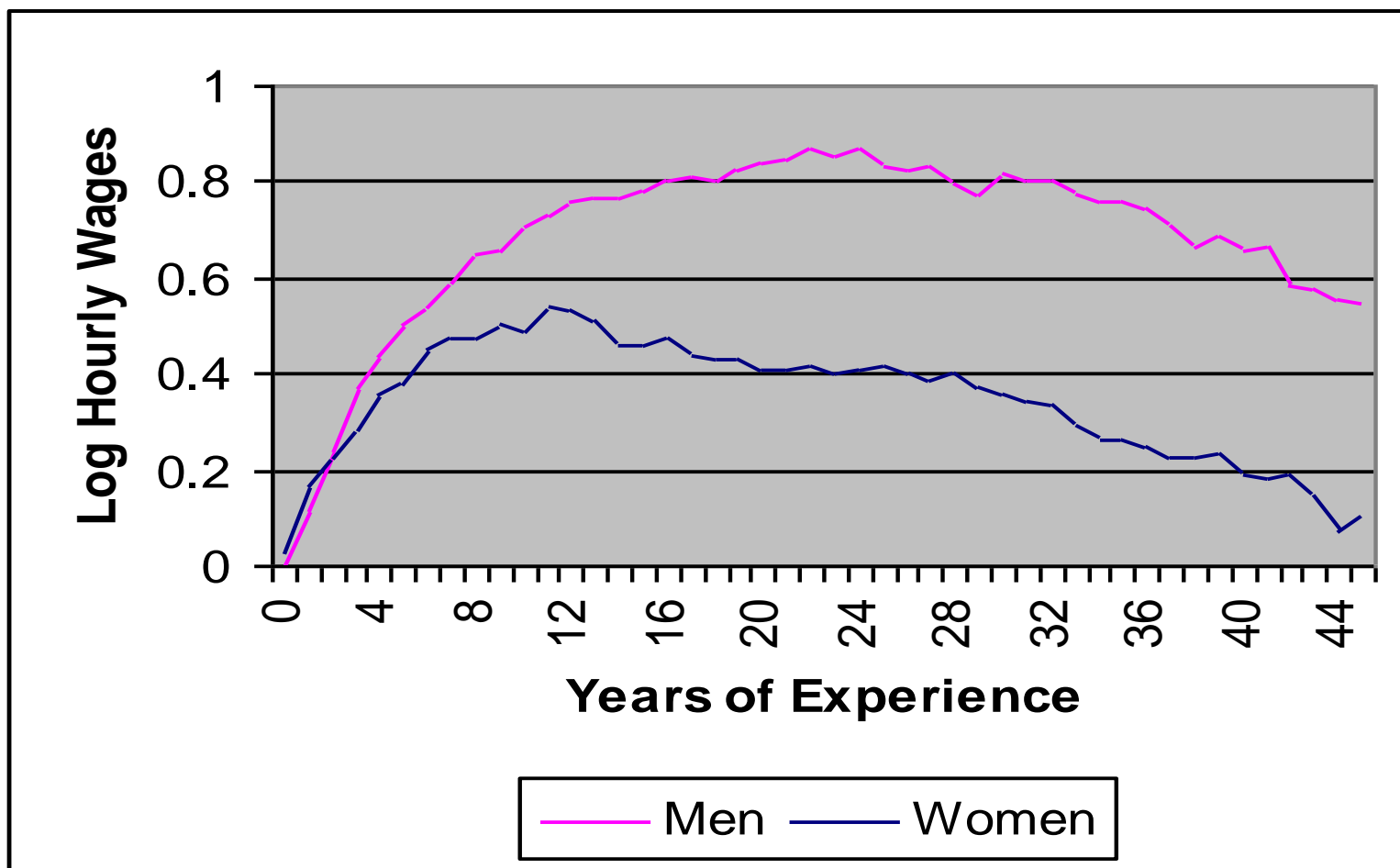
Gender wage gap from a lifetime perspective

- Gender pay gap is often non-existent on labour market entry

- The gender pay gap is larger for older workers
  - It rises rapidly in the childbearing age, then stagnates (in the UK) or rises even further (in the US)

- Most recent cohorts of women are not doing better than slightly earlier cohorts
  - Continued fall in aggregate gender pay gap hides this stalling in progress for women

Ratio of female-to-male median earnings by age, full-time workers, US

Women's weekly earnings as a share of men's, by age group. Earnings ratios are the weekly median earnings of full time workers.
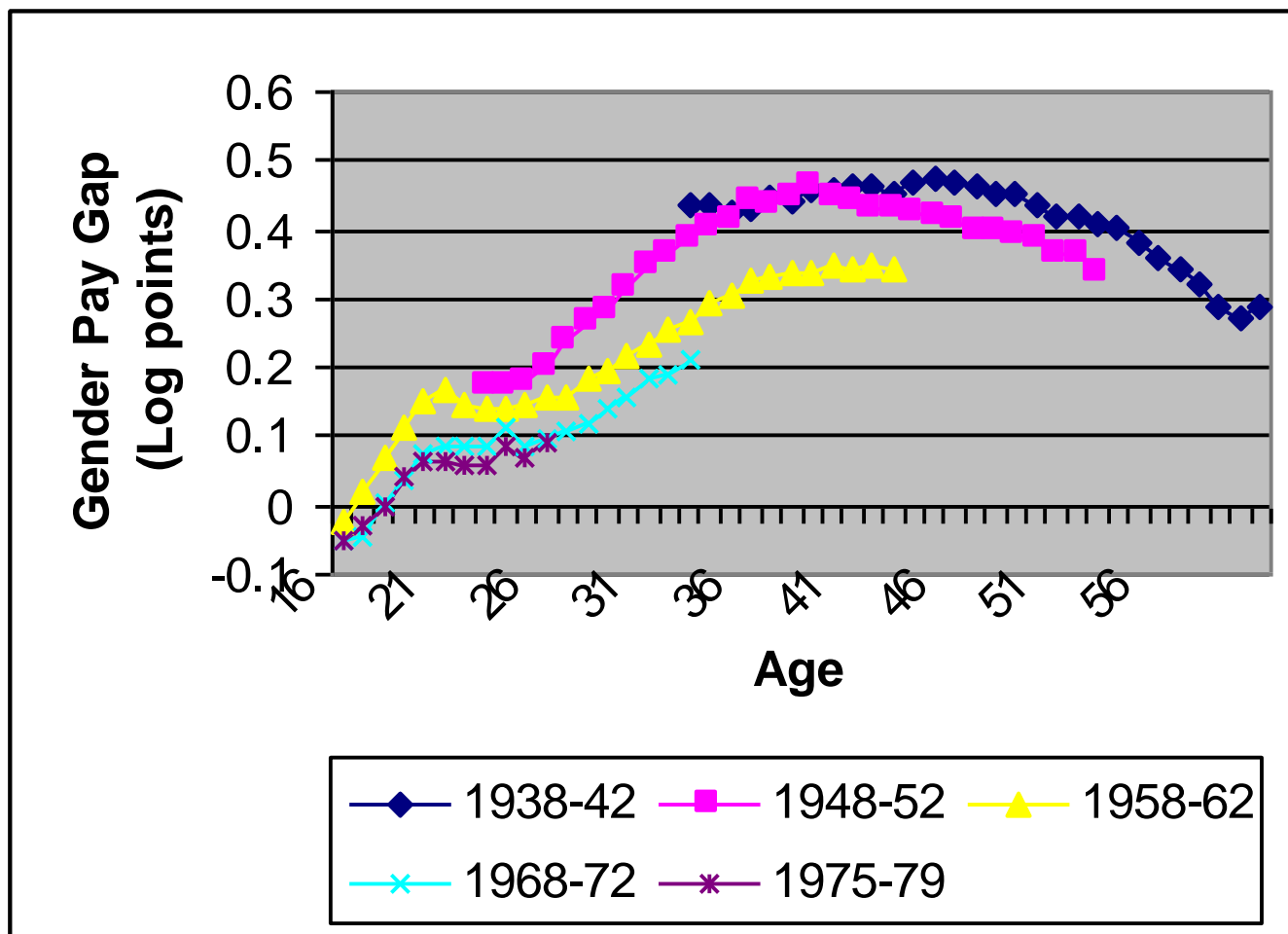
16 to 24 years
25 to 34 years
35 to 44 years
45 to 54 years

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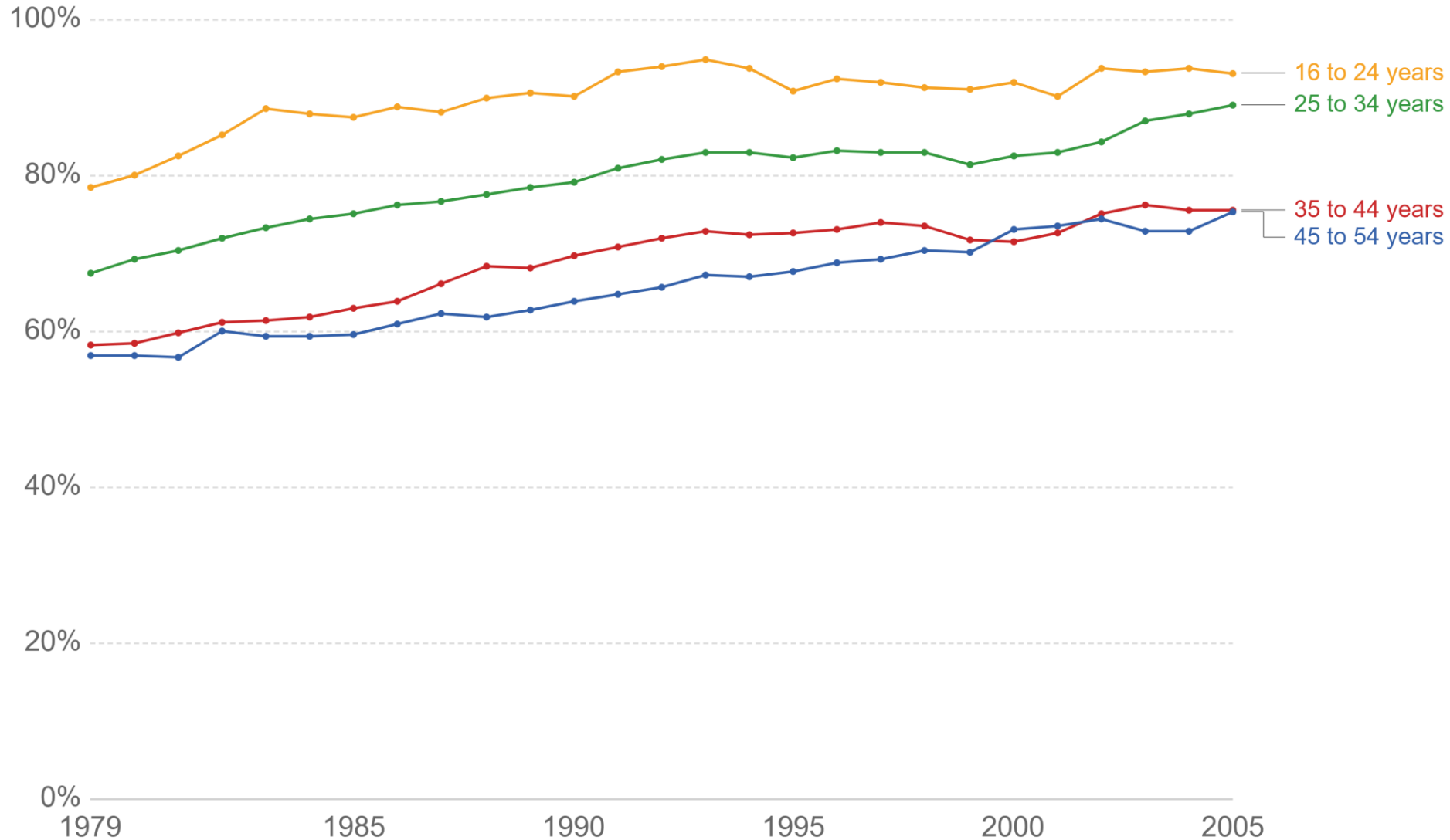
Age profile of hourly wages (UK)

Source: Alan Manning's lecture slides

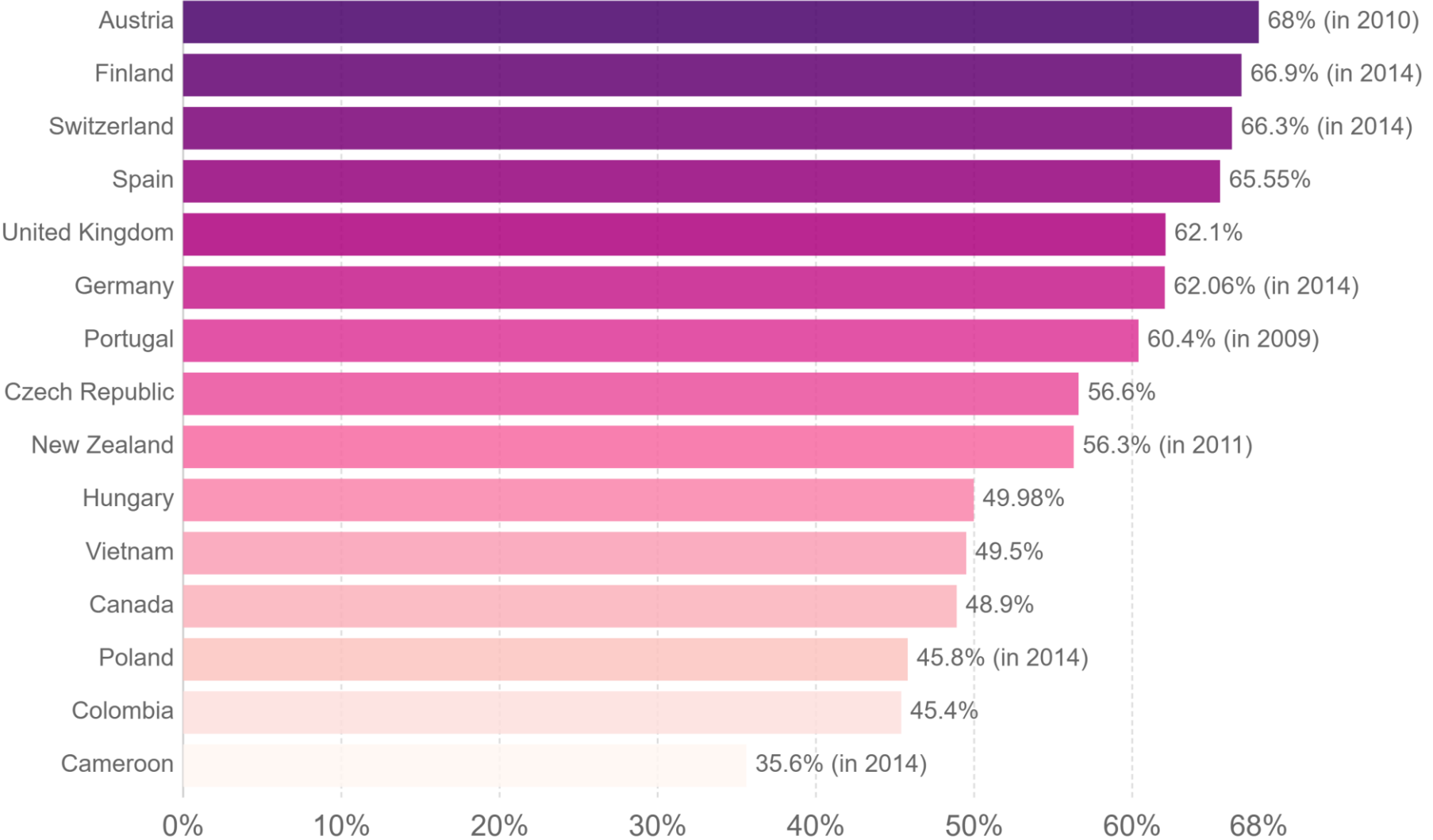# Importance of cohort effects (UK)

Source: Alan Manning's lecture slides

Where does the wage gap come from?

- Women tend to be overrepresented in the group of low earners
  - Low earners are those workers earning less than two-thirds of the median (i.e. the middle) of the earnings distribution
  - This is in particular the case in rich countries
- Women are also overrepresented in low paying occupations
  - Childcare, social services, etc.
- Women are also underrepresented in the group of high earners
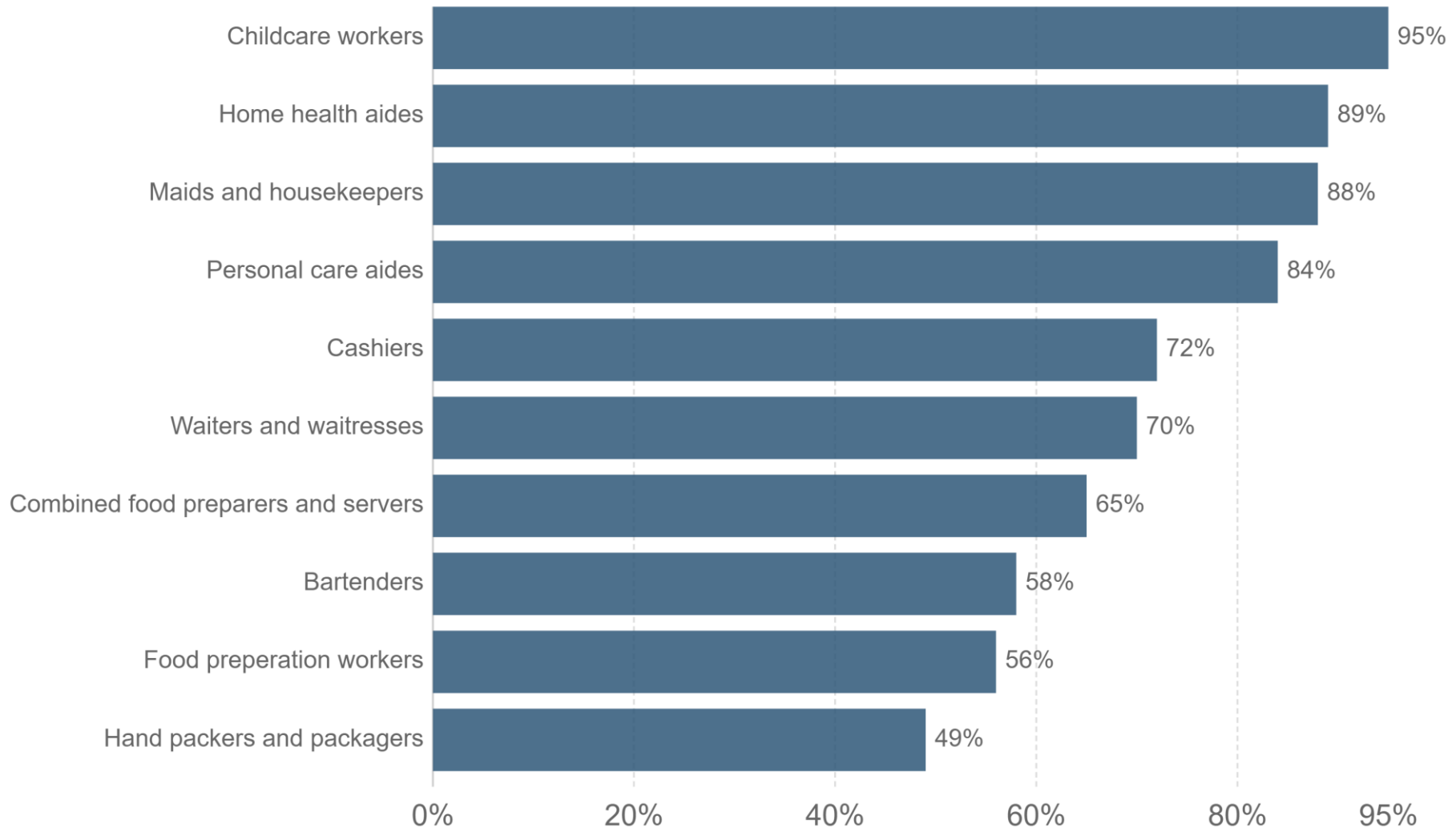
Female share of low pay earners (%), 2015

Female share of low pay earners is the percentage of low pay workers, among all low pay workers, who are female.
Workers are considered 'low pay' if their hourly earnings at all jobs are less than two-thirds of median hourly earnings.

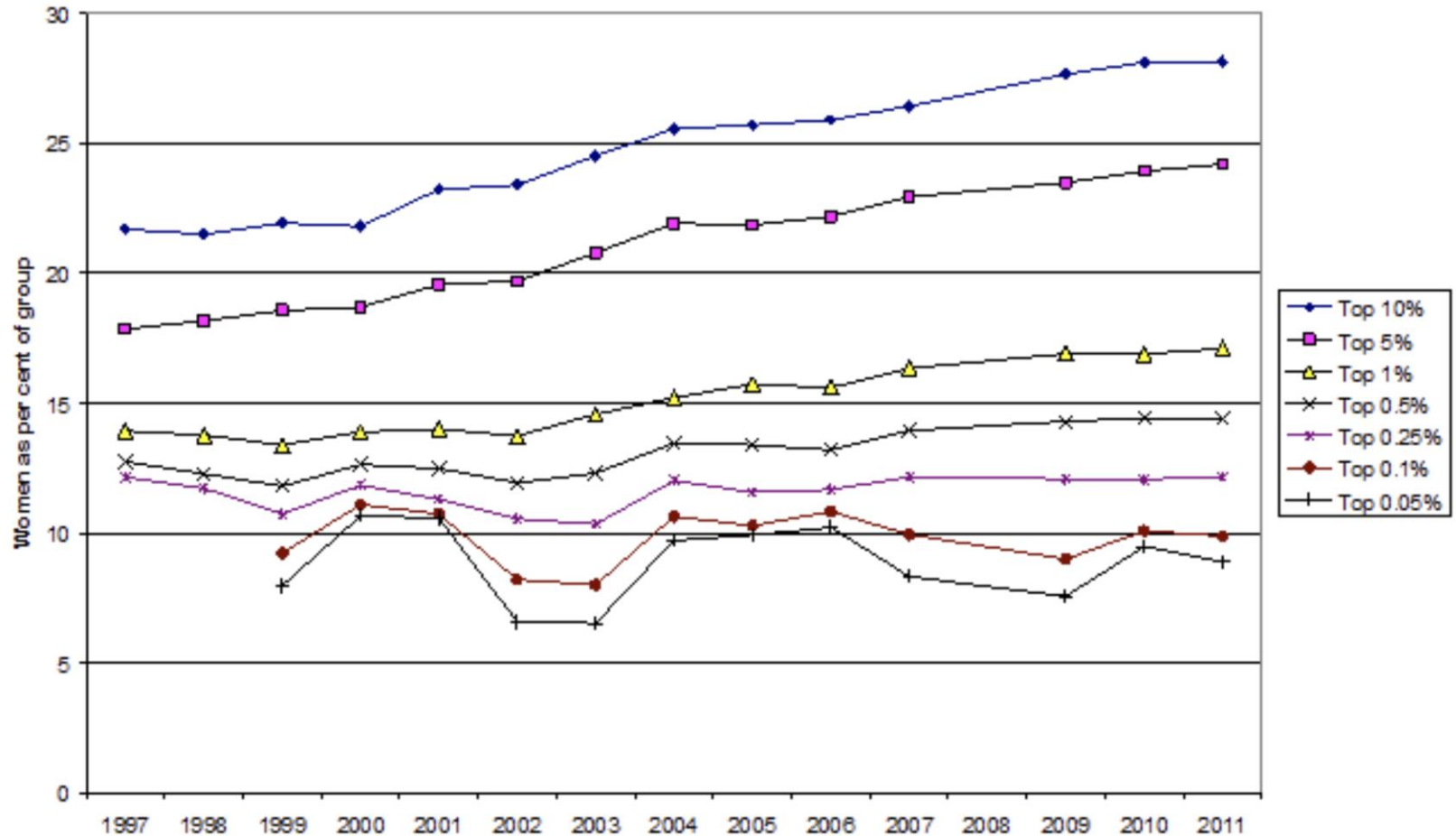| Country	
Austria	68% (in 2010)
Finland	66.9% (in 2014)
Switzerland	66.3% (in 2014)
Spain	65.55%
United Kingdom	62.1%
Germany	62.06% (in 2014)
Portugal	60.4% (in 2009)
Czech Republic	56.6%
New Zealand	56.3% (in 2011)
Hungary	49.98%
Vietnam	49.5%
Canada	48.9%
Poland	45.8% (in 2014)
Colombia	45.4%
Cameroon	35.6% (in 2014)

0%   10%   20%   30%   40%   50%   60%   68%

US women are overrepresented in low-wage occupations, 2013

Low-wage occupations are defined here as typically paying less than $10.10 per hour – the ones seen below are the ten largest. Women make up less than half of the US labor force yet hold 50% or more of the jobs in these low-wage occupations.

| Occupation	Percentage
Childcare workers	95%
Home health aides	89%
Maids and housekeepers	88%
Personal care aides	84%
Cashiers	72%
Waiters and waitresses	70%
Combined food preparers and servers	65%
Bartenders	58%
Food preperation workers	56%
Hand packers and packagers	49%

Percentage of women in top income groups (UK, 1997 to 2001)

Source: Atkinson, Casarico and Voitchovsky (2014)

Gender wage gap of Australian graduates

Lindsay, E. (2014). An analysis of the gender wage gap in the Australian graduate labour market, 2013. Graduate Careers Australia Ltd., Melbourne.
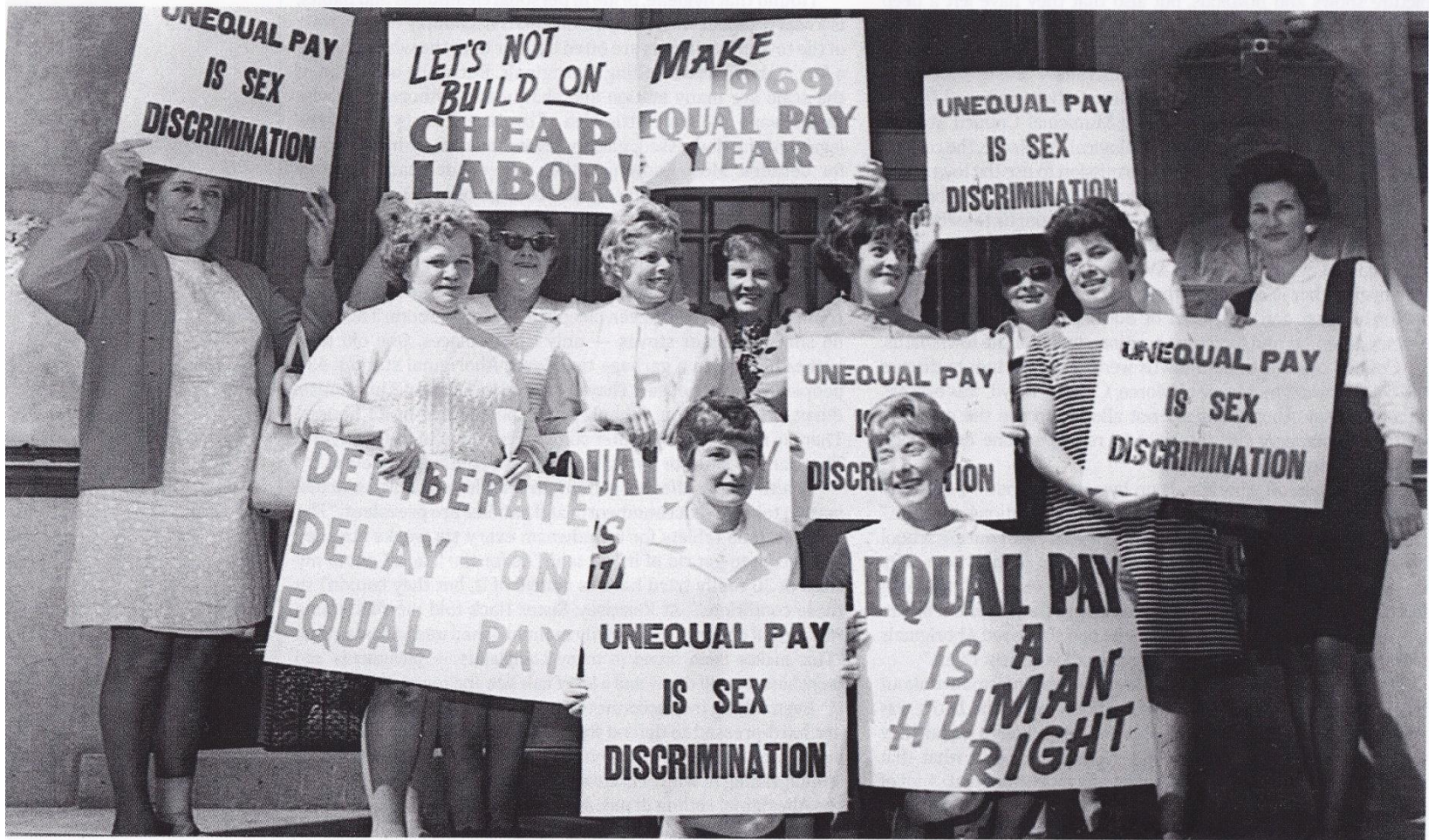
Women demonstrating outside Melbourne's Trades Hall in support of equal pay in 1969

The study

- Investigates whether a gender wage gap exists within the population of Australian graduates
- How is the gender wage gap affected by the personal, enrolment and employment characteristics of graduates?
- Data:
  - Graduate Destinations Survey (2013)
  - Sample: bachelor degree graduates aged less than 25 who are in first full-time employment in Australia (8,185 graduates)
  - Dependent variable – annual starting salary

Wage regression

OLS Regression:

$$lnS_i = \beta_0 + \beta F_i + \beta X_i + \varepsilon_i$$

- lnS_i = log of annual starting salary of graduate i

- β_0 = constant

- F_i = variable indicating that graduate i is female

- X_i = vector containing the various characteristics of graduate i (including personal, enrolment and occupational characteristics)

Explanatory variables

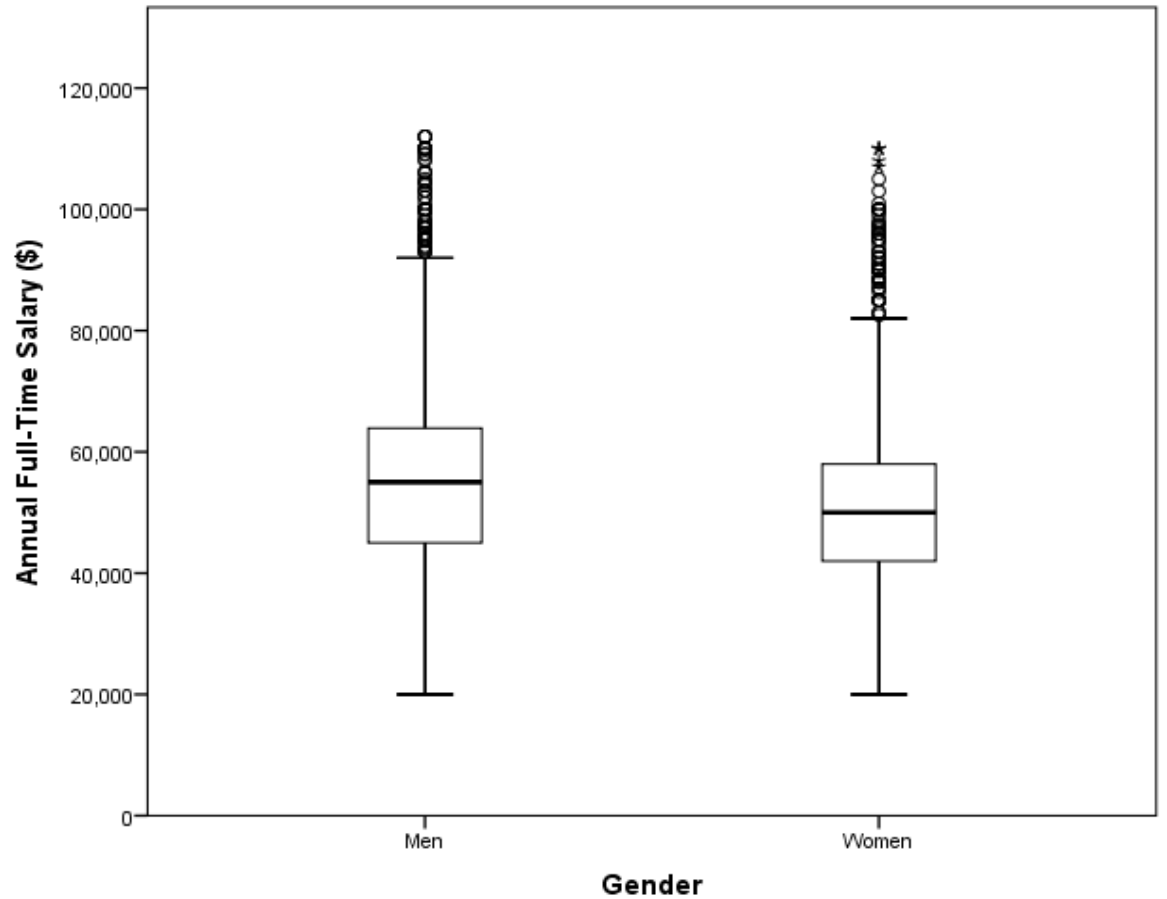| **Variable of interest**	**Personal characteristics**	**Employment characteristics**
Female	Disability	¤ Weekly working hours
Omitted: Male	*Omitted: No disability*	
	Non-English speaking background	**Other employment characteristics**
Field of education	*Omitted: English speaking background*	Small and medium enterprise
Accounting		*Omitted: large enterprise*
Agricultural Science	**Enrolment characteristics**	Public/government sector
Architecture & Building	Honours bachelor	*Omitted: private/not for profit sector*
Art & Design	*Omitted: pass bachelor*	Short-term contract
Biological Sciences	Double degree	*Omitted: permanent or open-ended contract*
Computer Sciences	*Omitted: single degree*	Field of study of limited importance
Dentistry		*Omitted: field of study important/formal requirement*
Earth Sciences	**State of employment**	In full-time work in final year of study
Economics & Business	NSW Capital	*Omitted: not in full-time work in final year of study*
Education	NSW Regional	
Engineering	VIC Capital	**Occupation**
Law	VIC Regional	Managers
Mathematics	QLD Capital	Professionals
Medicine	QLD Regional	Technicians and Trades workers
Optometry	SA Capital	Clerical and administrative workers
Paramedical Studies	WA Capital	Sales workers
Pharmacy	WA Regional	Machinery operators and drivers
Physical Sciences	TAS Capital	Labourers
Psychology	TAS Regional	*Omitted: Community and personal service workers*
Social Sciences	NT Capital	
Social Work	NT Regional	
Veterinary Science	ACT	
Omitted: Humanities	*Omitted: Regional South Australia*	

Raw gender gap in earnings

Figure 1: Distribution of full-time starting salaries for male and female graduates, 2013

Model 1: The raw gender gap

- The only explanatory variable is Female dummy:

	Model 1
	-0.094
Female	(0.006)**

- Interpretation?
- On average, female graduates earn 9.4% less than male graduates

Model 2: controlling for field of education

	Model 1	Model 2	Field of education (cont.)	Model 2
Sex				
Female	**-0.094** (0.006)**	**-0.047** (0.006)**	Medicine	0.238 (0.021)**
			Optometry	0.529 (0.060)**
Field of education (a)				
Accounting		0.070 (0.014)**	Paramedical Studies	0.155 (0.012)**
Agricultural Science		0.069 (0.029)*	Pharmacy	-0.110 (0.020)**
Architecture & Building		0.061 (0.019)**	Physical Sciences	0.101 (0.034)**
Art & Design		-0.121 (0.020)**	Psychology	0.026 (0.020)
Biological Sciences		-0.002 (0.017)	Social Sciences	0.023 (0.029)
Computer Sciences		0.125 (0.019)**	Social Work	0.028 (0.032)
Dentistry		0.446 (0.052)**	Veterinary Science	0.024 (0.048)
Earth Sciences		0.285 (0.033)**	**Personal characteristics**	
Economics & Business		0.059 (0.011)**	Disability	0.023 (0.016)
Education		0.177 (0.013)**	Non-English speaking background	-0.003 (0.008)
Engineering		0.306 (0.013)**	**Enrolment characteristics**	
Law		0.152 (0.019)**	Honours bachelor	0.114 (0.010)**
Mathematics		0.134 (0.038)**	Double degree	0.107 (0.008)**
Adjusted R²	.026	.203	**Adjusted R²**	.203
F-statistic	221.85	78.03	**F-statistic**	78.03
Sample size	8,185	8,185	**Sample size**	8,185

Gender gap adjusted

- When we include controls for field of education and personal characteristics, gender gap decreases to 4.7%

- Why the gender gap decreased?
  - Now we only compare men and women with the same field of education and same characteristics
  - If men are more likely to graduate from a high-paying field, the gender gap will be driven by that
  - Controlling for a field removes this part of the gap

Engineering vs. humanities

	Model 1	Model 2		Model 2
Sex			**Field of education (cont.)**	
Female	**-0.094** **(0.006)****	**-0.047** **(0.006)****	Medicine	0.238 (0.021)**
Field of education (a)			Optometry	0.529 (0.060)**
Accounting		0.070 (0.014)**	Paramedical Studies	0.155 (0.012)**
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Adjusted R^2	.026	.203	**Adjusted R^2**	.203
F-statistic	221.85	78.03	**F-statistic**	78.03
Sample size	8,185	8,185	**Sample size**	8,185

Engineering vs. humanities

	Male	Female	Total		Male	Female	Total
Gender	38.0	62.0	100.0	**Field of education (continued)**			
Field of education				Humanities	5.7	11.6	9.3
Accounting	9.4	6.6	7.7	Law	2.4	3.4	3.0
Agricultural Science	1.1	0.9	1.0	Mathematics	1.0	0.3	0.6
Architecture & Building	4.0	2.1	2.8	Medicine	2.3	2.0	2.1
Art & Design	2.0	2.9	2.5	Optometry	0.2	0.2	0.2
Biological Sciences	3.1	4.4	3.9	Paramedical Studies	6.3	21.0	15.4
Computer Sciences	6.0	0.8	2.8	Pharmacy	2.2	3.0	2.7
Dentistry	0.2	0.4	0.3	Physical Sciences	1.2	0.4	0.7
Earth Sciences	1.4	0.4	0.8	Pyschology	1.1	3.3	2.4
Economics & Business	21.6	18.8	19.8	Social Sciences	0.6	1.3	1.1
Education	3.5	10.9	8.1	Social Work	0.2	1.3	0.8
Engineering	24.6	3.7	11.6	Veterinary Science	0.0	0.6	0.4

Table 1: Graduates' field of education enrolment patterns, by gender, 2013 (%)

- More women indeed study Humanities than Engineering
- Engineering is the high paying field (see previous slide)

Model 3: controlling for occupation and type of employment

- Adding occupation and employment characteristics to model 2

	Model 1	Model 2	Model 3
Female	-0.094 (0.006)**	-0.047 (0.006)**	-0.044 (0.006)**

- Interpretation?

- This changed the gender gap only marginally (from 4.7% to 4.4%

- Seems that occupation and employment characteristics (given field of education) are much less important

Media

'Male' degrees get higher wages: study

By AAP   17/06/14 23:35:00 in Local News | Tagged as: Wages

A new study has found the gender gap in starting salaries for Australian graduates is largely dictated by which type of degree they choose to study.

IT'S MOSTLY A CHOICE GAP

It's a choice gap, not a gender gap

17.1% Pay gap across population
ABS

9.4% Pay difference between graduates.
GRADSTATS

4.4% Pay difference between graduates once age, level of education and training, occupation choice and region employment characteristics taken into account.
GRADSTATS

Discussion

- Is it a choice that drives the gender gap?

- Why do women choose fields that pay less?

- What about other (non-wage) characteristics of occupations?

- Policy recommendations?

- What about the 4.4% unexplained gap?

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