



Economia, Finanza e Analisi dei Dati

Laurea Magistrale

Data Analysis for Economics

Topic 1: The Gender Pay Gap in Europe

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Fall 2026

The Gender Pay Gap

- ▶ In recent decades, there has been a large and increasing interest (both in academia and among the general public) in the **gender pay gap**:
 - ▶ the difference between the average gross hourly earnings of men and women,
 - ▶ expressed as a percentage of men's earnings: a gap of 11% means that women earn, on average, 11% less per hour.
- ▶ There has been considerable effort by scholars and policymakers to:
 1. Understand the reasons behind observed gender differences in earnings,
 2. Track its evolution over time, and
 3. Design effective policies to close the gap.

What We Know About the Gender Pay Gap

The **drivers** of wage differences are many:

- ▶ differences in **sorting** across industries and occupations;
- ▶ productivity differences related to workforce commitment, fertility decisions, and social norms;
- ▶ differences in bargaining ability (women negotiate wages less intensively or ask for lower salaries);
- ▶ discrimination, either due to preferences (taste) or assumptions about expected productivity (statistical discrimination).

A (very short) literature

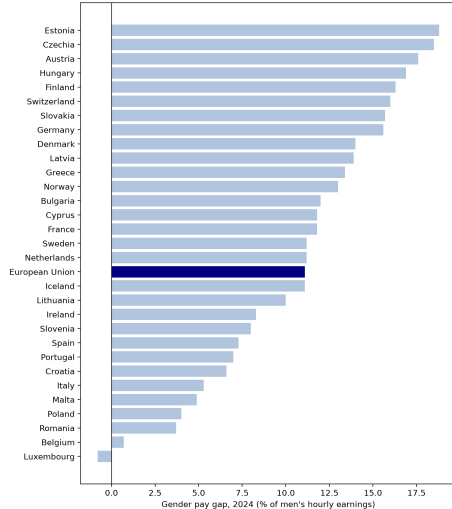
- ▶ Blau, F. D., & Kahn, L. M. (2017). The gender wage gap: Extent, trends, and explanations. *Journal of Economic Literature*, 55(3), 789–865.
- ▶ Kunze, A. (2018). The gender wage gap in developed countries. *The Oxford Handbook of Women and the Economy*, 369–394.
- ▶ Sin, I., Stillman, S., & Fabling, R. (2022). What drives the gender wage gap? Examining the roles of sorting, productivity differences, bargaining, and discrimination. *Review of Economics and Statistics*, 104(4), 636–651.
- ▶ Kleven, H., Landais, C., & Søgaaard, J. E. (2019). Children and gender inequality: Evidence from Denmark. *American Economic Journal: Applied Economics*, 11(4), 181–209.
- ▶ Kleven, H., Landais, C., & Leite-Mariante, G. (2025). The Child Penalty Atlas. *Review of Economic Studies*, 92(5), 3174–3207.
- ▶ International Labour Organization. Understanding the Gender Pay Gap.
<https://www.ilo.org/media/402181/download>

This Topic

	Question	Data
1. Size, trend	How large is the gap, and is it closing?	Eurostat: the gap by country, 2007–2025
2. Drivers	What drives it? Age, careers, type of employer	Eurostat: the gap by age and by ownership; women among managers
3. Children	Is it about children? The child penalty	Bank of Italy household survey; the Child Penalty Atlas

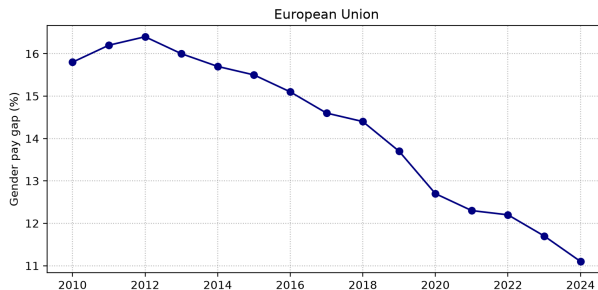
How Large Is the Gap?

- ▶ One year across countries: a **cross-section**.
- ▶ EU average in 2024: 11.1%.
- ▶ From about zero (Luxembourg, Belgium) to almost 19% (Estonia).
- ▶ Italy: 5.3%.



Class 1: Is the Gap Closing?

- ▶ One unit over time: a **time series**.
- ▶ EU: from 15.8% in 2010 to 11.1% in 2024.
- ▶ Did the countries with the largest gaps close them fastest? Convergence, with a scatter plot.



Class 2: What Drives the Gap?

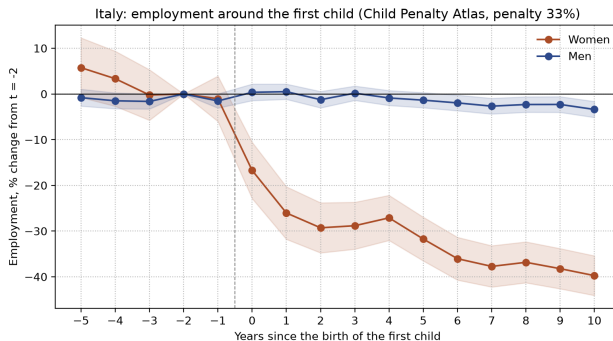
We describe the overall gap (the result of all mechanisms) through proxies for each driver:

- ▶ Discrimination/career interruptions → gender pay gap for different age groups
- ▶ Glass ceiling effect → presence of women in top/managerial positions
- ▶ Bargaining ability → private *versus* public sector
- ▶ Sorting across industries/occupations/fields → presence of women in STEM fields; part-time vs. full-time work...

These are **suggestive** evidence: country averages, not causal effects.

Class 3: The Child Penalty

- ▶ Employment of mothers and fathers, year by year around the birth of the first child.
- ▶ Before: men and women move together. After: women drop, and do not recover.
- ▶ Italy: women's employment 40% below its path 10 years after the birth.



Source: [The Child Penalty Atlas](#), Kleven, Landaïs and Leite-Mariante (2025).

Class 3: How the Atlas Measures It

Following [the Atlas methodology](#), on cross-sectional survey data:

1. **Event time:** years since the birth of the first child, given by the age of the eldest child at home.
2. **Before the birth:** each parent observed in the year of the birth is matched to childless people of the same sex and characteristics, 1 to 5 years younger.
3. **Normalisation:** employment relative to two years before the birth.
4. **The penalty:** how much more women's employment falls than men's, as a share of the employment they would have without children.

We plot unconditional averages. The Atlas also removes age and year effects: our number will be smaller (about 25% against 33% for Italy). Why?

Class 3: Our Data

- ▶ The Atlas estimate for Italy comes from the Bank of Italy's Survey on Household Income and Wealth (through the Luxembourg Income Study).
- ▶ The same microdata are freely available: about 8,000 households per wave, every person in the household with age, sex, relationship to the head, education and work.
- ▶ Each of you downloads the file directly from the Bank of Italy (no registration):
 - ▶ **Distribution of the microdata:** historical database, ASCII (CSV) format.
 - ▶ Data are distributed for research purposes only. Cite: Banca d'Italia, Survey on Household Income and Wealth.

Data Sources

- ▶ Eurostat database: <https://ec.europa.eu/eurostat/data/database>
 - ▶ tesem180: gender pay gap in unadjusted form (2024 values are provisional).
 - ▶ earn_gr_gpgr2ag, earn_gr_gpgr2ct: the gap by age and by type of ownership.
 - ▶ tqoe1c2: employed women in managerial positions.
- ▶ The Child Penalty Atlas: <https://childpenaltyatlas.org/>
- ▶ Banca d'Italia, Survey on Household Income and Wealth: bancaditalia.it