# Gender inequalities in academia: trends, reasons and mechanisms

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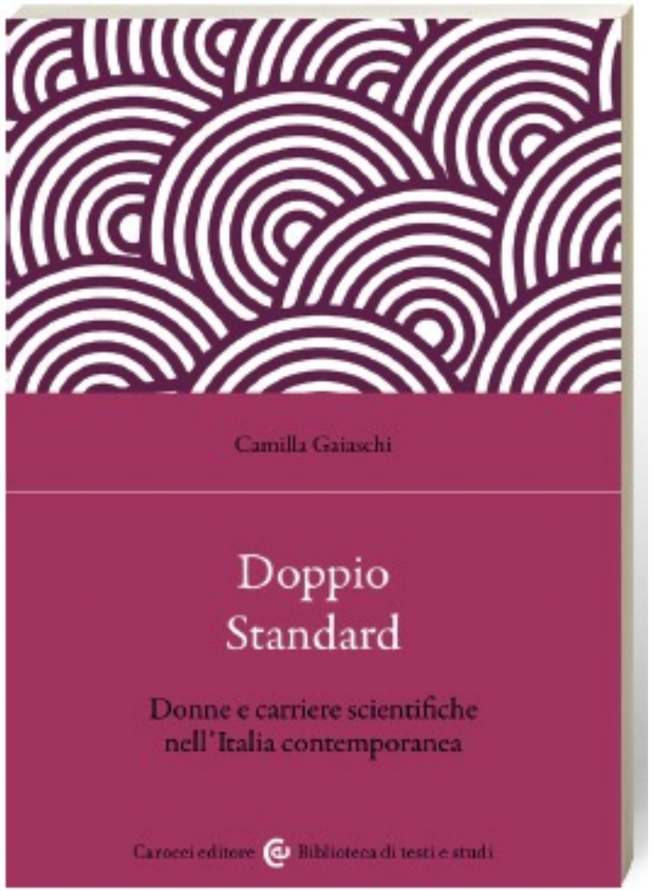



**Selected papers:**

Gaiaschi, C. 2023. *Gender, class and the meritocratic ideal. The case of the life sciences in Italian Academia.* In Conley, H. and Sandberg, P. K. (eds.) Handbook on Gender and Public Sector Employment. Edward Elgar.

Gaiaschi, C., Musumeci, R. *«Why so slow?»* (2021). *Un'analisi del reclutamento accademico in Italia dal 2000 al 2020, tra processi di femminilizzazione e (ri-)maschilizzazione*. AIS - Journal of Sociology, 18, pp. 97-122. ISSN 2281-2652.

Gaiaschi, C. (2021). *Università e cultura dell'eccellenza: più meritocratica per chi? Aporie di genere nell'accademia italiana*. Etnografia e ricerca Qualitativa, (2). ISSN:1973-3194

Gaiaschi, C. (2021). *Highly Skilled Women Reaching the Top: A Cost-free Achievement? Analyzing the Gender Promotion Gap in the Medical Profession*. Social Forces, 100(2), pp. 622–648.

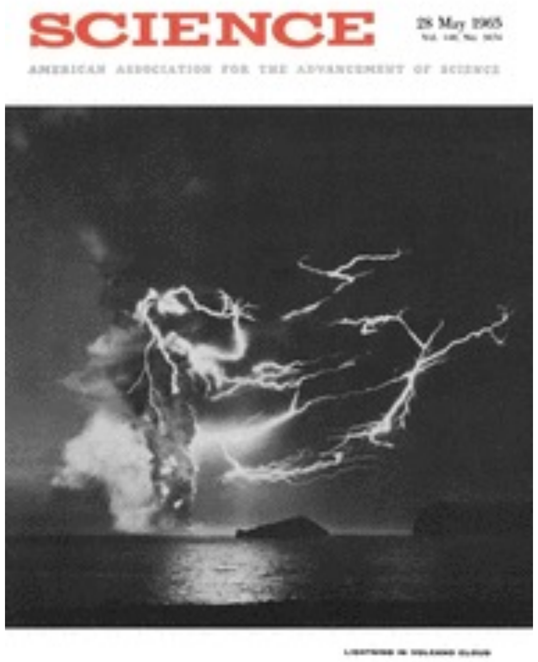
Gaiaschi, C. (2021). *The academic profession in neoliberal times: a gendered view. Professions and Professionalism*, 11(1).

Gaiaschi, C. & Musumeci, R. (2020) *Just a Matter of Time? Women\'s Career Advancement in Neo-Liberal Academia*. An Analysis of Recruitment Trends in Italian Universities. Social Sciences, 9(9), 163..

Gaiaschi, C. (2019). *Same job, different rewards: the gender pay gap among physicians in Italy*. Gender Work & Organization, 26(11), 1562-1588.

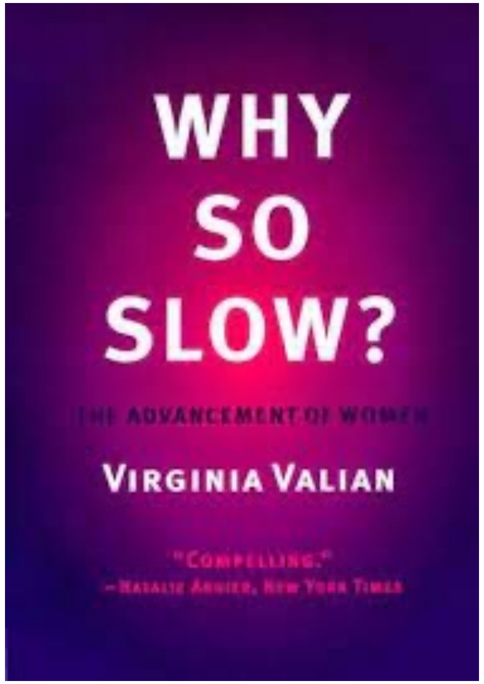
Gaiaschi, C. (2017). *Premiums and penalties among physicians in Italy: how gender affects the combined impact of marital and parental status on pay*. Polis, (1), 97-126.

# The three questions



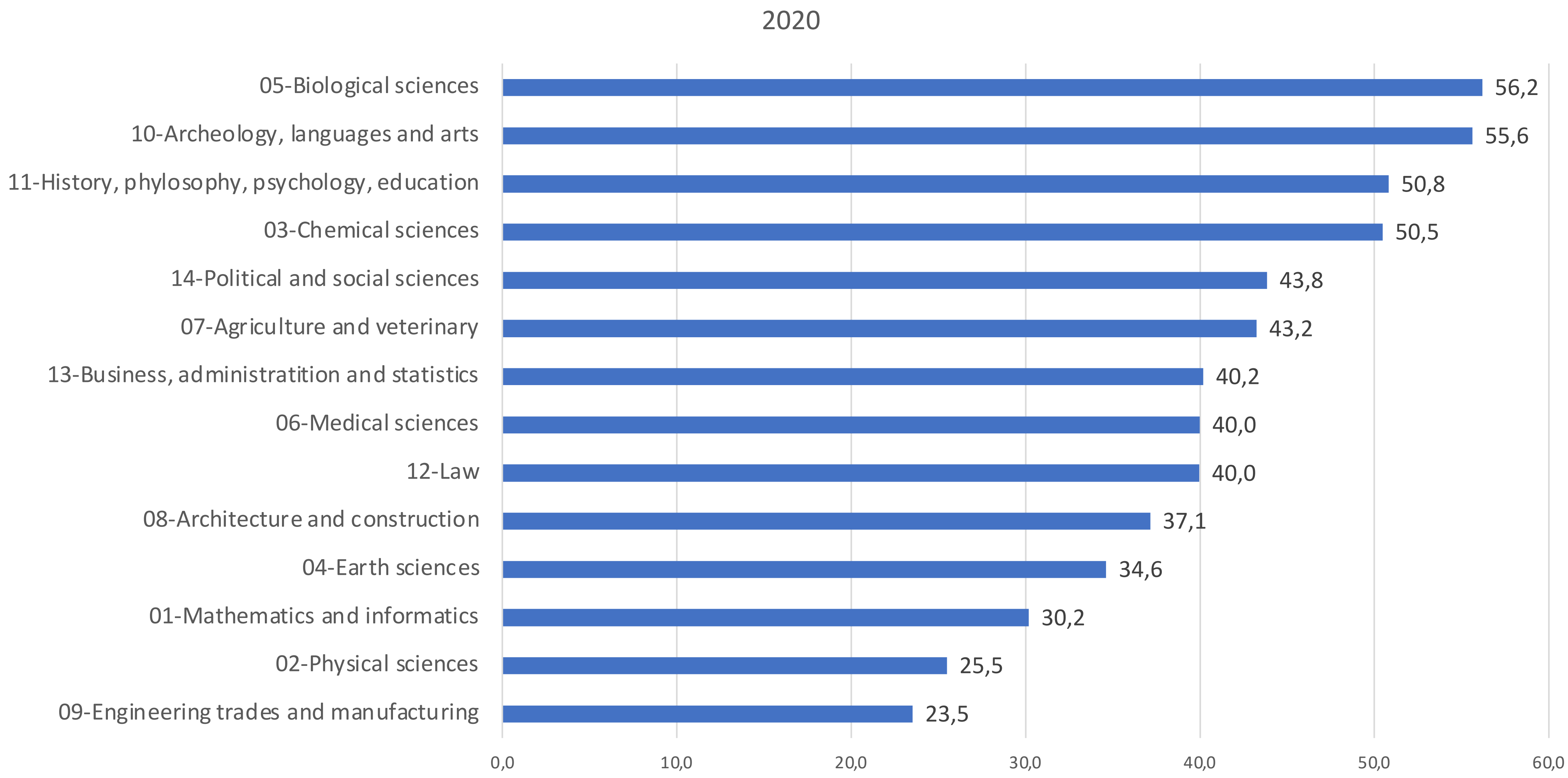

Why so few?
Alice Rossi, 1965


Why so low?
Inspired by:
Rossella Palomba, 2013




Why so slow?
Virginia Valian, 1999

# Why so few: female rates across scientific field - Italy

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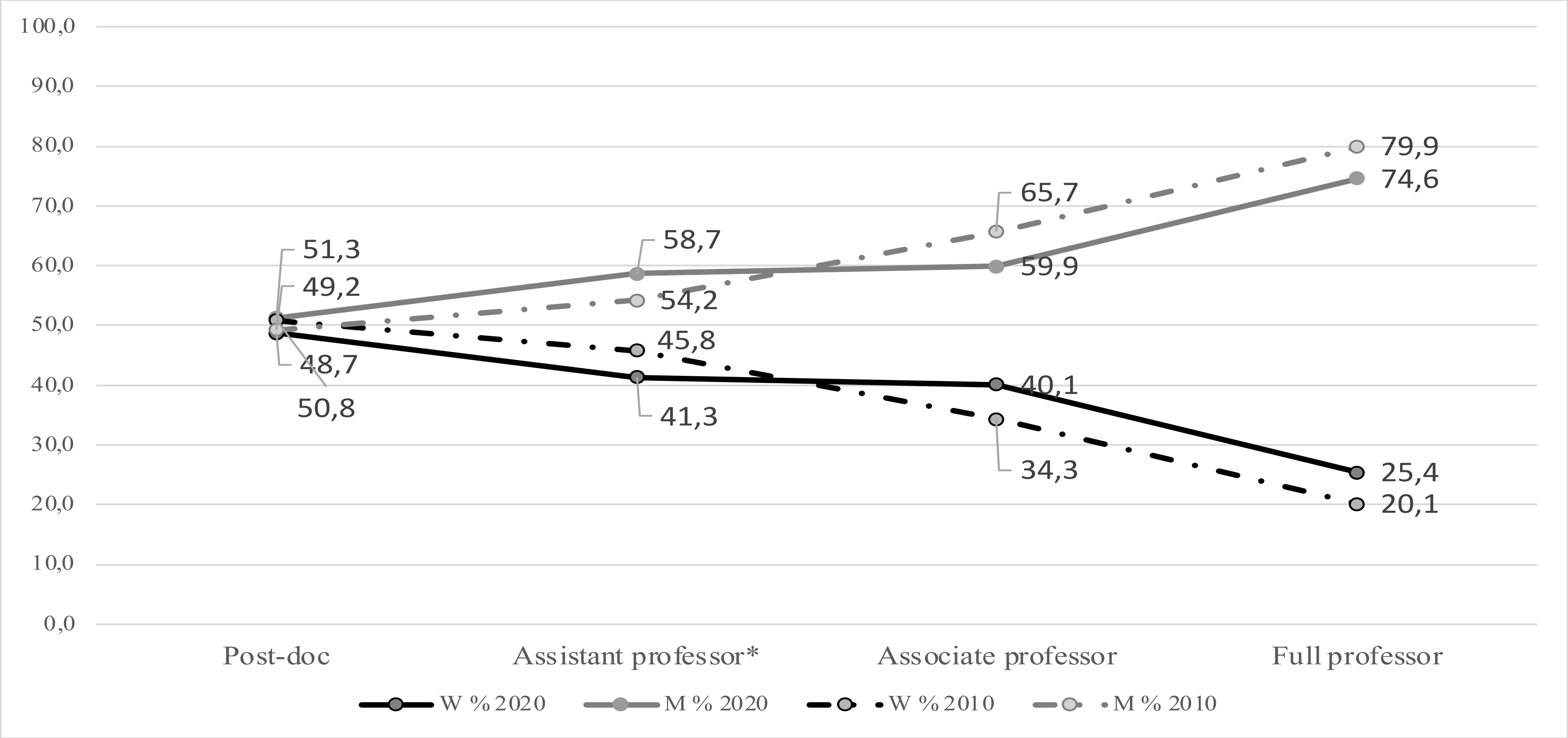
Source: MIUR data on the Italian academic population, Gaiaschi and Musumeci 2021

# Why so low: the scissor diagram




Gaiaschi, Musumeci, 2021 – Gaiaschi 2022

| 02 - Physical Sciences | | | | | |
|---|---|---|---|---|---|
| % F AR | %F RTDA | % F RTDB | % F RU | %F PA | % F PO |
| 31,2 | 43,7 | 18,8 | 29,1 | 21,9 | 14,6 |

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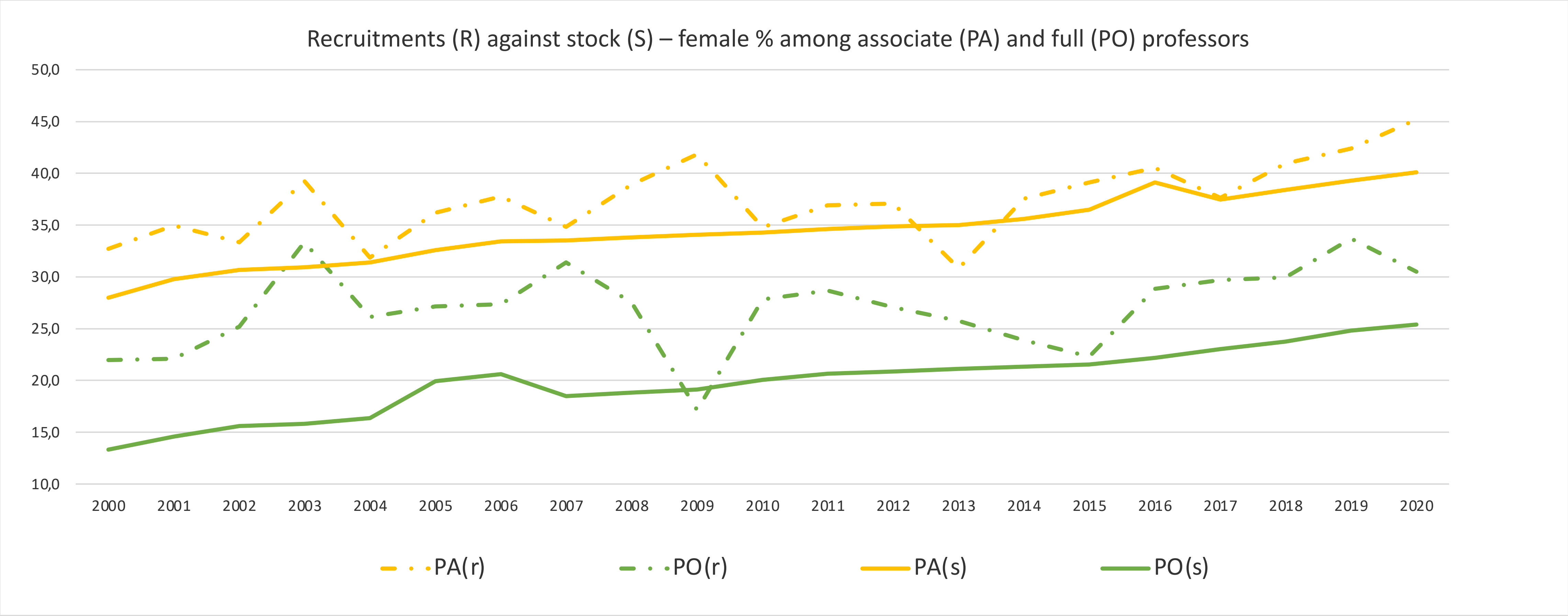
# Why so slow: recruitments vs employed




Source: MUR data - Gaiaschi and Musumeci, 2020, 2021

# Watch out: how to measure inequalities?

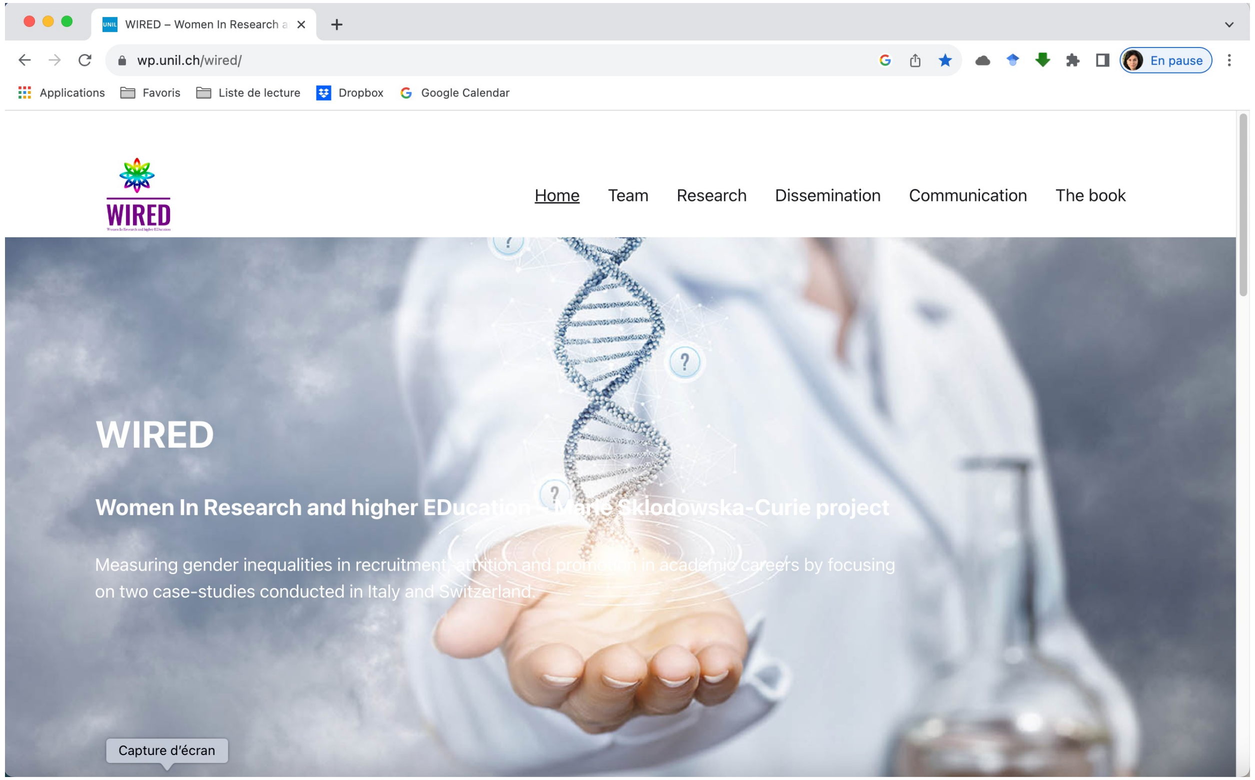
- Descriptive statistics can only provide us with **unadjusted** gender inequality gaps (in the career progression).
- Inequality does not mean discrimination!
- In order to see if discrimination is occurring it is essential to measure the **adjusted** gender gap through, for example, experimental methods or multivariate analysis on observational analysis!

# The adjusted gaps in academia

- The international literature shows that women have a smaller – **adjusted** – probability of becoming full professor (i.e. Perna et al. 2005; Durodoye et al. 2020; IT: Marini e Meschitti 2018), associate professor (i.e. Wolfinger et al. 2008; Box Steffenmeiser et al. 2015; Weisshaar 2017; Filandri e Pasqua 2019) and assistant professor (Groenwald et al. 2012; Wolfinger et al. 2008; Ginther e Kahn 2009).
- They are more likely to drop-out before obtaining tenure: Durodoye et al. 2020; Dubois-Shaik and Fusulier 2015, Huang et al. 2020.
- To date, studies that have measured the "adjusted" probability of career transition in Italy have focused on full (Marini and Meschitti, 2018; Filandri and Pasqua, 2019) or associate (Filandri and Pasqua) professors.
- The disadvantage that women experience in the transition from postdoc to assistant professor has been documented only at a descriptive level (Picardi, 2019; Gaiaschi and Musumeci, 2020, 2012, Gaiaschi 2022).
- To date, an "adjusted" measure of the likelihood of becoming an RTD is lacking, even in light of the contractual changes this position has gone through over time (L. 240/2010).
- The WIRED project is filling this gap!

# The WIRED project

## MSCA IF 2021-2023

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WIRED

Marie Skłodowska-Curie Actions

UNIL | Université de Lausanne

# Il progetto WIRED (2021-2023)

WIRED
Women In Research and higher EDucation

- Aim: to analyze the gender gap in academia in IT and CH with a focus on early career stages.
- Partnerships: MUR; UST; UNIL; UNIGE.
- TEAM: Camilla Gaiaschi (PI), Stephanie Steinmetz (UNIL), Giulia Valsecchi (UNIGE), Katy Morris (UNIL).
- Italian dataset: administrative data on the academic population + ASN data (provided by MUR) + 3 web sources on organizational performance: data on departments of excellence (MUR) 2017, Anvur data 2011-2014 and 2015-2019
- Range: 2005-2020
- Information on: gender, year of birth, nationality, position, area (14 items), SSD (361 items), ASN standardized productivity scores, year of application and attainment, area, university, department, 2017 score in the « departments of excellence ranking » (department), 2011-2014 and 2015-2019 scores in ANVUR ranking (universityXarea and SSD).

# Research questions

- WHAT – Do women have a smaller probability to cecome assistant professor?
- WHY – If it’s so: what are the reasons for this disadvantage?
- WHEN 1 -  Do women take longer to become RTD (with Katy Morris)?
- WHEN 2 – Has the gender gap changed over time?

# Methods and models

**WHAT: are postdoc women less likely to become RTDs?**

- Linear probability model (LPM) with random effects on 2010-2020 data

$Y_{it} = \beta_0 + \beta_1 gender + + \beta_p X_p + \alpha_i + \epsilon_{it}$

**WHY: what are the determinants of the gap?**

- "Nested" models and models with interactions (between gender and: productivity, science area, and % ordinary)

**WHEN 1 - do women take longer to get an RTD?**

- Survival analysis – «accelerated failure time» (AFT) su dati 2010-2020

**WHEN 2 - Has the gap changed since the reform?**

- Linear regression discontinuity model with RE on 2005-2020 data.

$Y_{it} = \beta_0 + \beta_3 time + \beta_1 gender + \beta_2 treat + \beta_4 treat*gender + \beta_4 time*gender + \beta_5 treat*time + \beta_p X_p + \alpha_i + \epsilon_{it}$

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# Some preliminary results

# What: the gender gap in recruitment

| | | | Unadjusted | Udjusted |
|---|---|---|---|---|
| M1 | AR > RTDab | b | -.040*** | -0.042*** |
| | | SE | .0017516 | .0016882 |
| | | N obs. | 254,299 | 254,299 |
| | | N ind. | 84,657 | 84,657 |
| M2 | AR > RTDa | b | -.024*** | -.031*** |
| | | SE | .0015251 | .0015264 |
| | | N obs. | 236,460 | 236,460 |
| | | N ind. | 83,505 | 83,505 |
| M3 | AR > RTDb | b | -.027*** | -.029*** |
| | | SE | .0015264 | .0012388 |
| | | N obs. | 226,19 | 226,19 |
| | | N ind. | 82,537 | 82,537 |
| M4 | RTDa > RTDb | b | -.032** | -.052*** |
| | | SE | .0071166 | .0073427 |
| | | N obs. | 45,946 | 45,946 |
| | | N ind. | 14,041 | 14,041 |

* p<0.05, ** p<0.01, *** p<0.001

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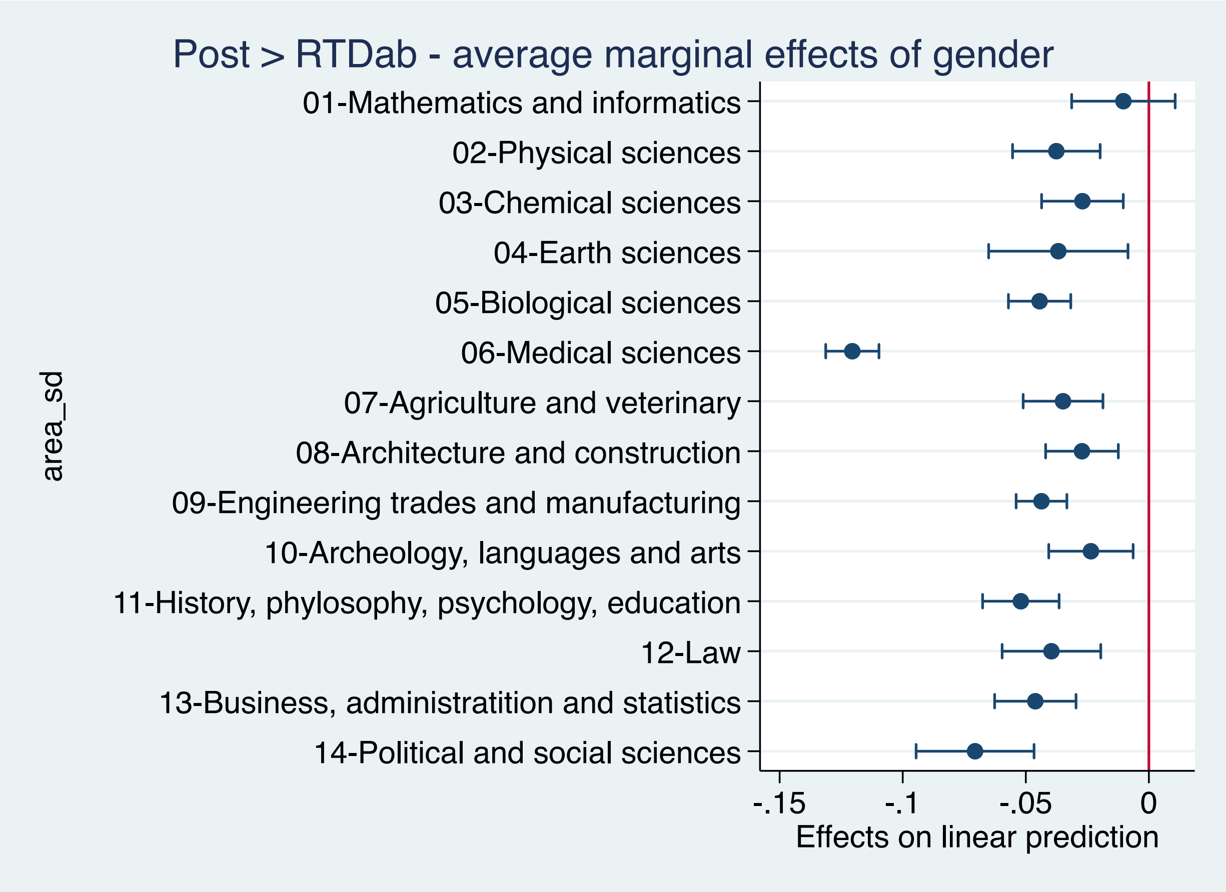
Controlli: tempo, età, nazionalità, indice di produttività standardizzato ASN, SSD (ERC-clustered), % di professoresse ordinarie in dipartimento (%), dimensione dell'ateneo, posizione nel ranking di eccellenza 2017, posizione nella graduatoria ANVUR 11-14 e 15-19

# Why: gender and self-promotion

| having succeded in the PA habilitation | gender_real | | |
|---|---|---|---|
| | M | W | Total |
| Tried and failed | 4,079<br>5.28 | 4,291<br>5.93 | 8,370<br>5.59 |
| Tried and successed | 29,812<br>38.58 | 22,218<br>30.69 | 52,030<br>34.76 |
| . | 43,390<br>56.15 | 45,875<br>63.38 | 89,265<br>59.64 |
| Total | 77,281<br>100.00 | 72,384<br>100.00 | 149,665<br>100.00 |

# Why: gender and scientific area




Watch out: nella transizione ad rtdA anche le aree 02-04 non riportano uno svantaggio femminile significativo!

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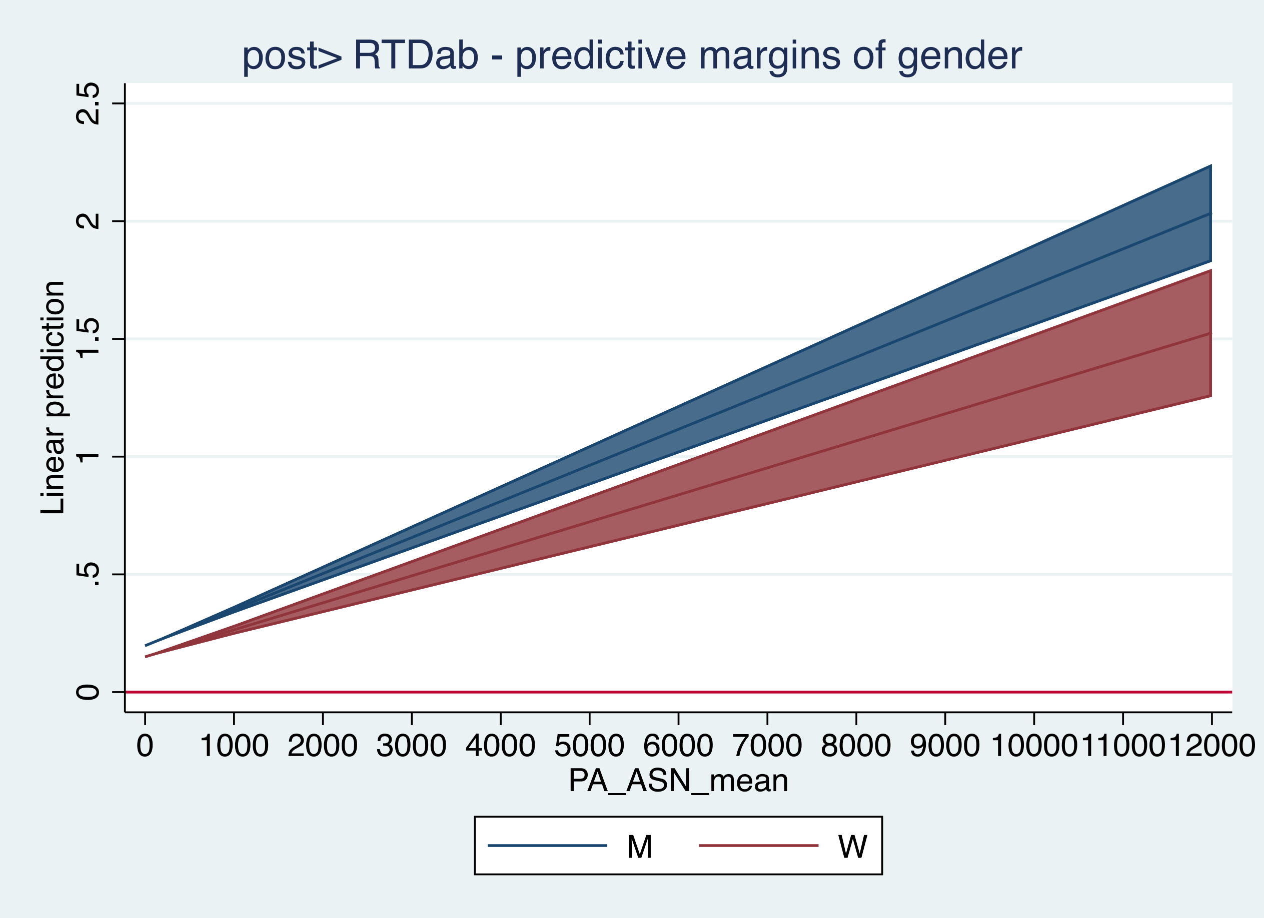
# Why: gender and scientific productivity



# When: the effects of the reform

| Average marginal effects of postreform*gender | | | | | | |
|---|---|---|---|---|---|---|
| **Udjsted model** | **Men** | | **Women** | | **W-M** | |
| Before the reform | 0 | (.) | 0 | (.) | -.023*** | ( .0027) |
| After the reform | -.850*** | (0.0021) | .0871*** | (0.0021) | -.043*** | (.0040) |
| N. obs: 529,275; N. ind: 123,354 - SE in parenthesis | | | | | | |
| * p < 0.05, ** p < 0.01, *** p < 0.001 | | | | | | |

- Random-effects Regression Discontinuity model:

  $Y_{it} = \beta 0 + \beta time + \beta gender + \beta treat + \beta treat*gender + \beta time*gender + \beta treat*time + \beta pXp + \alpha_i + \epsilon_{it}$

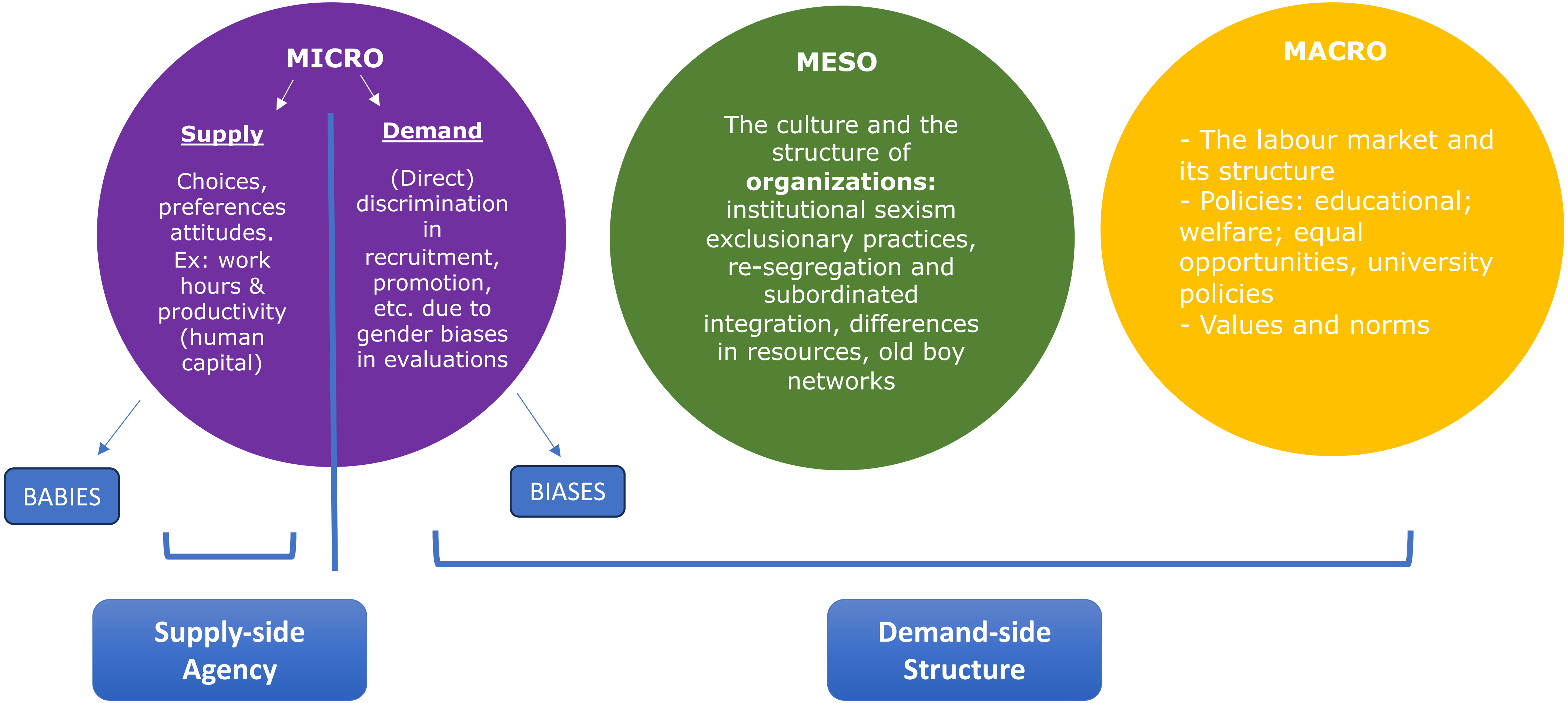
- DEP VAR: Y=RU (if year < 2012) + RTDa+RTDb
- TREATMENT (var « postreform »): post-reform=1 if year>2011; post-reform=0 if year<2012

# Preliminary conclusions

- Women are around -4% / -5% less likely to become researchers controlling for differences in: age, nationality, university, department, scientific field, individual and organizational productivity, etc.
- Women are less likely to apply for the ASN and this partly explains the gap!
- Scientific productivity does not " pay " equally for men and women in terms of chances for promotion.
- Scientific fields play a crucial role in explaining the gap: medicine is the most penalizing area for women, preceded by political and social sciences! Many STEM areas, on the other hand, are not more unequal than the SSH, particularly mathematics (where there is no gap!).
- The Gelmini reform seems to have widened the gender gap.

# Explaining the gender promotion gap

# Explaining the gender gap in promotion



# The reasons:

- Supply-side, **micro**:

    1. Differences in scientific and mathematical abilities and attitudes
    2. Differences in family responsabilities (*babies*)
    3. Differences in scientific productivity
    4. Differences in self-promotion

- Demand-side, **micro**: *biases* in evaluation processes

- Demand-side, **meso**: resources, networks, segregation, work-place climate.

- Demand-side, **macro**: university reforms and transformations

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# Thank you!

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More on the book:
https://www.carocci.it/prodotto/doppio-standard

More on my current project:
https://wp.unil.ch/wired/

More on me:
www.camillagaiaschi.com

# ANNEX