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PIANO NAZIONALE DI RIPRESA E RESILIENZA

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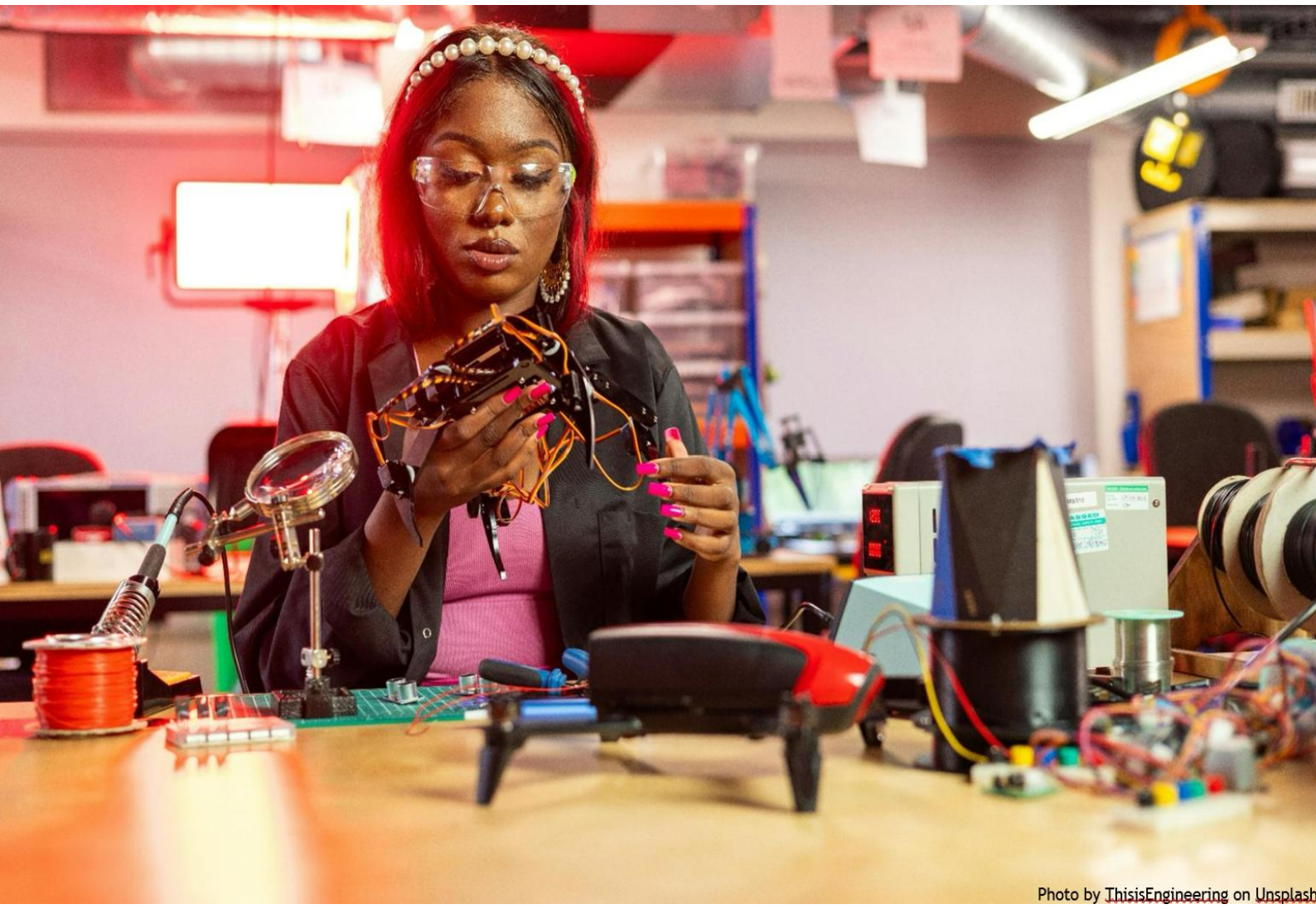
ALMA MATER STUDIORUM
UNIVERSITÀ DI BOLOGNA
DEPARTMENT OF MANAGEMENT

GENDER GAPS IN INNOVATION AND ENTREPRENEURSHIP: EVIDENCE, MECHANISMS, AND POLICY RESPONSE

28 JANUARY 2026, DEPARTMENT OF SOCIAL SCIENCES, UNIVERSITY OF FOGGIA

CONFERENCE PROCEEDINGS



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Proceedings of the final event of the PRIN project
"Women's inclusion in innovation and entrepreneurship"
(Prot. 2022TX2T3Y)

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Introduction

Daniela Bolzani (University of Bologna), Alessandro Muscio (University of Foggia), Giuseppina Testa (University of Foggia), & Giovanna Vallanti (LUISS University)

Universities, research centres, and public institutions are increasingly recognised as key actors in fostering innovation and entrepreneurship, contributing not only to technological advancement but also to broader socio-economic development. In this context, academic entrepreneurship, knowledge transfer, and innovation-driven activities have become central to both policy agendas and institutional strategies (Muscio et al., 2022). Yet, despite significant progress in women's access to higher education and scientific careers, persistent gender inequalities continue to characterise participation in innovation and entrepreneurship (Jennings & Brush, 2013; Giuri et al., 2020). These disparities are particularly evident in science, technology, engineering, and mathematics (STEM) fields and in innovation-intensive sectors, where women remain underrepresented among inventors, founders, and leaders of high-growth ventures.

Evidence consistently shows that women account for a minority of the global R&D workforce and an even smaller share of patenting and entrepreneurial activity (Jensen et al., 2018; UNESCO, 2019). The underrepresentation of women in innovation ecosystems reflects a complex interplay of individual, organisational, and institutional factors that shape career trajectories across the life course. These include early exposure to gender stereotypes, differences in educational pathways, unequal access to professional networks, and structural constraints related to work–family balance (De Bruin et al., 2007). Importantly, these dynamics are not confined to labour markets but are deeply embedded within academic institutions themselves, where gendered norms and evaluation systems may reproduce inequalities in research productivity, career progression, and engagement with industry (Klein, 2016; Murray & Graham, 2007).

This volume emerges from a workshop dedicated to advancing interdisciplinary understanding of gender gaps in innovation and entrepreneurship, bringing together scholars from economics, management, sociology, gender studies, and related disciplines. The workshop was organised within the PRIN research project "Women's inclusion in innovation and entrepreneurship" (Prot. 2022TX2T3Y), which adopted a multi-level and multi-method approach to investigate the origins and consequences of gender disparities across different stages of academic and professional careers. As highlighted in the project framework, addressing these inequalities is not only a matter of fairness but also of efficiency, as the underutilisation of female talent represents a loss in terms of innovation capacity and economic growth

The contributions included in these proceedings reflect the richness and diversity of perspectives needed to tackle this multifaceted issue. A first set of papers focuses on gender dynamics within academia, shedding light on how institutional contexts and individual constraints shape individual wellbeing, research outcomes, and career trajectories. In particular, the analysis of time allocation

and research productivity contributes to the broader literature on gender differences in academic performance, which has highlighted the role of structural constraints and organisational environments in shaping research outcomes (Muscio et al., 2022). Complementing this perspective, research on family influences in female entrepreneurship highlights the importance of social and institutional contexts in shaping entrepreneurial engagement, reinforcing findings that emphasise differences in networks, attitudes, and access to entrepreneurial resources (Jennings & Brush, 2013; Shaw et al., 2009).

At a more theoretical level, contributions proposing dynamic models of gender inequality in academic careers provide insights into the cumulative nature of disadvantage. These perspectives align with the broader literature emphasising how gender gaps emerge and persist through reinforcing mechanisms across different career stages, from education to academic advancement and entrepreneurial activity (De Bruin et al., 2007).

A second group of papers addresses gender issues in entrepreneurship and innovation more directly, exploring both firm-level dynamics and broader systemic factors. Research on corporate governance and startup performance examines how leadership structures and diversity influence firm outcomes, contributing to ongoing debates on the relationship between diversity and innovation performance (Dezsö & Ross, 2012). Other contributions investigate gender differences in motivations related to emerging domains such as the circular economy, highlighting how organisational and institutional drivers may shape innovation strategies differently for men and women.

The topics presented during the doctoral workshop further expand the scope of the discussion by addressing emerging and underexplored areas. Contributions on job satisfaction and entrepreneurial engagement among female academics, gender-lens investing, and gender gaps in climate finance illustrate the growing relevance of gender perspectives in new domains of innovation and finance. These topics reflect an increasing recognition that gender inequalities are shaped by complex and context-specific mechanisms, including institutional environments and broader socio-economic structures (Ahl & Marlow, 2012).

Taken together, the papers in this volume highlight several key themes. First, gender gaps in innovation and entrepreneurship are not the result of a single factor but emerge from the interaction of individual characteristics, organisational practices, and institutional frameworks. Second, these gaps are dynamic and cumulative, requiring multi-level and longitudinal approaches to be fully understood. Third, addressing gender inequalities requires coordinated action across multiple levels, including policy interventions, organisational change, and cultural transformation.

Importantly, the workshop and the contributions presented here also emphasise the need for methodological diversity and interdisciplinary dialogue. Quantitative analyses based on large-scale datasets provide robust evidence on the magnitude and drivers of gender gaps, while qualitative

and conceptual approaches offer deeper insights into underlying mechanisms. This combination is essential to advance both theory and practice in the study of gender and innovation.

From a policy perspective, reducing gender disparities in innovation and entrepreneurship is increasingly recognised as a priority at both national and international levels. Greater inclusion of women in these domains would not only enhance fairness but also improve economic performance by fostering diversity, creativity, and the development of new ideas and markets (Brush & Cooper, 2012). At the same time, universities play a pivotal role as both producers of knowledge and incubators of entrepreneurial activity, making them key sites for intervention and policy design (Muscio et al., 2022).

In conclusion, this volume contributes to a growing body of research that seeks to understand and address gender inequalities in innovation and entrepreneurship. By bringing together diverse perspectives and empirical evidence, it advances scholarly debate while also offering insights for policy and managerial practice. The contributions highlight the importance of continued research and collaboration to foster more inclusive and effective innovation ecosystems.

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Conference Program

- **09:00 – Welcome Address Alessandro Muscio**: *"Wellbeing in Academia"*

SESSION 1 | Gender Dynamics in Academia

- **09:30 – Giuseppina Testa**: *"Time Allocation and Research Productivity: Evidence from Italian Academics"*
- **10:00 – Belen Rodriguez**: *"Gender Differences in Female Entrepreneurship: The Role of the Family"*
- **10:30 – Francesca A. Lisi, Angela Martiradonna**: *"A Dynamical Model for Assessing Gender Inequality in Academic Careers"*

11:00 – Coffee Break

SESSION 2 | Entrepreneurship and Innovation

- **11:30 – Daniela Bolzani**: *"CEO Dual Leadership and Diverse Boards: Board Composition and Startup Performance"*
- **12:00 – Alessandro Montanaro**: *"Drivers of the Circular Economy: Investigating Gender Differences in Corporate Motivations"*

12:30 – Lunch Break

SESSION 3 | Doctoral Workshop: Paper Development

- **14:00 – Nadia Perveen**: *"Does Job Satisfaction impact positively to the Entrepreneurial Engagement in Female Academics in Italy"*
- **14:30 – Maria Dulcet**: *"Rethinking Gender-Lens Investing in Africa: Market Gaps, Financial Instruments, and Structural Misalignment"*
- **15:00 – Chipiliro Miyanga**: *"Gender Gaps in Climate Finance: Evidence from Global, Sub-Saharan, and Malawian Contexts (2019–2025)"*

15:30 – Concluding Remarks

Welcome Address: Wellbeing in Accademia

Alessandro Muscio (University of Foggia), Barbara Napoli (University of Foggia), Giuseppina Testa (University of Foggia) & Giovanna Vallanti (LUISS University)

Keywords: Scientific productivity, wellbeing, work-life balance, academia

Background

This work examines the relationship between academic wellbeing and research productivity, with particular emphasis on the role of institutional conditions in shaping both outcomes. In recent years, universities have faced mounting pressures associated with funding constraints, increasing competition, and the growing reliance on performance metrics to evaluate academic quality. Within this context, research productivity has become a dominant benchmark, often crowding out other dimensions of academic value and raising concerns about the sustainability of current academic systems. At the same time, the mental health and wellbeing of academics have emerged not only as welfare concerns but as structural vulnerabilities that may directly affect the capacity of universities to produce high-quality research.

Building on this perspective, our research challenges the implicit assumption that productivity and wellbeing are either unrelated or naturally aligned. Instead, it develops an integrated framework in which academic research productivity is jointly determined by individual wellbeing and institutional conditions. Individual wellbeing is conceptualized along two complementary dimensions: psychological wellbeing, capturing emotional and cognitive states such as stress, emotional stability, and life satisfaction; and work–life balance, reflecting the ability to reconcile professional demands with personal and family responsibilities. Institutional conditions are captured through three key domains: research support and access to funding, workload structure in terms of teaching and administrative duties, and the inclusiveness and diversity of the academic environment.

Methodology

The empirical analysis draws on a novel and comprehensive dataset derived from a large-scale national survey conducted in Italy in Autumn 2024, administered to the universe of Italian academics and integrated with administrative data. The dataset provides detailed information on individual characteristics, working conditions, institutional environments, and self-reported research outcomes over a recent and well-defined time horizon. With nearly 6,000 valid responses covering all academic ranks and disciplines, it enables a rich and multidimensional analysis of the

interaction between personal and organizational factors in shaping both wellbeing and scientific productivity .

To address potential endogeneity concerns arising from reverse causality and unobserved heterogeneity, the analysis adopts an instrumental variables strategy exploiting satisfaction with community and personal relationships as sources of exogenous variation in psychological wellbeing. This approach allows us to isolate the causal effect of wellbeing on research productivity, overcoming the limitations of standard OLS estimates.

Key findings

The results reveal a nuanced and, in part, paradoxical relationship. Psychological wellbeing has a positive and robust effect on research productivity, with instrumental variable estimates indicating that conventional OLS specifications tend to underestimate its magnitude. This finding supports the view that emotional and psychological conditions play a central role in shaping cognitive functioning, motivation, and sustained research engagement. In contrast, work–life balance and family responsibilities are negatively associated with short-run publication output, despite their positive effect on psychological wellbeing. This pattern reflects a fundamental trade-off consistent with time allocation models: while improved balance enhances individual wellbeing, it may reduce the time available for research activities within a performance regime that rewards measurable output over longer-term sustainability.

Institutional factors emerge as key determinants of both productivity and wellbeing. Access to research funding and a supportive departmental research environment are strongly and positively associated with scientific output, while heavier teaching and administrative workloads exert a consistently negative effect, highlighting the constraining role of non-research duties. At the same time, several institutional characteristics, including inclusiveness and gender balance, primarily influence productivity indirectly through their positive effect on psychological wellbeing rather than through direct effects on publication output. This suggests that organizational environments shape research performance not only by allocating resources and time but also by affecting the psychological conditions under which knowledge is produced.

Taken together, the findings point to the existence of a structural tension within contemporary academic systems. The practices and conditions that protect and enhance individual wellbeing in the short term may conflict with the metrics used to evaluate academic performance. Universities therefore face a trade-off between maximizing short-run measurable output and sustaining the human conditions that underpin high-quality research over time. Policies that focus exclusively on performance incentives and competitive pressure risk undermining the very foundations of scientific productivity.

Session 1 – Gender Dynamics in Academia

Extended Abstract: Time Allocation and Research Productivity: Evidence from Italian Academics

Alessandro Muscio (University of Foggia), Giuseppina Testa (University of Foggia), Giovanna Vallanti (LUISS University)

Keywords: Gender differences, academic labor market, research productivity, family responsibilities, faculty workload

Background

Persistent gender gaps in academic productivity have been documented across disciplines and national contexts (Ginther & Kahn, 2004, 2009; Larivière et al., 2013; Mairesse & Pezzoni, 2015). Although the magnitude of these differences varies by field, rank, and institutional setting, female academics consistently exhibit lower publication output than their male counterparts. A substantial body of research attributes these disparities to family responsibilities and childbearing (Ceci & Williams, 2011; Lutter & Schröder, 2020), unequal access to research resources (Beaudry & Larivière, 2016), and structural features of academic labor markets, including promotion systems and evaluation procedures (De Paola et al., 2017; Misra et al., 2018).

At the same time, academic work is inherently multi-task. Faculty members allocate time across research, teaching, administrative duties, and third-mission activities. Because research output is more heavily weighted in promotion and evaluation systems, time devoted to teaching and service may crowd out research effort and reduce publication output (Fox, 1992; Hesli & Lee, 2011). An expanding literature shows that women are disproportionately engaged in teaching- and service-intensive roles, often described as “academic housework”, which tend to carry lower career returns (Guarino & Borden, 2017; Heijstra et al., 2017; Misra et al., 2012). However, relatively few studies directly examine how detailed time allocation across academic tasks relates to research productivity, and whether gender differences persist once accumulated research performance is taken into account.

This paper addresses this gap by adopting a time-allocation framework in which academics distribute a fixed time endowment across paid work, unpaid work, leisure, and specific academic tasks (Becker, 1965). We investigate three research questions. First, how do parenthood and family responsibilities shape the allocation of time across paid work, unpaid work, and leisure? Second, are

gender and family characteristics associated with systematic differences in the distribution of working time across research, teaching, and administrative duties? Third, how does time allocation relate to research productivity, and do gender differences in recent publication output persist once past productivity and workload composition are considered?

Methodology

The study relies on an original individual-level survey administered in Italy in Autumn 2024 to academic staff across all ranks (researchers, associate professors, and full professors). The final sample includes 5,938 academics out of approximately 49,000 eligible individuals (response rate ≈12%). The survey collects detailed information on demographic characteristics, academic careers, family responsibilities, and time allocation.

A distinctive feature of the dataset is the detailed measurement of time use. Respondents report weekly hours devoted to paid work, unpaid work, and leisure, as well as the percentage of working time allocated to research, teaching and administrative duties, and other academic activities. Categorical time variables are converted into continuous measures using interval midpoints, and total weekly time commitment is constructed as the sum of hours across domains.

Research productivity is measured as the number of publications produced in the past three years. Past productivity is proxied by cumulative scientific output divided by career years, capturing accumulated research performance. Indicators of family responsibilities include both parenthood (number and age of children) and a self-reported measure of primary responsibility for household and family-related activities.

The empirical analysis proceeds in three stages. First, we estimate regressions of weekly hours devoted to paid work, unpaid work, and leisure on gender, parenthood, primary family responsibility, academic rank, age, academic experience, and institutional and disciplinary fixed effects. Second, we examine how these characteristics are associated with the share of working time devoted to research, teaching and administrative duties, and other tasks. Third, we estimate log-linear models of recent research productivity as a function of total working hours, workload composition (share of time devoted to teaching and administrative duties), family characteristics, academic rank, experience, institutional quality, and past productivity. Interaction terms between gender and workload, and between gender and child age categories, allow us to assess heterogeneous effects.

Key findings

The results reveal significant heterogeneity in time allocation and highlight the interaction between institutional workload distribution and family responsibilities as a key mechanism underlying gender differences in research productivity.

First, regarding overall time allocation, women report slightly higher paid working hours than men but significantly lower leisure time. Parenthood is associated with a reduction in paid working hours and a substantial increase in unpaid work. The interaction between having children and bearing primary family responsibility significantly reduces paid working hours, particularly for women. Unpaid work increases strongly with both parenthood and primary caregiving responsibility, while higher academic rank is associated with fewer unpaid hours. Leisure time is lower for women and for parents, indicating tighter overall time constraints.

Second, gender differences emerge in the allocation of working time across academic tasks. Female academics devote a smaller share of their working hours to research and a larger share to teaching and administrative duties relative to men. Parenthood alone does not significantly reduce research time, and interactions between gender and parenthood are generally not statistically significant in explaining research time shares. Past research productivity is strongly and positively associated with the share of time devoted to research and negatively associated with teaching time, suggesting cumulative advantages in research specialization. Higher academic rank is associated with a lower research share and greater engagement in teaching and administrative activities.

Third, time allocation plays a central role in explaining research productivity. A larger share of working time devoted to teaching and administrative duties is strongly and negatively associated with publication output in the past three years. Total weekly working hours are positively related to productivity, confirming that time investment translates into research output. In baseline models, female academics exhibit lower recent publication output. However, once past productivity is included, the gender coefficient becomes statistically insignificant, indicating that differences in recent output largely reflect accumulated research performance.

Nevertheless, gender-specific constraints re-emerge when workload composition and child age are considered. The negative association between teaching and administrative workload and productivity is significantly stronger for women. Moreover, women with children younger than six years display lower recent publication output relative to women without children, while no significant penalties are observed for older children. These findings suggest that early childcare years represent a critical period during which caregiving demands interact with workload allocation to shape research outcomes.

Overall, the study contributes to the literature by integrating family responsibilities, within-job time allocation, and research productivity within a unified empirical framework. Using detailed time-use data, it shows that gender disparities are not solely driven by differences in total working hours or parenthood per se. Rather, they reflect the interaction between cumulative research performance, institutional workload distribution, and caregiving responsibilities. From a policy perspective, the findings highlight the importance of transparent and equitable allocation of teaching and service duties, particularly for women and during early parenthood, alongside support measures addressing caregiving constraints.

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Extended Abstract: Gender Differences in Female Entrepreneurship: The Role of the Family

Belén Rodríguez Moro (University Pompeu Fabra) & Giovanna Vallanti (LUISS University)

Keywords: Gender; Entrepreneurship; Intergenerational mobility; Gender norms; Italy.

Background

Women remain significantly underrepresented in entrepreneurship across advanced economies, with gaps that are especially pronounced in capital-intensive and high-growth sectors (Hal- abisky and Shymanski, 2023). These disparities carry both equity and efficiency implications: systematic misallocation of talent along gender lines reduces aggregate productivity (Hsieh et al., 2019). While a large literature points to differential access to finance, networks, and local role models as proximate barriers, this paper shifts attention to a closer institution: the family. Intergenerational persistence in entrepreneurship is well documented, and emerging evidence points to gender differences in this process (Lindquist et al., 2015; Bell et al., 2019); yet it remains unclear to what extent such asymmetries reflect differential access to resources versus the influence of gender roles and culturally transmitted expectations within the family.

Methodology

We study Ph.D. graduates in Italy using administrative survey data from the *Inserimento Professionale dei Dottori di Ricerca* (IPDR), which tracks labor market outcomes five years after doctoral completion. We pool the 2014 and 2018 survey waves, covering Ph.D. cohorts graduating in 2008, 2010, 2012, and 2014. The setting is well suited to isolating family- background effects: individuals share high and relatively homogeneous levels of human capital and career orientation, so entrepreneurial entry reflects differential career selection rather than educational sorting. Our sample comprises 23,019 Ph.D. graduates, of whom 2.7% are engaged in entrepreneurial activity five years after graduation—substantially below the 10.1% rate in the general Italian population, consistent with the high opportunity cost of entrepreneurship for highly educated workers.

In the final version of the paper, we will expand the analysis to include the 2009 IPDR wave, thereby increasing the sample size and improving statistical power, particularly for the smaller cells involving entrepreneurial mothers and gender interactions. The extended dataset will also exploit more detailed occupation codes (up to four-digit classifications), which will allow us to implement a finer-grained skill-content analysis that is not feasible in the current draft.

Key findings

Table 1 documents the key descriptive patterns. Women are 1.5 percentage points less likely than

men to become entrepreneurs—a gap that represents roughly 43% of the male entrepreneurship rate and is pervasive across scientific fields. By contrast, the gender gap in employment is only 0.9 percentage points, indicating that entrepreneurship is a specific and concentrated margin of gender inequality. Among Ph.D. graduates with at least one entrepreneurial parent (18.3% of the sample), raw entrepreneurship rates are nearly twice those of peers without entrepreneurial family backgrounds, motivating the intergenerational analysis that follows.

Table 1: Entrepreneurship by Gender and Parental Background

	Entrepreneurship rate (%)		**Parental background (%)**	
	Women	Men	Entr. mother	Entr. father
Full sample	2.0	3.5	2.7	17.1
By field:				
STEM	2.4	3.9	2.7	15.8
Social Sci.	2.2	3.2	2.6	15.4
Humanities	1.9	2.8	2.8	15.7
By parental background:				
No entr. parent	1.8	3.0	–	–
Entr. father only	2.6	5.4	–	–
Entr. mother only	2.5	6.8	–	–
Both parents entr.	3.3	6.1	–	–

Notes: Own calculations from IPDR (2014 and 2018 waves). The sample comprises Ph.D. graduates observed five years after completion. Regulated liberal professions (law, medicine, architecture) are excluded from the definition of entrepreneurship. The overall sample mean entrepreneurship rate is 2.7%.

Gender Asymmetry in Intergenerational Transmission

We estimate linear probability models of the form

$$Y_{i,t,j,s} = \beta_0 + \beta_1 \mathbf{1}\{p_i = a\} + \vartheta\,\text{Female}_i + \alpha\,\mathbf{1}\{p_i = a\}\times\text{Female}_i + \Gamma X_{i,t} + \gamma_t + \gamma_j + \varepsilon_i,$$

where Y_i indicates entrepreneurial activity, $\mathbf{1}\{p_i = a\}$ captures parental entrepreneurial status (with $a \in$ {father only, mother only, both} and no entrepreneurial parent as omitted category), $X_{i,t}$ includes citizenship, undergraduate grade, and parental education, and γ_t, γ_j are Ph.D. cohort and university-province fixed effects. Standard errors are clustered at the university-province level.

Table 2 reports the results. The first two columns present pooled and gender-interacted estimates. Having at least one entrepreneurial parent increases the probability of entrepreneurial entry by 1.7–2.0 percentage points—roughly a doubling of the baseline rate of 2.7%—an effect that is stable across

specifications and not driven by parental education or field selection. The residual gender gap conditional on parental background is 1.8–1.9 percentage points.

Allowing for gender-specific transmission (column 2) reveals a large and significant asymmetry: daughters receive roughly two-thirds less of the intergenerational transmission effect than sons, and this differential accounts for a meaningful share of the unconditional gender gap. Columns 3–4 disaggregate by the sex of the entrepreneurial parent and show that the asymmetry is not symmetric across mother and father. Having an entrepreneurial father raises sons' entrepreneurial entry by 2.6 percentage points; having an entrepreneurial mother raises it by 4.3 percentage points—an effect exceeding the baseline rate. For daughters, both interactions are negative. The female–father interaction is −1.7 percentage points, while the female–mother interaction is −4.5 percentage points, fully and precisely offsetting the maternal effect. The net impact of having an entrepreneurial mother on daughters' entrepreneurial entry is statistically indistinguishable from zero.

Table 2: Intergenerational Transmission of Entrepreneurship by Parental Sex and Child Gender

	(1) Pooled	(2) × Female	(3) By parent sex	(4) × Female
Entrepreneurial parent	0.017***	0.030***		
	(0.004)	(0.006)		
× Female		−0.020***		
		(0.007)		
Father only			0.017***	0.026***
			(0.004)	(0.007)
× Female				−0.017**
				(0.008)
Mother only			0.018**	0.043**
			(0.009)	(0.017)
× Female				−0.045**
				(0.019)
Both parents			0.026***	0.032**
			(0.009)	(0.016)
× Female				−0.011
				(0.019)
Female	−0.019***	−0.014***	−0.017***	−0.013***
	(0.003)	(0.003)	(0.002)	(0.003)
Observations	19,637	19,616	19,637	19,616
Ph.D. cohort FEs	✓	✓	✓	✓

Parental education	✓	✓	✓	✓
Field & univ.-province FEs		✓		✓

Notes: OLS estimates. Outcome: indicator for entrepreneurial activity five years after Ph.D. completion. Omitted category: no entrepreneurial parent. Standard errors clustered at university-province level in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

These findings directly contradict the prediction that same-sex transmission should be the dominant mode of intergenerational persistence (Lindquist et al., 2015). Entrepreneurial mothers generate a particularly pronounced gender asymmetry: they transmit a large advantage to sons but nothing to daughters. We therefore examine more closely the role of family as a locus of cultural transmission, asking whether gender-differentiated socialization and the intergenerational transmission of beliefs about the costs and returns to entrepreneurship can account for the observed asymmetry (Fernández, 2013).

Skills vs. Occupational Conversion

A natural concern is that daughters simply fail to acquire entrepreneurial skills from their parents. We address this replacing the entrepreneurship indicator with a patenting outcome. Patenting activity—a measure of innovative and technical output independent of occupational status—shows no significant gender asymmetry in intergenerational transmission: the female interactions are small and statistically insignificant across all specifications (available upon request). If daughters were not inheriting entrepreneurial human capital from their parents, we would expect this asymmetry to extend to patenting.

In a further version of the paper, we will construct an occupation-level measure of en- trepreneurial skill intensity. We match the full universe of skill descriptors in the ESCO taxonomy to the OECD entrepreneurial competency framework, compute pairwise semantic similarity scores using sentence-level language model embeddings, and classify each skill as entrepreneurial or non-entrepreneurial based on a theoretically motivated threshold. Skill- level classifications are then aggregated to the three-digit ISCO occupation level, weighting by the number of skills per occupation. This procedure yields a continuous measure of how intensively each occupation demands competencies associated with entrepreneurial activity—independently of whether the worker is formally self-employed.

Taken together, the patenting and preliminary skill-based evidence indicate that the intergenerational transmission of entrepreneurial competencies does not exhibit the same gender differential as occupational entrepreneurship. Daughters of entrepreneurial parents appear to acquire relevant skills, but are less likely to convert those competencies into entrepreneurial careers.

Gender Norms and the Conversion of Family Background

We examine whether the gender asymmetry in occupational transmission varies with local gender attitudes. We exploit province-level voting outcomes from the 1981 Italian referendum on abortion rights—the share of votes cast against restrictions—as a proxy for gender- progressive norms. Provinces in the bottom quartile are classified as traditional. We augment the baseline specification with triple interactions between gender, parental background, and a traditional-province indicator, conditional on university-province fixed effects and the full set of controls. The analysis is restricted to respondents for whom province of birth is observed (N = 5,975).

Table 3 reports the results. Growing up in a traditional province is associated with a 1.2 percentage point lower probability of entrepreneurship—a substantively large effect relative to the sample mean. The female indicator conditional on parental background is small and insignificant, confirming that traditional norms do not simply reduce women's entrepreneurial entry uniformly. Rather, the triple interaction terms indicate that the gender asymmetry in intergenerational transmission is further attenuated in more traditional environments. For daughters with two entrepreneurial parents, the triple interaction is −0.093 (standard error 0.068)—imprecisely estimated given the small cell sizes, but economically large: it implies a near-complete elimination of any intergenerational transmission advantage for daughters from the most entrepreneurial family backgrounds in traditional provinces. The results are robust to alternative norm thresholds and to specifications using the continuous referendum vote share.

Table 3: Gender Norms, Parental Entrepreneurship, and Entrepreneurial Entry

	(1)	(2)
Father only	0.033***	0.038**
	(0.012)	(0.019)
Mother only	0.037	0.028
	(0.026)	(0.034)
Both parents	0.059*	0.039
	(0.030)	(0.040)
Female × Father only	−0.025*	−0.020
	(0.014)	(0.023)
Female × Mother only	−0.052**	−0.048
	(0.026)	(0.034)
Female × Both parents	−0.037	0.008
	(0.035)	(0.052)
Traditional province	−0.012**	−0.012*

	(1)	(2)
	(0.005)	(0.007)
Female × Traditional		0.005
		(0.008)
Female × Father × Traditional		−0.008
		(0.029)
Female × Mother × Traditional		−0.012
		(0.054)
Female × Both × Traditional		−0.093
		(0.068)
Female	−0.004	−0.007
	(0.004)	(0.007)
Observations	5,975	5,975
Ph.D. cohort FEs	✓	✓
Field & univ.-province FEs	✓	✓

Notes: OLS estimates. Outcome: entrepreneurial activity five years after Ph.D. completion. Traditional province defined as bottom quartile of the province-level vote share against abortion restrictions in the 1981 referendum. All specifications include controls for parental education and region fixed effects. Sample restricted to respondents with observed province of birth. Stan- dard errors in parentheses. *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

We document a systematic gender asymmetry in the intergenerational transmission of entrepreneurship among highly educated individuals. Sons of entrepreneurial parents are nearly twice as likely to become entrepreneurs as sons without such backgrounds; daughters with identical family backgrounds show a transmission effect two-thirds smaller. The asymmetry is largest and statistically complete for maternal entrepreneurship—entrepreneurial mothers confer no entrepreneurial advantage on daughters, despite transmitting a large premium to sons. Patenting activity and occupation-level skill content exhibit no such gender differential, indicating that the bottleneck is not skill formation but occupational conversion: daughters acquire entrepreneurial competencies, but are less likely to act on them. The conversion failure is most pronounced in provinces with more conservative gender attitudes, pointing to norms and occupational expectations as the binding constraint. These findings suggest that policies aimed at closing the entrepreneurial gender gap should target the normative and structural barriers that prevent women

from translating existing competencies into entrepreneurial entry.

As an extension, the final version will incorporate an additional survey wave (2009), increasing the sample size and strengthening inference in smaller subsamples, and will leverage four-digit occupation codes to conduct a more detailed skill-content analysis. This will allow us to test more precisely whether gender asymmetries arise at the level of task composition rather than at the point of entrepreneurial entry itself.

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Extended Abstract: A Dynamical Model for Assessing Gender Inequality in Academic Careers

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Keywords: gender bias, homophily, academic hierarchies, STEM disciplines, dynamical systems

Background

Gender inequality in academic careers remains a persistent and multifaceted phenomenon that requires rigorous analytical tools to be properly understood and addressed (European Commission: Directorate-General for Research and Innovation, 2025). Despite substantial progress in educational attainment and increasing female participation at early career stages, women continue to be underrepresented in senior academic positions, particularly in STEM disciplines. This persistent vertical segregation suggests that formally gender-neutral recruitment and promotion rules may coexist with dynamic mechanisms that gradually amplify initial imbalances along the academic hierarchy.

Mathematical modeling has recently emerged as a valuable approach to disentangle the structural mechanisms underlying gender disparities in professional hierarchies. In this work, we develop and apply a differential equation–based framework inspired by the model of gender bias and homophily introduced by Clifton et al. (2019), originally conceived as a general model of professional hierarchies, to analyze the evolution of gender representation across academic career levels. The framework is defined by a system of coupled nonlinear differential equations describing the evolution of the female share at each hierarchical level. Promotion flows depend on position availability at higher ranks and on two key behavioral parameters: homophily in application and bias in evaluation. Homophily regulates the propensity to apply as a function of the gender composition at the higher level, while bias affects promotion probabilities conditional on application. The hierarchical structure induces interdependence across levels, so that exits and promotions at higher ranks influence the dynamics below. Through the interaction of these two mechanisms, small initial imbalances may be amplified over time, leading to multiple long-run configurations and path-dependent outcomes. This dynamic structure provides a formal representation of the *leaky pipeline* phenomenon and explains how persistent underrepresentation may arise even in the absence of explicit discriminatory rules.

Methodology

Within the framework of a Horizon Europe Seeds project on the role of Universities in Gender Inclusion Policies, the model has been applied to academic career data from the University of Bari Aldo Moro over the period 2004–2022, with a focus on two STEM disciplines: Mathematics and Informatics (Lisi et al., 2025).

Key Findings

Parameter estimates suggest that, in Informatics, evaluative bias against women dominates the dynamic role of homophily, leading to persistent gender gaps at senior academic levels despite comparatively lower levels of network segregation. In contrast, Mathematics exhibits high homophily combined with neutral or favorable bias, resulting in more stable and, in some cases, improving female representation over time. Figure 1 compares the observed and simulated female shares across the four career levels considered in the analysis—second-cycle graduates (S), researchers (R), associate professors (A), and full professors (F)—for Mathematics and Informatics. The graphical evidence highlights the distinct dynamic regimes characterizing the two disciplines and confirms the model's ability to replicate the empirical patterns over time.

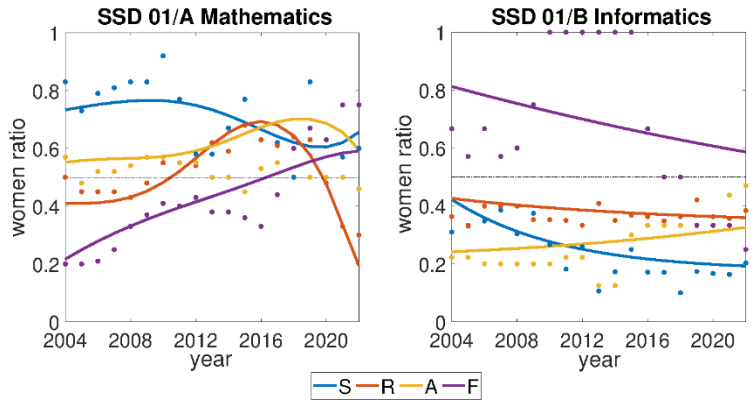

Figure 1. Observed and simulated female shares across academic ranks in Mathematics and Informatics (2004–2022).

This first application is limited by the availability of historical time series, which restricts the possibility of capturing slow structural changes in academic careers. Ongoing work aims to extend the analysis to all Italian universities and to incorporate doctoral candidates as an additional entry level in the hierarchy, thereby providing a more comprehensive representation of the academic pipeline. From a modeling perspective, an additional limitation lies in the assumption that the underlying mechanisms remain constant over time and across career stages. This simplifying assumption can be relaxed by allowing their intensity to vary dynamically, making it possible to reformulate the framework as a controlled dynamical system in which institutional policies act as control variables. This extension opens the way to the design of optimal and adaptive gender

equality policies through optimal control techniques, enabling the evaluation of trade-offs between short-run correction of leadership gaps and long-run strengthening of the academic pipeline.

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Session 2 – Entrepreneurship and Innovation

Extended abstract: CEO Dual Leadership and Diverse Boards: Board Composition and Startup Performance

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Keywords: Innovative startup governance; CEO-founder duality; board diversity, performance

Background

Early-stage firms typically emerge with highly centralized governance structures, often described as "one-man bands," in which the founder simultaneously acts as owner, chief executive officer (CEO), and sole decision-maker. While some startups transition from this configuration to entrepreneurial teams characterised by flat hierarchies and short decision-making lines (Bolzani et al., 2019), many remain strongly founder-centric in their early phases. This initial governance form enables rapid decision-making and tight strategic control, which can be advantageous in uncertain and fast-moving environments. However, it may also constrain access to critical resources, limit organizational legitimacy, and reduce the firm's ability to scale as it grows.

These challenges are particularly salient for startups operating in turbulent, innovation-driven contexts, such as technology-based industries, where governance choices become strategic levers shaping firms' ability to secure resources, gain legitimacy, and adapt under uncertainty (Garg, 2020; Ramsinghani, 2021). As firms evolve, the question of who governs—and how governance structures are configured—becomes increasingly important for survival and performance.

An expanding body of entrepreneurship research has begun to "open the governance black box" in new ventures by examining how boards are formed, how their roles evolve, and how governance structures change across the firm lifecycle (Garg & Eisenhardt, 2017; Garg, 2020; Gan & Erikson, 2022; Ramsinghani, 2021). Prior studies suggest that, particularly in early stages, boards function less as monitoring devices and more as collaborative partners that provide advice, resources, and legitimacy (Zahra et al., 2014; Zhang et al., 2011; Urtado & Filho, 2025). Related work highlights the importance of founding directors' resources for venture survival (Wilson et al., 2014) and explores how board characteristics evolve around critical transitions such as initial public offerings (Certo et al., 2001; Howard et al., 2021; Kenny et al., 2024).

Despite this growing literature, three interrelated governance dimensions remain insufficiently understood in early-stage firms: (1) founder leadership, particularly CEO–founder duality; (2) the complexity of board governance structures, captured by the distinction between solo and non-solo boards; and (3) board diversity, including demographic and experiential dimensions such as gender, nationality, age, and tenure. Existing studies often examine these dimensions in isolation, offering limited insights into how they interact and jointly shape firm performance.

To address this gap, this study adopts a resource dependence theory (RDT) perspective, which conceptualizes boards as boundary-spanning mechanisms that connect young firms to critical external resources such as capital, expertise, legitimacy, and strategic ties (Pfeffer & Salancik, 1978; Hillman et al., 2000). In uncertain and resource-constrained environments, boards are not merely formal oversight bodies but key channels through which firms access and mobilize external resources.

From an RDT perspective, governance structure shapes both the availability of resources and the costs of coordinating them. In solo-board settings, firms rely heavily on the founder-director's personal resources, networks, and judgment. In such contexts, CEO–founder duality may facilitate strategic alignment and swift decision-making. However, the absence of additional directors limits access to diverse external resources and increases exposure to bounded rationality and individual cognitive biases, thereby constraining the board's resource-provision role.

As firms transition toward non-solo board configurations, governance dynamics become more complex. Expanding board size can enhance access to heterogeneous resources, expertise, and legitimacy, but it also introduces coordination costs and potential frictions. Board diversity can further broaden resource channels and perspectives, yet its performance implications are likely to depend on the firm's governance structure and the interaction among board members. Evidence from early-stage contexts, such as academic spin-offs, suggests that the benefits of diversity are highly contingent on organizational and governance conditions (Sciarelli et al., 2021, 2023).

Building on this literature, this study centres on the founder's governance journey from solo to non-solo boards and conceptualises board size as a key mechanism that conditions the effects of leadership structure and diversity on performance. Accordingly, we address two interrelated research questions: (RQ1) Do the effects of leadership and diversity on performance differ between solo and non-solo boards? and (RQ2) How is board size related to early-stage firm performance, and is this relationship non-linear?

Methodology

We draw our empirical analysis based on longitudinal dataset from 2017-2024 of 1,681 Italian innovative startups founded in 2017 registered under the Innovative Start-ups Act (ISA) in 2012. All firm and regional level variables are combined through Aida-Bureau van Dijk and ISTAT for final panel. The empirical findings are drawn by panel quantile regression models rather than relying on

the mean based ordinary least squares (OLS) and fixed effect panel regression models. We model conditional quantiles of performance so that the effect can differ for low, medium, and high performing Italian innovative startups. Separate estimations are conducted for solo and non-solo boards to explicitly capture structural differences in governance.

Key findings

Our study findings provide nuanced evidence on the role of leadership and diversity in early-stage firm governance. Despite the fact that south Italy hosts the largest share of overall Italian innovative startups, it also exhibits the lowest relevative female founders. Moving further, based on the mean models, in solo boards, CEO-founder duality has no significant impact on performance suggesting that in one-man bands, founder does not entirely enhance nor impact the economic outcome. On the contrary, in the non-solo boards, CEO founder duality is detrimental to performance. However, the panel quantile regression results reveal that the negative effect becomes positive and non-uniform across the performance distribution. Second, we find board size to be U-shaped in relationship with performance in non-solo boards. Collectively, findings represent a RDT consistent capacity-cost trade-off, means a board must be large enough to channel outside resources but if it becomes too large the coordination and diffusion cost impacts performance. Finally, board diversity highly matters in non-solo boards of early-stage firms. Gender and nationality diversity have a negative main effect on performance, while tenure diversity has a positive main effect. However, the effects are contingent on size of the board and performance distribution. In low-performing firms, larger boards help diversity work for compensating for resource scarsity (until a certain threshold). In high-performing firms, larger boards introduce coordination costs that initially erode diversity benefits, that recover with very large board sizes. Overall, the study extends the resource dependence theory (RDT) to the early stage-innovative firms by demonstrating that governance mechanisms (board composition) operate differently depending on the board structure and performance heterogeneity. Empirically, we extend the debate of large scale panel data analyses distinguishing between the solo and non-solo boards while incorporating various board diversity dimensions.

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Extended abstract: Drivers of the Circular Economy: Investigating Gender Differences in Corporate Motivations

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Keywords: Circular economy, eco-innovation motivations, gender differences, SMEs, sustainability-oriented innovation

Background

Circular economy (CE) strategies are increasingly positioned as key levers for achieving environmental targets while safeguarding competitiveness. Yet, most empirical work on CE adoption and eco-innovation has focused on technological, regulatory, and economic drivers, leaving the social dimension—and especially the role of gender—comparatively underexplored (Palm et al., 2024). At the firm level, existing evidence on gender and sustainability-oriented innovation is largely concentrated on board gender diversity in listed companies. Studies typically examine whether a higher share of women on boards is associated with stronger environmental or eco-innovation outcomes, often drawing on upper-echelon and gender socialisation theories (Nadeem et al., 2020). However, this dominant empirical lens is difficult to translate to the typical Italian—and more broadly European—context of small and medium-sized enterprises (SMEs), where governance is frequently concentrated in a single owner-manager or a very small leadership team, and where board structures are absent or not informative.

This paper addresses this gap by shifting the focus from board composition to manager gender and by examining not whether firms adopt circular practices, but why adopters do so. In line with calls to open the "black box" of eco-innovation decisions, we analyse whether gender differences among firm decision-makers are associated with heterogeneity in the motivations behind CE innovation adoption (Horbach & Jacob, 2018). This perspective is particularly relevant for CE innovations, which often entail organisational change, coordination with external actors, and engagement along supply chains—features that distinguish circular and environmental innovations from standard process or product upgrades.

Methodology

The analysis exploits original survey data collected within the Territorial Innovation Ecosystem of Emilia-Romagna (Italy), funded under Italy's National Recovery and Resilience Plan (PNRR) through the Ecosister programme, which supports ecological and digital transition via regional innovation systems. The survey covers approximately 2,000 firms across key sectors—Agriculture,

Manufacturing, Energy, Water & Waste Management, Construction, and Transportation & Storage— and includes detailed information on firm characteristics (location, sector, internationalisation, performance), circular practices adopted in the last five years, and motivational drivers associated with CE-related investments.

Empirically, we focus on the sub-sample of CE adopters—about 25% of the original sample—defined as firms that report having adopted at least one circular practice among twelve surveyed practices. This design shifts attention from the extensive margin ("whether to adopt CE") to the motivational profile among adopters, allowing us to investigate gender differences in the underlying drivers of circular innovation rather than in adoption per se.

A central methodological challenge is that CE motivations are multidimensional and overlapping: firms may adopt circular practices simultaneously for economic, environmental, and market- or stakeholder-related reasons. Rather than constructing ad hoc motivation indices, we apply exploratory factor analysis with varimax rotation to 22 Likert-scale motivation items collected only from CE adopters. These items capture regulatory constraints and incentives, reputational and competitive considerations, stakeholder pressures, environmental rationales, and economic performance objectives. The factor analysis identifies three interpretable latent dimensions: (i) economic motivations (profits, productivity, market share, cost reduction, return on investment); (ii) environmental motivations (reductions in energy and material use, hazardous materials, environmental compliance, and environmental awareness/impact reduction); and (iii) market and stakeholder motivations (regulatory and incentive environment, reputational and competitive pressures, partner and societal demands, and financial institutions' requirements).

We compute firm-level factor scores for each motivation and estimate separate OLS models:

$$Motivation_i = \beta 0 + \beta 1 FemaleLeader_i + X'_i\gamma + \delta_{province} + \delta_{sector} + \varepsilon_i$$

where $FemaleLeader_i$ is a binary indicator for a female manager, and X_i includes a parsimonious set of controls capturing internationalisation (export share), group membership, and size/performance (log turnover). Province and sector dummies account for territorial and structural heterogeneity within Emilia-Romagna. Robust standard errors are used throughout.

To further explore heterogeneity, we examine whether gender differences in motivations vary across types of circular innovation. The twelve CE practices are grouped into three macro-categories: (i) product/material circular innovations; (ii) system or supply-chain circular innovations; and (iii) organisational and governance-related circular innovations. We then re-estimate the environmental motivation model within each subgroup of adopters.

Key findings

Two preliminary findings stand out. First, among CE adopters, female managers exhibit significantly higher environmental motivation scores than male managers, while no systematic gender differences emerge for purely economic motivations or for the market/stakeholder dimension. Second, this gender–environmental motivation link is not uniform across CE innovation types. It is particularly pronounced among firms adopting system and supply-chain circular innovations, such as take-back schemes, logistics and transport footprint reduction, and inter-firm resource exchanges—practices that require coordination beyond firm boundaries. By contrast, no significant gender differences are observed for product/material-oriented circular innovations or for organisational practices.

This study contributes to the emerging literature on gender and sustainability-oriented innovation by providing firm-level evidence on the motivational channels through which CE innovation is adopted in an SME-dominated regional economy. From a policy perspective, the findings suggest that circular transition strategies may benefit from recognising heterogeneity not only in motivations, but also in the interaction between gender, innovation type, and sectoral context. If female managers are particularly aligned with environmental motivations in systemic CE domains, policies that support network coordination, supply-chain platforms, and ecosystem governance may be especially effective in sectors where female leadership is more prevalent, enhancing the effectiveness of circular transition policies beyond uniform, one-size-fits-all incentives.

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Session 3 – Doctoral Workshop: Paper Development

Abstract: Does Job Satisfaction impact positively to the Entrepreneurial Engagement in Female Academics in Italy

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Keywords: Academic entrepreneurship, Research applicability, Knowledge Spillover Theory of Entrepreneurship, Well-being, Higher education, Generalized structural equation modeling (GSEM)

Background

This study examines the micro-foundations of academic entrepreneurship by analyzing how academics' perceptions of the applicability of their research shape entrepreneurial engagement, and how such engagement is related to individual well-being within the Italian public university system. Positioned at the intersection of innovation studies, higher education research, and entrepreneurship theory, the paper addresses a persistent gap in the literature: although academic entrepreneurship has been widely studied as an institutional and organizational phenomenon, less is known about how subjective perceptions of research relevance and individual psychological conditions jointly influence entrepreneurial action. The article therefore advances a dual-theoretical framework that combines the Knowledge Spillover Theory of Entrepreneurship with Self-Determination Theory. Within this framework, perceived research applicability is conceptualized as a key mechanism through which academics recognize opportunities to transfer knowledge beyond the university, while well-being is treated as both a potential antecedent and outcome of entrepreneurial engagement.

The study is grounded in the contemporary Italian higher education context, where universities are increasingly expected to contribute to innovation, economic development, and societal impact, yet where entrepreneurial infrastructures and gender equality conditions remain uneven across institutions and career stages. This setting is especially suitable for examining the role of individual-level motivations, because knowledge valorization is publicly encouraged but not uniformly embedded in academic practice. The paper also gives particular attention to gender, asking whether the drivers of academic entrepreneurship differ between male and female academics and whether entrepreneurship generates equivalent well-being effects across these groups.

Methodology

Empirically, the analysis draws on an original national survey conducted in autumn 2024 and administered to the full population of academic staff in Italian public universities. The final dataset includes 5,945 respondents and captures researchers, associate professors, and full professors across disciplines and institutions. The survey includes measures of entrepreneurial behavior, perceived research applicability, job and emotional well-being, time allocation, interpersonal relations, community integration, and economic satisfaction, alongside indicators of institutional support, patent ownership, disciplinary background, age, and academic rank. To estimate the relationships of interest, the study employs generalized structural equation modeling (GSEM), which is particularly well suited to handling a binary entrepreneurship outcome, a latent well-being construct built from multiple ordinal indicators, and reciprocal structural paths within a unified framework.

Key Findings

The findings provide strong support for the proposition that perceived research applicability is the most robust predictor of academic entrepreneurship. Academics who perceive their research as more relevant and usable beyond the scholarly domain are significantly more likely to engage in entrepreneurial activity. This result confirms the central expectation derived from the Knowledge Spillover Theory of Entrepreneurship: knowledge does not automatically generate entrepreneurial outcomes; rather, such outcomes depend on whether knowledge producers recognize its potential value outside academia. The analysis further shows that entrepreneurship and well-being are positively related in a reciprocal manner in the baseline model. Entrepreneurship is associated with higher well-being, and well-being is also positively associated with entrepreneurial engagement, although the magnitude of the latter effect is smaller. These results suggest that entrepreneurial activity may provide academics with a heightened sense of autonomy, competence, and purpose, while better well-being may simultaneously strengthen the motivational and cognitive resources required for entrepreneurial action.

At the same time, the paper demonstrates that this reciprocal dynamic is not uniform across groups. The gender-disaggregated analysis reveals that among female academics, perceived research applicability remains a strong and statistically significant predictor of entrepreneurship, but the bidirectional relationship between entrepreneurship and well-being is not significant. By contrast, among male academics, both directions of the entrepreneurship–well-being relationship remain positive and statistically significant. This divergence is one of the paper's most important contributions. It suggests that women's entrepreneurial engagement in academia may be driven more strongly by epistemic and societal motivations tied to the perceived value of their research, whereas the psychological rewards typically associated with entrepreneurship may be attenuated by enduring structural barriers, including unequal access to networks, recognition gaps, and more intense work–life pressures. The paper therefore interprets the absence of measurable well-being

effects among women not as evidence of irrelevance, but as a possible reflection of institutional asymmetries that weaken the personal returns to entrepreneurial participation.

The moderation analysis offers an additional important result. The study tests whether the effect of perceived research applicability on entrepreneurship is conditioned by university support, patent ownership, or disciplinary background, but none of these interaction terms achieves statistical significance. This indicates that the relationship between research applicability and entrepreneurial engagement is broadly stable across the institutional and disciplinary dimensions observed in the data. The findings therefore suggest that, although context matters, the decisive mechanism in this study is the academic's own perception that research can generate value beyond the university. In addition, the control variables show that age and academic rank are positively associated with entrepreneurship, indicating that seniority, accumulated networks, and career maturity remain important facilitators of entrepreneurial activity.

The paper makes three principal contributions. First, it advances the literature on academic entrepreneurship by shifting attention from macro-structural enablers alone to the subjective perception of research applicability as a proximate driver of entrepreneurial action. Second, it integrates motivational psychology into the analysis of knowledge commercialization by explicitly modeling well-being as a latent construct that interacts reciprocally with entrepreneurship. Third, it introduces a gender-sensitive interpretation of entrepreneurial pathways in academia, showing that similar levels of epistemic motivation can coexist with different psychological returns across male and female academics.

These findings also carry important policy implications. If perceived research applicability is the dominant predictor of entrepreneurial engagement, universities and policymakers should move beyond generic commercialization rhetoric and instead strengthen mechanisms that help academics recognize, articulate, and develop the societal and economic relevance of their research. Evaluation systems should better reward translational and impact-oriented scholarship. At the same time, because entrepreneurial engagement appears to be linked with well-being in the aggregate, institutional reforms that enhance autonomy, flexibility, and purpose in academic work may generate dual benefits for innovation and academic welfare. However, the gender-specific results caution against one-size-fits-all policies. For women in academia, support measures must go beyond formal entrepreneurship promotion and address the structural conditions that reduce the professional and psychological returns to entrepreneurial effort.

The study is careful to acknowledge its limitations. Because the data are cross-sectional, the reciprocal paths should be interpreted as structural associations rather than definitive causal effects. The findings are also embedded in the Italian higher education system and may not be directly generalizable to more market-driven or differently governed university systems. In addition, although the latent well-being construct improves measurement quality, it cannot capture every dimension of academic well-being, and the non-significant moderators may reflect limitations in the

available contextual variables rather than the true absence of institutional effects. Nonetheless, the study offers a rigorous and original contribution by showing that academic entrepreneurship is shaped not only by opportunity structures, but also by how academics perceive the external relevance of their work and by how entrepreneurial engagement intersects with well-being in gender-differentiated ways.

Extended Abstract - Rethinking Gender-Lens Investing in Africa: Market Gaps, Financial Instruments, and Structural Misalignment

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Keywords: Gender-lens investing; Africa; venture capital; financial instruments; women entrepreneurs; impact investing

Background

Across African markets, women demonstrate some of the highest entrepreneurial activity globally, yet they receive a disproportionately small share of growth capital. Women-led enterprises account for a large portion of small and medium enterprise activity but capture roughly 1–2% of venture funding, despite evidence of comparable or stronger capital efficiency. This paradox persists even as gender-lens investing (GLI), the integration of gender considerations into investment decision-making, has expanded rapidly across emerging markets.

Over the past decade, venture capital, private equity, and impact funds in Africa have adopted gender-lens strategies aligned with frameworks such as the 2X Challenge. These approaches target women-led enterprises, gender-diverse leadership teams, or companies serving women customers. However, increased adoption of gender-lens mandates has not translated into proportional capital flows to women founders.

Most existing research focuses on aggregate funding gaps or individual case studies. Less attention has been paid to structural patterns shaping gender-lens capital allocation: geographic and sectoral priorities, investment stages, and financial instruments used. Moreover, critiques of venture capital in African markets suggest that equity-heavy models with short fund lifecycles and exit-driven logics may be poorly aligned with local entrepreneurial ecosystems.

This study examines gender-lens investing as a collective market phenomenon rather than a set of isolated successes. It asks:

- What patterns characterize gender-lens funds in Africa in terms of geography, sector focus, and financial instruments?
- What explains the persistent gap between women's entrepreneurial activity and access to growth capital?
- How do ownership-focused versus beneficiary-focused gender-lens strategies affect capital allocation?

By addressing these questions, the study contributes to debates on gender gaps in entrepreneurship, venture capital adaptation in emerging markets, and inclusive finance policy design.

Methodology

The research adopts a mixed qualitative design combining mapping, interviews, and conceptual analysis[1].

First, a structured dataset maps gender-lens investment funds active in Africa using public sources such as investor reports, ecosystem publications, and portfolio disclosures. Variables include geographic focus, sector orientation, investment stage, ticket size, financial instruments, gender criteria, and portfolio characteristics. Comparative analysis identifies recurring patterns and typologies of gender-lens strategies.

Second, semi-structured interviews are conducted with approximately 40 participants, including gender-lens investors and women founders from companies across Africa. Interviews explore motivations for seeking or avoiding external capital, perceptions of equity dilution, preferred financial instruments, investor decision criteria, and barriers to funding. Investor interviews also examine definitions of gender-lens investing, pipeline constraints, and trade-offs between ownership-focused and beneficiary-focused approaches. Data collection includes meetings during in-prerson meetings, including the Sankalp Africa Summit and site visits to Opes-LCEF portfolio companies.

Finally, findings are integrated into a conceptual framework linking gender-lens investing to broader debates on capital adaptation in African markets, including the "missing middle," sectoral bias, and instrument innovation.

Key Findings

Preliminary analysis suggests three emerging insights.

- **Structural Misalignment:** Many gender-lens investors still use standard private capital models, equity-driven, short-horizon, and exit-focused, while many women-led enterprises face collateral constraints, sector bias, or reluctance to dilute ownership. Interviews indicate stronger demand for debt, hybrid, or revenue-based instruments better aligned with cash-flow realities.
- **Intent vs. Allocation:** Many gender-lens strategies prioritize firms serving women rather than women-led firms, creating a trade-off between scale of impact and founder-level financing.

[1] This research is conducted within Opes-LCEF under the supervision of Elena Casolari and Elisabet Nyquist.

- **Instrument Innovation:** Blended finance, patient capital, and appropriately sized debt or quasi-equity vehicles may better address the "missing middle" and improve access to growth capital.

This research contributes to three areas. First, empirically, it provides a structured mapping of gender-lens investment funds across Africa, identifying patterns in strategy, capital structuring, and portfolio composition. Second, conceptually, it links gender-lens investing to broader debates on capital misalignment, arguing that changing who receives capital must be accompanied by changes in how capital is structured. Third, from a policy perspective, the findings inform development finance institutions, investors, and policymakers designing inclusive financial ecosystems. Recommendations include diversified financial instruments, longer-horizon funds, improved gender-disaggregated data, and ecosystem interventions addressing pipeline and network constraints.

Gender-lens investing has expanded rapidly, yet structural barriers continue to limit capital flows to women-led enterprises in Africa. By combining mapping, interviews, and conceptual analysis, this study shows that the challenge lies not only in identifying women entrepreneurs but in redesigning financial architectures to match market realities. Understanding these dynamics is essential for building investment ecosystems that are both gender-responsive and economically effective.

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Extended Abstract - Gender Gaps in Climate Finance: Evidence from Global, Sub-Saharan, and Malawian Contexts (2019–2025)

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Keywords: Climate finance; gender-responsive finance; Vulnerability, climate justice, adaptation finance; Sub-Saharan Africa.

Background

Green finance, defined as financial flows directed toward environmentally sustainable activities, has become central to global strategies for mitigating climate change and advancing sustainable development (Höhne et al., 2014). Over the past decade, climate related financial flows have expanded substantially, reaching approximately USD 1.9 trillion in 2023 (Barbara, 2019). Yet this rapid growth has not translated into equitable or socially inclusive outcomes (Buchner et al., 2013). The global green finance architecture continues to face structural imbalances in sectoral allocation, geographical distribution, and gender responsiveness. Adaptation finance remains significantly underfunded relative to mitigation, while developing regions particularly Sub-Saharan Africa receive less than 5% of global climate finance (CPI, 2024). Malawi, one of the world's least developed and most climate-exposed countries, receives only about 0.1% of global flows (AfDB, 2023), despite its acute vulnerability to climate shocks.

The purpose of this study was to assess whether global green finance between 2019 and 2025 reflects equitable and gender-responsive allocation patterns at global, Sub-Saharan African, and Malawian levels. Specifically, it aimed to evaluate distributional patterns across mitigation and adaptation; to examine the extent to which climate finance integrates gender as a principal objective; and assess whether allocation mechanisms align with vulnerability and climate justice principles.

To analyze these inequities, the study applied Equitable Climate Finance Theory (Bowen et al., 2015), grounded in the principles of equity and common but differentiated responsibilities under the UNFCCC (1992) and reaffirmed in the Paris Agreement (2015). The theory evaluates climate finance through three justice dimensions: distributive justice (who receives finance and on what

terms), procedural justice (who participates in decision-making), and recognitional justice (whose vulnerabilities and capacities are acknowledged). From this perspective, a system that allocates the majority of finance to mitigation in advanced economies while providing loan-heavy adaptation support to vulnerable regions cannot be considered equitable.

Methodology

The study employed a systematic scoping review (Arksey & O'Malley, 2005). This approach maps trends, institutional structures, and allocation patterns rather than testing causal relationships. The review synthesizes 60 institutional datasets and official documentation from 2019–2025, prioritizing policy oriented sources. Core sources include CPI's *Global Landscape of Climate Finance* (2023–2025) and *Landscape of Climate Finance in Africa* (2024); OECD gender-environment finance reports (2023); African Development Bank climate finance publications (2023); UN Women climate justice frameworks (2021–2024); Green Climate Fund and Global Environment Facility reports; and the World Bank's *Malawi Country Climate and Development Report* (2022).

Key findings

Global results show that although climate finance is intended to support transformative and inclusive development, allocation patterns often marginalize vulnerable populations, especially women. Inadequate gender-disaggregated data limits the ability to measure women's direct access to climate finance (Pereira et al., 2025). Mitigation-focused investments such as renewable energy and large-scale infrastructure tend to overshadow adaptation priorities central to women's livelihoods in agriculture, water management, and food security (UN Women, 2023).

Additionally, a large proportion of climate finance in Sub-Saharan Africa is delivered through concessional and non-concessional loans rather than grants, raising concerns about debt sustainability in already fragile economies (CPI, 2024). Lindenberg, (2014) warns that without explicit equity safeguards, green finance risks reinforcing existing socio-economic inequalities rather than correcting them.

Malawi also exemplifies these structural inequities. Despite recurrent floods, droughts, and agricultural losses, climate finance receipts remain modest relative to national adaptation needs. Much of Malawi's climate finance is channeled through multilateral mechanisms such as the Green Climate Fund and development banks, often combining concessional loans with smaller grant components (Neunuebel, 2023). Complex accreditation procedures, co-financing requirements, and technical proposal standards constrain direct access. Gender integration within financed programs is limited, although women constitute roughly 70% of Malawi's agricultural labor force, climate projects frequently classify women as indirect beneficiaries rather than principal recipients or financial decision makers (Raghuvanshi, 2023).

Climate finance is expanding, yet those most affected by climate change still benefit the least. Scientifically, this study strengthens equity-based analysis by integrating gender and vulnerability

into climate finance evaluation. From a policy and practice perspective, it calls for measurable gender targets, stronger vulnerability metrics, improved reporting, and fairer financial instruments that ensure women and vulnerable countries like Malawi become direct beneficiaries and decision-makers within climate finance systems.

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