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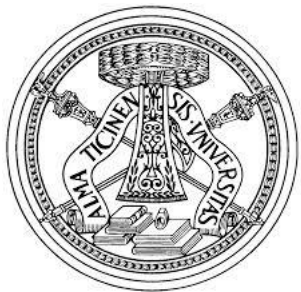
**“Sowing the seeds of the future: The financing of tomorrow’s innovations”**



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# How does University Internationalization Contribute to the Student Entrepreneurship?



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# Agenda

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- Context and Motivation
- Research objective
- Constructs
  - Student entrepreneurship
  - University internationalization
- Research design
- Results and Policy implications

# Context

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- Knowledge, creativity and innovation have become central to the economic progress and wellbeing (Audretsch 2007)
- Universities and HEIs are a central player of economic systems (Mian et al. 2011; Guerrero et al. 2014)
- Spread of the notion of “**Entrepreneurial University**” (Clark, 1998; 2001)
  - More responsive to social and economic needs
  - *Third Mission* increases demands for universities pro-activity
    - Interaction with society
    - Innovation
    - Knowledge transfer
    - Exploitation of scientific research

# Motivation of the paper: Research Gaps

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- Little is known about strategic and operational features of the entrepreneurial university (Audretsch, 2012; Fayolle & Redford, 2014)
  - **University support** for student ventures is an under-researched phenomenon
- Despite **internationalization of universities** has received abundant attention in the HE literature (Altbach 2006; Altbach and Knight 2007; de Wit 2002; Knight 2008; 2014; OECD 2004; de Wit 2015), we still miss an understanding of its contribution to the entrepreneurial university

# Research objective

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- This paper investigates whether ***university internationalization affects*** the ***entrepreneurial engagement*** directly or by moderating the university entrepreneurial support activity
  - *Entrepreneurial university proxy*: students' level of engagement in the entrepreneurial process, or ladder (van der Zwan et al. 2010)
- Holistic understanding of the entrepreneurial university
  - Also Teaching and Research may account for the outcomes of entrepreneurial university

# Shift in the concept of Entrepreneurship

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- Growing expectation that universities educate and nurture **students** to be **entrepreneurs**
  - Might be an important component of the entrepreneurial university
- Shift in the notion of Entrepreneurship
  - From serendipitous and individual to **social and organized**
  - Belief that it is a skill that **can be taught** (Bae et al. 2014)
    - Provide students an entrepreneurial way of thinking and behaving (Altbach and Knight 2007)
- Entrepreneurial education has emerged at universities largely over the last two decades (Wilson 2008)
  - **Institutionalizing** university-wide **entrepreneurship education**
  - Universities incorporated strategies for imparting entrepreneurial skills to students from a variety of disciplinary backgrounds

# Literature review: Students entrepreneurship (1/2)

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- **Students entrepreneurship** allows
  - Investigate people that have not made their first actual career choice yet
  - Shed a nuanced light on how entrepreneurial intentions come into being
- Measure: **Students entrepreneurial ladder**
  - *Entrepreneurial cognition research and nascent entrepreneurship*
    - No systematic biases should be expected when using samples with young individuals such as students (Schlaegel & Koenig, 2014)
    - Intentions are regarded as the best possible predictors of behavior (Ajzen, 1991; 2002; Fishbein & Ajzen, 1975)

# Literature review: Students entrepreneurship (2/2)

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- *Entrepreneurship and Entrepreneurial intention research*
  - Young individual/student samples are quite extensively used (Dohse & Walter, 2012; Zellweger et al., 2011; Falck & Woessmann, 2013; Degeorge & Fayolle, 2013)
  
- *Entrepreneurship as a progressive process*
  - View of entrepreneurship
    - The 'static' view has been updated by a more '**dynamic**' one acknowledging that setting up a business is a process which consists of several stages (Reynolds, 1997)
  - Concept of engagement levels (ladder) to discriminate between the various stages of setting up (following Grilo and Thurik 2005; 2008)
  - Engagement levels can be analysed in an ordered context (van der Zwan et al. 2010)



# University internationalization

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- Worldwide phenomenon
  - Volume of universities' international activities has expanded tremendously in the last two decades (Altbach & Knight, 2007)
  - International student base grew exponentially (Paleari et al. 2015)
- Scholars identified several different rationales for internationalization (De Wit 1999; 2002; Knight 1997; 1999; 2004), but it is not a goal in itself (de Wit 2015)
- There are not commonly acknowledged indicators to measure the university internationalization (de Wit 2015)

# Direct effect of University Internationalization

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- Improve students' human and social capital
  - Language competence (Cattaneo et al. 2015)
  - Access to international networks (Knight, 2004)
- Beneficial to institutional research cooperation
  - Access knowledge from “global pipelines”
    - Empirical evidence reveals a strong positive relationship between scientific productivity and university entrepreneurial performance (van Looy et al. 2011)
- Knowledge spill-over can generate the commercialization of innovative activities (Audretsch 2014)

***Hypothesis 1.*** Higher the degree of university internationalization, stronger the students' level of engagement in entrepreneurial process

# Indirect effect of University Internationalization

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- University support of student entrepreneurship is not limited to embedding entrepreneurial education in academic curricula
- Exposure to an international environment contributes to making universities more entrepreneurial, and adaptive to new challenges
  - Making university-based entrepreneurship training and support more effective

***Hypothesis 2.*** *The positive relationship between entrepreneurial support and students' level of engagement in the entrepreneurial process is stronger at higher degree of university internationalization*

# Sample: GUESS

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- GUESSS (Global University Entrepreneurial Spirit Students' Survey) project 2011
  - Investigates students' career choice intentions across the world
  - Recently used to study students' entrepreneurial intentions (e.g., Laspita et al., 2012; Zellweger et al., 2011)
    - 26 countries
    - 1.3 million students
    - 498 universities
    - 93.265 responses (6.3%)
  - **Dependent variable:**
    - Likert scale (from 1 to 9) on the decision to become entrepreneur
    - Observed at student level

# Variables and measures

Dependent variable	
Entrepreneurial ladder	Information on whether respondents had ever (and how seriously) thought about founding an own company (Likert Scale 1-9)
Independent variables	
Internationalization (Students)	Share of ISCED (1997) 5 + 6 international students (Source: Eumida)
Internationalization (Research)	Number of international co-authored publications (Source: Scival)
Internationalization (Third mission)	Dummy: Presence of international spinoff (Source: university website)
Controls	
Gender (F)	Dummy (Female=1)
Student Age	Age (in years)
Field of Study	Set of Dummy variables: Natural Sciences, Business and Economics, Social Sciences, Others (Others is the reference case)
Duration of Studies	Number of Years
Capital Need	Amount of capital that the student will need for founding his/her own company
Entrepreneurial Experience	Dummy (if student has been self-employed in the past, but not anymore=1)
Founder	Dummy (if student has been active founder before studying at university=1)
University Size	Number of Students
University Staff / Student	Ratio
University Age	Years
University Entrepreneurial Approach	Student's level of perception of favourable university environment towards entrepreneurship (3-items factor)
University Entrepreneurial Support	Student's level of <i>attendance of university offerings</i> aimed at stimulating entrepreneurship (14-items factor)

# Model

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- **Ordered logit model** to analyze the determinants of the entrepreneurial ladder progress through various stages
  - Dependent variable is at student level, while university variables are measured at institutional level
    - We referred to clustered standard errors in all our models
- Preliminary test (since dependent variable obtained through a survey):
  - Non-response bias (cp. Oppenheim 1992), for the potential presence of common method bias (Harman 1967) through both explanatory (cp. Podsakoff et al. 2003) and confirmatory factor analysis (Podsakoff et al. 2003)
  - Multicollinearity (Hair et al. 2006)
- None of these concerns affects our analyses

# Empirical analysis results

	(1)	(2)	(3)	(4)	(5)
Student Gender: F	-0.434***	-0.434***	-0.434***	-0.432***	-0.433***
Student Age	0.043***	0.043***	0.043***	0.043***	0.043***
Duration of Studies	0.000***	0.000***	0.000***	0.000***	0.000***
Capital Need	1.132***	1.132***	1.132***	1.133***	1.132***
Entrepreneurial Experience	4.824***	4.824***	4.824***	4.824***	4.824***
Founder	9.334***	9.334***	9.334***	9.334***	9.334***
University Size	0.000	0.002	0.001	0.001	0.001
University Staff ratio	0.487**	0.422**	0.410*	0.427**	0.460**
University Age	-0.000***	-0.000***	-0.000***	-0.000***	-0.000***
U. Entrepreneurial Approach	0.090***	0.088***	0.088***	0.089***	0.088***
U. Entrepreneurial Support	0.291***	0.290***	0.299***	0.237***	0.288***
Internationalization – Students		0.670**	0.664**	0.684**	0.591**
Internationalization – Research		0.005	0.005	0.004	-0.003
Internationalization – Spin-offs		-0.059	-0.060	-0.067	-0.061
Entrepreneurial Support × Int. – Students			-0.146		
Entrepreneurial Support × Int. – Research				0.010***	
Entrepreneurial Support × Int. – Spin-offs					0.043*
Observations	25,885	25,885	25,885	25,885	25,885
Log-likelihood	-27,802	-27,663	-27,558	-27,487	-27,550
Pseudo R <sup>2</sup>	0.316	0.320	0.325	0.326	0.325

Ordered Logit Regressions on Entrepreneurial Ladder;  
Controls for Country and Disciplines included

Significance level  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

# Main findings

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- Synergy of entrepreneurial education and internationalization
  - Internationalization acts as complement of more classic entrepreneurship support and training programs
  - Trigger university contributions towards economic growth
  - Student entrepreneurship can be regarded as an evolution of the former activities (manifestation of third mission commitments)
- Effect of internationalization:
  - Education only deploys directly
  - Research and Third mission only play a moderating role
    - Students may see the internationalization of these activities in the learning environment



# Contribution to the literature

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- Entrepreneurial university literature
  - Novel measure (student entrepreneurial progress) to assess entrepreneurial university outcomes
  - Multi-level approach uses both individual- and university-level factors to explain students' entrepreneurial progress
- Student entrepreneurship research, mostly focus on intention
  - Instead of predicting a transition between two stages, our focus has been on 9 different stages of the entrepreneurial process
- University internationalization
  - Even if is not a goal in itself, bolsters the university service to society and the university third mission

# Policy and managerial implications

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- Policy to charge the full cost of education to non-EU students may shrink international students to study overseas
  - Negative consequences on the university local contribution to the economic growth through new entrepreneurial activity
  - Our findings suggest policy-makers should carefully analyse, not only short-term savings, but also potential long-term lost benefits of their political choices
    - Local students trained in a less international environment
- Managerial implications
  - A university, if aims to become more entrepreneurial and to foster student entrepreneurial engagement, should not only supporting student entrepreneurship, but results could be amplified by the internationalization process

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Thanks for your attention

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# APPENDIX

# Entrepreneurial ladder

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- 1 Never
- 2 Sketchily
- 3 Repeatedly
- 4 Relatively concrete
- 5 I have made an explicit decision to found a company
- 6 I have a concrete time plan when to do the different steps for founding
- 7 I have already started with the realization
- 8 I am already self-employed in my own founded firm
- 9 I have already founded more than one company, and am active in at least one of them

# Student entrepreneurship

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- Growing expectation that universities educate and nurture **students** to be **entrepreneurs** (and thus agents in the promotion of economic and social solutions)
  - Students' engagement in the entrepreneurial process might be an important component of the entrepreneurial university
  - Students' entrepreneurship provides a valuable contribution to regional competitiveness (Guerrero et al. 2014)
- They may be a response to the limitations of university contributions towards economic growth
  - Spur job creation and regional economic development (Kretz and Sa 2013)
  - Students are vessels through which academic knowledge is transferred to the economy

# 'Teachability dilemma' in entrepreneurial education

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- It is not self-evident that Entrepreneurship can be taught
  - Entrepreneurial competencies result from complex interactions of education, experience and socialization processes with the individual stock of entrepreneurial knowledge (Cope, 2005)
  - Expected experience-based soft skill are difficult to develop (Haase & Lautenschlager, 2011; Neck & Greene, 2011)