

# Entrepreneurship Hysteresis and Persistence in Higher Education

## A quasi-experiment on academic innovation

Kabore Pazisnewende François

[francois.kabore@cerap-inades.org](mailto:francois.kabore@cerap-inades.org) / [fpk2@georgetown.edu](mailto:fpk2@georgetown.edu)

Jesuit University Institute (CERAP/IDDH), 15, av. Jean-Mermoz, 08 BP 2088, Abidjan 08, Cocody, Côte d'Ivoire

**Abstract.** This study builds on part of our prior research results that suggest that an entrepreneurial ecosystem increases entrepreneurial intent. It investigates the impact of an entrepreneurial ecosystem on entrepreneurial hysteresis and persistence among students. We use survival analysis, namely poisson and negative binomial models to study tests the hysteresis and persistence of entrepreneurial behavior based on an experimental design. We find that participation in an incubator increases the average number of years of perseverance in entrepreneurship by 54.1%. Such a result confirms the importance of an ecosystem of entrepreneurship or of an incubator and calls for creative and innovative approaches to higher education in West Africa.

**Keywords:** Innovation, Entrepreneurship, Education, Africa.

### 1 Introduction

The African continent already has more than 1.2 billion inhabitants with a least a quarter of them aged under 25 years. According to the African Development Bank (AfDB), 100 millions of Africans were aged between 15 and 24 years in 2010. In 2030, they will be about 450 millions. However, the data from the International Labor Organization (ILO) suggests that throughout the world, the likelihood for youth to be unemployed is three times higher than for adults. Moreover, the 2013 report by the African Development Bank (AfDB) on “Youth Employment and Insertion Support Program”<sup>1</sup> estimates that the increase in unemployment is stronger among university students than non-students. In the same lines, the 2015 ILO reports estimates that youth with tertiary education are two to three times more likely to be unemployed than those without tertiary education. Such a situation raises the question of how relevant tertiary education is with respect to the labor market. Following an empirical study on entrepreneurship, education and youth employment in Africa, Kaboré (2018) found that entrepreneurship awareness courses do not have a statistically significant impact on students’ decision to engage in entrepreneurship. However, when students benefit from an entrepreneurship ecosystem, their likelihood of becoming entrepreneurs increases by 50%. The current study tests the hysteresis and persistence of entrepreneurial behavior based on a quasi-experimental design. Once student choose to become entrepreneurs or to behave as entrepreneurs is that a sustainable long lasting behavior? if so, does an incubator or an entrepreneurship ecosystem sustain that. Does it exist ways of training that would note only favor the rise of entrepreneurial consciousness but also sustain it?

Africa is yet to reap the benefits of its population dividend and it is becoming clearer and clearer that governments in Africa cannot afford creating jobs for everyone. Entrepreneurship and the development of a strong private sector seem then to be the requirement for good education that meets the demand of current youth.

In order to tackle this issue, the current reflection is organized in four main parts. The first one introduces the main concepts and reviews the literatue. The second part consists of an empirical study of creativity and entrepreneurship, based on a quasi-experiment in higher education in Côte d'Ivoire. The third and last part discusses the results and draws recommendations before the conclusion in part four.

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<sup>1</sup> African Development Bank (AfDB). “Appraisal Report” [http://www.afdb.org/fileadmin/uploads/afdb/Documents/Côte\\_d\\_Ivoire\\_-\\_Youth\\_Employability\\_and\\_Insertion\\_Support\\_Programme\\_PAAEIJ\\_-\\_Appraisal\\_Report.pdf](http://www.afdb.org/fileadmin/uploads/afdb/Documents/Côte_d_Ivoire_-_Youth_Employability_and_Insertion_Support_Programme_PAAEIJ_-_Appraisal_Report.pdf)

## 2. Methodology and data

### 2.1 Design

The current study tests the results of Kabore (2018) that the entrepreneurial ecosystem induced a 50% increase in entrepreneurial intent. Such results differ from Fayolle and Benoît (2013) who studied the impact of a short entrepreneurship awareness compulsory program on entrepreneur attitude. Note that in Kabore (2018), the entrepreneurship awareness course and entrepreneurship ecosystem were based on self reports and interviews by students. Students were asked whether they took an entrepreneurship awareness course versus whether they benefited from an entrepreneurship ecosystem which included not only a course, but also other practical teaching tools such as meeting with successful entrepreneurs, visiting businesses, and also benefiting from any service that alleviates constraints to entrepreneurship. The current study takes advantage of an experimental design that is being carried out at the Jesuit University Institute since 2015. The experimental design is termed the “Young Entrepreneurship Link Office” program: the YELO program.

The YELO program was officially launched in 2015. All 65 Bachelor of Arts (BA) students of the Jesuit University Institute were concerned. However, over time, some of them left the program, other stayed until the end of the program that consisted in one hour and half training on entrepreneurship and business strategy, business creation based on the business canvas of Oswalder (2009).

Overtime some students could not participate more than a year. Among those who stayed in the program, some participated in a business competition with business projects that they designed. A last group of students did not eventually attend the program but still did develop small businesses. This group works as a non-treatment or counterfactual group. The aim of the study is thus to investigate hysteresis and persistence of entrepreneurial spirit among the youth.

The program gathered about 33 first year bachelor of arts (BA) students from various study tracks<sup>2</sup>. Participation to the program was only open to BA students from the three available concentrations: economics, management of projects and organisations, and Law and Ethics. Given that participation was on voluntary basis, one may argue that selection was random across concentrations and other relevant variables. However, it has self sel

To test hysteresis and persistence, we use a survival model to check the impact of participation on the persistence of entrepreneurial spirit.

$$\text{Persistence} = \alpha * \text{Participation} + \beta * \text{Individual} + \gamma * \text{Group\_characteristics} \quad (1)$$

We therefore test two hypotheses:

**Hypo 1: entrepreneurship ecosystems increase entrepreneurial hysteresis**

**Hypo 2: being a female negatively impacts entrepreneurial hysteresis**

Hypothesis 1 checks that benefiting from an entrepreneurial ecosystem increases the likelihood of a student persevering into entrepreneurship despite the end of the program. This is important because it shows whether an entrepreneurship ecosystem has a long-lasting impact or not. Once a student as ad

Hypothesis 2 considers that gender matters in the ability or in the decision of a student to choose to persevere in entrepreneurship. In particular being a female would negatively impact that ability or decision.

The YELO program benefited from the financial support of the MTN foundation<sup>3</sup> as it supports creativity in education. The YELO program aimed at helping students develop projects that would turn into income generating activities for students. MTN foundation has been supporting the project for the last couple of years since its start. The YELO program received the second prize for the 2016 Excellence Competition in Innovation organized by the Ivorian Organization for Evaluation (2iEval: [www.2ieval.org](http://www.2ieval.org)) with the collaboration of Economic Policy Unit Analysis (CAPEC) at the Ivorian Center for Economic and Social Research (CIRES).

### 2.2 Descriptive statistics

The dependent variable measures the number of years of survival as an entrepreneur, ie, the number of years a student who benefited from the entrepreneurship ecosystems stays as an entrepreneurs.

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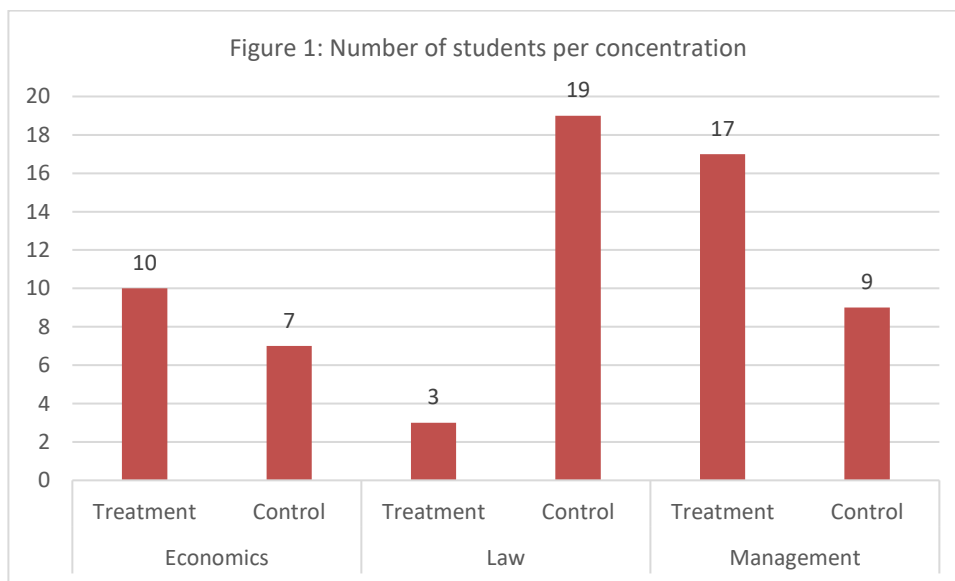
<sup>2</sup> These the tracks could be summarized in three categories: science (série C & D in the French school system), literature (série A) and other (série G, H, etc.)

<sup>3</sup> <http://foundation.mtnonline.com/>

**Table 1: Variable Characteristics**

#	Variable Name	Freq./ Mean	freq. (%) / St. Dev.	Comments
1	Participation	17	26.15	Share of students who participated in the YELO program
2	Zero year of persistence	25	38.46	Percentage of students who either did not participate or did not persevere as entrepreneurs
3	Age			Min Max=[1-5]
4	Gender (males)	36	55.38	Overall gender distribution in the treatment and control group
5	A-level Science Bacground	31	46.97	Science background from secondary school
6	Economics-BA Concentration	17	26.15	Share of BA students in the economics track
7	Management-BA Concentration	26	40.00	Share of BA students in the management track
11	Law-BA Contentration	22	33.85	Share of BA students in the law track

*Abs.=absolute, Freq.=Frequency, St.dev.=Standard Deviation*



The project was focused on all students in the economics and project management tracks. However, three students from Law attended, while a few students from economics and management drop from the course, as it was not a credit course. A t-test confirmed that there is no statistically significant differences between those who stayed in the program and those who drop, as well as the control group. The majority of those who participated were mostly from the concentration “project management”.

Figure 2: Concentrations of the treatment group

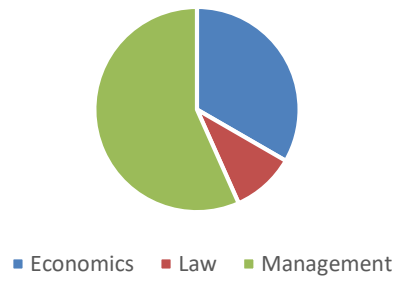


Figure 3: Gender Distribution of the Treatment Group

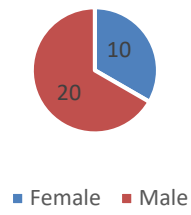
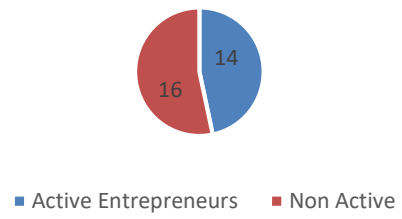


Figure 4: Persistence of Entrepreneurial Training



### 3.Results and interpretation

#### 3.1 The results

**Table1: Marginal Impact of Education on Entrepreneurial Hysteresis and Persistence**

Y=Entrepreneurial Hysteresis	OLS (2)	Poisson (3)	Negative Binomial (4)
<i>Participate</i>	1.044** (3.41)	0.541* (2.25)	0.554* (2.35)
<i>Gender</i>	-0.613* (-2.11)	-0.382 (-1.83)	-0.393 (-1.87)
<i>Age</i>	0.0413 (0.74)	0.0127 (0.37)	0.0118 (0.33)
<i>A-level Science Concentration</i>	0.183 (0.48)	0.0773 (0.32)	0.0798 (0.32)
<i>BA concentration MOP</i>	0.609 (1.67)	0.368 (1.39)	0.371 (1.39)
<i>BA concentration Law</i>	0.148 (0.26)	0.0773 (-0.09)	-0.0124 (-0.03)
Constant	0.358 (0.30)	-0.0248 (-0.03)	-0.0196 (-0.03)
Log Likelihood Ration		-97.424	-97.424
R-Square (Pseudo)	0.342	0.106	0.103
Observations	65	65	65

t statistics in parentheses, \* p<0.05, \*\* p<0.01, \*\*\* p<0.001

The average number of years of survival is about for those who participated in the program. The results of the regressions suggest that on average, benefiting from the incubator's environment increases entrepreneurial persistence by 1 more year (see model 1 using Ordinary Least Squares). Given that up to 38.46% of the overall sample had 0 years of attendance, we also used the zero-inflated poisson model. The Vuong test confirmed that the zero-inflated poisson was a better fit for the model. Given also the high standard deviation, a fourth model using the negative binomial was run.

All results confirm that benefitting from the incubator's environment increases persistence in entrepreneurship by 54 to 55%.

#### 3.2 Interpretations

##### **Hypo 1: entrepreneurship ecosystems increase entrepreneurial hysteresis**

Hypothesis 1 is confirmed as participation in an incubator increases the average the number of years of perseverance in entrepreneurship by 54.1%. What this means is that when a typical student benefits from an entrepreneurial ecosystem such as an incubator, it has 54 to 55% chance of staying as an entrepreneur.

##### **Hypo 2: being a female negatively impacts entrepreneurial hysteresis**

Hypothesis 2 rejected as gender does not have a statistical impact on students' ability to persevere on entrepreneurship. This implies that, everything else being equal, both males and females have equal chance to persevere as entrepreneurs while they live in an entrepreneurship ecosystem. This makes sense as one would rather expect a differential impact across gender once people are married or have kids.

A counterintuitive result is that concentration tracks does not seem to matter. This is unexpected as one could imagine students with science background to be involved in entrepreneurship.

## Conclusion: « Educating Differently »

This study builds on prior research results that suggest that an entrepreneurial ecosystem increases entrepreneurial intent. It investigates the impact of an entrepreneurial ecosystem on entrepreneurial hysteresis and persistence and finds that participation in an incubator increases the average number of years of perseverance in entrepreneurship by 54.1%. The study also suggest that gender does not have an impact on students' ability to persevere on entrepreneurship. In a context where entrepreneurship is the best option for the youth to create jobs and participate to value creation, such a study calls for reframing higher education. The new approach to education should favor the development of entrepreneurial ecosystems in general, and of incubators, in particular, so that students can learn how to strengthen their entrepreneurship skills all the more since the public sector can no longer hire everyone. Such an approach to education requires a harmonious collaboration within the triple or quadruple helix of innovation: government, universities, industry (private sector), civil society.

The Young Entrepreneurs' Link Office (YELO) program was not initially thought of as an experimental design. As a matter of fact, the small number of students involved and the overall environment of the Young Entrepreneurs' Link Office (YELO) might be too specific to be scalable. In that regards, larger scale experiments and subsequent studies would complement this study both on theoretical and empirical grounds.

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