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The supply of high-quality entrepreneurs in developing countries: evidence from Nigeria

Adedayo O. Olofinyehun, Caleb M. Adelowo and Abiodun A. Egbetokun*

National Centre for Technology Management, Obafemi Awolowo University, P.M.B. 012, Ile-Ife, Nigeria

*Corresponding author. Email: aaegbetokun@gmail.com

Abstract

This article analyses entrepreneurial interest and practice as well as the impact of an education policy among a representative sample of highly educated young Nigerians. We use pooled cross-sectional data from 2007 and 2011 on about 27,000 undergraduates in over 50 schools. Our descriptive analyses reveal a high prevalence of interest in entrepreneurship but low prevalence of entrepreneurial practice. In a set of difference-in-differences estimation, the results show that compulsory entrepreneurship education stimulates entrepreneurial interest but does not reinforce it. Quite strikingly, we find that the rate of entrepreneurial practice diminished among students who were exposed to entrepreneurship education compared to the control sample. This suggests that entrepreneurship education improves selection into actual entrepreneurship practice by filtering out individuals with initial interest but with lower perceived success potential.

Key words: entrepreneurship education; high-quality entrepreneurs; Nigeria; policy; difference-in-differences; National Universities Commission.

1. Introduction

The aim of this article is twofold. First, it provides evidence on the potential supply of highly-educated entrepreneurs in a typical developing country. As the literature consistently shows, educated entrepreneurs have a propensity to start growth-oriented firms and provide better management (Bloom and Van Reenen, 2007; Bloom et al. 2007; 2012a; Gennaioli et al. 2013). They also have a disproportionately high tendency to create and expand modern businesses (La Porta and Shleifer 2014). Apparently, when educated entrepreneurs are in short supply, economic growth is constrained because productive businesses are much less likely to emerge in the economy. For this reason, we could view highly-educated entrepreneurs as being of high quality.¹ A focus on highly-educated (high-quality) entrepreneurs is economically and politically important, especially for developing countries that generally battle high rates of youth unemployment. It is indeed useful to understand the potential supply of this category of entrepreneurs. Secondly, this article provides evidence on the impact of compulsory entrepreneurship education on stimulating and sustaining entrepreneurial attitudes among highly-educated young persons in a developing country. The literature suggests that entrepreneurship education indeed facilitates the emergence and reinforcement of an entrepreneurial mindset among young persons (Valerio et al. 2014). Against this background, we evaluate the impact of a compulsory entrepreneurship education policy, designed for Nigerian universities in 2006, on the entrepreneurial behaviour of undergraduates. We believe this evaluation is important for policy and practice.

Throughout the article, we adopt basic and conventional definitions of the main concepts: entrepreneurship and the entrepreneur (Kirzner 1973; Gürbüz and Aykol 2009; Klapper et al. 2010). We take entrepreneurship to mean the process of starting one's own business. In other words, the entrepreneur is one who creates a new business, irrespective of whether he manages the same business. By extension, a potential entrepreneur would be one who currently expresses interest in starting a new business even if he has not yet done so. We use pooled cross-sectional data from 2007 to 2011 on about 27,000 undergraduates in over fifty tertiary education institutions in Nigeria, being one of the largest economies in Africa and the largest black nation in the world (UN-DESA 2013). Unemployment rates in Nigeria have been consistently high for a long time so the country epitomises the burden of unemployment that developing countries typically grapple with. We believe, therefore, that the Nigerian case will offer useful lessons for other countries, especially developing ones.

Our analyses are useful for several reasons. In general, data on the supply of young entrepreneurs in developing economies is rare. The large data set presented in this study offers important insight on the source and characteristics of future entrepreneurs in a typical developing country (Nigeria). In addition, entrepreneurship offers a solution to the problem of unemployment and economic growth especially if high-quality entrepreneurs are nurtured. Higher-education institutions, particularly universities, are a major source of high-quality entrepreneurs. Therefore, understanding what drives entrepreneurial interest (EI) and practice among undergraduates is important for

policymaking. Moreover, the extent to which compulsory entrepreneurship education in Nigerian tertiary education has influenced entrepreneurial intentions among undergraduates remains unknown. To the best of our knowledge, this will be the first evaluation of the impact of the compulsory entrepreneurship education policy. Finally, our analyses offer a rigorous test of the proposition that education is a viable way to stimulate and sustain EI among highly-educated young persons, thereby potentially increasing the supply of high-quality entrepreneurs and facilitating the economic growth process. On the basis of the results of this study, relevant policy lessons can be drawn for other countries in general, and developing countries in particular.

The next section provides a summary of the literature that motivates our specific research questions and the corresponding analyses. This is followed with a description of our data and methods. In Section 4, we discuss the evidence relating to the aim of this article. We offer some concluding thoughts in the final section.

2. Background literature

Between 35 and 50 per cent of firms in the private sector in most developing countries are in the informal economy (La Porta and Shleifer 2014). There are, however, two traditional but opposing views about the role of informal firms in development. The first (negative) proposes that the informal sector should be suppressed because it is parasitic and unproductive, though large (see e.g. Levy 2008). Most development scholars actually agree that despite their ubiquity, informal firms are typically small, unproductive, and stagnant (La Porta and Shleifer 2008). Consequently, these firms do not present much hope for economic growth even if they offer a means of subsistence to millions of people in poor countries. The second (positive) believes that the informal sector should be encouraged to thrive because it shelters potential entrepreneurial capacity essential for growth (see e.g. De Soto 1989). The conflicting views pose a trade-off for public policy: If the goal is to drive economic growth, then informal firms are not particularly interesting; but because many households live on proceeds from these firms, implementing policies that stifle them is bound to aggravate poverty. This is the main controversy that surrounds the role of informal firms in economic development (La Porta and Shleifer 2014).

But the hybrid view, rooted in the work of scholars like Rauch (1991), disentangles the roles of both the formal and informal sectors and suggests the driving of economic growth by an expansion of the formal sector, which naturally shrinks the informal sector over time. This is the so-called ‘Walmart’ theory of economic development, which turns out to be highly consistent with firm-level data (La Porta and Shleifer 2008). Stimulating expansion in the formal sector of the economy, rather than actively discouraging informality, drives growth and shifts the productivity frontier such that most informal firms can no longer compete. Ultimately, an expanding formal sector can provide employment for firm owners driven out of the informal sector.

The primary mechanism in the Walmart theory is straightforward: formal and informal firms are similar in most respects except in the quality of entrepreneurs and management (La Porta and Shleifer 2014). According to Bloom et al. (2007, 2012a, b), management explains the astounding differences in performance across firms and countries. Their analyses show that firms with better management have up to 69 per cent higher productivity. Among the factors found to significantly influence management practice is the quality of the entrepreneur’s or manager’s education. Better-educated entrepreneurs and managers are the typical sources of the more productive and growth-oriented firms. In fact, Gennaioli et al.

(2013) document a 30 per cent return to an extra year of manager’s education as against only 6–7 per cent return to an extra year of staff training. However, firms in poor countries, especially the informal ones, are poorly managed—they are typically self-owned, managed by uneducated entrepreneurs, and lack the desire to significantly innovate (de Mel et al. 2008; La Porta and Shleifer 2014). For this reason, their growth and productivity prospects are very low—even when they increase in size—making them unfit to drive economic growth. Consequently, a clear need exists for driving economic growth by expanding the formal sector. The question then is: how can the supply of formal firms be increased?

A major policy prescription of the positive view of informal firms is reduction of formalisation barriers. However, recent evidence, especially about poor countries, has demonstrated that informal firms do not perceive regulatory barriers as their most important obstacle to business and they rarely transition to the formal sector even when they are incentivised (Jaramillo 2009; de Andrade et al. 2013; de Mel et al. 2013). In fact, there is substantial evidence that most informal firms do not cross over into the formal sector even in the face of regulatory changes and incentives (de Mel et al. 2013). Therefore, simplifying the business registration process or providing microfinance, though positive on its own, is not a very good alternative. A more plausible alternative has been suggested in the recent literature: deliberate strategies geared towards increasing the supply of highly-educated entrepreneurs and business managers who have a proven propensity to start high-growth firms and can better manage. In the words of La Porta and Shleifer (2014):

The evidence suggests that an important bottleneck to economic growth is not the supply of better-educated workers; indeed, at least on many observable characteristics the workers are rather similar in informal and formal firms. Rather, the bottleneck is the supply of educated entrepreneurs—people who can run productive businesses. These entrepreneurs create and expand modern businesses with which informal firms, despite all their benefits of avoiding taxes and regulations, simply cannot compete. This is how the informal economy dies out in the process of development. From this perspective, the policy message for how to grow the formal economy and shrink the informal one is to increase—whether through immigration or education and training—the supply of educated entrepreneurs (La Porta and Shleifer 2014: 125–6).

This idea is consistent with the well-known notion that nations can overcome unemployment and drive economic growth through entrepreneurship (Wennekers and Thurik 1999). In fact, it further amplifies the seminal proposition of Baumol (1990) that not all forms of entrepreneurship are the same; there is productive, unproductive, and even destructive entrepreneurship. The above policy prescription implies that the process of economic growth can be facilitated by deliberately spurring productive entrepreneurship. At the same time, it begs some important questions.

First, where will highly-educated entrepreneurs come from? There are two possible answers as suggested by La Porta and Shleifer (2014): immigration and education. For developing countries heavily constrained by brain drain and poor business environments (World Bank 2016), it is difficult to attract high-quality entrepreneurs from abroad. However, education and training may serve as a good means of growing high-quality indigenous entrepreneurs. In this regard, higher-educational institutions, particularly universities, polytechnics, and colleges will play a key role. What remains to be known is the quantity of potential entrepreneurs that is available in these institutions, and their motivational factors. The

first aim of this article, therefore, is to analyse using available data, EI, and activity among young persons in tertiary institutions in Nigeria. Based on our analyses, we hope to offer a better understanding of the potential supply of high-quality entrepreneurs in a typical developing country.

The second important question is the so-what of the first one. Once we know the potential quantity of high-quality entrepreneurs, how can we both sustain the current level and even increase it further? In other words, what policy actions need to be taken to stimulate and sustain EI particularly among highly-educated young persons? Again, following *La Porta and Shleifer (2014)*, education and training is recommended. Indeed, there is substantial evidence that entrepreneurship education plays an important role in the development of entrepreneurial mindset of youths and in reinforcing their intention towards entrepreneurship (*Crant 1996; Gorman et al. 1997; Kourilsky and Walstad 1998; Sergeant and Crawford 2001; Wang and Wong 2004; Fayolle 2005; Gerry et al. 2008; European Commission 2012; Valerio et al. 2014*). Against this background, the Nigerian government sanctioned in 2006 a public policy intervention mandating all universities in Nigeria to introduce compulsory entrepreneurship courses across all disciplines and to establish entrepreneurship development centres (EDCs). The National Universities Commission (NUC), the agency of government responsible for regulating university education in Nigeria, designed and monitored this policy. We exploit variation in the date of implementation across universities to evaluate the impact of the policy in a difference-in-differences (DiD) setup.

For our analyses, we rely on a pooled cross-sectional data set from 2007 to 2011 on about 27,000 undergraduates in Nigeria's tertiary education institutions. To date, this very large and unique data set is the only one of such in the country. Using the 2007 wave of this data set, *Siyabola et al. (2012)* found that entrepreneurship education is a very significant correlate of EI among highly-educated young persons in Nigeria. However, that study could not provide rigorous evidence on the impact of entrepreneurship education on EI. Moreover, the study itself highlighted some important methodological limitations, noting that "... care should be exercised in interpreting the result relating entrepreneurship education to [entrepreneurial interest] due to the well-known 'self-selection' bias – which in this case refers to the probability that many of the students might be taking entrepreneurship classes because they already have interest in entrepreneurship. What this means is that while the entrepreneurship education initiative of government is good, it might be more effective as a means of intensifying existing interest in entrepreneurship than as a means of stimulating more EI" (p. 19).

3. Context, data, and methodological approach

3.1 Empirical context

The context for this article is Nigeria, a middle-income country in sub-Saharan Africa. There are several reasons why it is desirable to take the case of Nigeria to illustrate the points of this research. In the first quarter of 2014, the country's GDP was rebased and it consequently became the largest economy in Africa. As of July 2017, Nigeria remains one of the three largest economies in sub-Saharan Africa in terms of GDP. Even after the GDP was recently rebased, it is estimated that up to 57 per cent of GDP comes out of the informal sector, making the country the largest destination of informal sector activity in Africa (*BusinessDay 2014*). Moreover, knowing why young persons want to be entrepreneurs is relevant for development policy in the face of high unemployment. This is particularly

important in a country like Nigeria where, as is typical of most developing countries, unemployment is very high. For instance, in the second quarter of 2015, the combined rate of unemployment and underemployment in Nigeria was up to 26 per cent (*NBS 2015*). Thus, the evidence obtained on Nigeria will have relevant implications for other developing countries.

In 2006, the Nigerian government sanctioned a public policy intervention mandating all universities in Nigeria to introduce compulsory entrepreneurship courses across all disciplines and to establish EDCs. The NUC designed the policy and monitored compliance among universities. In most universities, the compulsory entrepreneurship course is essentially a compulsory elective which undergraduates have to take somewhere between their second and final years of study. The final year is the fourth or fifth year of study depending on the course of study. Thus, once an individual is registered in a university where the policy is already in effect, he is bound to complete the compulsory entrepreneurship course before the end of his/her regular course programme. Implementation of the policy began around 2007 but took effect at different times within different universities up until around 2013.

3.2 Data and sampling details

Data from a longitudinal survey to explore how students transfer their EI into actual practice would have been the most appropriate to answer the research questions, but that is not available in Nigeria as far as we know. For this article, we pool data from two independent cross-sectional surveys on entrepreneurial attitude of science, social science, and engineering undergraduates in Nigerian tertiary institutions. Respondents were selected for both surveys by a rigorous systematic random sampling procedure. The National Centre for Technology Management (NACETEM), Nigeria designed and conducted both surveys. The first survey was conducted between November 2006 and February 2007 and the second between 2010 and 2011, in a sample of registered tertiary institutions. *Table 1* provides details on the distribution of sampled institutions by type. The first survey included twenty-five (at that time, about a fifth of all officially registered) tertiary institutions while the second included fifty-five (at that time, over a third of all officially registered) tertiary institutions. The sample of tertiary institutions for the two surveys was drawn from the list of schools in the latest examination brochures published by the Joint Admissions and Matriculations Board (JAMB) as at the time of commencement of each of the surveys. This sampling frame is intrinsically reliable since JAMB is the principal authority responsible for conducting admission examinations into all categories of institutions covered by the study and it is known that JAMB's institutional listings include only accredited institutions and courses. The population of tertiary institutions in Nigeria was clustered respectively by location, age, ownership, and availability of several courses within the three broad disciplines focused in the surveys (science, social science, and engineering). For instance, all universities located in South-Western Nigeria will belong to the same location cluster but different age, ownership, and discipline clusters. The final sample of schools was randomly selected across clusters.

Respectively, the population of science, social science, and engineering undergraduates in the selected tertiary institutions was clustered by their specific course and current year of study. For example, all mechanical engineering undergraduates will belong to the same course cluster but different year-of-study clusters. First-year students were excluded since extant entrepreneurship-related policies and programmes in their respective schools will only have minimally

influenced them, if it does at all. The final sample of respondents was randomly selected across clusters. To make the final sample as representative as possible, an equal number of respondents was targeted from each specific cluster across the institutions. A census was taken wherever the cluster size was not more than twenty. In the selected institutions, printed copies of the survey instrument were hand-delivered by previously trained enumerators to randomly selected undergraduates who then self-completed it. This approach helped to overcome selection bias since enumerators were directly responsible for the randomisation and they could assess on the spot whether a respondent was eligible or not. Table 2 contains the distribution of respondents across the two surveys. After data cleaning, our final sample includes nearly 27,000 respondents, 77 per cent of which is from the second survey. To date, this very large data set is the only one of such kind that we are aware of in the country. Richer details on the survey instrument, methodology, and sample characteristics can be found in NACETEM (2010, 2012).

The survey collected information on several demographic attributes of the respondents, in addition to indicators of entrepreneurial behaviour. Our main survey items of interest are included in Appendix Table A.1. In particular, respondents were asked to indicate whether they were interested in starting their own business. We use this question to proxy EI. In a follow-up question, respondents who expressed interest in starting their own business were asked to rate how strong their interest was, on a scale of 1 (very low) to 5 (very high).

3.3 Methods

Our first focus in this article is to evaluate EI and activity among highly-educated young Nigerians. With this, we offer some insight on the potential quantity of high-quality entrepreneurs. We do this via descriptive analyses of the relevant variables available in the survey. These include self-reported interest in starting one's own business, the level of this interest, current engagement in a business as well as motivations and deterrents of EI and practice. The descriptive analyses, reported in Section 4.1, include our full sample.

To examine the impact of compulsory entrepreneurship education on entrepreneurial outcomes, we adopt a DiD estimation technique. The DiD is an econometric technique that exploits the heterogeneous effect of a policy in a population that leads to only one group of people (treated) being affected, leaving another group (control) not influenced. The idea is to use the trend of the outcome (in our case, EI) in the control group as a counterfactual to mimic what the trend in the treated group would have been in the absence of the policy. The results will be valid if the so-called common trend assumption is fulfilled. In other words, there should not be external factors that may affect the control group without influencing the treated group, or vice versa.

Two possible factors could cause the common trend assumption to be violated in our sample. One, some of the respondents might

have taken entrepreneurship courses in addition to the policy that we seek to evaluate, either as part of their regular course programme or as a personal effort. Thus, observed effects may not necessarily be due to the policy. Fortunately, the survey asked respondents directly whether they have previously taken any entrepreneurship course. It turns out that a large share (57 per cent) of our DiD sample responded positively to the question, and this raises concerns about confounding effects. To get rid of the confounding effect, we include in all estimations a control variable for whether or not an individual had taken an additional entrepreneurship course. Secondly, the sample is randomly drawn from a heterogeneous, randomly selected, set of schools. Certain attributes of the schools like location, student-teacher ratio, strategic focus, and alumni activity might force responses to be somewhat homogenous within but heterogeneous across schools. In other words, it is reasonable to expect the treatment effect to be correlated within schools but not across schools. Thus, in all estimations we cluster the standard errors by school, thereby allowing responses to be freely correlated within but independent across schools. Individual heterogeneity and self-selection bias cannot confound our results because they can only affect the point in time at which a treated individual takes the compulsory course but not the probability of being treated or untreated. By the design of the policy as discussed earlier, there is in fact no guarantee that every respondent in our sample has actually taken the compulsory elective, and the survey provides no information on this. However, we rely on the assumption that the existence of the course creates an ambience that is potentially more favourable to EI. Moreover, since students typically work in tight social networks, knowledge spillovers will be common and non-negligible. Finally, we estimate that by virtue of the multilayer stratification employed in the sampling, a considerable proportion of the respondents would have taken the compulsory elective.

A final methodological note relates to the composition of the DiD sample. The NUC's compulsory entrepreneurship education policy concerns only universities and not all of them implemented the policy in the same year, some not even until after the time of the second survey. This has two implications: first, we are compelled to select a subsample of universities, and secondly, it allows us to select a group of universities that we can categorise as treated or untreated by exploiting variation in the time of policy implementation. We first selected the three largest and historically best-performing² universities in our sample, which introduced a university-wide compulsory entrepreneurship course after the time of the second survey

Table 2. The final sample.

Year of survey	Sample	Response rate (%)	Final sample
2007	7,560	82.5	6,235
2011	50,000	41.2	20,616
Total	57,650	–	26,851

Table 1. Distribution of sampled institutions.

Institution type	2006–7			2010–11		
	Total	Sample	Total percentage	Total	Sample	Total percentage
University	65	13	20	92	31	33.7
Polytechnic	51	9	17.6	52	17	32.7
College of Education (Technical)	8	3	37.5	7	7	100
Total	124	25	20.2	151	55	36.4

Table 3. The DID subsample.

Name of institution	Year of policy implementation	2007 survey	2011 survey	Total	Percentage of DiD sample
Treated					
University of Lagos, Akoka (UNILAG)	2005/6	371	811	1,182	21.65
Obafemi Awolowo University, Ile-Ife (OAU)	2007	360	636	996	18.24
Covenant University, Ota (CU)	2002	281	339	620	11.36
Total		1,012	1,786	2,798	51.25
Untreated					
Ahmadu Bello University, Zaria (ABU)	2011	357	955	1,312	24.03
Federal University of Technology, Minna (FUTMinna)	2011	79	953	1,032	18.90
Federal University of Agriculture, Abeokuta (FUNAAB)	2011	301	17	318	5.82
Total		737	1,925	2,662	48.75

(2011). We then matched this number with the largest and best-performing universities that had introduced a university-wide compulsory entrepreneurship course by the time of the first survey. Putting these together, we ended up with a subsample of six universities, which are the largest and best performing in our full sample: the University of Lagos, Akoka (UNILAG); Obafemi Awolowo University, Ile-Ife (OAU); Covenant University, Ota (CU); Ahmadu Bello University, Zaria (ABU); Federal University of Technology, Minna (FUTMinna) and Federal University of Agriculture, Abeokuta (FUNAAB).

This subsample includes 5,460 observations (that is, approximately 20 per cent of the full sample and 30 per cent of university undergraduates in the full sample) and is evenly distributed by treatment: 51 per cent treated and 49 per cent untreated (Table 3). Despite this restricted sample, we believe that our results provide a first hint at the potential impact of policy-induced entrepreneurship education policy in affecting the supply of high-quality entrepreneurs in a country like Nigeria. Given that most developing countries face similar challenges, we believe that the results hold relevant insight for other countries.

The equation that we estimate is the following:

$$Y_{ist} = \alpha + \gamma_{it}D + \lambda_{is}T + \delta_{ist}D \cdot T + \epsilon_{ist} \quad (1)$$

where i is the individual, s is the treatment unit (i.e. university), and t is time. D is a dummy equaling 1 if an individual is treated and zero if otherwise. T is a time dummy equaling 1 for treatment unit s in the post-treatment period (that is year 2011) and 0 otherwise (i.e. in year 2007). The coefficient of interest is δ_{ist} , which captures the effect of treatment over time—the so-called average treatment effect. In this set-up, a treated individual is one that comes from a university that already has complied with the NUC policy. γ_{is} captures the aggregate difference between the treated and untreated units while λ_{it} captures the aggregate difference in the sample over time. Y_{ist} corresponds to one of three outcomes that we are interested in: whether an individual i expresses interest in starting his/her own business (EI), the level of interest in starting an own business (level of entrepreneurial interest, LEI), and whether an individual currently owns a business (entrepreneurial practice, EP). We estimated equation (1) as a logit for EI and EP, and as an ordinal logit for LEI. For the latter estimation, we isolated only those who had a score of 1 for EI as the response to the LEI question is only valid for them.

Our estimations control for a number of other correlates of entrepreneurial behaviour found in the literature on entrepreneurship (Wang and Wong 2004; Tulker and Selcuk 2009; Siyanbola

et al. 2012) and available in our dataset. These include variables related to:

- I respondents' background including parents' entrepreneurship history and educational attainment;
- II respondents' educational characteristics including academic performance (measured in terms of cumulative grade point average) and whether they have taken any entrepreneurial training apart from the policy-induced compulsory course; and
- III respondents' personal information including risk aversion, age, gender, marital status, and ethnic origin.

A summary of these variables is contained in Table 4. Note that here, and in the subsequent regression estimations, all categorical variables are dichotomised to ease interpretation of results. About half of our sample is exposed to treatment and 68 per cent is from the post-treatment period. Only about a third of the sample is female and expectedly, the majority is well under 25 years of age and single. Moreover, parents of majority of the respondents are entrepreneurs and are highly educated. Risk taking is common in our sample, and more than half of the individuals have received some education in entrepreneurship apart from the policy-induced compulsory entrepreneurship course that this article evaluates. A correlation matrix is reported in Appendix Table A.2, in which no evidence of multicollinearity is present. But for only one exception, the correlation values are just around 0.1. Maximum correlation of around 0.6 is between the educational attainment of the father and mother. This is to be expected given that people tend to marry within their own social class. Yet, this does not raise colinearity concerns since average variance inflation factor is only 1.22 and the maximum is 1.67. These values are well below acceptable limits.

4. Results and discussion

4.1 The potential supply of high-quality entrepreneurs in Nigeria

This section discusses the results of the descriptive analysis carried out on the full sample to evaluate EI and activity among highly-educated young Nigerians, as well as their motivations and deterrents. Out of the 26,851 undergraduates in our full sample, 22,621 (84 per cent) indicated that they were interested in starting their own business. Most of these (70 per cent) were already running their own business at the time of the study (Table 5). The level of EI was also found to be high. Sixty percent of the 22,621 respondents who expressed interest in starting their own business also reported that their level of interest was high or very high in contrast to only 3 per

Table 4. Summary statistics, DiD subsample ($N = 5,460$).

Variable	Mean	SD	Min	Max
Year ($T, 2011 = 1$)	0.680	0.467	0	1
Treatment (D)	0.512	0.500	0	1
Gender (Female = 1)	0.332	0.471	0	1
Age <16 years	0.001	0.036	0	1
Age 16–20 years	0.276	0.447	0	1
Age 21–25 years	0.556	0.497	0	1
Age 26–30 years	0.160	0.367	0	1
Age >30 years	0.007	0.081	0	1
Marital status (Single)	0.939	0.240	0	1
Marital status (Married)	0.051	0.221	0	1
Marital status (Divorced)	0.010	0.099	0	1
Ethnicity (Hausa)	0.209	0.406	0	1
Ethnicity (Igbo)	0.180	0.384	0	1
Ethnicity (Yoruba)	0.545	0.498	0	1
Ethnicity (Others)	0.066	0.249	0	1
Cumulative grade point average (≤ 1)	0.023	0.149	0	1
Cumulative grade point average (> 1)	0.239	0.426	0	1
Cumulative grade point average (> 2)	0.503	0.500	0	1
Cumulative grade point average (> 3)	0.236	0.424	0	1
I do things that are risky (Never)	0.075	0.264	0	1
I do things that are risky (Rarely)	0.194	0.395	0	1
I do things that are risky (Sometimes)	0.444	0.497	0	1
I do things that are risky (Usually)	0.184	0.387	0	1
I do things that are risky (Always)	0.103	0.304	0	1
Parents have a business	0.725	0.446	0	1
Taken entrepreneurship course before	0.569	0.495	0	1
Father has no education	0.051	0.219	0	1
Father has below tertiary education	0.385	0.487	0	1
Father has at least a university degree	0.565	0.496	0	1
Mother has no education	0.085	0.279	0	1
Mother has below tertiary education	0.508	0.500	0	1
Mother has at least a university degree	0.407	0.491	0	1

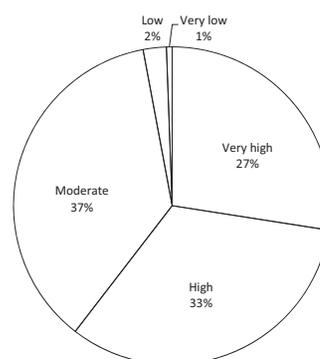
cent who reported low or very low interest (Fig. 1). Taken together, these figures suggest a large potential supply of high-quality entrepreneurs in Nigeria. However, most of these potential entrepreneurs are not currently gaining any hands-on experience.

The importance of the above figures will be more obvious if we can establish in our data—as the previous literature suggests—that revealed EI is associated with subsequent business ownership. Unfortunately, the cross-sectional nature of our data does not allow us to provide conclusive evidence on this, but we can at least examine if undergraduates with revealed EI are more likely to start their own business while in school. Table 6 reports the results of this exercise. The numbers suggest a strong relationship between EI and EP. For instance, 30 per cent of those interested in starting their own business, as against only 13 per cent of those without EI, were already engaged in a business at the time of the surveys. Moreover, when those with EI were involved in a business, they were much more often the initiators, compared to those without EI (64 per cent against 49 per cent). These differences are statistically significant at the 5 per cent level, suggesting that revealed EI could be a strong predictor of business ownership. This result suggests that strengthening existing entrepreneurship education and establishing innovation hubs or business incubators could stimulate the entrepreneurship transition from interest to practice.

We turn now to a discussion of the motivators and deterrents of entrepreneurship among highly-educated young persons. This is important because, despite a large potential pool of entrepreneurs, a

Table 5. EI and practice (full sample $N = 26,851$).

	Frequency (%)
Not interested in entrepreneurship	4,230 (15.8)
Interested in entrepreneurship	22,621 (84.2)
<i>of which:</i>	
Not currently engaged in business	15,763 (69.7)
Currently engaged in business	6,858 (30.3)

**Figure 1.** Level of entrepreneurial interest (subsample with interest in entrepreneurship $n = 22,621$).

poor understanding of what could stimulate or hinder their activities hampers the design of appropriate policies. In Table 7, we summarise our findings on why some undergraduates want to start their own business or already do so and why some do not. The most common reasons that the undergraduates who reported being interested in starting their own business gave are fear of unemployment and market opportunities. This is consistent with the literature on entrepreneurial antecedents. For instance, self-employment has been established as a common response by individuals to unemployment (ILO 2013). Our result suggests that self-employment could also be a response to anticipated unemployment, a phenomenon where young persons believe it will be hard for them to secure employment due to high levels of unemployment in their environment. This type of response is typical among highly-educated individuals who normally have a high level of human capital, confidence, and a large productive social network to start with. Moreover, the spillover theory of entrepreneurship suggests that entrepreneurial behaviour is stimulated in an environment where knowledge spillovers and technological opportunities abound (Acs et al. 2013; Singer et al. 2015). By extension, a desire for entrepreneurship may be aroused where there are untapped market potentials (Klapper et al. 2010). It is interesting to note that entrepreneurship education is also a commonly reported motivator of EI. This is in keeping with existing evidence that entrepreneurship education plays an important role in the development of entrepreneurial mindset of youths and in reinforcing their intention towards entrepreneurship (Siyabola et al. 2012; Valerio et al. 2014).

Most of the students who were already running a business at the time of the surveys were mostly motivated by their EI (34 per cent), their parents (20 per cent), their desire for additional

Table 6. Comparison of EP across EI.

EP	EI (%)		A-B (z-score*)
	(A)	(B)	
	Yes	No	
Currently engaged in business	6,813 (30.12)	547 (12.90)	17.22 (23.07)
<i>of which:</i>			
Initiator of the business	4,357 (63.95)	268 (48.99)	14.96 (6.96)
Partner in the business	1,325 (19.45)	105 (19.20)	0.25 (0.14)

*Bold indicates statistical significance at the 5% level.

Table 7. Motivators and deterrents of entrepreneurial behaviour.

Motivators of EI	Percentage (N = 17,391)
Fear of unemployment	32.59
Market opportunities	31.02
Entrepreneurship education	27.02
Family entrepreneurship experience	5.78
Government policy/reform	3.58
Motivators of business engagement	Percentage (N = 7,360)
Personal interest	34.42
Parents	20.13
Desire to make money	16.07
Self-actualisation	13.37
Relatives	4.68
Siblings	3.20
Peers	2.91
Events	2.03
Others	0.19
Deterrents of business engagement	Percentage (N = 17,899)
Presently in school	60.24
Lack of capital	22.02
No interest	5.34
I have flair for something else	3.36
Business is risky	2.34
Other reasons	0.28

income (16 per cent), and self-actualisation (13%). This is in keeping with previous evidence that need for achievement, parental influence, and pecuniary gains positively influence the probability of self-employment (Global Entrepreneurship Monitor 2014). On the other hand, most of those not engaged in a business were deterred by their studies (60 per cent) and insufficient capital (22 per cent). These results yield some policy-relevant insight. First, EI is often strong enough that even undergraduates do not delay actualisation. Thus, given the strong correlation between EI and practice as discussed above, policymakers should see institutions of higher learning as a veritable breeding ground for future entrepreneurs. Moreover, entrepreneurship development policies targeted at this demographic will benefit significantly from engaging parents and practising entrepreneurs as instructors or role models. Removal of barriers to business capital is also an important area of policy action.

Table 8. Cross tabulation of EI and practice by treatment and time.

	Year	Percentage of treated	Percentage of untreated	Total
Entrepreneurial interest	2007	91.6	85.9	89.2
	2011	93.5	74.8	83.8
	Total	92.8	77.8	85.5
Currently engaged in business	2007	32.8	25.2	29.6
	2011	23.2	28.4	25.9
	Total	26.7	27.5	27.1

4.2 The impact of entrepreneurship education on entrepreneurial behaviour

We discuss in this section the impact of a 2006 compulsory entrepreneurship education policy introduced into Nigerian universities on the formation and expression of EI. Variation in the date of implementation of this policy across universities endows us with a pseudo-natural experiment in which the policy is the treatment. The surveys that we use straddle the implementation of the policy in some universities and therefore allow us to set up a DiD analysis. Before turning to the estimation results, we first report in Table 8 the distribution of EI and practice across time and treatment. This gives us some basic insight into the effect that we estimate subsequently in the multivariate regression setting.

Between 2007 and 2011, EI increased marginally in the treated sample but reduced substantially in the untreated sample. Thus, the difference in the rate of EI between the treated and untreated samples widened over time, indicating a substantial treatment effect. The rate of EP reduced substantially in the treated sample between 2007 and 2011 but increased marginally in the untreated sample. Thus, although the rate of EP was initially higher in the treated sample than in the untreated, it became lower in 2011. While this does not necessarily hint at a substantial treatment effect, it does seem to suggest that treatment might improve selection into the actual practice of entrepreneurship. In other words, exposure to entrepreneurship education might cause individuals to become more aware of the requirements for success and the inadequacy or otherwise of their own preparation. Consequently, only those who possess a higher level of confidence about their success potential and who feel better prepared end up starting a business. This filtering effect of entrepreneurship education is particularly relevant for entrepreneurship policy.

The regression results based on equation (1) provide richer insight regarding the effects just discussed (Table 9). Our main coefficient of interest is the interaction of treatment and time, the average treatment effect, which captures the difference between the treated and untreated samples across time. Given that the common trend assumption is fulfilled, we find a significant average effect of treatment on EI (Model I) but not on either of the level of EI (Model II) and EP (Model III). As indicated in the coefficient of the treatment variable in Model I, exposure to treatment (i.e. compulsory entrepreneurship education) increases the probability that an undergraduate will show interest in entrepreneurship by as much as 86 per cent (i.e. $e^{0.618} - 1$). This significant positive effect is amplified over time, yielding a positive and significant average treatment effect. To illustrate this, we plot in Fig. 2 the predicted probability of EI in the treated and untreated samples. The figure depicts how the gap between the treated and untreated samples widened over time so much that by 2011, the difference in the probability of EI between the

Table 9. Estimation results.

Models	(I)	(II)	(III)
Dependent variables	LOGIT	ORDINAL LOGIT	LOGIT
Independent variables	EI	Level of EI	EP
Year (<i>T</i>)	-0.352 (0.409)	-0.639*** (0.075)	0.099 (0.170)
Treatment (<i>D</i>)	0.618** (0.312)	-0.124 (0.142)	0.242 (0.195)
Treatment*Year (<i>D*T</i>)	0.814* (0.421)	0.172 (0.305)	-0.515 (0.384)
Gender (Female=1)	-0.288*** (0.110)	0.149* (0.082)	-0.213** (0.098)
Age 16–20 years	2.261*** (0.690)	1.030* (0.590)	-1.583*** (0.318)
Age 21–25 years	2.335*** (0.631)	0.983 (0.645)	-1.296** (0.293)
Age 26–30 years	2.483*** (0.620)	0.971 (0.672)	-1.296** (0.322)
Age >30 years	2.562** (1.033)	0.553 (0.643)	-0.783 (0.495)
Marital status (Married)	-0.102 (0.309)	0.164 (0.176)	0.446*** (0.132)
Marital status (Divorced)	-0.348 (0.498)	0.088 (0.280)	0.730*** (0.230)
Ethnicity (Igbo)	-0.147 (0.134)	0.041 (0.056)	0.020 (0.119)
Ethnicity (Yoruba)	-0.020 (0.056)	-0.030 (0.043)	0.044 (0.048)
Ethnicity (Others)	0.433 (0.285)	0.108 (0.073)	-0.134 (0.230)
Cumulative grade point average (>1)	0.509*** (0.135)	0.114 (0.330)	-0.163 (0.137)
Cumulative grade point average (>2)	0.573*** (0.158)	-0.089 (0.361)	-0.065 (0.157)
Cumulative grade point average (>3)	0.643*** (0.130)	-0.032 (0.348)	-0.106 (0.198)
I do things that are risky (Rarely)	0.473** (0.195)	0.125 (0.235)	-0.053 (0.080)
I do things that are risky (Sometimes)	0.308 (0.270)	-0.045 (0.188)	0.070 (0.107)
I do things that are risky (Usually)	0.250 (0.259)	-0.269 (0.209)	0.478*** (0.111)
I do things that are risky (Always)	0.384 (0.292)	-0.540** (0.274)	0.493*** (0.204)
Parents have a business	0.811*** (0.087)	-0.154** (0.072)	0.327** (0.154)
Taken entrepreneurship course before	0.080 (0.187)	-0.214** (0.091)	0.340*** (0.117)
Father has below tertiary education	0.136 (0.170)	0.271 (0.194)	-0.121 (0.175)
Father has at least a university degree	0.079 (0.192)	0.194 (0.186)	-0.145 (0.207)
Mother has below tertiary education	0.052 (0.271)	-0.119 (0.081)	0.106 (0.164)
Mother has at least a university degree	-0.376 (0.240)	-0.123 (0.100)	0.216 (0.153)
Intercept	-2.010** (0.894)		-0.168 (0.507)
Number of observations	5,460	4,669	5,460
Log-likelihood	-2,011.095	-5,552.904	-3,097.261
Percentage correctly classified	85.48	–	72.95
McFadden's R^2	0.110	0.017	0.029
χ^2	495.519***	190.646***	182.210***

* $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$.

treated and untreated samples was approximately twice as large as in 2007.

This stimulating effect of entrepreneurship education is a desirable one especially in the context of high unemployment, as in Nigeria. A more desirable effect would be that entrepreneurship education reinforces interest in entrepreneurship. The analysis reported in Model II of Table 9 gives some insight on this aspect. For the subsample of those already interested in starting their own business, we examine the effect of treatment on their level of interest. The coefficient on the treatment–time interaction is insignificant though it has the expected sign. This, as illustrated in detail in Fig. 3, suggests that compulsory entrepreneurship education has a negligible effect on the level of interest. At first glance, this result seems to suggest that where entrepreneurship interest already exists, compulsory entrepreneurship education is of little use. However, this interpretation is not necessarily correct since the analysis did not take the content of the compulsory entrepreneurship course into account. The more correct interpretation would be that curriculum matters: the entrepreneurship education content that stimulates EI is inadequate for reinforcing it. This specific result is particularly

important considering that the level of EI tends to decrease over time: the probability that an undergraduate shows a higher level of interest in entrepreneurship is just about half as high in 2011 as in 2007 (i.e. $1 - e^{-0.639}$). In fact, as Fig. 4 illustrates, at lower levels of EI, the predicted probability increases across time; and in contrast, the predicted probability reduces across time at higher levels of EI. In other words, when left alone, EI tends to diminish over time; therefore, deliberate strategies starting with adequate entrepreneurship education and training are required to reinforce and sustain it.

As noted earlier, EP drops considerably among students exposed to compulsory entrepreneurship education compared to the control sample. This effect, though insignificant,³ appears in Model III in the negative sign of the treatment–time interaction. Fig. 5 provides an illustration of the time–treatment interaction effect. Clearly, the probability of EP declines in the sample that has been exposed to treatment such that in 2011 it became lower than in the control sample. This gives additional support to our earlier argument that entrepreneurship education tends to improve selection into actual entrepreneurship practice by filtering out individuals with initial interest but with lower perceived success potential. The significant negative effect of additional entrepreneurship education on the level of EI (Model II) gives further support to this argument. It simply implies that the more educated an individual gets in entrepreneurship, the less interested they tend to become in starting their own business. The significant positive effect of additional entrepreneurship education in Model III appears to contradict our argument on the selection effect of entrepreneurship education. At first glance, it seems to suggest that an individual who takes an entrepreneurship course in addition to treatment is generally more likely to start his own business but a more detailed look reveals that this is less so in the treated sample (see Fig. 6).

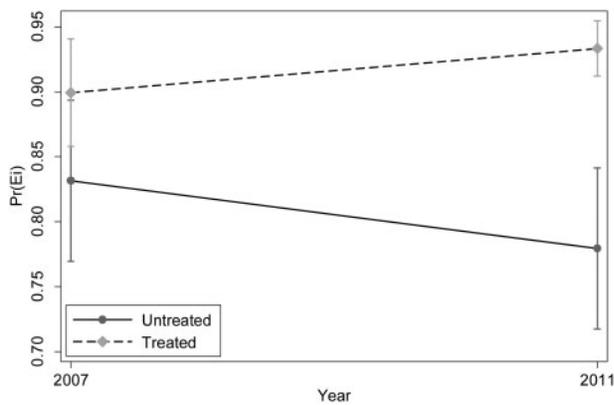


Figure 2. Predicted probability of entrepreneurial interest over time in treated and untreated samples.

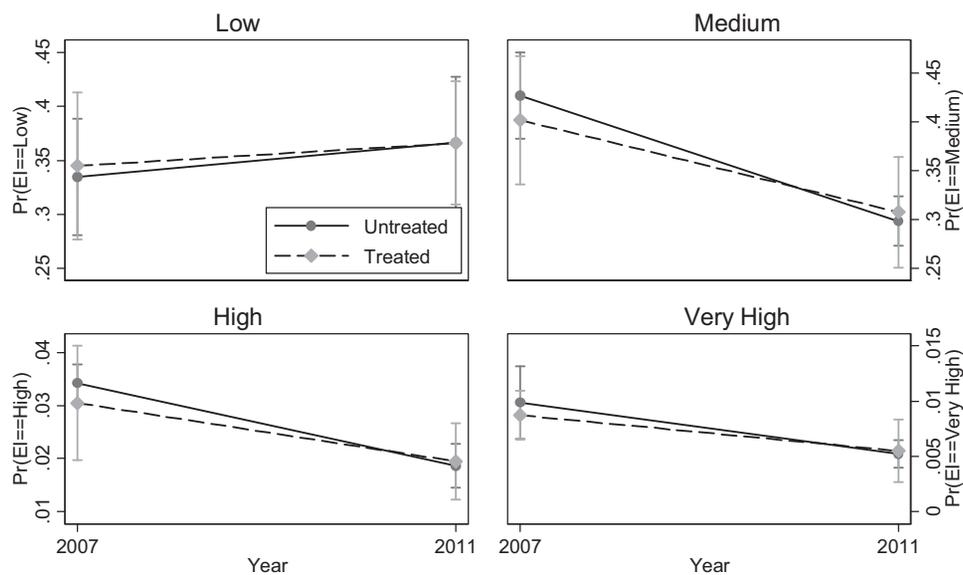


Figure 3. Predicted probabilities of different levels of entrepreneurial interest over time in treated and untreated samples.

4.3 Robustness checks

To examine robustness of our results, we perform some additional analyses and summarise the results in Table 10.⁴ It is entirely plausible that undergraduates take entrepreneurship courses even in the absence of treatment, that is, the NUC initiative. This has an important implication for our research. Consider two typical students, one

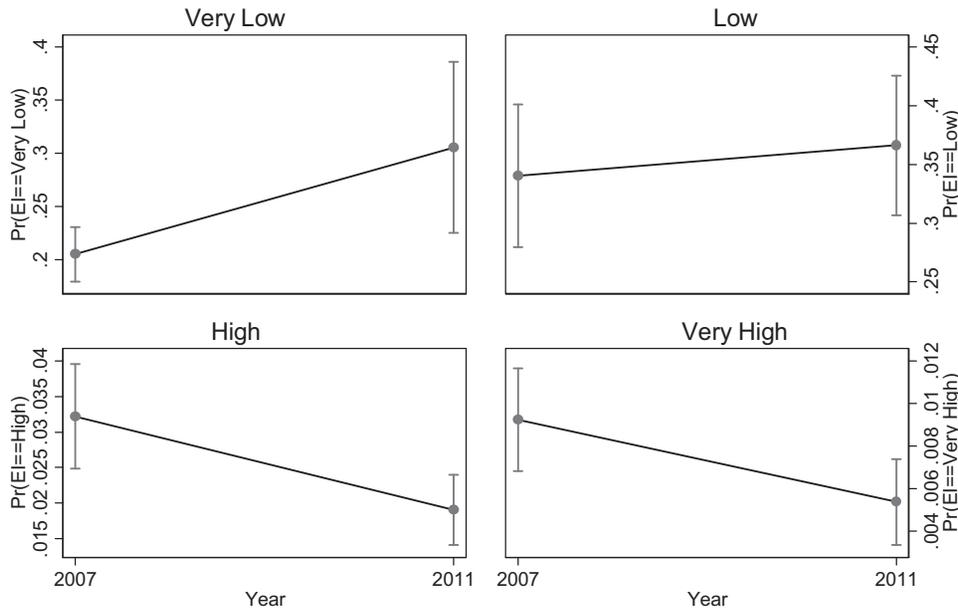


Figure 4. Predicted probability of level of entrepreneurial interest over time.

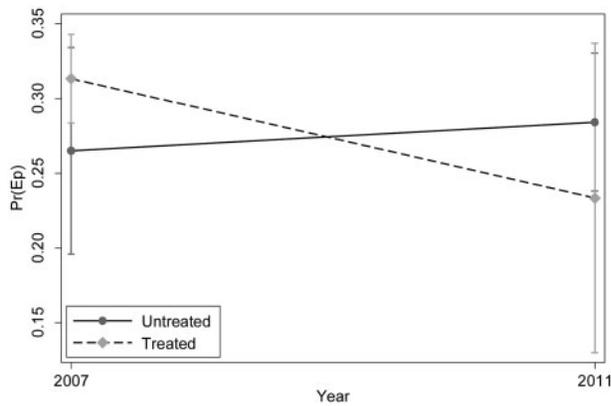


Figure 5. Predicted probability of EP over time in treated and untreated samples.

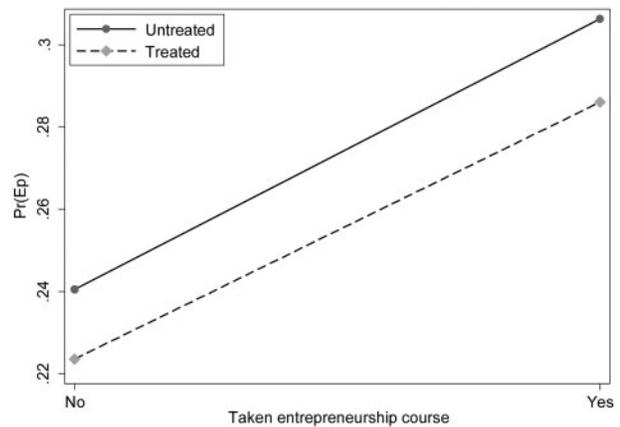


Figure 6. Predicted probability of EP conditional upon taking an additional entrepreneurship course in treated and untreated sample.

from the treated sample and the other from the untreated. If both have taken an entrepreneurship course at the time of the survey, the main source of difference between them, *ceteris paribus*, will be the additional effect of treatment, which is present for one but absent for the other. So far, we have only included a dummy to control for the potential confounding effect of entrepreneurship education. To examine the robustness of our results, we check whether the treatment effect shows up in the subsample of respondents who have taken an additional entrepreneurship course at the time of the survey. The results (Table 10) are similar to what we have reported above.

Moreover, while the difference in attitudes of students across time is interesting, it may be difficult to attribute the change entirely to the new policy. One way to make the analysis more convincing is to examine within a given university, if there are groups of students who were affected more by the change in policy than others. For example, was there a special focus on engineers, or business students, or some other group? However, as far as we know, the policy is not selective in this regard. Yet, we do know that certain groups of

students take, in addition to treatment, other courses that could potentially foster an entrepreneurial mindset. For instance, students in business administration and economics take courses related to small business planning and management, marketing, production, and operations management as well as the business environment. As a result, we expect that the impact of treatment in this group will be reinforced. To examine this, we repeat our estimations adding a second difference, across time and across disciplinary groups. The results (Table 10) remain similar to what we have reported above. In sum, the results on the effect of compulsory entrepreneurship education on the supply of high-quality entrepreneurs remain remarkably robust.

4.4 Other noteworthy results

The effects of some of the demographic controls in Models I, II, and III of Table 9 are worth noting. EI is seen to increase with age whereas EP and the level of interest in entrepreneurship are barely

Table 10. Robustness checks.

	EI	Level of EI	EP
Estimation results based on a subsample that has taken an additional entrepreneurship course			
Time (<i>T</i>)	-0.269 (0.599)	-0.604*** (0.072)	0.309*** (0.089)
Treatment (<i>D</i>)	0.663*** (0.408)	-0.136* (0.082)	0.120 (0.135)
Treatment*Time (<i>T*D</i>)	1.145** (0.580)	0.120 (0.237)	-0.439 (0.300)
Controls	Yes	Yes	Yes
Number of observations	3,088	2,668	3,105
Log-likelihood	-1067.502	-3181.827	-1848.244
Pseudo- <i>R</i> ²	0.152	0.016	0.025
χ^2	382.983***	101.221***	96.131***
Estimation results with additional difference based on discipline			
Time (<i>T</i>)	-0.380 (0.389)	-0.594*** (0.065)	0.057 (0.187)
Treatment (<i>D</i>)	0.676** (0.342)	-0.039 (0.137)	0.244 (0.193)
Treatment*Time (<i>T*D</i>)	0.765* (0.404)	0.172 (0.312)	-0.533 (0.401)
Controls	Yes	Yes	Yes
Number of observations	5,460	4,669	5,460
Log-likelihood	-2007.662	-5548.518	-3095.606
Pseudo- <i>R</i> ²	0.111	0.018	0.029
χ^2	502.385***	199.417***	185.520***

P* < 0.05, *P* < 0.01, ****P* < 0.001.

affected by age. Female undergraduates show lower EI and are less likely to have a business while in school. However, their level of interest in entrepreneurship when they have it is generally higher than that of their male counterparts. EI and its level are both unaffected by marital status but the probability of EP increases as marital status becomes more advanced: the married and divorced are more likely than the single undergraduates to have a business while studying. This could be an age and experience effect: married and divorced individuals are older than the single on average, thus they may possess more experience and tend to have more familial responsibilities. Academic performance, measured in terms of cumulative grade point average (CGPA) has a positive effect on the EI but no effect on either of the level of EI or EP. EI is not particularly associated with the propensity to take risks but EP is. The probability to have a business while in school is significantly higher among respondents who reported the highest levels of risk affinity. This seems to reflect the difference between an emotion and reality: showing interest in starting a business is not risky and can be undertaken without any real loss but acting upon this interest requires taking risks and acting under uncertainty. This is even more noteworthy considering that the sample comprises undergraduates who are constrained by limited resources in terms of time and capital. Having parents who are entrepreneurs increases the probability of EI in our sample, and as already highlighted in Section 3.1, parents are a significant motivator of EP. However, among the respondents who already have EI, having entrepreneurial parents tends to reduce the level of EI. This is logical if the parents' business had failed or achieved only limited success.

5. Conclusion

Knowing who want to be entrepreneurs and how to nurture their interest through policies is essential for development especially in the face of high unemployment among the youth in developing countries. This study investigated the potential supply of highly-educated entrepreneurs and tested the effectiveness of an entrepreneurship education policy in initiating and reinforcing EI and practice among educated young persons in Nigeria.

The evidence is based on descriptive and econometric analyses of pooled data from two cross-sectional surveys on a total sample of about 27,000 undergraduates in Nigeria's universities, polytechnics, and technical colleges of education. A large portion (84 per cent) of the respondents has EI, most (70 per cent) of who runs some businesses alongside schooling, as the initiator or a partner. The econometric results support and extend the existing literature. Similar to previous studies (e.g. Wang and Wong 2004; Valerio et al. 2014) that suggest a positive effect of entrepreneurship education on youth EI, the result of this study shows that EI improved over time among those exposed to compulsory entrepreneurship education. However, the level of interest in entrepreneurship was unaffected by entrepreneurship education. Moreover, entrepreneurship education seemed to have a filtering effect: EP dropped among those who were exposed to entrepreneurship education compared to the control sample.

The results hold some insight for entrepreneurship education and policy. First, high EI among undergraduates presents an opportunity for development if a facilitative atmosphere is created to foster EP among students. University-based incubators and science parks as well as competitive start-up grants are useful in this regard.

Students' final year projects, for instance in the engineering and creative arts disciplines, could be harnessed as launch-pads for new enterprises. Moreover, curricula for entrepreneurship education need to be adaptive and more responsive to the target audience. Going by the results of this study, different content may be required for different groups of undergraduates depending on their current attitude towards entrepreneurship. It is useful, therefore, to profile students in terms of their baseline interest in entrepreneurship and offer different course options in response to this. Finally, the apparent filtering effect of entrepreneurship education implies that it is not futile to introduce compulsory entrepreneurship education. Even if the aim of stimulating EI and practice is not directly achieved, filtering out low-potential individuals creates an indirect path for achieving this aim. This is especially important in the wake of rising unemployment in many developing countries, especially in Africa, and the proliferation of entrepreneurship education policies.

5.1 Limitations and suggestions for future research

Early identification and nurturing of entrepreneurs remains a powerful development tool. Moreover, determining an effective way to stimulate and reinforce the desire for self-employment among highly-educated young persons is essential if developing nations like Nigeria are to make any convincing progress in overcoming high unemployment. This requires more rigorous research that builds on the kind of questions addressed in this article. The first obvious opportunity for extension comes directly from one of the most important limitations of this study - the use of pooled cross-sectional data. For instance, one university in our DiD sample had introduced university-wide entrepreneurship courses before the first survey was carried out in 2007, others introduced it between the two surveys as a direct consequence of the policy while the rest only introduced it after the second survey in 2011. Therefore, the analysis does not allow us to draw strong causal inferences on the impact of the NUC policy. A proper longitudinal data set will permit in-depth analyses of intertemporal trends and patterns of entrepreneurial behaviour and determinants among the youth. Moreover, there is need for impact evaluations of education initiatives that take curriculum content into account in the analysis. Among other things, this will further shed light on how different curriculum content can yield different outcomes. In particular, it remains to be known whether the non-significant effect of entrepreneurship education on level of EI, as we found, is indeed a function of what is being taught. Finally, our analyses relied on the arguably strong assumption that the introduction of the compulsory entrepreneurship course in a school generally creates an ambience favourable to positive entrepreneurial behaviours, as discussed in Section 2.3 above. For instance, spillover effects through social networks and social media may diffuse the lessons learnt under the courses. However, it would be better if we were able to distinguish between students who have actually taken the compulsory entrepreneurship course and those who have not. This would enable us to elicit the impact of the policy more precisely. Unfortunately, our data does not include the necessary variables. Altogether, these limitations create room for future studies.

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Notes

1. Although an entrepreneur being highly educated does not mechanically translate to high-quality entrepreneurship, there is overwhelming evidence that education improves the quality of an entrepreneur. For instance, [La Porta and Shleifer \(2014\)](#) document that informal firms are considerably unproductive primarily because of the low level of their operators' human capital. The most productive, innovative, and persistent firms are hardly ever created by uneducated individuals. Even when an uneducated individual exhibits traits of a high-quality entrepreneur, they are usually surrounded by highly-educated individuals who share their vision. See also [Gennaioli et al. \(2013\)](#).
2. By this we refer to the post-graduation performance of the alumni of these universities. Admittedly, these might not be the best among all universities in the country but they are the best available in our sample.
3. The coefficient becomes significant if we do not cluster standard errors or if we include school fixed effects rather than clustered standard errors. The latter gives less conservative but comparable estimates as the main results that we report.
4. Full results are available from the authors.

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Appendix A

Table A.1. The survey items measuring entrepreneurial behaviour

Measure	Questionnaire item	Level of measurement	Options
EI	Are you interested in starting your own business?	Binary	Yes, No
LEI	To what extent are you disposed towards starting a new business?	Ordinal	Very High, High, Moderate, Low, Very Low
EP	Are you presently engaged in any business?	Binary	Yes, No
	What is your level of involvement in the business?	Categorical	Initiator, Partner, Others (specify)
	Who or what motivated your involvement in the business?	Categorical	Parent, Sibling, Relatives, Personal interest, Desire to make money, Self-actualisation, Events, Peers, Others (specify)
	If you are not presently engaged in any business, why?	Categorical	I am presently in school, I have no interest, Lack of capital, Business is risky, I have flare for something else, Others (specify)

Table A.2. Correlation matrix of independent variables

Variable	1	2	3	4	5	6	7	8	9	10
1 Gender	1									
2 Age	-0.151***	1								
3 Marital status	0.149***	0.129***	1							
4 Ethnicity	-0.047***	0.082***	-0.116***	1						
5 Cumulative grade point average	0.024	-0.082***	-0.047***	0.121***	1					
6 I do things that are risky	-0.023	-0.024	-0.005	-0.074***	-0.026	1				
7 Parents have a business	-0.046***	0.032*	-0.049***	0.160***	0.100***	-0.031*	1			
8 Taken entrepreneurship course before	0.026	0.002	0.016	0.029*	0.053***	0.064***	-0.025	1		
9 Father's level of education	0.107***	-0.154***	-0.048***	0.038**	0.089***	0.006	-0.035**	0.063***	1	
10 Mother's level of education	0.110***	-0.187***	-0.058***	0.049***	0.090***	0.026	-0.036**	0.077***	0.621***	1

*P < 0.05, **P < 0.01, ***P < 0.001. Mean (Max) Variance Inflation Factor (VIF) = 1.22(1.67).