Journal of Economic Analysis

Homepage: https://www.anserpress.org/journal/jea

From degrees to dollars: Exploring the link between elite education and startup funding

Alfredo Molinas [a, b] *

[a] *Yale University, New Haven, USA*
[b] *Institut Européen d'Administration des Affaires (INSEAD), Fontainebleau, France*

ABSTRACT

Many startups look for venture capital (VC) funding to grow their business. Anecdotally, in the Southeast Asia context, startup founders who attended an elite institute of higher learning have greater access to this kind of capital, but this has not been demonstrated quantitatively. We look at a dataset of nearly 800 startups in Southeast Asia who have received VC funding in the last 5 years and look for any correlation between the founder's educational background and the amount of VC funding received. We find that founders who have obtained a postgraduate degree from an elite university receive significantly more VC funding than those who graduated from other universities. Furthermore, this effect is only seen at later stages of funding, not at the seed stage. Potential reasons for this effect could be from stronger signaling of business acumen or technical skill; or better access to funding networks.

KEYWORDS

Startups; venture capital; educational background

* Corresponding author: Alfredo Molinas
E-mail address: alf.molinas@gmail.com

ISSN 2811-0943
doi: 10.58567/jea03010008

Received 31 May 2023, Accepted 14 July 2023, Available online 1 August 2023, Version of Record 15 March 2024

1. Introduction

The startup ecosystem in Southeast Asia has witnessed significant growth in recent years, attracting a growing number of entrepreneurs, investors, and accelerators. Startup funding is a critical aspect of entrepreneurship, and the ability to secure venture capital investment is often a key determinant of a startup's success. While numerous factors contribute to the likelihood of securing funding, the educational background of the startup's founders is often, but only anecdotally, considered to be a significant factor. The prevailing intuition from different stakeholders in the startup space is that founders who graduated from a top university are able to raise more funding from venture capital than founders who did not. This report aims to explore, at a quantitative level, the relationship between the educational background of startup founders in Southeast Asia and their ability to secure venture capital investment.

There exists a limited amount of research on the link between education and venture success. The most related work lies in Ratzinger (2017), who finds that founders with a technical education are more likely to reach financing milestones through private equity. In Tamaseb (2021), we learn that the founders of billion-dollar companies were more likely to have PhDs than be dropouts and that in 45% of these unicorns, co-founders either went to the same school or worked at the same company at some point. Tan and Ng (2006), Pinho (2014), Koellinger (2018) and Kim et al. (2006) identify entrepreneurship education as a factor that increases the probability of entry in high growth businesses, like VC-backed startups. Colombo (2009) investigates the determinants of startup size of new ventures in Italy with a focus on the characteristics of founders. They find industry-specific effects on size and profitability, concluding that what correlates with entrepreneurial success is what you know, and in Colombo (2010) this is also linked to greater access to VC funding. However, these studies are silent on the impact of the pedigree of the educational institutions.

Looking beyond entry into VC-backed entrepreneurship, while level of education, together with large capital inputs, has been shown to correlate positively with the longevity of a firm (Bates 1990), in this study we are looking at how that level of education correlates with such large capital inputs, in this case those stemming specifically from venture capital.

Glasner (2019) looks at which US institutions churn out the most graduating startup founders who have raised at least US$1m, in which UC Berkeley, UCLA, and the University of Michigan come out on top. Hayter (2016) explores the link between university graduates and spin-offs stemming from IP developed in the university, and Marvel (2007) looks at university-affiliated incubators to test the human capital factors that lead to more radical innovation.

More recently, Kushida (2023) examines, among other things, the educational background of the 15 most-funded startups in Japan, noting that the universities of Tokyo, Keio, and Waseda, which were by far the three most prominent names, are also Japan's top-ranked universities and produced the largest number of founders. Previously, Jo & Lee (1996) had looked at 48 startups in Korea and noted that a higher level of education and experience in the relevant field was correlated with higher profitability. These are echoed in a larger study by Soriano (2012) and Barba-Sanchez (2012) which look at SME performance in the European Union.

However, to the best of our knowledge, there has been limited research on the relationship between the educational background of startup founders in Southeast Asia and their ability to attract venture capital investment. To this end, this report will examine data on startup founders in Southeast Asia and their educational backgrounds, using a dataset compiled from publicly available sources such as Pitchbook and LinkedIn. Specifically, the report will compare the funding received by startup founders who graduated from one of the top 30 universities in the world to those who did not. While we expect the general results to show that there is some positive correlation between graduating from a top school and the amount of funding received, through this research we hope to identify with greater detail the level of impact (if any), whether it exists consistently throughout the lifetime of a startup, or whether graduating from those top schools at different levels of education (i.e. undergraduate or postgraduate) has

a different impact.

Overall, this report aims to contribute to a deeper understanding of the relationship between educational background and startup funding in Southeast Asia. By shedding light on the factors that contribute to the likelihood of securing funding in this region, this report will provide valuable insights for entrepreneurs, investors, and policymakers alike.

2. Methodology

The purpose of this report is to investigate whether startup founders in Southeast Asia who graduated from one of the top 30 universities in the world receive more investment from venture capital than startup founders who did not attend one of these universities. Anecdotally, the intuitive answer from different players in the startup scene is that an elite education background certainly helps to get more investment, as the prestige of the institution attended at the very least signals certain credentials such as specific skills or access to powerful networks. However, no quantitative analysis has been done on this question.

To accomplish this, we first extracted a list of 900 startups with headquarters in Southeast Asia from Pitchbook, specifically shortlisting those that raised funding after 2017. Pitchbook is a financial data and software company that provides information on global private equity, venture capital, and mergers and acquisitions. The data extracted from Pitchbook included information on the latest funding size and the latest financing deal type for each startup on the list, which was categorized into “seed round”, “early stage” (series A and B), and “late stage” (series C and D). Although this list of companies was comprehensive, it was certainly not complete, as we knew of a few startups that were missing from the list. We attribute these absences to random clerical errors on the Pitchbook side, and do not identify any specific bias in this list.

Next, we manually looked at each of the 900 startups and took note of the educational details of the founders. We found this information mainly on LinkedIn, but sometimes through search engines. We recorded where each founder went for undergraduate and post-graduate studies. However, it was important to note that it had to be a full-time program for it to count. Online or short-term courses, even those from prestigious institutions, were excluded. Additionally, executive MBAs were also not counted, since the exact nature of some of those programs is less clear and might actually fall under the category of a short-term course.

In choosing which founders within each startup to focus on, we always prioritized the CEO first. For a second co-founder (CXO), where relevant, we established a hierarchy as follows: co-founders came first, followed by those with a Chief Operating Officer (COO) title and then finally those with any other title. If there was no co-founder, but there was a Chief Technology Officer (CTO) who had started well before the latest funding round, we took those details instead. In cases where a company only had one founder and no one else with the CEO role could be found, we assumed that this person was the CEO regardless of their actual title.

For these reasons, the data on co-founders was always going to be a bit more noisy. The objective of collecting this secondary data was to try and understand whether any possible impact from attending an elite institution needed to come from the CEO or could be from any (or all) of the co-founders.

One of the biggest challenges we faced during this study was connected to people's privacy settings. While most people could be found on LinkedIn, some founders had a very faint digital footprint. This was especially the case with founders of web3 and crypto startups, where anonymity and privacy are strong values in the community.

After creating this list of startups and founders and noting their educational backgrounds, we assigned a ranking to the universities based on whether they were in the top 30 worldwide. To determine which universities qualified as a top 30 school, we used a ranking created by USNews for the academic year 2022/2023. We understand that this is a contentious issue and that many top schools may be left out of this ranking. However, we used this ranking to ensure consistency in our analysis. There were three Asian universities on this list: Tsinghua, the National

University of Singapore, and Nanyang Technological University.

In the event we could not find the founder's university background, we assumed that it was not a top 30 institution. We then used an Ordinary Least Squares (OLS) regression to assess whether having attended elite institutions at the undergraduate or graduate level was correlated to the amount of funding raised at different stages of a startup. We initially expressed the process as follows:

$$F = \beta_0 + \beta_1 T + \epsilon \quad (1)$$

Where F refers to the latest funding size and T is a dummy variable that captures whether or not the CEO went to a top school. We then added in dummy variables to accommodate the three different funding stages:

$$F = \beta_0 + \beta_1 E + \beta_2 L + \beta_3 ST + \beta_4 ET + \beta_5 < + \epsilon \quad (2)$$

Where E is a Dummy variable that takes value 1 when the latest funding being raised was at the Early stage (series A and B) and 0 otherwise and L is a dummy variable that takes value 1 when the latest funding being raised was at the Later stage (series C and D) and 0 otherwise (for seed-stage startups). ST, ET and LT are multiplicative dummies where T was defined above and S is a dummy variable that takes value 1 when the latest funding being raised was at the Seed stage and 0 otherwise. The statistical significance of the multiplicative dummies will tell us whether attending a top school affects the amount raised in any of the stages. The comparison will be in relation to the amount raised by a CEO who has not attended a top school at the seed stage.

The data from Pitchbook has additional fields, some of which we are able to use as control variables. We found two that might be ostensibly relevant. The first was the financing year of the last funding round. We believed this might be relevant to the analysis as a proxy for macroeconomic trends. For example, our date range for the data set includes the coronavirus pandemic, a time during which there was a lot of uncertainty and investors were hesitant to invest, especially in the first half of 2020.

The second control variable is whether or not a given startup has its registered headquarters in Singapore. Singapore-registered companies are more likely to be based in Singapore, which in turn are more likely to have higher costs of production (through labour, rent), and may thus require higher amounts of investment dollars for the development or operations of their business compared to similar startups in other parts of Southeast Asia. We note that this effect, if any, is likely to be diluted by many Southeast Asian companies establishing their headquarters in Singapore, even if their main operations lie elsewhere, for fiscal benefits.

The dataset also included the year in which the company was founded, so we could derive the number of years any startup has been in operation. However, we decided to exclude this variable from our analysis as we determined it to be a confounding variable. Only companies that have been in operation for a number of years will be raising at the Later Stage, and hence the financing size will be affected accordingly (the inverse is not true: we would not expect very young startups to be raising at stages C onwards). Thus our final setup would become as follows:

$$F = \beta_0 + \beta_1 E + \beta_2 L + \beta_3 ST + \beta_4 ET + \beta_5 < + D + H + \epsilon \quad (3)$$

Where the variables follow the same pattern as (2) above, but we add control variables D and H for the year of the last financing round and whether the startup is headquartered in Singapore (dummy), respectively.

We used this model to examine CEOs who have attended elite schools at the undergraduate level and then at the graduate level, that is we run different regressions with different definitions of the dummy T.

Finally, we also run the regressions looking at the founding team as a whole. In other words we define our dummy variable T as taking value 1 when at least one of the two founders went to a top school and 0 when neither of them did.

3. Results

3.1. Descriptive analysis

Table 1. Breakdown of CEO's educational background by last financing deal type of startup.

Last Financing Deal Type	Total number of CEOs	# CEOs with regular undergrad	# CEOs with top undergrad	# CEOs with no postgraduate degree	# CEOs with regular postgraduate degree	# CEOs with top postgraduate degree
Seed Round	320	270	50	191	81	48
Early Stage VC	378	300	78	219	86	73
Later Stage VC	59	48	11	31	13	15
Grand Total	757	618	139	441	180	136

From the original sample of 961 entries extracted from Pitchbook, we removed those which were at different stages of funding from the three categories we were looking for (Seed Round, Early Stage VC, Later Stage VC) or whose stage was not given. From the remainder, we also removed those startups for whom we could not find a founder or CEO. Once we had removed all these, we were left with a sample of 757 startups.

Looking at the CEO's undergraduate background, 139 of them, or 18% of the sample, went to a top 30 university (Table 1). This proportion was consistent among the three financing deal types.

Looking beyond the undergraduate level, 316 CEOs, or 42% of our sample, had attended some sort of graduate program (Table 1). Among those, 136, or 43% of all grad school attendees (18% from the total sample), were from a top 30 university. Of those who went to graduate school, 43% of them had an MBA (Table 2). Half of the MBA holders received it from a top university. Again, these proportions were generally consistent across the different deal types.

Table 2. How many CEOs have an MBA, and of those how many are from a top 30 school?

Last Financing Deal Type	No MBA	MBA	Of which from top school
Seed Round	270	50	20
Early Stage VC	304	74	39
Later Stage VC	47	12	8
Grand Total	621	136	67

Looking at co-founders (Table 3), 230 startups, or 30% of our sample, did not have a co-founder. Of the remainder that did have a co-founder, 15% went to a top undergraduate school.

Table 3. Breakdown of CXO's educational background by last financing deal type of startup.

Last Financing Deal Type	No CXO	# CXOs with regular undergrad	#CXOs with top undergrad	#CXOs with regular postgraduate degree	#CXOs with top postgraduate degree
Seed Round	98	196	26	52	28
Early Stage VC	108	223	47	69	47
Later Stage VC	24	25	10	8	8
Grand Total	230	444	83	129	83

Similar to CEOs, 40% of co-founders attended graduate school (Table 3). However, co-founders were more likely to have attended a top school (39%) than CEOs. There may be some bias here as previously mentioned in the methodology, although it is likely we are capturing the advanced skillset of technical co-founders, especially from

those startups more focused on the sciences.

3.2. Deal size distribution analysis

We examined the distribution of the deal sizes. As expected, this distribution has a very long tail due to the fact that a) there are fewer startups in later stages relative to earlier stages, and b) very large deals are quite rare (hence terms like "unicorn" to describe startups valued at over $1bn). This distribution follows a similar pattern overall and across each of the three financing deal types considered here. (note that some outliers have been removed from the seed stage and early stage charts for clarity, though they have not been removed from subsequent analysis).

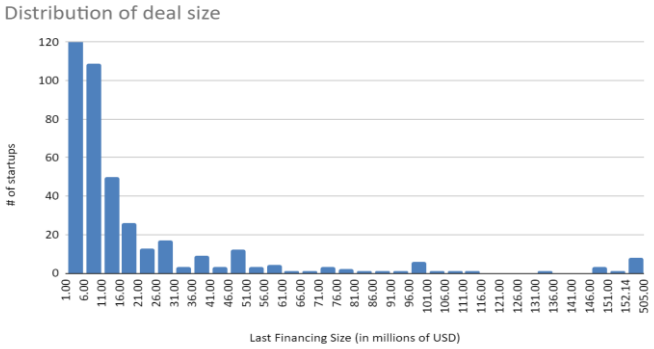

Figure 1. Distribution of deal size in our entire dataset.

Notes: The majority of deals were made between the $1m-$11m range, with a very long tail of deals stretching as far as $500m. Note that the number of deals between $1m-$5m is in fact 494, though the y-axis has been cut shorter for clarity.

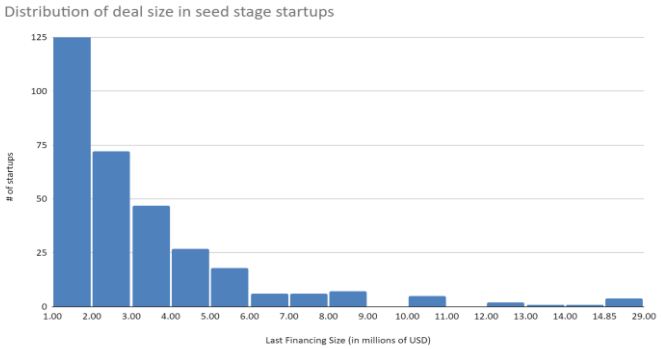

Figure 2. Distribution of deal size in seed stage startups.

Notes: The trend follows the same trend of the overall dataset, with a mode between $1m and $2m followed by a very long tail. There was one deal that was $100m (an eyewear company), which has been omitted from the graph, but not from the analysis, for clarity.

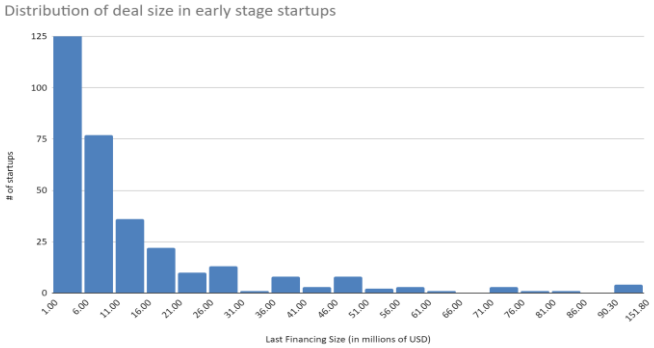

Figure 3. Distribution of deal size in early stage startups.

Notes: Similar to the general trend, for early stage startups we see most deals occurring between $1m and $11m. There were in fact 202 startups that were in the $1m-$6m bucket, but the y-axis has been cut for clarity. The distribution shows a long tail that extends into the low hundreds of millions. There are six startups that secured over $200m in their latest early stage deal. They are omitted from the graph for clarity but not from the analysis.

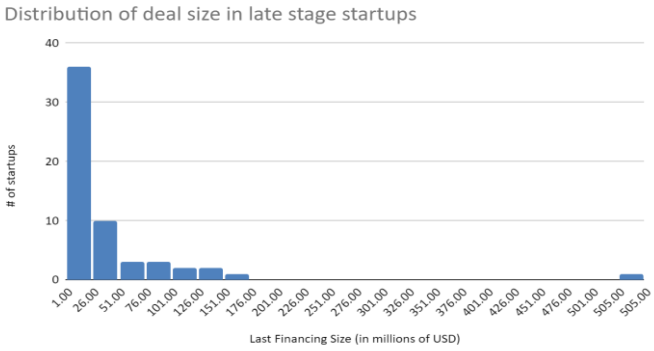

Figure 4. Distribution of deal size in late stage startups.

Notes: The range for all but one of the startups was between $1m - $170m, with the mode being the $1m-$26m bucket and the trend again exhibiting a long tail. One startup, a data services company, was able to secure well outside this range at $505m.

We also examine the distribution of the startups across the two control variables. In Figure 5 we look at the distribution of startups by the last funding date. The majority of the deals occurred between 2021-2022. As such, we expect the impact of this variable to be relatively small. A more uniform distribution might have been able to control for macroeconomic effects better.

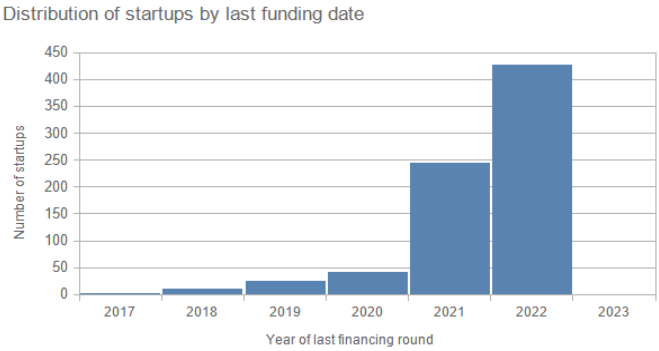

Figure 5. Distribution of startups by last funding date.

Notes: The vast majority of the deals in our dataset were between 2021-2022, suggesting that these startups are still live and in operation. Note that in 2023 we had only had 1 deal at the time of data extraction.

In Figure 6 we look at the split between startups with their headquarters registered in Singapore versus the rest of Southeast Asia. We see that nearly two thirds of the startups in our dataset are registered in Singapore. As explained above, this does not necessarily mean that two thirds of the startups are actually Singaporean or have their main operations in Singapore. Instead, we should interpret this to say that at least one third of the startups are definitely not Singaporean, and we might expect a negative effect on financing size from that subgroup.

We next looked at both the mean and the median funding size at each stage, taking into account whether or not the CEO attended a top undergraduate school (Table 4).

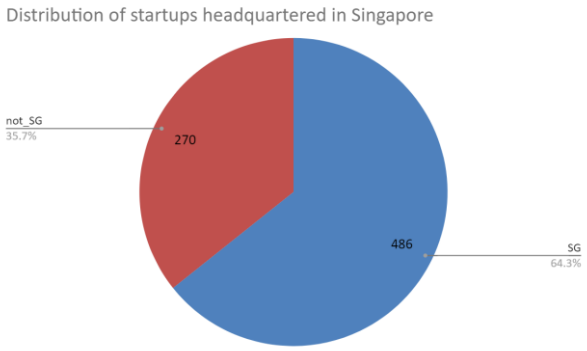

Figure 6. Distribution of startups headquartered in Singapore.

Notes: Two thirds of the startups in our dataset had their HQ registered in Singapore.

Table 4. Mean and median of funding size at each financing deal type by CEO's undergraduate background.

Last Financing Deal Type	mean (in millions of USD)		median (in millions of USD)	
	Regular School	Top School	Regular School	Top School
Seed Round	$4.46	$2.80	$2.37	$2.65
Early Stage VC	$16.36	$19.00	$6.15	$5.58
Later Stage VC	$41.87	$41.67	$14.50	$28.00

As expected, the median values tend to be much lower than the mean values, as the very large deals from the long tail of the distribution pull the mean upwards significantly. Nevertheless, we see a similar story in both cases, in which there does not appear to be much of a difference in the amount raised by founders who attended a top undergraduate university worldwide and founders who did not. Two potential exceptions that stand out are the difference in mean values at the seed round, where in fact CEOs who went to an elite university seem to raise less, and the median values at the Later Stage, which suggest that elite-school CEOs are raising almost twice as much. We confirm whether these differences are statistically significant later during our regression analysis.

Table 5. Mean and median of funding size at each financing deal type by CEO's postgraduate background.

Last Financing Deal Type	mean (in millions of USD)			median		
	No masters	Regular School	Top school	No masters	Regular School	Top school
Seed Round	$3.31	$6.91	$3.17	$2.43	$2.22	$2.00
Early Stage VC	$14.52	$13.87	$27.63	$5.00	$7.00	$7.00
Later Stage VC	$38.01	$23.03	$66.03	$15.00	$10.00	$20.00

Next, we performed a similar analysis, this time considering the CEO's postgraduate education, if any (Table 5). Starting with the means, we seem to see an increasingly larger difference in funding size between CEOs who went to a top post-graduate school and those who didn't, or did not attend at all, as the financing deal type matures. The median tells a similar story as with the undergraduates, where there is a seemingly large difference in the medians at the later stages of startup financing.

Finally, we looked at the difference in means and medians, taking into account the educational pedigree of the second co-founder (Table 6). In the table above we considered the case when neither co-founder went to a top school, when at least one co-founder did, and when both of them did.

Table 6. Mean and median of funding size at each financing deal type by the number of cofounders who attended an elite institution.

Last Financing Deal Type	mean			median		
	None	One co-founder	Both co-founders	None	One co-founder	Both co-founders
Seed Round	$4.49	$3.21	$2.44	$2.30	$2.65	$2.00
Early Stage VC	$16.47	$19.75	$11.84	$6.00	$6.00	$5.00
Later Stage VC	$45.05	$31.01	$38.00	$15.00	$13.00	$28.00

3.3. Regression analysis

In this section we follow a similar order of analysis as in the previous section, this time running different regressions with added variables. We expand the analysis further by asking deeper questions about the influence that the educational background of co-founders might have.

3.3.1. CEO's Undergraduate Education

We begin by examining the correlation between having attended an elite undergraduate school and the size of the most recent fundraising round only (Table 7).

Table 7. Regression analysis: the effect of a CEO's undergraduate background on the amount last fundraised.

	Impact of elite undergraduate education on amount of $ last fundraised		
	(1)	(2)	(3)
constant	13.14***[0.000]	3.54*[0.08]	4.01[0.225]
ceo_uni_top	1.9[0.572]		
early_dummy		12.8***[0.000]	13.1***[0.000]
late_dummy		38.3***[0.000]	38.7***[0.000]
seed_top_uni		-0.733[0.886]	-0.884[0.863]
early_top_uni		2.83[0.504]	2.56[0.546]
late_top_uni		-0.202[0.986]	-1.1[0.921]
financing_date			-1.21[0.382]
is_singapore			2.13[0.407]
Observations	756	756	756
R-squared	0	0.093	0.095

*Notes: Table 7 reports the results of the estimation of equation (1) in column (1), equation (2) in column (2), and equation (3) in column (3). The dependent variable is the amount raised in the latest financing round. The dummy variable ceo_uni_top takes value 1 if the CEO attended a top-30 university for their undergraduate studies. Early_dummy and late_dummy take value 1 if the startup was at the early stage or late stage, respectively. Seed_top_uni, early_top_uni, and late_top_uni are multiplicative dummies that take value 1 if the startup is at the seed, early, or late stage, respectively, and if the CEO attended a top-30 university. Financing_date and is_singapore are control variables proxying for macroeconomic effects. Standard errors are reported in brackets. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.*

We noted the lack of significant correlation in our first equation (column 1). We continued the analysis by adding the three funding stages as dummy variables, as seen in the second column, which corresponds to our second equation. Again we find no statistically significant effect of an elite undergraduate education on the last fundraising round. Adding the two control variables (column 3) did not change the significance of any of the other variables.

3.3.2. CEO's postgraduate education

Next, we repeated the analysis by looking at the CEO's postgraduate education (Table 8). First, we examined whether having any kind of masters is correlated with greater financing as shown in column (1) below.

Table 8. Regression analysis: the effect of a CEO's postgraduate background on the amount last fundraised.

	Impact of elite postgraduate education on amount of $ last fundraised			
	(1)	(2)	(3)	(4)
constant	11.3***[0.000]	11.3***[0.000]	3.31[0.162]	3.93[0.27]
ceo_has_masters	4.44*[0.083]	-1.25[0.682]		
ceo_masters_top		13.2***[0.001]		
early_dummy			11.2***[0.001]	11.3***[0.000]
late_dummy			34.7***[0.000]	34.8***[0.000]
seed_master			0.545[0.904]	0.39[0.928]
early_master			-0.497[0.905]	-0.541[0.897]
late_master			-14.98[0.166]	-14.8[0.171]
seed_master_top			-0.672[0.910]	-0.523[0.930]
early_mater_top			13.6**[0.009]	13.4**[0.011]
late_master_top			43.0***[0.001]	42.6***[0.001]
financing_date				-0.95[0.488]
is_singapore				1.33[0.599]
Observations	756	756	756	756
R-squared	0.004	0.019	0.12	0.12

*Notes: Table 8 reports the results of the estimation of equation (1) in column (1), equation (2) in column (2), and equation (3) in column (3) as applied to the CEO's postgraduate education. The dependent variable is the amount raised in the latest financing round. The dummy variable ceo_has_masters takes value 1 if the CEO has any postgraduate degree. The dummy ceo_masters_top takes value 1 if the CEO attended a top-30 university for their postgraduate studies. Early_dummy and late_dummy take value 1 if the startup was at the early stage or late stage, respectively. Seed_master, early_master, and late_master are multiplicative dummies that take value 1 if the CEO has a postgraduate degree and the startup is at the seed, early, or late stage, respectively. Seed_master_top, early_master_top, and late_master_top are multiplicative dummies that take value 1 if the startup is at the seed, early, or late stage, respectively, and if the CEO attended a top-30 postgraduate university. Financing_date and is_singapore are control variables proxying for macroeconomic effects. Standard errors are reported in brackets. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.*

We see that there is a positive and significant effect. Next, we added a variable to the regression to see the effect of having attended an elite postgraduate school, in column (2). We see from this regression that the effect from the previous regression was coming from the subsection of founders who went to top postgraduate school, as the dummy variable for having attended an elite school has a positive and significant effect, whereas the dummy variable of having any postgraduate becomes insignificant and near zero.

Next, we tried to understand if this effect is significant across the different rounds of financing, so we included the variables for the various deal types in column (3). From this regression we see that at the seed stage there does not seem to be any effect from having a postgraduate degree, regardless of the pedigree of the school. In later stages, however, we see a significant and positive effect between having an elite master's degree and raising money, an effect that intensifies at later stages. These results hold even when we add the control variables, as shown in column (4).

3.3.3. Co-founders' undergraduate education

Finally, we look at whether there is any additional effect when we look at the educational pedigree of the founding team and not just the CEO, that is, when we also consider the educational background of the co-founder.

We begin at the undergraduate level, first looking at any effect from at least one of the founders having gone to an elite undergraduate school (Table 9).

Similar to the scenario where we exclusively examined the CEO's educational background, there appears to be no significant effect in fundraising from having at least one of the founders with an undergraduate degree from a top university (column 1).

As before, we proceed to investigate whether the effect varies at different stages of funding (column 2), and

once again, we observe no significant impact on funding at any deal size. Adding the control variables (column 3) did not alter the results.

Table 9. Regression analysis: the effect of a CEO or CXO's undergraduate background on the amount last fundraised.

	Impact of elite undergraduate education on amount of $ last fundraised		
	(1)	(2)	(3)
constant	12.85***[0.000]	3.51*[0.091]	3.96[0.237]
ceo_cxo_uni_top	1.28[0.663]		
early_dummy		12.96***[0.000]	13.24***[0.000]
late_dummy		41.54***[0.000]	42.10***[0.000]
seed_top_uni_founders		-0.428[0.926]	-0.67[0.884]
early_top_uni_founders		1.71[0.655]	1.38[0.719]
late_top_uni_founders		-11.85[0.222]	-12.99[0.182]
financing_date			-1.31[0.345]
is_singapore			2.43[0.344]
Observations	756	756	756
R-squared	0	0.095	0.097

*Notes: Table 9 reports the results of the estimation of equation (1) in column (1), equation (2) in column (2), and equation (3) in column (3). The dependent variable is the amount raised in the latest financing round. The dummy variable ceo_cxo_uni_top takes value 1 if either the CEO or cofounder (CXO) attended a top-30 university for their undergraduate studies. Early_dummy and late_dummy take value 1 if the startup was at the early stage or late stage, respectively. Seed_top_uni_founders, early_top_uni_founders, and late_top_uni_founders are multiplicative dummies that take value 1 if the startup is at the seed, early, or late stage, respectively, and if the CEO or CXO attended a top-30 university. Financing_date and is_singapore are control variables proxying for macroeconomic effects. Standard errors are reported in brackets. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.*

3.3.4. Co-founders' postgraduate education

Lastly, we examine postgraduate education, whether having at least one of the co-founders from an elite institution has any effect on fundraising (Table 10). As before, we first explore if either co-founder holding a postgraduate degree has an impact on financing (column 1).

Table 10. Regression analysis: the effect of a CEO or CXO's postgraduate background on the amount last fundraised.

	Impact of elite postgraduate education on amount of $ last fundraised			
	(1)	(2)	(3)	(4)
constant	12.15***[0.000]	12.15***[0.000]	3.39[0.440]	4.18[0.429]
founders_have_masters	1.64[0.627]	-1.827[0.599]		
ceo_cxo_master_top		11.468***[0.000]		
early_dummy			13.56**[0.025]	13.93**[0.018]
late_dummy			27.71**[0.013]	27.89**[0.010]
seed_master_founders			1.34[0.789]	-0.239[0.961]
early_master_founders			-4.4[0.358]	-4.88[0.297]
late_master_founders			1.67[0.891]	1.5[0.898]
seed_master_top_founders			-1.33[0.782]	0.023[0.996]
early_master_top_founders			13.77***[0.001]	13.62[0.001]
late_master_top_founders			26.35***[0.001]	25.96[0.007]
financing_date				-0.997[0.477]
is_singapore				1.47[0.563]
Observations	756	756	756	756
R-squared	0	0.02	0.11	0.12

Notes: Table 10 reports the results of the estimation of equation (1) in column (1), equation (2) in column (2), and equation (3) in column (3) as applied to the CEO's postgraduate education. The dependent variable is the amount raised in the latest financing round. The dummy variable founders_have_masters takes value 1 if the CEO or the CXO have any postgraduate degree. The dummy ceo_cxo_masters_top takes value 1 if either the CEO or CXO attended a top-30 university for their

*postgraduate studies. Early_dummy and late_dummy take value 1 if the startup was at the early stage or late stage, respectively. Seed_master_founders, early_master_founders, and late_master_founders are multiplicative dummies that take value 1 if either the CEO or CXO have a postgraduate degree and the startup is at the seed, early, or late stage, respectively. Seed_master_top_founders, early_master_top_founders, and late_master_top_founders are multiplicative dummies that take value 1 if the startup is at the seed, early, or late stage, respectively, and if either the CEO or CXO attended a top-30 postgraduate university. Financing_date and is_singapore are control variables proxying for macroeconomic effects. Standard errors are reported in brackets. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.*

Unlike the previous instance, where having a postgraduate degree had a positive and significant effect, when we include the educational background of the CTO/co-founder, that effect becomes insignificant.

We continue by distinguishing those postgraduate degrees that come from elite schools (column 2). We can clearly see the positive and significant effect from elite postgraduate education on the amount raised from VC, a result consistent with what we found when only looking at CEOs.

Lastly, we include variables for the different funding stages to determine if this effect is consistent across the board or only at specific stages (column 3). Indeed, and as before, the significant and positive effect is observed only in the later stages (Series A and onwards), whereas we cannot discern a significant difference in fundraising at the seed stage. As before, adding the control variables to the analysis (column 4) did not alter the results.

4. Discussion

The results of our study indicate a significant and positive relationship between having attended an elite university and the amount of funds a startup in Southeast Asia can raise. However, this effect becomes apparent only at later stages of fundraising and when the founders attended those top schools for their postgraduate studies, rather than for undergraduate.

These results may appear counterintuitive at first glance, especially considering that founders typically raise funds at the seed stage based on little more than a pitch deck. One might expect investors to look for other signals to help them estimate the chances of success. In fact, some VCs specifically and openly target founders with an elite school background. For instance, Loyal VC has a strong preference for founders who are either INSEAD or Founder Institute alumni. Nevertheless, our findings indicate that the correlation between the pedigree of founders' education and the amount raised is limited during the early stage of investment.

This limited correlation may be attributed to the fact that seed-stage venture capitalists (VCs) do not base their valuations solely on the quality of the founders. Instead, they also consider the cash flow requirements of the startup. At such an early stage of the business lifecycle, as startups work to establish product-market fit, the amount of capital needed is limited, given that they have not yet entered the growth phase. In contrast, later-stage investment rounds emphasize growth, and the required capital levels may vary significantly depending on the startup type, the market it targets, and the nature of the business.

It is also possible that our dataset is not large enough to tease out any actual difference at a significant level, but it is also possible that what we are seeing instead is a binary effect where a disproportionate number of founders who come from elite schools are receiving any VC funding at all. Seed funding was fairly consistent in size across our data - the interquartile range is only $2.3m. Considering how many universities there are worldwide, it is unlikely that, everything else being equal, we would expect to get 18% of founders to come from the top 30 schools alone. Perhaps we are observing the chances of securing funding given an elite education background. However, this is difficult to demonstrate as we do not have the counterfactual of how many startups failed to fundraise from VCs.

This amplification of the elite school effect at later stages of funding could be attributed to various factors. For instance, it is possible that founders with elite postgraduate education are perceived as having superior skills, networks, or expertise, leading investors to place higher valuations on their startups. As companies progress

through funding rounds, the importance of a strong leadership team with the ability to scale and navigate complex market dynamics becomes increasingly crucial. Consequently, investors may view founders with elite postgraduate education as better equipped to steer the company towards success in the long term, thereby justifying higher valuations and larger investments.

Furthermore, the elite school effect may also be indicative of the types of industries and ventures that founders with elite postgraduate education tend to pursue. It is plausible that these founders gravitate towards high-growth sectors or cutting-edge industries, such as deep tech, medtech, or other highly technical business models, which typically require larger amounts of funding and specialized expertise. As a result, the elite school effect may be partially influenced by the alignment between the educational background of the founders and the nature of their startups. Moreover, founders with prestigious postgraduate education may have access to a more extensive network of alumni, mentors, and industry professionals, which could facilitate introductions to potential investors and strategic partners. These connections can be invaluable in securing larger funding rounds and establishing credibility within the startup ecosystem. From the Tamaseb (2021) dataset, we know that the median age of founders, at the time of founding, is 34. In other words, more than half of the founders have been out of school for at least 10 years. Whatever may have been learned at university, top or otherwise, may not be necessarily relevant in a startup context.

In conclusion, as postgraduate education from prestigious universities appears to be important in later stages of fundraising, startups that lack key leadership with this background should consider adding a new member to the leadership team who possesses a strong postgraduate pedigree. By doing so, the startup would be better positioned to increase its ability to fundraise at later stages, potentially improving its prospects for growth and success in the long run. This new member could bring the necessary skills, expertise, and network connections that could significantly benefit the startup and its fundraising efforts, making it a strategic decision that could greatly impact the company's future trajectory.

5. Areas of Further Study

This study should be considered as only the first step in better understanding the VC investing landscape in Southeast Asia. We are likely examining just one of many different factors that affect the decision to invest in a startup.

A first step would be a robustness test using a ranking from a different source or the ranking of a different year. While we do not expect the list of the top 30 schools worldwide to change dramatically from year to year, the inclusion or exclusion of certain universities might significantly alter our results.

Outside of robustness, within this particular study there were a few assumptions we made in our data that should be re-examined. We attempted to control for potential discrepancies in funding due to geography through our is_Singapore dummy variable, which would control for companies registered in Singapore. The underlying hypothesis was that Singapore has a larger concentration of startups raising from VC but they may also have higher costs of production, so they may be raising more. However, many Southeast Asian startups choose to register their headquarters in Singapore for fiscal reasons, and from the current dataset it is impossible to discern which startup actually has operations in Singapore and which one does not. This might dilute the impact of this control variable, which was positive, as expected, but insignificant. Additionally, we assumed that elite school graduates were evenly distributed across the startups in the region, but perhaps Singapore has a stronger gravitational pull because of higher salaries and the relatively higher level of educational institutions.

Second, we did not seek to distinguish between the different industries in the startup world. It may be possible that elite school graduates gravitate towards specific industries, or that specific industries inherently need to raise more in order to be able to build their product to completion. If the former is true we might be looking at an

endogenous variable. The first challenge to include this variable in the analysis would be to come up with a consistent taxonomical framework to classify each startup. The second step would be to grow the existing dataset: with each new industry added into the analysis our degrees of freedom are further divided. This would become especially problematic for Late Stage startups, where in the current dataset there were fewer than 60 in total.

A specific mention should be made about startups in the web3 space. We observed anecdotally that Web3 companies exhibited peculiar characteristics when compared to more traditional startups in Southeast Asia. A key contributing factor to this discrepancy was the preference of many Web3 founders to remain anonymous, leading them to adopt non-traditional funding methods such as tokens or Initial Coin Offerings (ICOs). This approach made it challenging to accurately determine the amount of funds these companies were raising, as the decentralised nature and anonymous participants in Web3 projects often obscured the funding process. This unique aspect of the Web3 space also serves as a reminder that the rapidly evolving nature of technology and the startup ecosystem can present new challenges and considerations when analysing fundraising trends and dynamics.

Third, we attempted to control for macroeconomic factors by including the year of the most recent fundraise, which was available in the Pitchbook dataset. However, as a variable and as a control it proved insignificant and unable to change the effect of any other variables. This could be due to the fact that the various macroeconomic factors, from the pandemic to the war in the Ukraine to the looming tech and financial crisis, have affected different parts of the startup industry differently. For example, although the pandemic affected many industries negatively, certain sectors such as e-commerce and logistics were able to raise a lot, very quickly. A next step in the analysis might be to look for an external proxy variable that might be able to better represent the macroeconomic situation of the time.

These are just three potential factors that could help explain the amount of funds raised for any given startup at any given time. This is data that can be refined by rebuilding the dataset - including an external macroeconomic proxy, establishing the actual base of operations, and creating a categorization structure for each startup's industry. In its current size, however, our dataset is unlikely to be large enough to be usable with a more sophisticated model, so we would also have to consider growing the number of observations by looking to combine multiple data sources.

Funding Statement

This research received no external funding.

Acknowledgment

Acknowledgments to anonymous referees' comments and editor's effort.

Conflict of interest

The author claims that the manuscript is completely original. The author also declares no conflict of interest.

References

Barba-Sánchez, V., & Martínez-Ruiz, M. P. (2009). A Longitudinal Study to Assess the Most Influential Entrepreneurial Features on a New Firm's Growth. *Journal of Small Business and Entrepreneurship*, 22(3), 253–266. https://doi.org/10.1080/08276331.2009.10593454

Bates, T. C. (1990). Entrepreneur Human Capital Inputs and Small Business Longevity. *The Review of Economics and Statistics*, 72(4), 551. https://doi.org/10.2307/2109594

Colombo, M., & Grilli, L. (2010). On growth drivers of high-tech start-ups: Exploring the role of founders' human capital and venture capital. *Journal of Business Venturing*, 25(6), 610–626. https://doi.org/10.1016/j.jbusvent.2009.01.005

Colombo, M., Delmastro, M., & Grilli, L. (2004). Entrepreneurs' human capital and the start-up size of new technology-based firms. *International Journal of Industrial Organization*, 22(8–9), 1183–1211. https://doi.org/10.1016/j.ijindorg.2004.06.006

Hayter, C. S., Lubynsky, R. M., & Maroulis, S. (2016). Who is the academic entrepreneur? The role of graduate students in the development of university spinoffs. *Journal of Technology Transfer*, 42(6), 1237–1254. https://doi.org/10.1007/s10961-016-9470-y

Jo, H., & Lee, J. (1996). The relationship between an entrepreneur's background and performance in a new venture. *Technovation*, 16(4), 161–211. https://doi.org/10.1016/0166-4972(96)89124-3

Kim, P. H., Aldrich, H. E., & Keister, L. A. (2006). Access (Not) Denied: The Impact of Financial, Human, and Cultural Capital on Entrepreneurial Entryin the United States. *Small Business Economics*, 27(1), 5–22. https://doi.org/10.1007/s11187-006-0007-x

Koellinger, P. (2008). Why are some entrepreneurs more innovative than others? *Small Business Economics*, 31(1), 21–37. https://doi.org/10.1007/s11187-008-9107-0

Kushida, K. (2023). The People Powering Japan's Startup Ecosystem. *Carnegie Endowment for International Peace*. https://carnegieendowment.org/2023/02/01/people-powering-japan-s-startup-ecosystem-pub-88924

Marvel, M. R., & Lumpkin, G. T. (2007). Technology Entrepreneurs' Human Capital and Its Effects on Innovation Radicalness. *Entrepreneurship Theory and Practice*, 31(6), 807–828. https://doi.org/10.1111/j.1540-6520.2007.00209.x

Pinho, J. L. S., & Sá, E. (2014). Personal characteristics, business relationships and entrepreneurial performance. *Journal of Small Business and Enterprise Development*, 21(2), 284–300. https://doi.org/10.1108/jsbed-10-2013-0150

PitchBook. (n.d.). Venture Capital, Private Equity and M&A Database | *PitchBook*. https://pitchbook.com/

Ratzinger, D., Amess, K., Greenman, A., & Mosey, S. (2017). The impact of digital start-up founders' higher education on reaching equity investment milestones. *Journal of Technology Transfer*, 43(3), 760–778. https://doi.org/10.1007/s10961-017-9627-3

Soriano, D. R., & Castrogiovanni, G. J. (2010). The impact of education, experience and inner circle advisors on SME performance: insights from a study of public development centers. *Small Business Economics*, 38(3), 333–349. https://doi.org/10.1007/s11187-010-9278-3

Tamaseb, A. (2021). Super Founders: What Data Reveals About Billion-Dollar Startups. *Hachette UK*.

Tan, S. S., & Ng, C. K. F. (2006). A problem-based learning approach to entrepreneurship education. *Journal of Education and Training*, 48(6), 416–428. https://doi.org/10.1108/00400910610692606

TechCrunch is part of the Yahoo family of brands. (2019a, May 25). https://techcrunch.com/2019/05/25/which-public-us-universities-graduate-the-most-funded-founders

The Best Universities in the World, Ranked. (n.d.). https://www.usnews.com/education/best-global-universities/rankings