

**Asymmetric network ties to elite American universities create differential access to
venture capital in Africa**

By

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B.A., Economics, University of Miami (2015)

Submitted to the Department of Political Science in partial fulfillment of the requirements for the
degree of Master of Science in Political Science at the Massachusetts Institute of Technology

September, 2022

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Abstract

Why is the venture capital (VC) flowing into Africa concentrated in a handful of countries? I reject the popular notion that market size is the primary reason why VC investments only end up in a few countries. Because ties with elite universities are the primary way in which African startup founders build social capital with U.S. VC firms, which are the largest purveyors of venture funds on the African continent, I advance a novel network theory. It is predicated on a new form of core-periphery relationship wherein capital domiciled largely in the United States drives uneven startup ecosystem growth on the African continent. I argue that this market failure, characterized by concentrated VC investments, stems from an asymmetry in elite U.S. school network ties between the top four recipient countries (Nigeria, Kenya, South Africa, and Egypt) and the other 50 African nations. I collected statistical evidence of the funding differential between countries and the imbalance in U.S. elite university attendance by country. I used a linear model to show that attending a school in the top 20 of U.S. 'News World Report of Best Universities' might significantly increase the venture capital amount the country of a graduate is expected to receive. My research contributes to the literature on network capitalism and development.

Thesis Supervisor: Evan Lieberman

Title: Total Professor of Political Science and Contemporary Africa

Acknowledgements

This research study owes a lot of gratitude to a number of individuals who selflessly contributed their ideas and time to bring this research project to fruition.

I am grateful and give my warmest thanks to my supervisor, Evan Lieberman, who made this work possible. His guidance and advice carried me through all the stages of writing this thesis.

I am thankful to Kenneth Oye for being a second reader and providing thoughtful comments.

I would also like to give special thanks to Serin Gupta and Christina Ridlen for being gracious sounding boards throughout my research.

Finally, I would like to thank my family for their unconditional love and support. It is thanks to their sacrifices that I undertook the journey of pursuing a master's degree at this wonderful Institute I now call a home. Making them proud is my greatest satisfaction.

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Introduction

Networks, when harnessed effectively, can be strong drivers of value creation. Few industries have epitomized the importance of networks like the venture capital (VC) industry. Despite its perceived sophistication, the VC world runs on the simple principle of social capital, which is derived from the (social) network of professionals, experts, and other venture capitalists (VCs) in which the VCs are embedded. As investments overlap with social networks, they tend to favor the most connected destinations. The less integrated destinations suffer from a lack of reputational inputs, resulting in a higher perception of risk. This creates a self-perpetuating mechanism, ultimately resulting in a winner-takes-all situation. In 2021, 80% of all U.S.-based VC investments on the African continent were concentrated in just four countries: Nigeria, Kenya, South Africa, and Egypt. However, collectively, these countries only account for 32% of the continent's population and 50% of its gross domestic product (GDP). What might explain this imbalance?

Why is venture capital flowing to Africa overwhelmingly concentrated in just four countries? I make two claims. First, I argue that African access to elite American universities is positive for access to VC because VC allocations are made largely on the basis of knowing individuals and through credentialing, both of which are disproportionately available at those schools. Second, I argue that a few first mover countries have institutionalized an uneven playing field by a) increasing the flow of co-nationals to those schools; b) refocusing network building and cultural content towards their own countries while on campus. As a result, I contend that VCs have strong biases about Africa and primarily make investment decisions on the basis of familiarity (existing networks). I further argue that their biases have led to the observed asymmetry in their investments on the continent. To explore those claims, I collected publicly

available data on African student attendance in the top 20 U.S schools, population, GDP, as well as VC flows illuminating the top African countries that are recipients of these investments. I also obtained a novel dataset on VC investments and details about the academic institutions that the founders of startups have attended. I used the data to run statistical regressions and explore predictive relationships. Furthermore, I conducted semi-structured interviews with VCs and entrepreneurs to understand the mechanisms by which they became connected with one another. I also spoke to policymakers and ecosystem builders to understand their views on the necessary conditions to incentivize investors to risk their capital in particular markets. Those interviews helped me to understand the extent to which attendance in elite institutions in the United States might be driven by deliberate public policies and also to identify potential rival explanations to the elite network theory I propose in this research. I also investigated the first waves of African migration to the United States to illuminate the possible historical root causes of the imbalance in attendance to elite universities among students from various African countries.

This research fills a knowledge gap on the causal pathways that determine the quality of development in growing or emerging markets. Traditionally, the literature on north–south development dependencies has focused primarily on foreign direct investments (FDIs) and development finance institutions (DFIs). This research, however, explores the development implications of the relatively novel field of VC on the African continent. Concurrently, it also uncovers the new structures of the global system and promotes the idea of network capitalism. This research can inform policymaking, particularly as it relates to the reproduction of unbalanced core–periphery relationships, the politics of talent migration, economic attractiveness, risk communication, and innovation.

Literature Review

When investigating the determinants of venture capital investments across Africa, scholars have focused on the role of country level factors. In some cases, they advance factors such as accounting standards, business freedom, fiscal health and judicial effectiveness (Benali & Ghalfiki, 2021). Others point to digital infrastructure, high technology exports, internet coverage and market size (Amoussou & Kemeze 2022). There is also those who advance the role of public markets and capitalization (Oni, 2017). Yet, a rich body of literature has argued that the role of networks is a determinant in shaping economic outcomes. However, too little focus has been placed on understanding the role of interpersonal relationships on funding outcomes in Africa. Leaning into this idea, I explore the social capital of African startup founders and how it signals abilities, norms and values. This paper draws upon well-established theoretical ideas and relationships to develop conjectures about the role of networks in the allocation of VC funding.

My research is premised on the strength of social capital. I suspect that an information asymmetry is at the root of the VC funding differential that is observed across African geographies. I argue that it results from uneven access to elite networks by founders, which in turn stems from historical migration patterns of their conationals to the United States. While it may be tempting to think that this asymmetry is shaped primarily at the level of the entrepreneur, it is worthwhile to understand the siloed nature of deal flows on the VC side and the associated capital concentration—both social and financial capital. Indeed, VC firms impact startups in two different ways—directly by providing financial capital and human capital in the form of management skills and indirectly by giving them access to their networks (Alexy et al., 2012). In many ways, VCs are both information brokers and resource brokers. Transactions occur within an elaborate system, which, in effect, pools risk across networks to improve the odds of success.

Just as stock-based compensation was engineered to align incentives in bureaucratic organizations (Boltanski & Chiapello 2005), capital acquisition in startups by a handful of firms ensures that unified social capital can compete in the marketplace. In the world of VC, everything from board seats to the equity pool set aside to attract talent is designed to conquer market share in a timely manner and limits the hostility of key agents in the system. Simply put, capital allocation can be understood as an exercise in minimizing risk through the expansion of social capital. This is reflective of Putnam's (1993) seminal insight that "certain communities did not become civic simply because they were rich"; instead, "they have become rich because they were civic." To Putnam, the social capital embodied in the norms and networks of civic engagement is a precondition for economic development. Much like cities or states, the VC industry can be understood as a locale with rules and norms and consequently its own set of biases. Because the VC industry is inherently relationship-based, investment patterns primarily follow trust and credibility dynamics.

I further argue that in the context of Africa and VC investments, capital suppliers often pursue unified outcomes as a result of peer effects. Such effects denote the idea that the actions of a reference group affects an individual's behavior or outcomes. Here, I lean on the work of Useem (1984), who argued that elite networks, despite their pluralism, have a commonality of purpose and interests that transcend their differences. As noted earlier, the pooling of risk aligns different business leaders and builds convergence, as they put forth relentless efforts to make their shared portfolio companies successful.

Related to the notion of peer effects is Olson's (1971) collective action theory. It examines the extent to which individuals that share a common interest find it in their individual interest to bear the costs of an organizational effort. In the VC world, some leading firms secure

access to deals, and other firms take free rides on the sourcing of deals. Similarly, some entrepreneurs with vast networks share them with others in their ecosystem free of charge. Following Olson's theory, both VCs and entrepreneurs are producers of "public goods" available to members of their network, whether or not they have borne the cost of producing them.

The various network theories discussed up until this point lead to reflections on the structural forces underpinning all those seemingly transactional interactions. On that subject, Feld (1997) argued that the depth of a tie between two individuals is a function of the overlap of social activities that connect a set of people with others who are similar to them. For example, within the business elite, status activities like playing certain sports (i.e. golf), affiliation to certain member clubs or vacation to exclusive destinations are legion. Those various touch points strengthen relationships. Feld further argued that such relationships tend to be more stable over time. The stability factor is paramount to creating a self-reinforcing network where incumbents capitalize on well-established patterns. In the context of this research, I suggest that once capital is connected to a network, it might very well flow indefinitely, albeit with varying intensity. This is the network effect that underpins the central argument of this paper. It refers to the increasing economic and social value individuals are able to derive from belonging to the exclusive network of graduates from top 20 U.S. universities. My research contributes to show how it links to African entrepreneurs.

Building on the idea of the role of interpersonal networks within larger ecosystems, networks are linked to managerial effectiveness and impact the success or failure of projects (Kilduff & Tsai, 2003). While the small-world nature of the VC realm may be easy to conceptualize, it also has clear mathematical models. Models of dynamic systems with few agents enhance signal propagation speed (Watts & Strogatz, 1998). This is true in Silicon Valley,

which serves as the global benchmark for behavior, not only in the western VC industry, but also in locales with seemingly different cultures such as China. For example, when analyzing joint investments between VC firms in China, similar network properties and factors are observed among the different firms. A small-world network with elite clique network dynamics is consistently formed in the VC world (Gu et al., 2019). Africa is no exception.

This brings us to efficiencies and the low transaction costs that characterize elite networks. Transaction cost economics suggests that economic activities tend to be organized efficiently (Milgrom & Roberts, 1996). In the context of VC firms, this refers to allocating capital to risky companies and influencing their management practices. Milgrom and Roberts' work might be useful in shedding some light on the economic benefits of a field where dealmaking happens relatively quickly with minimal friction and low upfront bargaining costs (legal fees). For instance, today, startups with very network-savvy founders can bypass expensive legal fees for their first round of funding by using a simple agreement for future equity (SAFE) contracts popularized by the Y combinator, the popular Silicon Valley incubator, or by tying the settlement of legal bills to funding outcomes. Such reductions of barriers can go a long way toward determining the long-term success of a startup project.

To understand the origins of the asymmetry in access to resources between founders, I consider the analogy of the structural inequalities of the U.S. education system (Gamoran, 2001). There have been growing gaps between children from high- and low-income families in terms of college admissions, persistence, and graduation (Bailey & Dynarski, 2011). Because the overwhelming majority of VC fund managers tend to be White, male, and highly educated, this study provides a strong basis for analyzing inequality formation and wealth concentration. In the context of my research, I strongly conjecture that patterns observed in the US directly impact

wealth distribution in Africa, particularly now that a small African elite and fund managers who are in part the product of an unequal U.S. education postsecondary education system are increasingly interconnected. While this design might initially concentrate capital in the hands of a few founders, their ability to grow may produce long-term positive externalities and diffuse capital horizontally.

Given the rapid growth of VC and its globalization, it is reasonable to expect it to play an increasing role in development in the years to come. The emerging literature on the “neo” or “entrepreneurial” developmental state offers expansive analytical pathways. Indeed, states have the capacity to condition public assistance, discipline private firms, and design institutional capacities that can accelerate the emergence of successful ventures (Maggor, 2020). Israel, for instance, epitomizes the promise of focusing on human capital and innovation to achieve developmental outcomes that beat the odds (Senor & Singer, 2009).

Nevertheless, while the concept of the entrepreneurial state is alluring and offers a worthwhile model for many African countries to emulate, dependency theory cautions against the characteristics of any novel framework. Dependency theory refers to the constraints imposed on developing countries by the structure of the global order that maintains them in a state of dependence vis-à-vis developed countries. For example, a nationalist versus a dependent capitalist model of development has yielded better outcomes in Asia when compared to other so-called peripheral countries (Kohli, 2009). This was the case because Asian countries limited the ability of foreigners to control their economies. In Africa, however, the combination of the absence of efficient capital markets, low-value exports, and heavy reliance on foreign aid may raise questions about the economic sovereignty of the continent and its ability to guard against foreign domination of key aspects of its economy. Founders need to avoid a “pit to port”

(Pelletier, 2021) model, wherein most of the value extracted locally in Africa disproportionately benefits outsiders in a developed country. Additionally, because factors such as rule of law, research and development expenditures as a percentage of GDP, and information between investors and potential investees are positively and significantly related to VC activity in Africa (Adongo, 2011), there should be concerns about asymmetrical growth across the continent. Countries that lag behind might increasingly trigger substantial intra African migration flows that risk destabilizing relatively good economic performers. Henceforth, there might be a dual conversation necessary to (a) ensure that single sources of foreign VC capital remain in minority in target African startups while also (b) diversifying their destination to promote more even growth across the continent.

African awareness around the financial structure of VC investments is critical. To that end, education has an important role to play. A country's ability to design appropriate policies to maximize positive outcomes internally rests on the skills of its human capital. To be sure, the impact of higher education is twice as large as the growth impact of physical capital investment (Gyimah-Brempong et al., 2006). In the absence of a large pool of world-renowned African universities, there seems to be merit to strategies that maximize the number of students who receive training in elite universities abroad, particularly in America. However, the current distribution of African students at those universities raises a number of important questions that we will address in the section below.

An elite network theory of VC investments

American Higher Education Perpetuates Systemic Inequalities Between African Countries

As the number of African graduates from elite universities has increased over the years so too have their interactions with American students. It is important to consider how the interactions between both of these groups shapes investment patterns. I contend that network effects tend to create monopolistic outcomes. The U.S. elite institution apparatus has a long tradition of selecting members of the top one percent of Americans to attend, thereby perpetuating inequalities. Less known is how this American wealth concentration impacts wealth creation and distribution in other countries. To shed some light, consider the percentage of top fund managers (as measured by investment to exit ratio) and founders who studied in a top 20 (as per U.S. News and World Report) U.S. university. The numbers are unequivocal. In 2021, 71% of the founders of top VC firms had studied at an institution from U.S. News and World Report's top 20 universities. While attending these institutions, VC founders, both past and present, met a population of African international students. These tend to come overwhelmingly from a handful of countries (e.g., Nigeria, Kenya, South Africa, Egypt). I hypothesize that this asymmetrical matching facilitated by the university network translates into the investment differentials observed across African countries. Indeed, African countries with higher student representation at U.S. universities benefit from more VC investments. I argue that this is because social ties developed at the university level carry through investment theses. In other words, fund managers tend to invest in markets with familiar founders. This familiarity extends to business standards and practices. Early connections yield long-term advantages for this select group of countries. Quartz Africa (2022) recently published an article with data that confirm this assumption. The article, "African Startup CEOs That Study Abroad Raise More V.C. Money Than Those at

Home,” notes that “investor bias and inclination to stick to familiar patterns may not be down to color alone.” The conclusion is that where one attends school matters significantly because attendance means embeddedness in a social web that has ramifications at the top echelons of societies. My research expands on this by seeking to establish the geographical concentration of the phenomenon, as well as investigating the mechanisms that perpetuate this dynamic.

The Power Law

Network effects and positive feedback loops explain the concentration of opportunities. The build-up of ties between American investors and African founders from the most highly represented countries create a phenomenon of preferential attachment (Newman, 2001). Here preferential attachment refers to a process wherein each additional student from one of the four countries discussed adds to the system as an increasing function of the number of students already in the system. The preferential attachment process concentrates power among a select few (Mallaby, 2022). In practice, it is easy to see how this concentration forms. Indeed, several interviews with African students from MIT and Harvard were conducted as part of this research. One question was, “How did you come to this (elite) school?” Respondents’ journeys consistently began with exposure; they had a family member, knew someone who attended these universities, or had been repeatedly primed in high school to consider those elite schools as higher education options.

Hypothesis

In line with my theoretical framework on social capital, networks, and development, I formulate the following hypotheses.

- *H1: Elite U.S. university attendance by African students increases VC funding in their home countries.*

- *H2: Connection to elite American students increases opportunities for elite African students to share their venture ideas and increases investments.*

- *H3: The relative disproportionate representation of certain African countries at elite universities is determined by a first mover advantage.*

Methodology

This section starts with a discussion of the data that I used to examine the elite network theory I developed to explain investment differentials across Africa. It then proceeds to discuss the adopted model. Finally, it outlines the results and discusses the findings. My identity as a student-entrepreneur from the DRC, a non-networked country with largely untapped human capital potential, provided the prism through which I looked at the data and conducted interviews.

Data

I adopted a multimethod approach to empirically examine my theory. First, I investigated phenomena that seemed to confirm my intuition about the concentration of investment opportunities among a handful of countries. I looked into the composition of various African groups within MIT and Harvard. I also spoke with a number of American students to understand the perception of Africa they were getting from attending these two institutions. I also attended numerous events focused on Africa, notably the Harvard Business School Africa Conference and the MIT Africa Innovate conference, which allowed me to verify the extent to which nationals from some countries have refocused cultural content towards their own country while enrolled in school. Furthermore, I conducted semi-structured interviews to determine the role networks may have played in shaping investment outcomes for various stakeholders, including VCs, African entrepreneurs, and African students. I also interviewed researchers and ecosystem builders to probe their beliefs about the drivers of investment concentration and to identify control variables. Additionally, I collected statistical evidence about African enrollees at elite U.S. universities. To study their post-education startup funding outcomes, I collected a unique dataset from “Africa The Big Deal,” a database updated on a monthly basis that lists all reported funding deals that

have exceed USD 100,000 secured by startups in Africa since 2019. It reports startup names, founders' gender mix, the amount raised, investors, the CEO's graduation year, the university they attended, and the number of years between graduation and startup launch. I extracted the complete results for U.S-funded deals and created a dataset. After excluding all non-top 20 American schools, I was left with 180 deals to investigate. I compared those deals with the broader dataset to determine whether founders who had graduated from elite schools fared better than the rest. I also collected data on total venture deal flow in Africa since 2016 from Partech, a Silicon Valley investment platform.

Figure 1

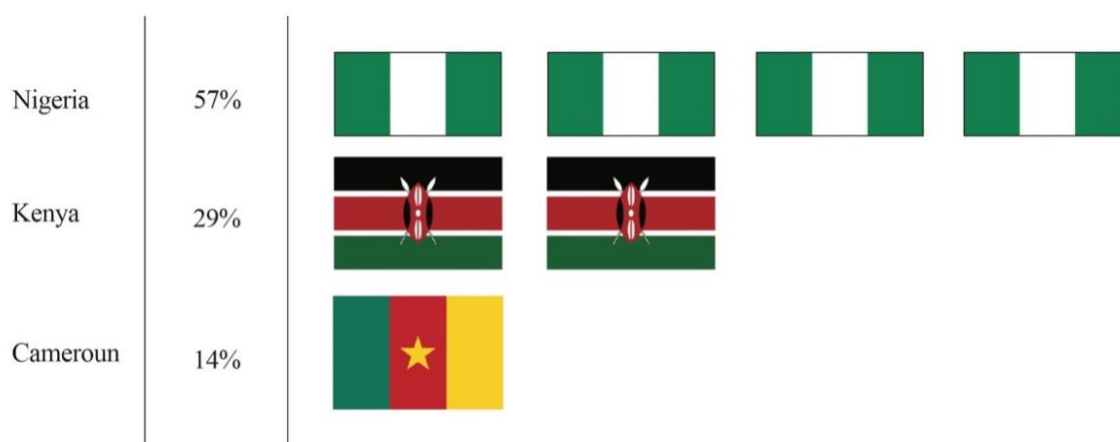
Origins of Students in the Organizing Team of the 2022 MIT-Africa Innovate Conference



Note: Every year in April African students from MIT are tasked with organizing the ‘MIT Africa Innovate Conference’. It is a student-run event and organizers are responsible for selecting panelists. Source: MIT Africa Innovate Conference book.

Figure 2

Origins of Students in the Organizing Team of the 2022 Harvard Business School Africa Conference



Note: Every year in March, the Africa Business Club of Harvard Business School organizes the 'HBS Africa Business Conference'. Student organizers are responsible for selecting panelists.

Source: HBS Africa Business Conference website.

As part of my research, I attended both the MIT-Africa Conference and the HBS Africa Conference. My objective was twofold. First, I probed my assumption that Nigerian students represented the majority of organizing teams at both schools. Second, I gauged the level of influence that the majority might have on the general conversation at both events. I tried to determine the level of influence by interviewing a number of organizers from both Harvard and MIT, asking them if there was a connection between them and a panelist. If there was, I further asked about the reasons for this. My interviews confirmed the tendencies to make panel selections according to the organizers' nationalities. In the context of this research, it is important to note the compounding network effect of having a large group of nationals from the same

country in select positions at elite U.S. universities. The ability to speak from a place of authority with a seal of approval from world-renowned academic institutions such as MIT and Harvard allow these students to build interest and goodwill toward their countries. This constitutes yet another illustration of the power law. Indeed, by tapping into their personal networks to select panelists, students from Nigeria and Kenya in particular are able to focus the content of discussions on their countries.

Table 1

African Students at Elite U.S. Universities (2015–2020)

Country	# of Students	% of Total
Nigeria	1,562	19.8%
Kenya	1,426	18.1%
South Africa	903	11.4%
Egypt	895	11.3%
Ghana	816	10.3%
Ethiopia	475	6.0%
Zimbabwe	615	7.8%
Morocco	375	4.8%
Rwanda	330	4.2%
Tunisia	203	2.6%
Cameroun	108	1.4%
Senegal	82	1.0%
Ivory Coast	52	0.7%
Democratic Republic of Congo	47	0.6%
Angola	4	0.1%
Total	7,893	100.0%

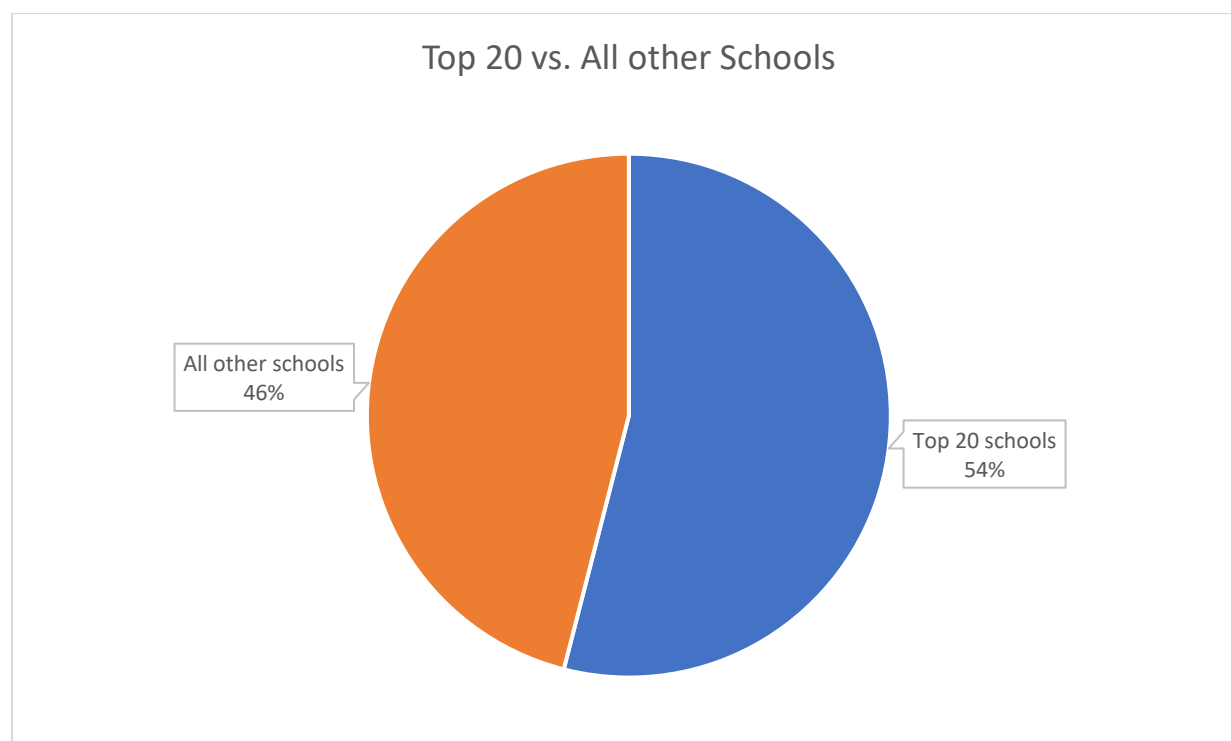
Note: author's calculations derived from publicly available international student data from websites of the top 20 U.S. schools as per 'U.S News World Report'.

When examining the nationalities of African students attending the top 20 U.S. universities, two countries stand out from the rest: Nigeria and Kenya. Collectively, they account

for nearly 40% of the Africa student population in my dataset. They are followed by South Africa (11.4%) and Egypt (11.3%). We will explore in a later section how immigration patterns since the mid-1960s may explain the large differential between Nigeria, Kenya, South Africa, Egypt and other African countries. It is also worth noting that the presence of two world-class universities in Egypt (American University of Cairo) and South Africa (University of Cape Town) may explain why these two countries lag significantly behind Nigeria and Kenya in terms of number of nationals attending a U.S. elite university. In addition, an interesting phenomenon worth paying attention to is Rwanda's relatively high number of students in elite U.S. universities, particularly given its small population. It is the best performer in terms of elite university attendance on a per capita basis out of all the countries I studied. This is due to a deliberate strategy of investing in education and engaging the U.S. academic community (Kagame, 2008). The following set of descriptive data make a compelling case for why it might be a good strategy for any country to increase the number of students it sends to elite US universities.

Figure 3

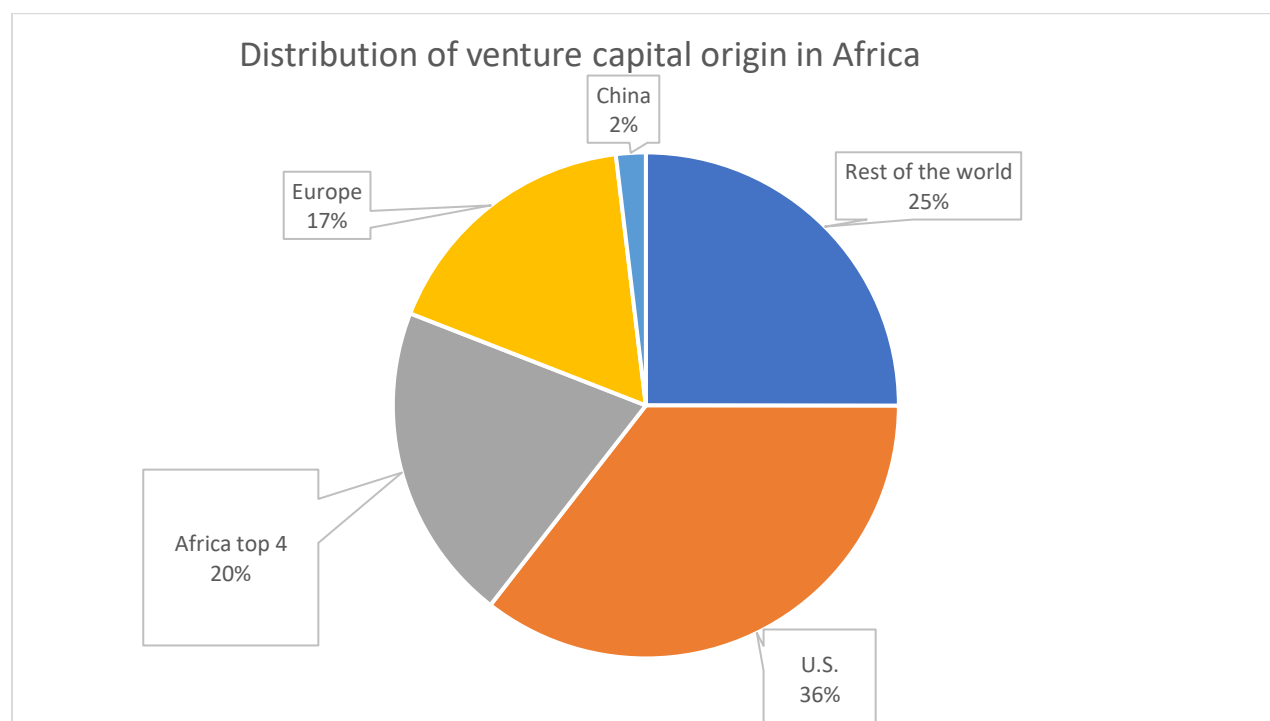
Africa VC Deals with Founders From Top 20 U.S. Schools Vs. Rest



Note: This graph was computed by the author with data from 'Africa the Big Deal' database.

"All other schools" refers to all other schools from the United States not in the top 20 of 'US News and World Report.'

I observed that African students who have attended elite U.S. universities accounted for 54% of all US-based deals recorded for the year 2019. This corresponds with my intuition that venture funds are more comfortable investing their money with founders graduating from such elite schools. All of the VCs interviewed cited trust as one of the main factors driving their decisions and admitted that the university that founders attended factored into their determination of the founders' trustworthiness.

Figure 4*Global VC Investment in Africa by origin (2019)*

Note: This graph was computed by the author with data from ‘Africa the Big Deal’ database. It represents all recorded VC investments in Africa and compares US, Europe, China, Africa top 4 countries (Nigeria, Kenya, Egypt, South Africa) and rest of the world funding. “Rest of the world” refers to all other countries in the database outside of the listed countries in the pie chart.

The U.S. is by far the largest originating country for VC investments in Africa, providing more than one third of the total. Because heads of U.S. VC funds are typically graduates of elite universities themselves, the data observed strongly suggest that there is a strong network effect at play, consistent with the history of dealmaking in that industry. Even in cases when African founders who graduate from an elite school are not well-networked, their credentials send a

positive signal to investors and it is customary for them to emphasize their university affiliation whether on their company's website or relevant investment presentations.

Europe's limited VC investment activity in Africa compared to that of the United States supports my elite network theory by illustrating how removing interpersonal relationships reduces the potential for VC investments in the startup space. Indeed, in contrast with the relatively prolific deal flow of American investment firms on the African continent, the three largest European economies—the United Kingdom, Germany and France—only account for 11.1% of venture flows in Africa. This stems from Europe's traditional state-led approach to business in Africa. Whereas the United States' more entrepreneurial culture and its vast network of elite universities favors cross-pollination and horizontal deal making, Europe's model is very much centered around development agencies and a top-down approach.

First, let us look at the United Kingdom. The UK's investments patterns, similar to its business culture, display both American and European characteristics. It is Europe's most active country in Africa with 89 funds (6.7%) that have made investments on the African continent. On one hand, similar to the United States, the UK has numerous prestigious universities with global appeal, attracting top talent from Africa and around the world. For instance, between 2019 and 2021, Oxford-educated founders attracted USD 242.7 million to the African continent. Kenya and Uganda were the top recipient countries of funding directed to Oxford graduates, each receiving 24% of the total funds. Nigeria and South Africa tied for third place, each receiving 16% of the total. Oxford-affiliated founders alone represented 4% of the USD 6 billion raised across those four countries over the two-year period. While African graduates from top schools in the UK fare better than less prestigious schools, it is important to note that they are far behind

their U.S. counterparts. This is testament to the social capital power of the US elite school network and its better connectedness to capital suppliers who tend to be alumni.

It is noteworthy that the UK's historical ties with Africa guarantee it a direct deal pipeline to and from its former colonies. Yet, the UK also significantly displays a top-down approach. Indeed, similar to its European counterparts, it has a track record of leaning on its development finance institution (Commonwealth Development Corporation [CDC]) to make investments in Africa. In June 2022, the CDC announced a plan to invest USD 6 billion in Africa over five years (Kene-Okafor, 2022). Rather than making direct investments in early-stage startups, it invests in VC funds as a limited partner. Currently, Nigeria is its largest investment market in Africa with a portfolio of USD 570 million across asset classes.

France's VC track record pales in comparison to its deep ties and long colonial history on the continent. Forty-two funds (3.1% of the total of all funds recorded in my research) from France invested in the African continent from 2019–2021. France's elite system of "Grandes écoles" (great schools) differs from that of the UK and the US in that it is primarily designed to train French bureaucratic and corporate elites. Founding a startup is something that has traditionally been viewed with a degree of disdain. Even the name given to VC in France exemplifies this reality—"capital risque" or risk capital. However, the perception of entrepreneurship (in the Anglo-Saxon sense) has begun to shift dramatically under the leadership of President Macron, who vowed to make France a "start-up nation" (Alderman, 2018). During his first term, France leapfrogged over Germany for venture funding raised by its startups (Agnew, 2019); additionally, with the help of Brexit, Paris began to attract firms that historically would have only considered London for their European headquarters (Baazil et al., 2021).

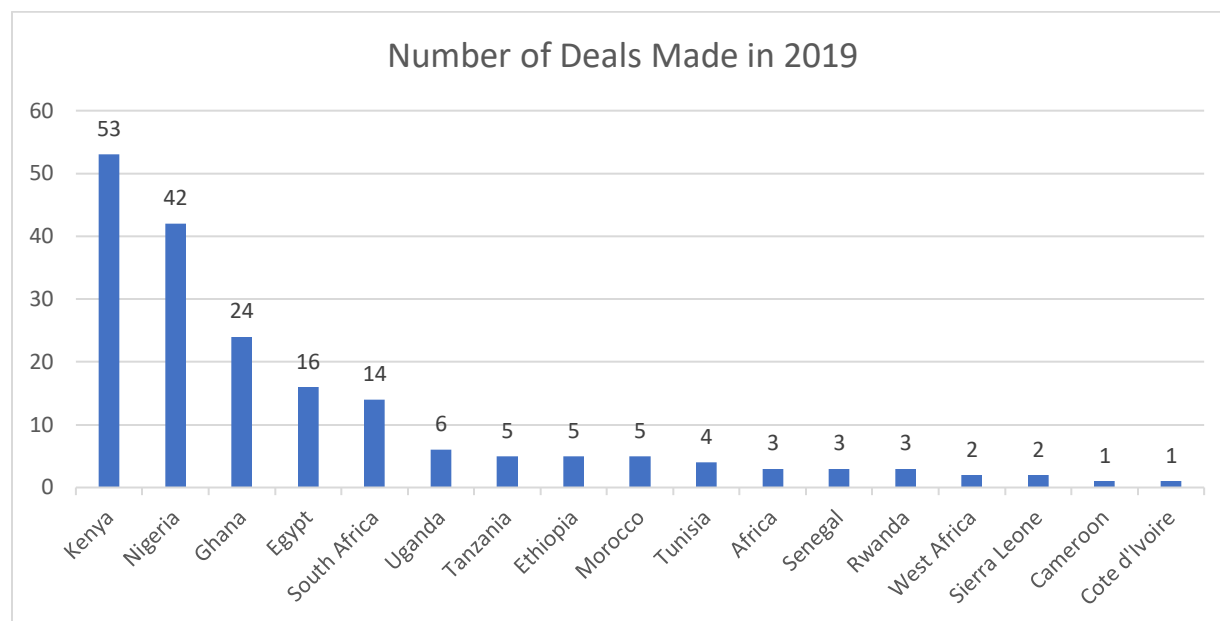
As per the data examined for this research, Germany's VC firms only contributed 1.3% of total investments in Africa over the same period, highlighting the country's weaker ties to Africa than its fellow former imperial powers.

Europe's VC deployment on the African continent trails that of the United States by a wide margin, presumably because of the weakness of Euro-African elite ties. In Europe, business is usually conducted or facilitated at the state level. While a handful of long-established European families have built and maintained successful enterprises on the African continent (Rodney, 2018), these enterprises tend to be in older industries like manufacturing and mining. The dynamism of social capital formation in the United States is riper for innovation and building the companies of the future. In many ways, Europe's African venture capital landscape is symptomatic of the fact that outside of the United Kingdom, there may not be a real, substantive African elite with access to top schools.

I interviewed a South Africa and London-based Congolese investor educated in the UK at King's College who spent several years working for a global banking giant. His comments were in line with the above observations. He noted that "private capital in the UK and in France is significantly lower than in the US and is not geared toward emerging markets—and much less so toward Africa—to start with." Even specialized funds that are focused on Africa, such as Helios "are relatively small in size," he added. According to this interview subject, "the UK is more a transit place for capital than a home for capital." Therefore, the notion of the UK having VC investments in Africa will always be limited. He further noted, "I see it myself when we need to raise funds."

Figure 5

Numbers of Deals (over USD 1M) for the Year 2019 by Nationalities with a Degree from a Top 20 U.S. University

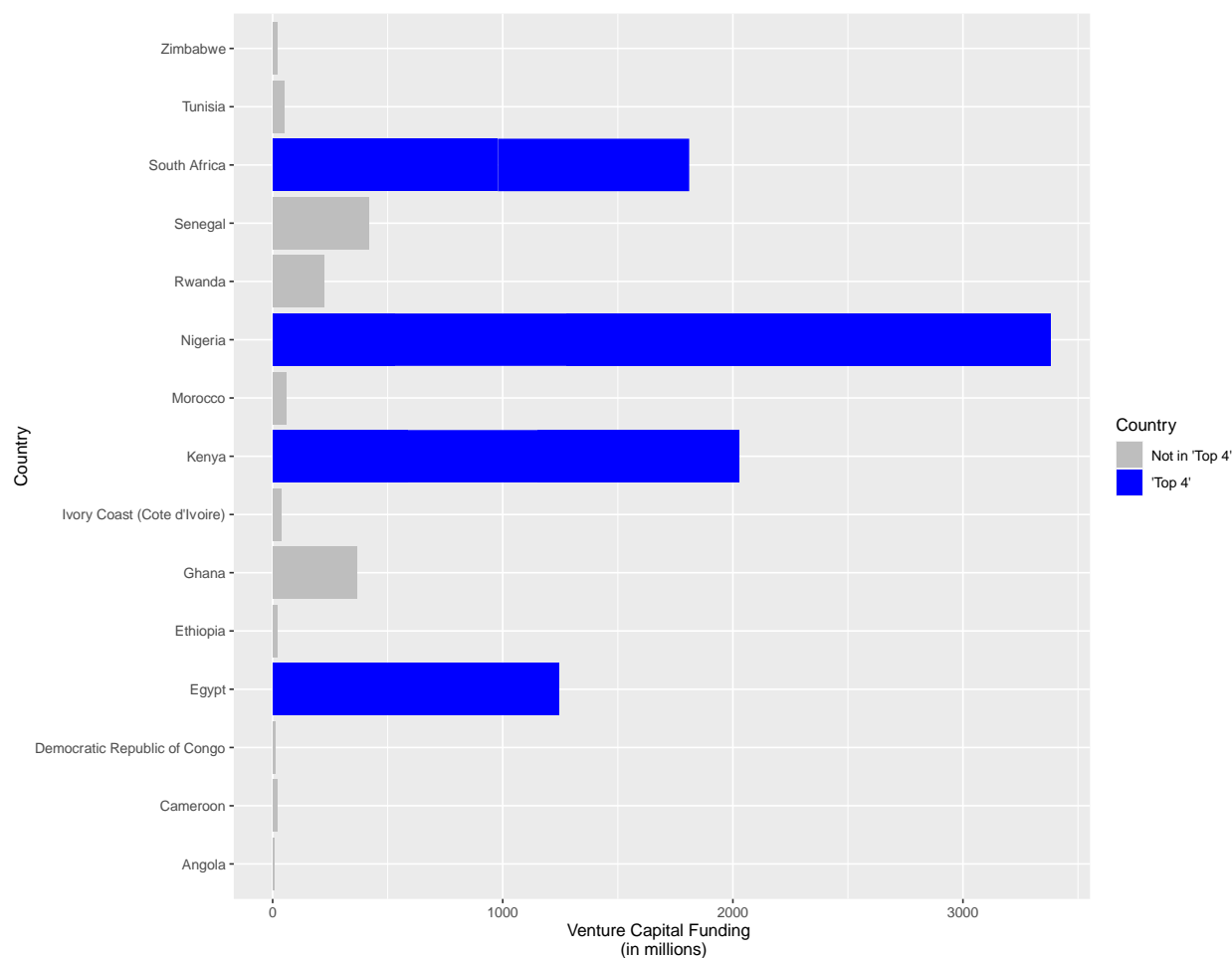


Note: this chart was computed by the author with data from the 'Africa the Big Deal' database.

In 2019, a total of 53 deals over USD 1 million were made with Kenyan founders who attended an elite American university. Nigerian students were second with 42 deals, followed by Ghanaians (24), Egyptians (16), and South Africans (14). The countries represented in the top 5 of this chart are also in the top 5 in terms of African countries represented at elite universities. It is worth noting that 6.7% (89) of the 1,328 investors in the database are headquartered in South Africa. This might suggest that local South African founders may not need to be as reliant on international elite networks for funding compared to other African countries. Additionally, in terms of location of startup headquarters in Africa, Nigeria is home to 5.2% (70), Egypt has 4.2% (57), and Kenya has 2.3% (31). Together, these four countries account for 80% of all VC supply on the African continent.

Figure 6

Venture Capital Funding (in Millions) Between 2015–2021



Note: Between 2015 and 2021 Nigeria, Kenya, South Africa and Egypt have attracted the most funding on the African continent. Source: Partech, Africa the Big Deal and author calculations.

The table above shows the amount of VC invested in the countries studied between 2015–2021. The top four strongly correlate with the top four countries with the most graduates from elite U.S. universities. It is worth noting that Senegal fares better than Ghana for that timeframe because of a single deal from 2021—a USD 200 million investment in the fintech company Wave by American VC giants, Sequoia, Founders Fund, and Stripe (Tene-Okafor,

2021). Outside of this event, Ghana would be in fifth place, the same spot it holds for number of students attending elite universities in the US. It is also worth noting that Rwanda has been able to attract significant capital relative to its size. Consistent with my theory, I attribute this performance to the relatively high number of Rwandan students who attend elite U.S. universities.

Table 2

Amounts Raised in Millions of USD per Sector (2019-2022)

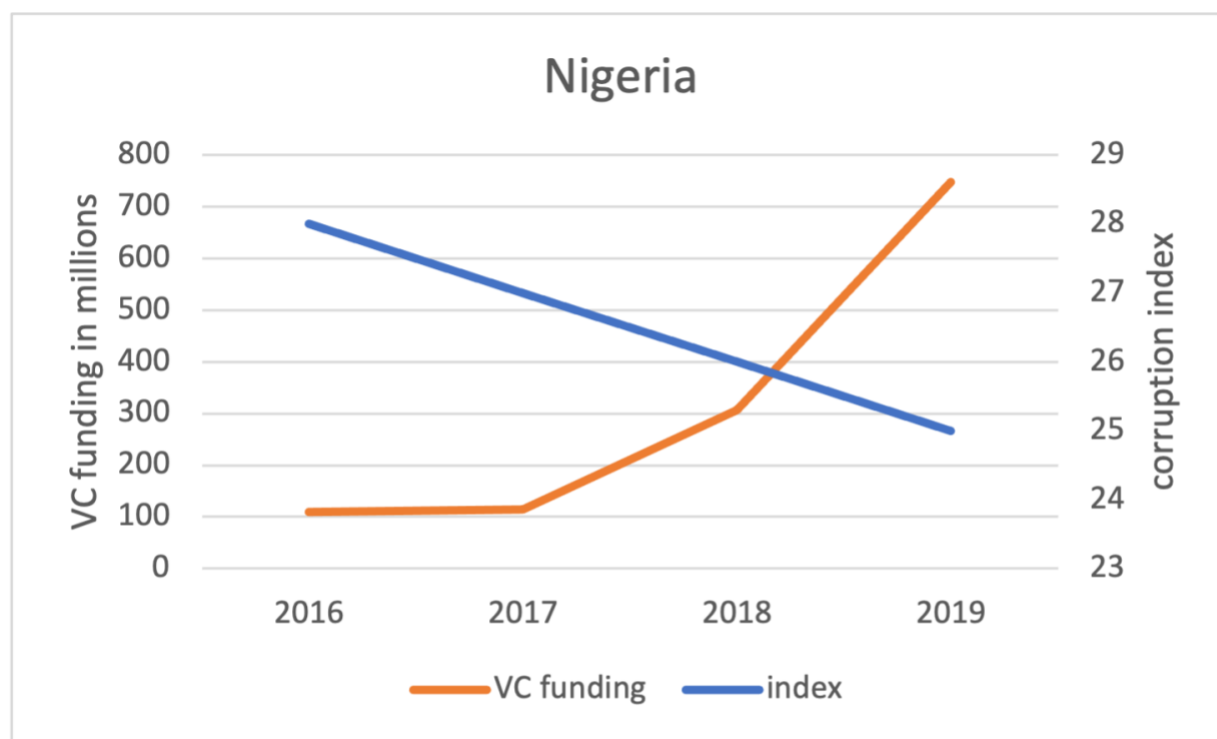
Sector	Top 4 Countries	All Others
Fintech	3,845.7	767.49
Energy & Water	904.5	380.67
Logistics & Transport	850.7	101.46
Agriculture & Food	442.6	67.79
Education & Jobs	420.9	9.53
Telecom, Media & Entertainment	295.5	11.26
Deeptech	134.7	109.17
Services	133.4	52.07
Housing	27.0	17.55
Grand Total	8,075.7	1,684.29
As % of GDP	11%	0.06%

Note: Between 2019 and Q1 of 2022, countries from the top 4 raised substantially more funding than any other African countries. This table was computed by the author. Source: Africa the big deal

The table above illustrates that even when controlling for specific sectors, founders from highly-networked countries obtain larger deals. It also highlights the significant weight of VC funding activity in the GDP of the four economies that receive most of it. Indeed, VC funding represents 11% of the combined GDP of Nigeria, Kenya, South Africa and Egypt. Why is there such a funding gap? Is Nigeria, for instance, performing well on a widely popular country risk indicator such as Transparency International's "Corruption Index?"

Figure 7

Corruption Perception and VC Funding in Nigeria (2016–2019)



Note: Between 2016 and 2019 Nigeria's score on Transparency International Corruption index kept decreasing. It went from being ranked 136th most corrupt country in the world with a score of 28 in 2016 to 146th in 2019 with a score of 26. However, during the same period VC investments soared. Source: Transparency International's corruption index and Partech.

I suspect that the social capital built by African entrepreneurs who studied at elite universities and the related perception of credibility constitute a new form of risk assessment that can bypass more traditional metrics. To illustrate this, I plotted Nigeria's corruption index per Transparency International against its VC funding outcomes in Figure 5 above. I observed that as Nigeria's corruption index value decreased (indicating a worsening of corruption), it simultaneously attracted more VC funding. The patterns observed may support my argument that

the signal sent to investors by an affiliation to an elite U.S. university overshadows more traditional country-level indicators, assuming relatively stable conditions. In other words, the suggestion is that consistent with my elite network theory, VC money follows elite founders first before it concerns itself with other risk factors, including citizen perceptions of corruption. I now turn to empirical analysis to substantiate my claim that the elite university network explains the funding differential observed across African countries.

Model

$$lm(\text{OutcomeVariable} \sim IV + IV1 + IV2 + IV3)$$

The dependent variable is the venture capital funding a country receives in a given year. The independent variables include African enrollees at elite American universities and the control variables of GDP per capita, population, and percentage with tertiary education.

I predict that the estimated coefficient for elite American university enrollees is positive and statistically significant. The model may not demonstrate that there has been “bias” because most smaller or poorer countries may not have any entrepreneurs seeking VC, but it could reveal structural inequalities in the system in addition to whether those with thinner networks (i.e., Francophone countries) have a hard time obtaining funding for eligible projects.

Data Manipulation

First, I selected a set of countries to compare to the top four African destinations for VC. I deliberately selected not only countries from different geographical locations but also some that might commonly be expected to fare well in terms of funding because of either their GDP (Morocco) or population (Ethiopia). I ended up selecting a total of 15 countries out of a total of 54 countries. I also selected countries based on the availability of interview subjects who are nationals from those countries in Cambridge. Then, I computed population, tertiary education,

GDP and elite university attendance for each. I restricted the data in the model to the years of 2015 to 2020. There was not much VC activity on the African continent until 2015, and I did not go beyond 2020 because the data for university attendance is not available for many universities, and international student attendance was largely impacted by COVID-related shutdowns. As the World Bank data had many missing values for tertiary education, I used interpolation to approximate the missing values. I interpolated over time within countries. This is an appropriate practice because the standard deviation is small (close to 0). I logged the GDP per capita and population variables to normalize the distribution across countries. I then ran two linear regressions. First, I ran my model for 2015–2020 to show that there was consistency over a number of years. Then, I ran the model with the year 2019 to spotlight the fact that as time progresses, assuming no significant exogenous factors (e.g., COVID-19), the explanatory power of the elite graduation variable increases. The year 2019 offered the added benefit of having the least missing values of all years studied; additionally, 2019 was a pre-COVID year with relatively stable conditions across countries. My model may not be the ideal estimate given that I do not account for a lagged effect but given the consistency of the top 4 and the proportion of funding outcomes it captures I assume that random effects are largely neutralized.

Interviews

I interviewed over 30 subjects over the course of this research project. I conducted a mix of in-person and zoom interviews. Being in Cambridge with direct access to Harvard and MIT greatly facilitated my interviews. I separated interviewees in 3 main categories: current students from elite universities, VC-backed African founders who graduated from elite universities and investors. I did not distinguish between graduates and undergraduates from these elite schools. My objective was to identify whether the elite university network was the primary point of contact between the three groups in the conduct of business. Here, business refers to any interaction done for the purpose of recruiting, fundraising or investing. For students, my questions revolved around their path to the elite institution they were attending and their overall exposure to entrepreneurship while in school. For VC-backed entrepreneurs, I focused on understanding the causal mechanisms behind their fundraising and recruiting theses. For VCs I asked broadly about their approach to investing in Africa.

Results

Table 3

Regression summary (2015-2020)

Characteristic	Beta¹	SE²	p-value
Year	0.07*	0.028	0.025
Students Graduated from Elite Universities	1.7***	0.294	<0.001
(log) Population	-0.14	20.0	0.5
Population with tertiary education (percent)	-0.03*	0.015	0.044
(log) GDP per capita	42.62	24.5	0.091

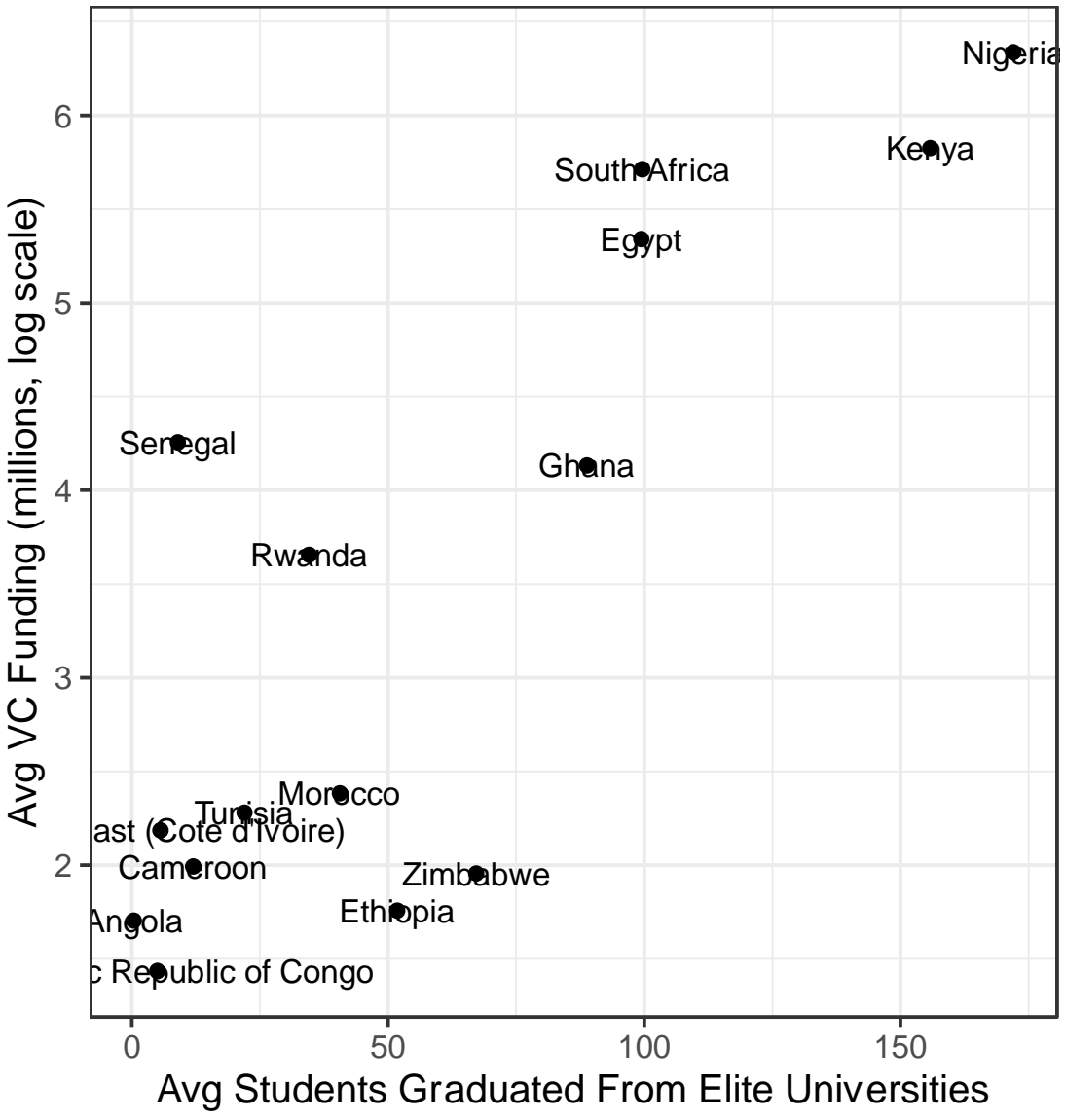
¹ *p<0.05; **p<0.01; ***p<0.001
² SE = Standard Error
R² = 0.651; Adjusted R² = 0.599; Standard Error = 72.7; F-statistic = 12.7; p-value = <0.001

Note: Elite graduation significantly explains funding outcomes for African countries. The sample size is 15 countries, and the summary of the regression was computed by the author using R software. Sources: Partech and author's database.

As I hypothesized, the elite graduation variable is the most substantively and statistically significant effect of all the variables I observed. For every student graduating from an elite U.S. university, a country can expect USD 1.69 million in VC investment. Assuming that the null hypothesis is rejected at an alpha of .05, the control variables were either significant or approached statistical significance. There might be a slight trend in the data, meaning that VC funding simply increases as time goes on, but the significance of the “graduated from elite universities” variable indicates that this particular variable is more important. The R^2 is .651, and the adjusted R^2 is .599. The adjusted R^2 makes sure that the model is not overfitted with too many explanatory variables. It also shows that the independent variables included here explain most of the variation in the dependent variable. I also performed a sensitivity test to account for the risk of an omitted variable (see appendix 1).

Figure 8

Scatterplot of VC Funding 2015–2020



As seen in Figure 11 above, the top four destinations for VC in Africa across the period studied were also the top four countries with the most students at elite U.S. universities. There is a clear linear trend: as African countries increase their supply of graduates from elite US universities, they can expect more VC funding. This provides strong support for the elite network theory I advance.

Table 4*Regression summary 2019*

Characteristic	Beta¹	SE²	p-value
Students Graduated from Elite Universities	2.92**	0.720	0.005
(log) Population	-0.19	45.5	0.7
Population with tertiary education (percent)	-0.03	0.037	0.4
(log) GDP per capita	-0.05	63.2	>0.9

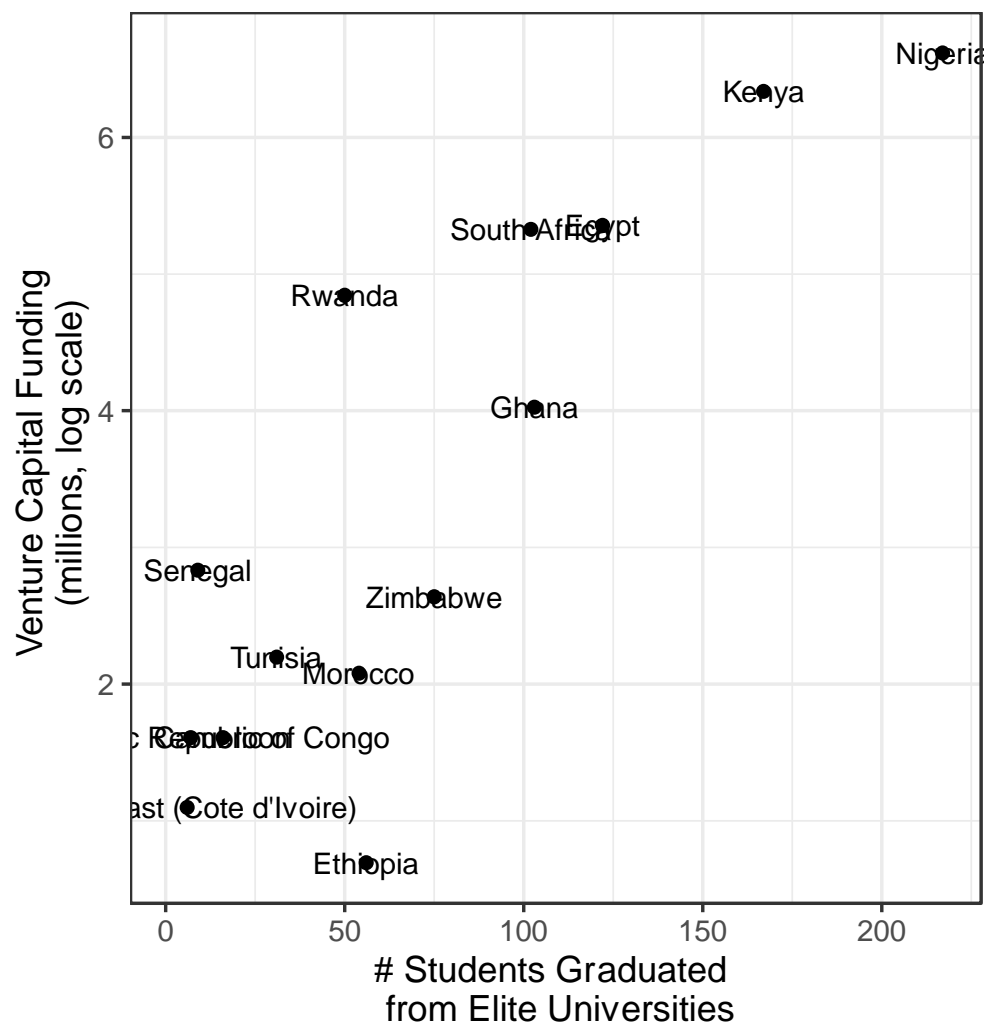
¹ *p<0.05; **p<0.01; ***p<0.001
² SE = Standard Error
R² = 0.786; Adjusted R² = 0.664; Standard Error = 96.3; F-statistic = 6.42; p-value = 0.017

Note: The year 2019 has greater significance, indicating the possible upward Trend of the effect over years. The sample size is 15 countries, and the summary of the regression was computed by the author using R software. Sources: Partech and author's database.

The table above shows the summary of results when I ran the model for the year 2019. While the sample size is small, the effect is both statistically and substantively significant. Based on my findings, I expect that moving forward in time, the effect of elite graduation on Africa's funding outcomes will continue to increase. In recent years, investors have taken a keen interest in African opportunities, and the funds overwhelmingly target students with ties to elite universities.

Figure 9

Scatterplot of VC Funding in 2019



The scatterplot above shows the outcome variable (VC funding) on the Y axis and its key predictor (graduating from an elite university) on the X axis. The two outliers represent Nigeria and Kenya. They pulled in USD 747 and 564 million, respectively. They are also the top two countries for number of graduates from elite universities. This is consistent with my theory about elite university networks. When filtering the database to investigate the profile of deals made for both countries in 2019, the one constant between both countries is the large number of Series A, B, and C funding rounds. Those rounds are typically between USD 5 and 50 million in contrast to seed rounds, which are below USD 1 million and are more prevalent in other African countries. This highlights the maturity of the Nigerian and Kenyan markets. Out of the 30 deals available in the database for Nigeria during that period, nine were made with founders who had graduated from a top 20 U.S. university (30% of the total). Out of the 24 deals available for Kenya, 10 were made with founders who had graduated from a top 20 U.S. university (42% of the total).

Table 5

Regression summary with VC funding as share of GDP (2015-2020)

Characteristic	Beta¹	SE²	p-value
Students Graduated from Elite Universities	0.026742***	0.005	0.000002
Population with tertiary education (percent)	-0.000003	0.000	0.145193
(log) GDP per capita	-1.022348***	0.281	0.000856

¹ *p<0.05; **p<0.01; ***p<0.001
² SE = Standard Error
R² = 0.596; Adjusted R² = 0.562; Standard Error = 1.19; F-statistic = 17.7; p-value = 0.000000

Note: the summary of the regression was computed by the author using R software. The sample size is 15 countries. The Beta of the tertiary education variable was very small so 6 decimal points were necessary. Similarly, the standard error was very small and the software is rounding to 0. There was no package available to elicit further decimal points.

Just as foreign direct investments (FDIs) and official development assistance (ODA) are routinely discussed as share of GDP, it is reasonable to describe VC funds as share of GDP to get a like-for-like comparison. To that extent, I changed the specification of my main model by switching the outcome variable to $\ln(VC/GDP)$ while still controlling for $\ln(gdp/capita)$ and tertiary education. This design allows to weigh VC funding as a share of a country's income. Further supporting the elite theory, the summary of results confirms the significance of the elite university variable over and above all other variables. It also suggests that a higher $gdp/capita$ may actually decrease funding. This might be explained by the fact that the elite university variable substantially dampens the effect of being a relatively wealthy country. But why is it that the elite networks discussed throughout this paper get formed in the first place?

Historical origins of elite university networks

At the root of the numerical advantage of nationals from Nigeria, Kenya, South Africa and Egypt at elite US universities lies path dependence. In other words, I contend that past events have a crucial effect on the present and future distribution of students. Immigration patterns are of particular interest. It is useful to go back in time to analyze the first waves of modern African immigration to the United States and the extent to which it provided those countries a first mover advantage. Here, first mover advantage refers to the ability of nationals from a handful of countries to enroll in elite U.S. universities in much larger numbers than those of others and the resulting opportunities.

First Mover Advantage: Immigration, Bilateral Agreements, and Special Programs

Voluntary migration from Africa to the United States did not become substantial until the 1980s (Batalova & Lorenzi, 2022). The Immigration and Nationality Act of 1965 expanded pathways for non-Western European immigrants to come to the United States, mainly through family ties. The Refugee Act of 1980 increased admissions of refugees fleeing conflict. Additionally, the Immigration Act of 1990 created a diversity visa to bolster immigration from underrepresented countries. The 1990 law also made it easier for highly skilled immigrants to migrate for work, opening the door to educated workers and international students. As a result, from 1980 to 2009, the African-born population in the United States grew from just under 200,000 to almost 1.5 million (McCabe, 2011). Historically, the top countries of origin for African-born immigrants to the United States are Nigeria, Ethiopia, Egypt, Ghana, Somalia, South Africa, and Kenya (Batalova & Lorenzi, 2022). Of particular interest to this research is the fact that four of these countries—Nigeria, Kenya, South Africa, and Egypt—are currently the four African countries with the highest number of nationals attending elite American universities. In addition, the same four are also currently the top four recipients of U.S. VC investments. While I limit the scope of my analysis to the top four VC recipient countries, it is worth noting that Ghana ranks fifth in both elite U.S. school attendance and VC funding, seeming to confirm the strong link that can be observed among immigration, elite school attendance, and VC funding. The raw correlation between these three variables is clear.

To what extent does this first mover advantage mechanistically contribute to the asymmetry in VC funding observed today? A case-by-case analysis of the U.S migration patterns of the top four VC recipient countries might shed some light on how structural embeddedness combined with path dependency formation and English proficiency has provided the nationals of

these countries with a competitive advantage in attending elite U.S universities and developing strong ties with the American elite, from which most VC fund managers emerge. Structural embeddedness refers to the depth of ties between two parties in a system. Path dependency refers to processes in which past events condition future outcomes.

Nigeria

Nigeria is the top birthplace for African immigrants to the United States. There are currently 350,300 Nigerian immigrants in the United States (Batalova & Lorenzi, 2022). They tend to be concentrated in large states where the best academic institutions in the country are found. Texas is home to 23.3% of the total Nigerian immigrant population, followed by the Washington metropolitan area (13%), New York (9.6%), California (8%), and Georgia (6.7%). As of 2016, in terms of education, about six in 10 (59%) Nigerian immigrants in the U.S. had a bachelor's degree or higher, a percentage that is roughly double that of the overall U.S. population.

If the current wave of Nigerians moving to the U.S. benefits from the power of community and a formative diaspora experience, it is thanks to those who paved the way and built foundations. Take the case of Ngozi Okonjo-Iweala, the current head of the World Trade Organization, for instance. She immigrated to the United States in 1973 as a teenager to pursue a bachelor's degree in economics at Harvard University. She then earned a PhD in regional economics and development from the Massachusetts Institute of Technology (MIT). It stands to reason that Ngozi Okonjo-Iweala sent a strong signal to her fellow Nigerians by excelling academically and graduating from two of the best academic institutions in the world. Her journey created what might be the beginning of a path dependency, as evidenced by her son's path. Indeed, Uzodinma Iweala graduated from Harvard magna cum laude, just as his mother did, and

obtained an advanced degree from another elite university (Columbia University College of Physicians and Surgeons), just as his mother did. In my interviews with Nigerian students, the students consistently cited Ngozi Okonjo-Iweala as a role model. Like Ngozi Okonjo-Iweala, there are a number of prominent Nigerians who are graduates from elite universities and they permeate all sectors from politics to business. More so than in any other African country, being a graduate from an elite U.S. university is a status symbol in Nigeria. A number of Nigerians I interviewed confirmed that there are many sought after positions that are simply unattainable without at least a Master's degree. There is a level of systematization of attendance to an elite US (or British) school for the Nigerian elite.

Kenya

There are currently 141,800 Kenyan immigrants in the United States (Batalova & Lorenzi, 2022). They tend to be more widely dispersed across states than Nigerians; however, similar to Nigerians, they are concentrated primarily in large states such as Texas and California. The Kenyan diaspora also has a higher level of educational achievement than the general U.S. population. In fact, 30% of U.S.-based Kenyan diaspora members ages 25 and older hold a bachelor's degree, while only 20% of the general U.S. population ages 25 and older hold a bachelor's degree. Furthermore, 16% of these Kenyans possess a master's degree, a PhD, or an advanced professional degree, while the number stands at 11% for the general U.S. population (Migration Policy Institute, 2015b). The initial waves of immigration from Kenya to the United States consisted of members of the elite seeking training with the purpose of eventually returning home. As a result, in 1980, there were fewer than 10,000 Kenya-born residents in the United States (Migration Policy Institute, 2015b). However, due to the violence and political instability in Kenya in the 1990s, more contemporary waves of immigrants have chosen to stay in the US

permanently. Between 2002 through 2012, 72,000 Kenyans were granted permanent resident status in the US. While 35% of recipients claimed this status thanks to relatives, 28% were beneficiaries of the diversity visa program, which emphasizes education and skills (Migration Policy Institute, 2015b). Early migration from Kenya to the United States and its long-lasting structural implications is best exemplified by Barack Hussein Obama Senior, father of the 44th President of the United States, Barack Obama. The senior Obama was selected for a special program to attend college in the US and obtained a bachelor's degree at the University of Hawaii. He then went to Harvard University to pursue a PhD in economics before returning to Kenya in 1964, becoming a senior government economist. The extent to which the senior Obama was a motivating factor in Barack Obama's subsequent enrollment at Harvard Law School is unclear. However, consistent with the path dependency argument, it is worth noting that Harvard (n.d), as an institution, values legacy, as acknowledged on their admissions website, where it states, "among a group of similarly distinguished applicants, the children of Harvard College alumni/ae may receive an additional look." In other words, Barack Obama's chances of being accepted at Harvard were higher than "similarly distinguished" applicants of African descent. This path dependency is further evidenced by Malia Obama, the former president's daughter, who attended Harvard half a century after her Kenyan grandfather paved the way. In my interviews, current Kenyan students at both Harvard and MIT cited Barack Obama as an inspiration but not a motivating factor in applying. Instead, they emphasized Kenya's meritocratic school system and their high school exposure to elite American universities. Public schools such as Alliance Girls in Nairobi have gained notoriety for placing students in top U.S. universities on full scholarships. It is very likely that the path dependency set in motion by Kenyan attendees of elite American universities and information signaling at the high school

level are mutually reinforcing. Perhaps the convergence of both signals of possibility constitutes the strongest driver in applications to elite U.S. academic institutions.

South Africa

As of 2019, there were 110,000 South African immigrants in the United States. In contrast with Kenyans, who arrived in large part after 2000, many South Africans arrived prior to 1980.

Although most South Africans are Black, about 80% of South Africans in the US in the late 2000s were White (Waters et al., 2007). McCabe (2011) noted that South Africans have the highest rate of English proficiency of any African immigrants, with 96.9% reporting that they speak English “very well” or “only [speak] English” in 2009. This means that historically, South Africans have been better equipped to seek admission at elite U.S. universities than their African peers. Additionally, relative to other African passports, South Africans have historically fared better in terms of ease of obtaining visas. For White South Africans, in particular, their White ancestry often meant they had access to a second passport that was more suitable for migration in the West. Elon Musk arguably provides a good example of how a combination of having English proficiency, holding citizenship in a developed country, and attending elite universities can change the odds in one’s favor (Vance, 2015). Indeed, the South Africa-born richest man in the world methodically charted his path to North America and the classrooms of the University of Pennsylvania and Stanford University by leveraging his mother’s Canadian citizenship. In the case of Musk, one might legitimately argue that his brilliance alone landed him on the top spot of the Forbes list; however, his deliberate pursuit of an elite education may suggest his tacit recognition of the market signaling power of world-renowned U.S. academic names. Another prominent South African businessman, David Frankel (see appendix 1), might exemplify the power of social capital built at the U.S. elite school level even better than Musk. In 2001, Frankel

landed in the United States after deferring admission to Harvard Business School (HBS) twice. While earning his MBA, he began to very successfully fund his classmates' ventures. Today, he is at the helm of Founder Collective, an investment firm whose "mission is to build the most aligned VC fund for founders at the seed stage." The fund is headquartered in Cambridge and New York. As evidenced by Musk and Frankel, South Africa's largely white elite has been the primary beneficiary of elite university networks.

Egypt

As of 2013, approximately 248,000 Egyptian immigrants and their children were living in the United States (Migration Policy Institute, 2015a). Traditionally, Egypt has been the country with the third most African immigrants in the United States after Nigeria and Ethiopia. However, it is worth noting that the United States is not a top destination for Egyptian immigrants, many more of whom live and work in the Middle East. Similar to Nigeria, the Egyptian diaspora is distinguished for its high educational attainment. Members of the Egyptian diaspora in the United States are more than twice as likely as the U.S. population to have earned a degree higher than a bachelor's degree. Out of the top six wealthiest Egyptian businessmen, three attended a university in the United States (Forbes, 2022). The wealthiest family in Egypt, the Sawiris, have deep ties with Stanford and the University of Chicago, where a scholarship bears the name of the patriarch of the family, Onsi, thanks to a USD 20 million donation from one of his son Nassef, a graduate from the school. Today, a third generation of Sawiris is being educated at top U.S. schools and have entered the elite university-driven field of VC (HOF Capital, n.d).

All Top Four Countries Speak English and are Better Connected With the US

The selected review of African immigration patterns above illuminates the fact that since opening its borders to African immigration, the United States has predominantly attracted

nationals from English-speaking countries. Immigrants from Nigeria, Kenya, South Africa, and Egypt all have substantially higher levels of education attainment than other African countries, particularly Francophone countries. Nationals from the latter have predominantly migrated to France. Contrary to the United States, the French system does not facilitate the upward mobility of its immigrants. They are concentrated in “banlieus” at the periphery of core metropolitan areas and grew apart from the general French population. The U.S. system, in contrast, for all its structural flaws, has allowed a number of Africans to distinguish themselves. Academia, in particular, is the common denominator of success in the United States and may guarantee access to an elite network, irrespective of one’s race or background.

Illustration of the power of the first mover advantage

The numerical superiority of countries in the top 4 at elite U.S. universities seem to allow its graduates to shape public opinion about Africa and command greater trust in the marketplace as evidenced by their better funding outcomes. Nigeria, more than any other African country, exemplifies this reality. It is omnipresent in all discussions related to VC on the continent and will likely continue to be as it has now largely institutionalized its dominance of the US elite education system over all other African countries. In April 2022, I spoke to Olugbenga Agboola a graduate from MIT and the CEO of Flutterwave, Africa's most valuable startup. He had just delivered a speech to an audience filled with admiring compatriots, many of whom were attending MIT with dreams of replicating his accomplishments. I asked him about his thoughts on sovereignty and the fact that most institutional investors in African startups are domiciled outside of Africa. He responded that it was a necessary first step as no one else is willing to take that level of risk on the continent. He then highlighted that since his fortune improved drastically, thanks to the soaring valuation of his company, he had been able to invest in fellow Nigerians' startups at a rapid pace. His response illustrated yet another aspect of the benefits of being from a high networked country. Specifically, the ability to channel a portion of foreign investments to grow the local ecosystem. More generally, it is indicative of the possible positive rippling effects brought about by foreign capital. If harnessed effectively, the current VC funding coming to countries like Nigeria, Kenya, Egypt and South Africa can propel a new generation of African financiers.

Figure 10

Olugbenga Agboola (MIT graduate), CEO of Flutterwave (Nigeria), Africa's most valuable startup, at the MIT Africa conference in April 2022.



Note: picture taken by the author at the MIT Africa Innovate Conference in April 2022.

During the course of my research, my interviewees largely expressed the belief that being a graduate from an elite U.S. university constituted a competitive advantage for fundraising, recruiting and investing. They consistently cited access to information as the main source of their perceived advantage. I interviewed subjects from all countries of the top 4 at both MIT and

Harvard. Process tracing their journey to Cambridge, where both schools are located, consistently led to a network signaling at some point in their youth or in their professional careers. They took steps to apply not only because they felt they had the academic standing but primarily because they knew compatriots, friends, family members and other people in their networks who had done it. A number of subjects also cited parents who pushed them to consider exclusively elite schools. Perhaps the most compelling account of the power of network signaling came from my interviewees from countries outside of the top 4. They often reached elite U.S. schools by immersing themselves in an enabling culture. By enabling culture, I refer to a culture where information and resources to maximize application success are widely available. Those include access to tutoring, test preparation, advanced placement classes and alumni.

For instance, a second-year Cameroon-born female student from HBS whom I call “Alana” answered questions related to family-induced desire formation. Her father had pursued a PhD in Canada, and her mother was also highly educated. This created a culture that emphasized academic excellence within her home.

At the high school level, admission to a handful of top American universities was identified as an objective. Alana’s parents chose a very competitive high school, as this is one of the key metrics elite universities consider in the admissions process. Alana ultimately attended Wellesley College, an all-women’s college ranked fifth on the U.S. News and World Report’s list of best liberal arts colleges. After working at Goldman Sachs and in private equity in New York, she was admitted to HBS to pursue her MBA. Alana has three younger siblings, two of whom are currently attending Harvard College as undergraduates. While such examples are relatively rare in families from countries like Cameroon, which sends few students to elite U.S. institutions, they are relatively common in Nigeria, Egypt, Kenya, and South Africa. It is easy to see how a

first mover advantage can quickly lead to an outsized representation based on network effects and access to information. From the onset, it stands to reason that Alana is likely to face more barriers relative to nationals from the top four.

Once enrolled, the university system's design accelerates already pronounced structural inequalities. Indeed, Alana, the Cameroonian, met few compatriots at Harvard. The data I collected revealed that there was a total of two Cameroonian students at Harvard for the academic year 2019–2020. In contrast, there were 37 Nigerians, 32 Kenyans, 29 South Africans, and 29 Egyptians that same year. While Cameroon is the smallest country of the group in terms of population (26.55 million), the disparity in the attendance numbers is much larger than the population factor. For instance, Nigeria, the most populous country of the group has 206 million inhabitants or nine times more than Cameroon but had 18.5 times more students at Harvard in 2019 and 27 times more students at Yale. This underrepresentation of Cameroonian students is consistent when contrasting Cameroon with all the other countries that send the most students to elite U.S. universities. Because humans are social creatures, Alana pursued memberships in various African organizations but was always in the minority. Conversation topics tended to be decided by the majority's interests, and Alana became well informed about the culture of predominant groups in these organization—particularly Nigeria in her case. However, the majority groups made little effort to reciprocate because of the information asymmetry and an echo chamber phenomenon. Alana ultimately embraced Nigeria's dominance and began exploring opportunities in Nigeria.

Unless students from minority groups are actively engaged in shining a spotlight on issues related to their countries, they may not find a large audience predisposed to amplify their concerns and interests. This reality, then, translates into less affinity between academic

institutions and marginalized countries. In 2022, Alana traveled to Lagos, Nigeria as part of a school trip. She expanded her network, accessed investment opportunities, and built ties that would predominantly benefit Nigeria. Consequently, Cameroon will do without Alana's resources for the time being. Her journey to college, and the subsequent networking experience she had, illustrates the concentration of opportunities brought about by the numerical advantage nationals from Nigeria enjoy at elite universities. They can attract significantly more attention to their country because of the power law. My results showed that this is exactly what is occurring for venture capital investments. Countries with the most students at elite universities attract the most capital.

Limitations of the Research

One limitation I faced was the fact that some schools have no international student statistics, and some schools only have data for a handful of years. Furthermore, there is a general lack of availability of key data for Africa. Indeed, even when data are available from reputable sources such as the World Bank, they tend to be sparse. This problem is more pronounced for some countries. For instance, population data for large countries such as Nigeria and the Democratic Republic of Congo are missing for most recent years. For the Democratic Republic of Congo, the country has not run a census since the early 1970s.

Another limitation of the study is the inability to add an expatriate variable as a control. Indeed, throughout my interviews, a number of subjects cited the presence of a large expatriate population as one possible explanation for why countries in the top four outperformed others. Nevertheless, I could not find a dataset with accurate figures on the percentage of foreign expats in African countries. However, according to Inter Nation's "Expats Insider 2022 Report,"

Nairobi, Cape Town, and Cairo are the top three best cities in Africa to live in and work in. It is worth noting that expatriate formation tends to occur due to a number of factors that are directly connected to the presence of a sizable population of elite university graduates. For instance, Inter Nation lists factors such as career prospects, finding friends, and language. All those factors might improve with an increase in graduates from elite universities, as they tend to share more similar traits with expatriates than locals. Humans are attracted to familiarity and recognizing familiar patterns in new environments can make people feel more at ease. I observed this repeatedly during my research at MIT. As Africa is increasingly perceived as “the last frontier” (Moghalu, 2014) with vast, untapped growth potential, a number of students are eager to explore the continent. Typically, the first touchpoint for many is an internship. African students act as brokers to match their international friends to top technology jobs back home. Consistent with the elite university theory I advocate in this paper, those brokers are often from the top four, and their international peers inherently trust their guidance. Prior to the beginning of the summer, I interviewed a Venezuelan graduate student at the MIT Sloan School of Business. One thing was clear to him: he was going to do his first-year MBA internship in Africa. He had no prior experience on the continent, so he did not know where to go. Consequently, he resorted to his Sloan network to decide. Out of the five friends he consulted, four were Nigerians, and one was from Kenya. One of his Nigerian contacts set him up with Max Mobility, a Lagos-based startup started by two MIT graduates. The peer signaling of an MIT founding team combined with the fact that Max had last raised USD 31 million in Series B funding in December of 2021 was very alluring to my interviewee. Then, his Kenyan contact from Sloan steered him away from Lagos and touted the attributes of Nairobi. She particularly emphasized “quality of life for expats” and

managed to land him an interview with a well-funded local startup. This process illustrates how ecosystem formation is a self-reinforcing loop driven in large part by elite university networks.

Discussion and implications

The current distribution of African students at elite American universities skews toward Nigeria, Kenya, South Africa, and Egypt. These countries have benefited from a first mover advantage that has increased over time. While the quality of primary and secondary schools may play a role in students' preparedness, my interviews revealed that most students admitted to top schools cite early knowledge of the application process as a decisive factor in their admission. This information asymmetry is particularly acute in countries with very few graduates from elite schools. The inability of many students in countries with fewer elite university networks to gain tips and best practices puts them at a significant disadvantage compared to their peers in countries with more networks. As I have shown, outsized U.S. VC spending in economies with more networks relative to others mechanistically stems from this reality. Consequently, African countries suffering from a lack of visibility or unwarranted perceptions of high risk are left out of the innovation conversation on the African continent; these countries do not benefit from potentially transformational investment activity.

Simply put, the likelihood of African students attracting funding post-graduation is greater if they attend Stanford or MIT compared to Polytechnique in France or Imperial College in the UK. Generally, the decision of which institution to attend largely comes down to network signaling. Many Francophone students with the academic aptitude to succeed in elite American universities simply do not apply because of an absence of signaling in their network. I interviewed a number of African students at both MIT and Harvard who all had anecdotes about

how their path was leading to a “Grande Ecole” or the United Kingdom until someone in their network encouraged them to think about an elite U.S. university track. Such students are exceptions in that they obtained path-changing information at a crucial juncture in addition to the necessary support to act on it, often in the form of mentoring from alumni from an elite U.S. institution. The vast majority of equally capable students who have fewer networks do not consistently receive such signals and the related support. In early-stage financing, which is the predominant stage currently in Africa, VC follows talent and execution ability first. In boardrooms from San Francisco to Cambridge, this often translates into following people with degrees from the best U.S. universities. These graduates command greater trust and are found predominantly in English-speaking countries. As a result, French-speaking countries have largely been left out of the VC activity in Africa and its ancillary benefits.

In line with my results, another plausible explanation for the VC allocation across Africa might be that students who go to elite universities benefit from better training and therefore can develop better and more fundable ideas. Indeed, in addition to a strong network, students from top 20 U.S. universities attend classes taught by world renowned experts. They also benefit from an abundant flow of guest speakers who are luminary in their fields and they can tap into extracurricular activities designed to optimize their chances of success in the entrepreneurial world. Such activities include fellowship programs, startup accelerators, workshops and seminars.

Alternatively, the funding differential might come down to a self-reinforcing market size decision making process. If we take the view that VCs focus heavily on past performance to make their investment decisions, it stands to reason that countries outside of the top 4 will keep losing ground because they do not provide enough data points to investors.

However, the market size theory raises the important question of ecosystem building and the factors necessary to form suitable destinations for investments in the first place. Why is Nigeria seemingly more attractive to VCs than Ethiopia for instance? Considering both countries have a large population and both have a volatile security context (Boko Haram in northern Nigeria and the war in Tigray for Ethiopia) what may explain the large differential in VC funding outcomes between the two? The popular view would note Nigeria's market size or gdp/capita and overlook what may have caused ecosystems formation in Nigeria and lack thereof in Ethiopia in the first place. Instead, the elite network theory I advance in this paper suggests that elite graduates from Nigeria and other countries in the top 4 might diffuse networks and knowledge widely, which then crystalizes investments. Indeed, 20% of African elite students in the database I computed are from Nigeria, whereas only 6% are from Ethiopia. Would countries like Ethiopia or the Democratic Republic of Congo be more attractive to VC investors with an additional hundred graduates every year from the top 20 U.S. universities? If we reasonably assume that those schools provide better training and better networks and that such graduates once back in their country get access to top government and business roles, then it is probable that we might see better funding outcomes.

Policymakers Have a Responsibility to Design Systems to Train, Export, and Import Talent

While outcomes in the VC landscape and elite university attendance are primarily driven by individuals, strategies to improve them can come from governments. They should focus on increasing the number of students applying to top U.S. schools. The end goal is to equip many nationals with a world-class education, allowing them to then share new knowledge and networks with their fellow citizens upon returning. The strong association between attendance in elite universities and investment flows to Africa supports the argument behind promoting these strategies and initiatives. The value of accruing social capital in the United States to stimulate local African business environments should not be underestimated. Language and historical migration patterns play an evident role in this state of affairs, but they should be viewed as structural background factors that reinforce the elite university theory indicated in this study. Indeed, proficiency in English facilitates attendance and reinforces the entrenched advantage of Nigeria, Kenya, South Africa, and Egypt.

While other countries such as France, the UK, or Germany may also provide opportunities for funding, their investment activities on the African continent have traditionally and largely been the purview of their respective development agencies: Deutsche Gesellschaft für Internationale Zusammenarbeit (Germany), Agence Française de Développement et Banque Publique d'Investissement (France) and Commonwealth Development Corporation and Department for International Development (United Kingdom). Naturally, this raises the question of national economic sovereignty, as the capital powering Africa's next unicorns may be domiciled in Silicon Valley or Delaware.

American Universities can Also Play a Role

At the U.S. level there needs to be more awareness about the current imbalance in African representation at U.S. academic institutions and actionable strategies to correct this imbalance in a way that is not heavy-handed. Similar to the diversity visa that opened the door to the United States to immigrants from marginally represented countries, universities could signal intent to recruit more qualified students from African countries outside of the identified top 4.

When analyzing the process by which most students decide to apply to a top U.S. university, exposure is one constant. Students who end up at MIT and other similar schools are often exposed to the idea of attending such institutions during their pre-higher education academic career. For some, this comes through a well-intentioned adviser such as a cousin or the older sister of a close friend. Again, attitude formation happens thanks to the structure of networks and the content within them. The likelihood of such exposure in an affluent, predominantly White suburb of Boston is exceptionally high. It may be less so in any given neighborhood of Kinshasa in the Democratic Republic of Congo. Nevertheless, if the leadership of universities such as MIT and Harvard decide to promote their brands more actively in places like Kinshasa, the resulting exposure may trigger more applications. An increase in Congolese students over time would be likely. Such a strategy does not seek to manipulate admissions. It simply increases the visibility of those institutions in areas away from the spotlight. The burden is then on individuals and governments to make the most of these signals. MIT's Regional Entrepreneurship Acceleration Program is an excellent example of such a university initiative because it "engages with communities around the world to strengthen innovation-driven entrepreneurial ecosystems and transform economies." The expansion and propagation of such initiatives is needed to increase the number of students from underrepresented countries. The

hope is that students from these countries decide to sharpen their intellect at the best institutions in the world to ultimately give back to their countries.

Another strategy to mitigate this situation is to devise strategies to create pipelines with U.S. universities, sending students on a meritocratic basis but with a contingency to return home once they complete their education. In addition, exchange programs should be developed so that African countries can benefit from reverse brain drain. Whenever possible, the creation of satellite campuses of top American universities and research institutes should be considered. Some countries such as Rwanda, which had a late start but invested relentlessly in those strategies, are reaping the benefits of such programs, as seen by a sharp increase in recent years in the number of their nationals attending top U.S. universities. Once they complete their education abroad, they tend to go back and build strong ties between their country and the academic institutions they have attended. For example, this summer, the Legatum Center at MIT is running a bootcamp in Kigali, Rwanda. Paula Ingabire, an MIT alumnus currently minister of ICT and Innovation of Rwanda, has spearheaded this initiative. Such incremental steps can lead to substantial returns over time. While individuals can drive change, results can be compounded with the active strategic support of a government. More underrepresented countries should take note. If policymakers are interested in securing more VC investments, they should formulate deliberate strategies to send more students to elite U.S. universities.

A market and digital social network driven approach

Ultimately, it is up to entrepreneurs, investors, and policymakers to navigate these complex social webs and choose what they want to optimize and think carefully about alignment with the public's interest. I take the view that individuals ought to begin shaking the status quo rather than wait for policy or outside intervention. To begin reducing the asymmetry discussed in this paper one alternative solution is to create a digital social network (see appendix 3). The platform would connect African innovators across the world to Africans at elite U.S. universities. While the platform will be exclusionary by design, several actors in particular stand to benefit from it as well as the public at large. The primary beneficiaries will be users from African countries with weak ties to elite U.S. universities. A digital platform that enables them to connect with students from top U.S. universities and innovators across the continent could unlock unimaginable opportunities and long-term dividends. The platform's envisioned set of features include job placements, events, investments, and communication technology to solve coordination issues they tend to face. For instance, in the digital realm, one is not subject to obtaining a visa to connect with potential board members or partners, which are critical drivers of efficiencies. Such a solution removes friction, particularly as it relates to the speed of making meaningful connections.

From a balance of power standpoint, the solution erodes the brokerage power VCs have by putting more of it in the hands of entrepreneurs. As argued earlier, VCs' main currency is their social capital and the ability to leverage it to get the best deals. The more African entrepreneurs can bypass VCs to make connections, the greater their ability to negotiate better investment terms. This might be a necessary condition to avoid turning the world of venture capital into an instrument of neo colonialism on the African continent.

Conclusion

Why is the venture capital (VC) flowing into Africa concentrated in a handful of countries? I argue that part of the answer lies with the existence of asymmetric network ties to elite American universities that create differential access to venture capital in Africa. As VC activity gains traction on the African continent and significantly shapes innovation in economies that are recipients of funding, particular attention must be paid to the structural drivers of capital concentration in a small handful of countries. This paper produces evidence demonstrating that all else equal, the higher its number of graduates from an elite U.S. university, the more VC investment a given African country will attract. It also sheds light on the first mover advantage that some countries have been able to build and the entrenched nature of their numerical advantage in the top 20 U.S. universities. The resulting information asymmetry creates a VC funding differential. Indeed, in the absence of clear market information, most fund managers—typically Caucasian males with little to no exposure to Africa—place outsized weight on trust in their decision-making processes. Thus, capital tends to flow to founders who happen to come from the trusted circle of elite U.S. universities. This paper shows that such founders are predominantly nationals of Nigeria, Kenya, South Africa, and Egypt.

My research also demonstrates that it is possible for smaller countries to attract relatively large sums of capital if the number of their nationals at elite schools increases. Ghana and Rwanda are prime examples. The latter in particular shows the positive effects on venture capital a country can expect by working on the structural determinants of elite university access. Indeed, Rwanda has turned away from French to embrace English and has thus been able to create the structural conditions necessary to improve its nationals' odds of admission at top universities. This is important to note in the context of the Francophone versus Anglophone cleavage. The

lesson here is that English should not be seen as an explanatory variable but rather as an enabling systemic condition.

- *Hypothesis: Elite U.S. university attendance by African students increases VC funding in their home countries.*

I found support for this hypothesis. For every additional graduate from an elite U.S. university an African country can expect to receive USD 1.7 million.

- *Hypothesis 2: The relative disproportionate representation of certain African countries at elite universities is determined by a first mover advantage.*

I found support for this by tracing the numerical advantage of the top 4 countries to earlier migration patterns by their co-nationals to the United States. They came in greater numbers than their francophone counterparts and proficiency in English helped them academically.

- *Hypothesis 3: Connection to elite American students increases opportunities for elite African students to share their venture ideas and increases investments.*

I found support for this. American VC fund managers have limited information about Africa and invest significantly on the basis of trust as proxied by elite university credentials.

My research contributes to the literature on social capital and networks by providing an early look into the structural foundations of Africa's twenty-first century network capitalism. Whereas scholars have traditionally focused their research on foreign aid, international development agencies, and the role of multinational enterprises, I have brought to the forefront a new scholarly view on the literature on core-periphery relationships by focusing on the novel asset class of VC.

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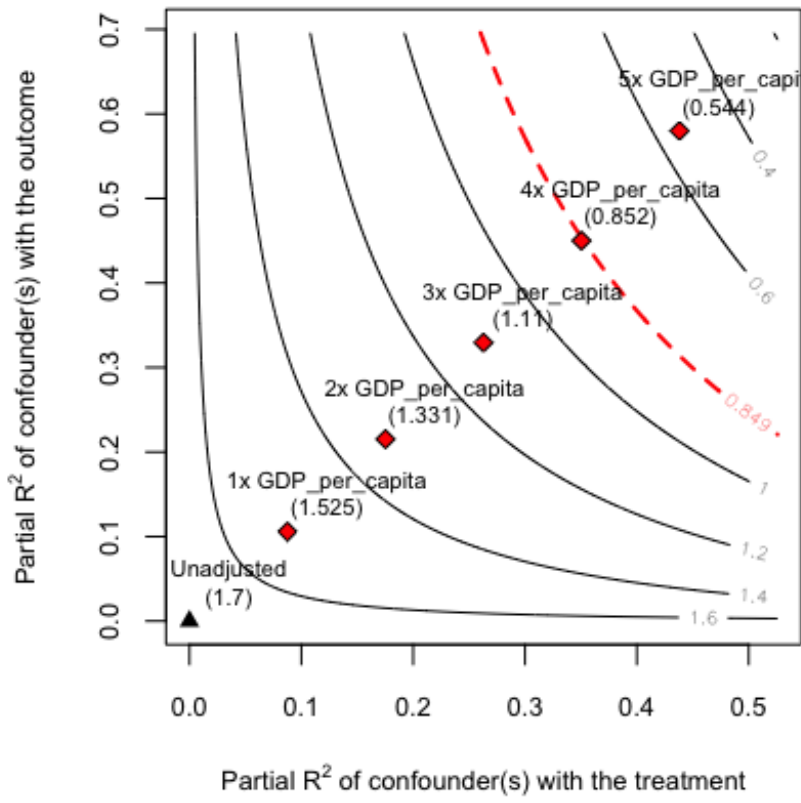
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Appendices

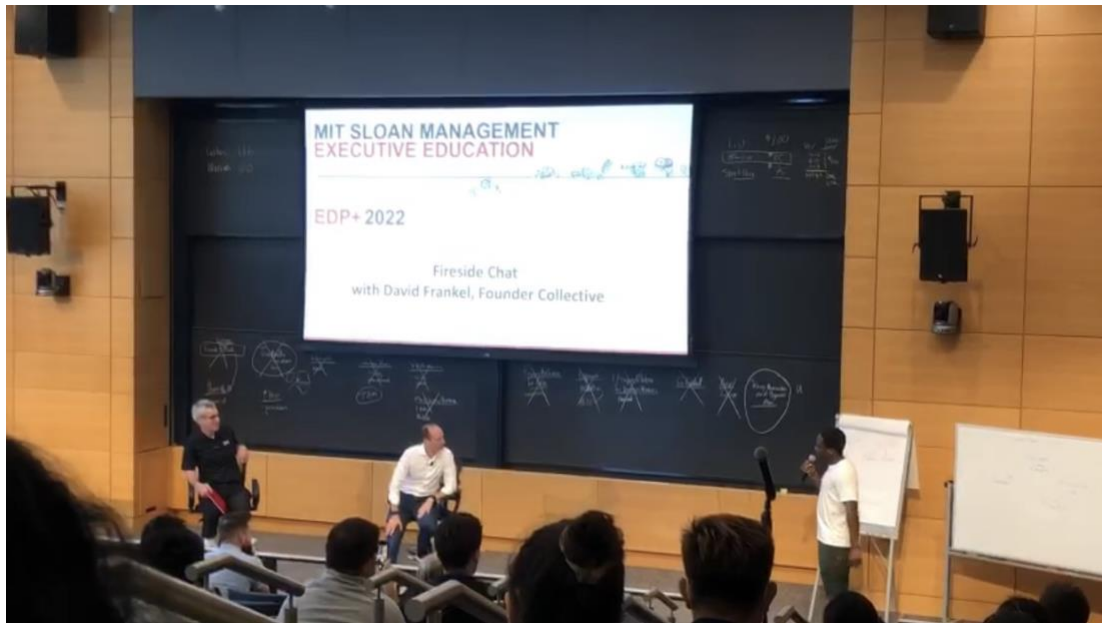
Appendix 1: Sensitivity Test



I have included a sensitivity contour plot to account for the risk of an omitted variable.

Substantively, there would have to be an omitted variable with four times the strength of the GDP per capita control variable to reduce the estimated effect of elite university attendance on VC funding by 50%.

Appendix 2 : Exchange with Dave Frankel from the ‘Founder Collective’ VC at the Massachusetts Institute of Technology in June 2022.



Between June and August 2022 I participated in MIT’s premier startup accelerator program, Delta v. As an educational exercise, I was randomly selected to share my startup idea to notorious South African born investor Dave Frankel. This anecdote supports the elite network theory advanced in this paper by demonstrating the level of access one has by being affiliated with a top 20 US school. As a national from a country with very little representation in elite schools (the Democratic Republic of Congo) I was able to share information about my venture to someone most equally capable founders will never be able to approach, simply because they are outside of networks of interest. This type of exclusive contact underpins most of the VC ecosystem. The relative higher frequency of such interactions for founders in the top 20, who are disproportionately from Nigeria, Kenya, South Africa and Egypt significantly explain the investment differential observed on the African continent.

Appendix 3: Cambridge Africa Society is the beta test of a future digital platform (Africa Society) that will seek to address the uneven playing field discussed in the research.

Image 1: Thought process behind the proposed platform

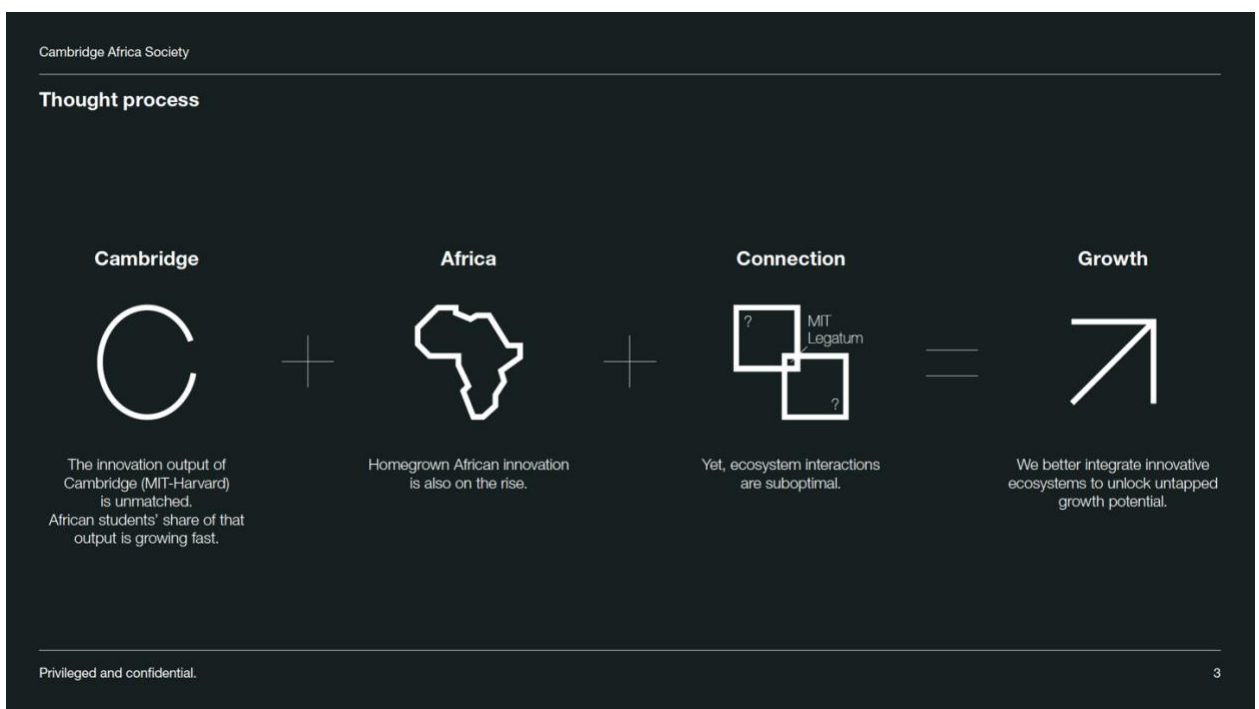


Image 2: Sample network ties of the proposed platform

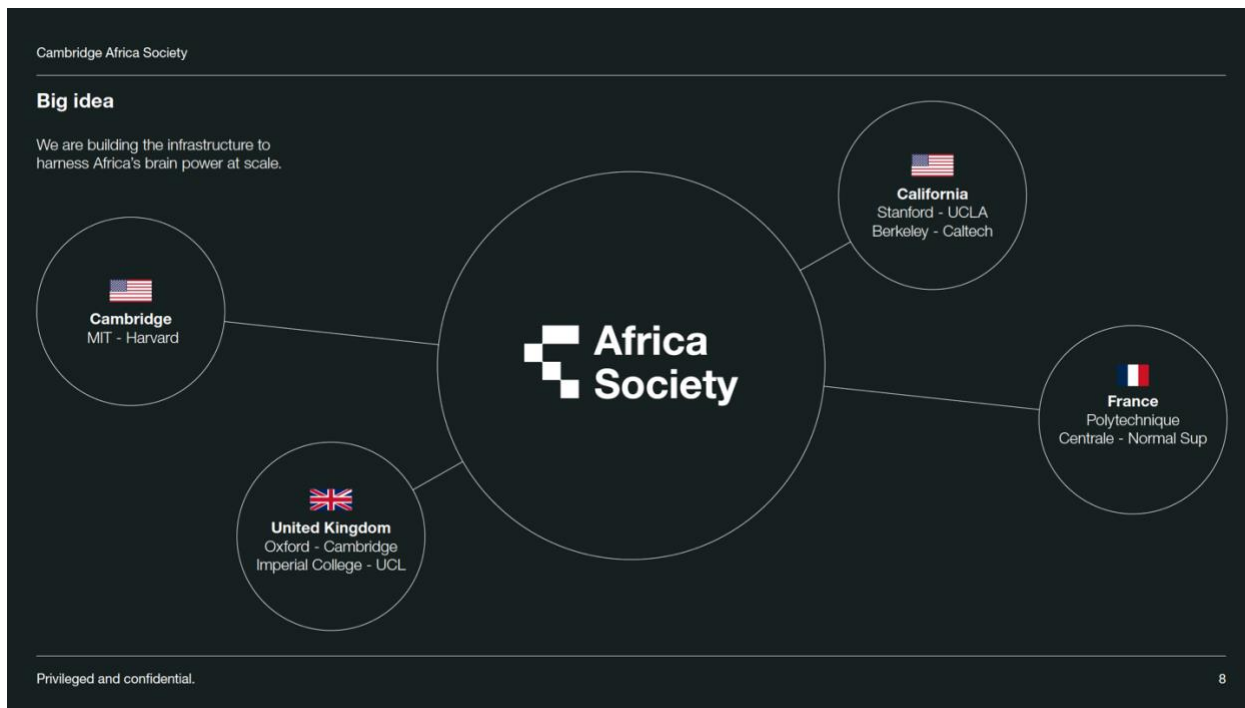


Image 3: User interface

