LONDON'S LOST INNOVATORS

Understanding Brexit's Effect on Venture Capital and Startup Investing in the UK

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ABSTRACT

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Title: London's Lost Innovators; *Understanding Brexit's Effect on Venture Capital and Startup Investing in the UK*

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Many still believe London is the center of the world, serving as a hub that connects dynamic markets together. But what happens when those ties are distressed? Since the Brexit vote in the summer of 2016, European markets have been faced with instability and look to an ambiguous future ahead. The purpose of this thesis is to understand how Brexit specifically affects the venture capital (VC) and startup landscape in the UK. By collecting the perspectives of respected academics and industry professionals through interviews and dialogue, the thesis uncovers and principles that influence VCs and startups during socio-economic events such as Brexit. By juxtaposing sentiment analysis with economic data, the findings of this research can also better inform and guide venture capitalists, entrepreneurs, and policymakers when making decisions in response to Brexit.

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TABLE OF CONTENTS

Introduction ... 1
Literature Reviews
Startups ... 2
Venture Capital ... 9
Brexit ... 13
Potential Impacts of Brexit on VCs and Startups ... 21
Findings
General and VC Investor Appetite for the UK and EU ... 23
Fundraising Challenges and Opportunities ... 28
Trade and Access to Internal Markets ... 31
Currency and Exchange Rate Impacts ... 33
M&A and Exit Implications ... 35
Immigration and Access to Talent ... 39
London's Outlook ... 41
Conclusions ... 43
References
Works Cited ... 46
Industry Professionals and Academics Consulted ... 47
Other Groups Consulted ... 49

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I. Introduction

"The British people voted for change. They voted to shape a brighter future for our country. They voted to leave the European Union and embrace the world. And they did so with their eyes open: accepting that the road ahead will be uncertain at times, but believing that it leads towards a brighter future for their children — and their grandchildren too... I want Britain to be what we have the potential, talent and ambition to be. A great, global trading nation that is respected around the world and strong, confident and united at home."

~ Theresa May
January 17th, 2017

More than a year has passed since Prime Minister of the United Kingdom (UK) Theresa May delivered her heavily-anticipated speech to her Tory faithful, attempting to clarify what Brexit would mean moving forward. It had been many months since the Brexit vote passed and David Cameron had resigned from office, and May was expected to have answers soon. The threat of "cliff-edge" – reaching the end of a two-year Article 50 divorce talk with no future economic or political relationship defined – loomed closer and closer to the March 30th, 2019 withdrawal court date. While May and her cabinet members feel the weight of Europe on their shoulders, they are not the only ones nervously glancing at their wrist. *The entire world is*.

Before the referendum, many believed – and many still do – that London was the center of the world. It has been for centuries a city forged by globalization and brought to life by its diverse collection of cultures, languages, and people. Moreover, it serves as a hub connecting dynamic markets across the seas. But what happens when those ties are distressed? The streets of London and the markets they tap into have been faced with instability and now look to an ambiguous future ahead.

One of the more interesting crevices of this market is that of the Venture Capital (VC) and technology startup space. There is a clear, paramount importance of venture capital companies to young startups in the world. The city of London holds the highest concentration of VC investing in Europe and is clearly at the epicenter of young European companies. How does the idea that Brexit throws a wrench of uncertainty into the British and European markets affect venture capital and startup investing? Do the majority political economists, industry professionals, and academics understand the threat of Brexit? Does Brexit offer any additional threats that traditional economic uncertainty does not account for?

This thesis presents a series of insights and analyses addressing these questions. Much of the content in this paper is sourced in recent literature and market data, and then juxtaposed with – even sometimes challenged by – the perspectives of respected academics and industry professionals through interviews and dialogue. Yet even then, a discussion as such is inherently challenging – who could ever pinpoint an outlook of an entire industry, or quantify the impacts felt in an entire city or region of the world? Every week, the Brexit narrative changes are we are introduced to new economic information, policy ideas, and bold predictions.

However, it is my hope that the underlying themes and truths brought forth by this thesis are meaningful to stakeholders and observers alike, now and moving forward, in the following ways: By collecting the perspectives of respected academics and industry professionals through interviews and dialogue, the thesis uncovers and principles that influence VCs and startups during socio-economic events such as Brexit. By juxtaposing sentiment analysis with economic data, the findings of this research can also better inform and guide venture capitalists, entrepreneurs, and policymakers when making decisions in response to Brexit.

Before jumping straight into the dialogues or asking whether London has lost its "cosmopolitan-cool," it is important unpack the building blocks of the thesis subtitle (*Understanding Brexit's Effect on Venture Capital and Startup Investing in the UK*) into three general literature reviews – on startups, venture capital, and Brexit's current narrative.

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II. Literature Review: Startups

In late 2013, Forbes' Natalie Robehmed published an article titled, "*What Is A Startup?"* – an attempt to find a precise definition of what a startup really is in today's fast-paced business climate[1]. As you might have guessed, she was unsuccessful. How could you expect someone to define something so fluid and confounded with culture? In this section, we'll review the *startup* construction and culture by elaborating on what a startup is, understanding the immediate relationship between startups and venture capital, and discussing the global startup ecosystem and its outlook moving forward.

Historically, startup literature – and the broader business community – has not necessarily come up with a consistent idea or definition of what a startup is. No two individuals agree on its meaning or composition. Take for example the following sample of definitions given by distinguished academics, c-suite executives, and journalists[2]:

> *"[A startup is] an organization formed to search for a repeatable and scalable business model" – Steve Blank (Stanford professor, author, and entrepreneur)*

> *"A startup is a company working to solve a problem where the solution is not obvious and success is not guaranteed" – Neil Blumenthal (Warby Parker Co-CEO)*

> *"A startup is a company designed to grow fast… The only essential thing is growth. Everything else we associate with startups follows from growth." – Paul Graham (Y Combinator head, investor, and entrepreneur)*

> *"[A]startup is a state of mind. It's when people join your company and are still making the explicit decision to forgo stability in exchange for the promise of tremendous growth and the excitement of making immediate impact." – Adora Chung (Homejoy CEO)*

While some of these quotes refer to a startup in terms of its function or goal, others argue that a startup is determined by its growth profile. A few take it even farther to suggest that startups are defined by intangible feelings or cultural environments. As Robehmed might have concluded from her probe, perhaps there is no precise definition of a startup. However, for the sake of this thesis, we can look to Eric Reis' *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses* to give us a working definition:

> *"A startup is a human institution designed to create a new product or service under conditions of extreme uncertainty…the fact that a startup's product or service is a new innovation is also an essential part of the definition" (Reis, 27-28)*

Admittedly, Reis notes that his definition is extremely broad and potentially over-encompassing. Does a company like Spotify – a company founded in 2006, injected with $21.5 million of Series A

[1] Robehmed, N. (2013). What Is A Startup? *Forbes*.
[2] Quotes taken from Shontell, A. (2014). This Is The Definitive Definition Of A Startup. *Business Insider.*

funding in 2008, and tagged with a speculated $19 billion valuation in 2018[3] – earn the distinction of being a startup? For the sake of this thesis again, we can use the **50-100-500 Rule** to set parameters on a startup. The rule, proposed by *TechCrunch* journalist Alex Wilhelm, suggests that a startup is no longer a startup if it meets or exceeds any of the following criteria: $50 million revenue run rate (forward 12 months), 100 or more employees, or a $500+ million valuation (on paper, or otherwise)[4]. Under this framework, companies like Spotify, Uber, and Snapchat graduate from *startup* to *unicorn* distinction; that is, referring to a post-financial-crisis tech company that was incubated in a quantitative easing and low-interest rate environment, quickly accelerating to billion-dollar valuations.

Speaking of which, how do startups get to these dreamy valuations in the first place? Where do they even get their initial capital from? Paul Graham of Y Combinator offers the following analogy:

> *"[Funding] works like gears. A typical startup goes through several rounds of funding, and at each round you want to take just enough money to reach the next speed where you can shift into the next gear. Few startups get it quite right. Many are underfunded. A few are overfunded, which is like trying to start driving in third gear."*

Medium contributor Ryan Law breaks down the different gears in his article, "From Pre-Seed to Series C: Startup Funding Rounds Explained."[5] Startup funding rounds typically begin with a **Pre-Seed Round**, which is regarded as the first round of capital that a founder can raise, typically from friends, family, angels, and startup accelerators. Average funding amount falls around <$1mm for a company with a $1-3mm valuation needing to accomplish immediate action items. A **Seed Round** follows, which occurs when the startup is progressing beyond its founding team to accomplish its next set of goals. In this phase, capital is raised from angels, early-stage VC funds, and startup accelerators. By the time a startup has established growing revenue and a proof of market or product fit, it may enter a **Series A Round** of fundraising, which averages to ~$10.5mm of additional capital from VCs and "super" angels, fetching valuations of $10-15mm. A **Series B Round** is usually warranted by new company growth plans, raising an average funding amount of ~$25mm and obtaining a valuation of $30-60mm. At this point, capital is being sourced almost exclusively by VCs and late-stage VCs. Finally, a **Series C Round** will tap into capital from late-stage VCs, private equity firms, hedge funds, and even banks. A startup that has made it this far is likely in the midst of full-scale expansion (Law, 2017). Theoretically, a startup can keep progressing to the next letter of the alphabet, but it rarely ever gets to that point.

Venture capital seems to be one of the main players that can cut a big check to startups; however, does that make it the most important funding source? To many people's surprise,

> *"**Venture capital financing is the exception, not the norm, among start-ups**. **Historically, only a tiny percentage (fewer than 1%) of U.S. companies have raised capital from VCs**...Non-VC sources of financing are growing rapidly and giving entrepreneurs many more choices than in the past...**Angel investors** – affluent individuals who invest smaller amounts of capital at an earlier stage than VCs do – fund more than 16 times as many companies as VCs do, and their share is growing...Another new source of start-up investment is **crowdfunding**, whereby entrepreneurs raise small amounts of capital from large numbers of people in exchange for nonequity rewards such as products from the newly funded company" (Mulcahy, 2013).*[6]

If this is true, then why does our discussion concern itself with the relationship between startups and VCs? Why not instead look to Brexit's impact on crowdfunding shifts or angel dispersion? As

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[3] Walters, N. (2018). What Is Spotify's Valuation Right Now? *The Motley Fool.*
[4] Wilhelm, A. (2014). What The Hell Is A Startup Anyway? *TechCrunch.*
[5] Law, R. (2017). From Pre-Seed to Series C: Startup Funding Rounds Explained. *Medium.*
[6] Mulcahy, D. (2013). 6 Myths About Venture Capitalists. Harvard Business Review, 91(5), 80-83.

Fortune's Erin Griffith explains, anecdotally 90% of startups fail, but venture-backed startups often do a little better:

> *"Cambridge Associates, a global investment firm based in Boston, tracked the performance of venture investments in 27,259 startups* ***between 1990 and 2010****. Its research reveals that* ***the real percentage of venture-backed startups that fail****—as defined by companies that provide a 1X return or less to investors—****has not risen above 60% since 2001. Even amid the dotcom bust of 2000, the failure rate topped out at 79%****" (Griffith, 2017).*[7]

As Indian Institute of Management's A. Thillai Rajan identifies in his 2010 paper[8], "Venture capital and efficiency of portfolio companies," academic literature historically has found that VC-backing enhances the profile of a startup in a variety of ways:

> *"[Megginson and Weiss (1991)] indicates that VC backed IPOs are associated with higher underwriter prestige, higher institutional holdings, and lower levels of under pricing than non VC backed IPOs… Jain and Kini (1995) find that VC backed firms show superior post IPO operating performance than non VC backed companies. Brav and Gompers (1997) find that VC backed firms have higher long term returns. Chemmanur, Krishnan, and Nandy (2009) indicate that VC backed firms have higher sales as compared to non VC backed firms before VC funding, and after funding show a greater growth in sales… Hellmann and Puri (2000) show that VC funded companies are more forthcoming in introducing new products to the market. They pursue more aggressive market strategies than non VC backed firms, and also aim at more radical innovations… Kortum and Lerner (2000) also point out that VC funded firms are more innovative and are associated with more valuable patents. While very few companies receive funding, a large fraction of the startups that make it to the public company stage are funded with venture capital. By taking into account only true startup companies that go public, Kaplan and Lerner (2010) find that from 1999 to 2009, 60% of the IPOs had VC backing. They also find that only in two out of the 11 years did the figure go down to less than 50%. Since the proportion of companies that receive funding is very low, the authors go on to infer that VC funding and going public are highly related. They interpret that VC funding significantly increases the success of a startup going public" (Rajan, 2010).*

Whatever the funding source may be, all startups nonetheless aspire to grow fast enough to warrant the next round of fundraising or justify the next big leap in valuation. At the heart of these lofty goals lays your protagonist, the entrepreneur behind an idea with humble beginnings. But again, conventional wisdom says that 90% of these protagonists will not succeed, for a variety of reasons. Maybe their product or service won't be right for the market, or maybe the target market isn't an ideal one to begin with. Perhaps they might ignore a few details or pieces of information that could lead to a more effective marketing strategy. What if their growth isn't rapid or, even worse, what if it's not sustainable? What if they can't appropriately pivot or recover from setbacks? Most entrepreneurs are cognizant that the deck is stacked against them, which is why they need to pick the right table to play at – the right **ecosystem**, which is what this thesis is concerned with.

Startup Genome, a collaborative group of analysts, policy experts, entrepreneurs, and startup enthusiasts, produced *The Global Startup Ecosystem Report (GSER)* 2017 which provides data analytics and insights on startup ecosystems around the world. In collaboration with their partners[9], the report

[7] Griffith, E. (2017). Conventional Wisdom Says 90% of Startups Fail. Data Says Otherwise. *Fortune.*
[8] Thillai Rajan, A. (2010). Venture capital and efficiency of portfolio companies. *IIMB Management Review*, 22(4), 135-136.
[9] The Global Entrepreneurship Network (GEN), Crunchbase, Orb Intelligence, and Dealroom.

(which is by far one of the most comprehensive pieces of startup literature available) identifies capital flow patterns and connections that drive ecosystems, impacting the success of early-stage startups.

Figure 2a: Share of Global Exit Revenue Based on Ecosystem (2-Year Moving Average)

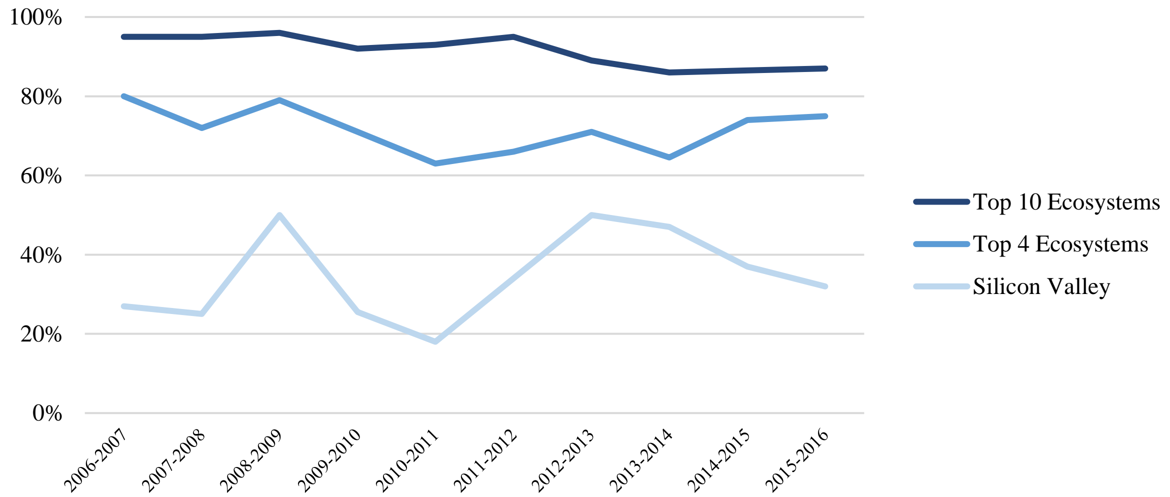
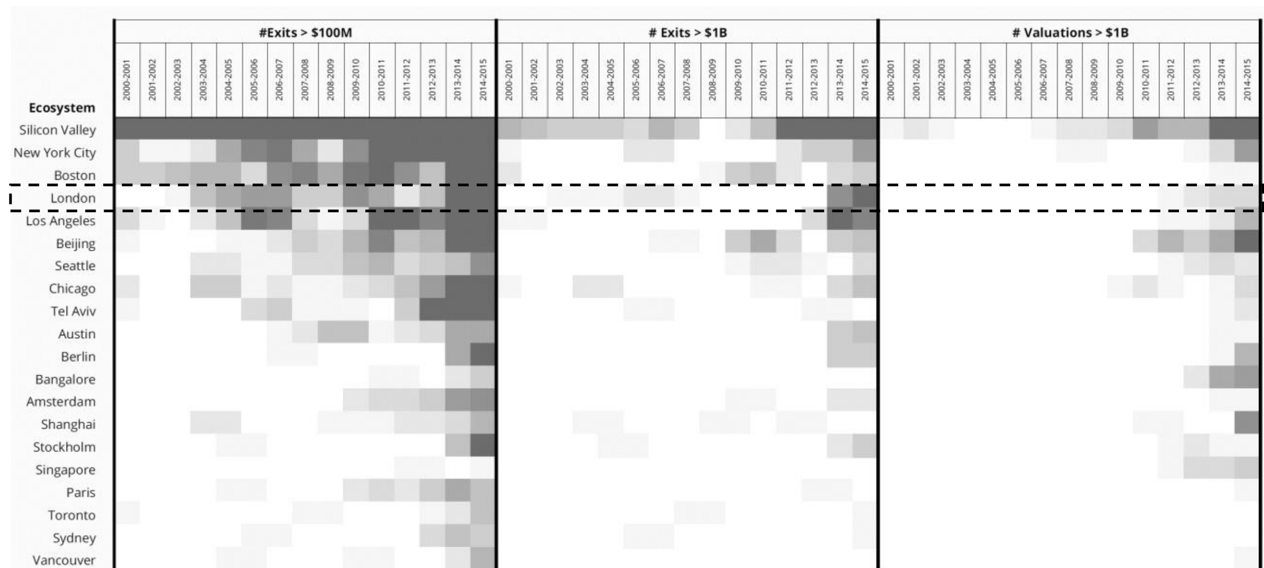


Figure 2b: Timing, Sizes, and Rhythm of Top 20 Ecosystem Exits[10]



For example, when looking at exit value (*Figure 2a*), Startup Genome's *GSER 2017* explains:

*"…despite some ups and downs**, the concentration of Exit Value has remained fairly steady among the top 10 ecosystems for at least 10 years.** While their share fell slightly after 2011, likely reflecting the aftershocks of the global financial crisis, concentration has remained stable since" (GSER, page 12).*

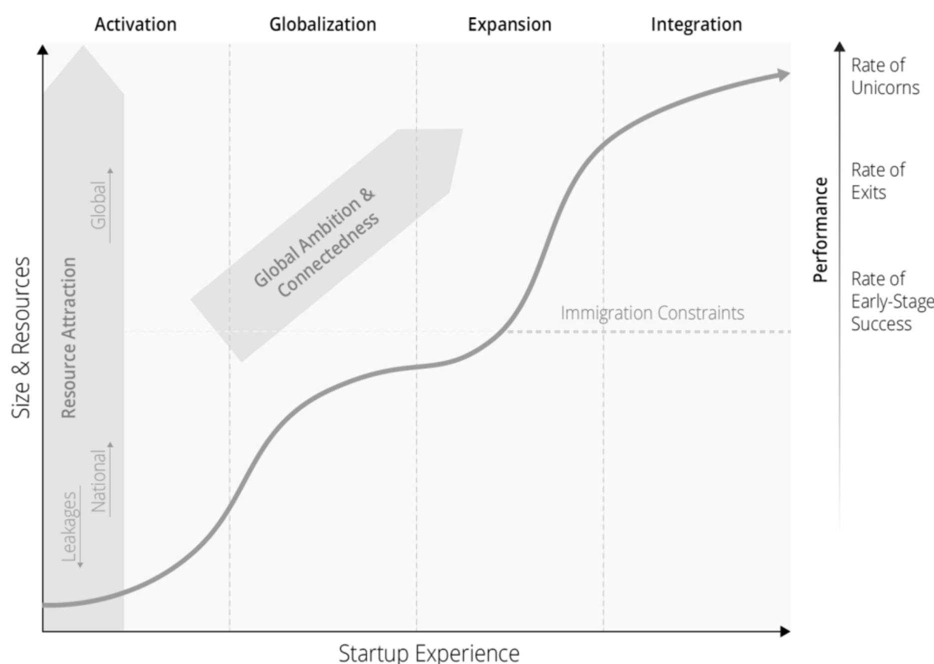
[10] Data and heat map found in *GSER 2017* (page 19).

Furthermore, as *Figure 2b* on the previous page shows, trigger activity – defined in the report as two large exists happening within the same year or within two consecutive years – in the top 20 ecosystems has increased dramatically over time, demonstrating that impressive exits in a given ecosystem precipitates into a "sharp increase in Resource Attraction." In other words, *lagging* indicators such as exit value and trigger activity pave the way for *leading* or *current* indicators such as funding availability to grow as well.

> *"**Larger ecosystems** see their startups perform better on average: they **have a higher rate of success from Series A to Series C [funding], and their valuation grows faster**... [Data] suggests this is essentially due to the greater ability of larger ecosystems to create globally-leading startups... some of which evolve into large exits and unicorns" (GSER 2017, page 26).*

It is incredibly virtuous to startups if other startups in the same ecosystem do well. But how do these ecosystems become so valuable in the first place? Startup Genome designed what they call the **Ecosystem Lifestyle Model** (*Figure 2c*), which illustrates the trajectory that ecosystems take as they develop over time and become more capable of incubating startups. The model is divided into four phases – Activation, Globalization, Expansion, and Integration – that each carry distinct attributes and objectives that trigger ecosystem evolution. The *Activation* phase is characterized as a low-output (<1,000 startups), limited-resource environment that is seeking to tap into local entrepreneurs, talent, and investors. The *Globalization* phase is when startup ecosystems start to show flares of large exits (>$100mm in value), a growing output (approaching ~2,000 startups), and an increased relevance or attractiveness outside its original, local pool of entrepreneurs, talent, and investors. Once an ecosystem reaches the *Expansion* phase, it has supported even larger exits (given a stronger output of >2,000 startups), some of which have achieved "unicorn" status as discussed earlier. At this point, the resources available to young startups is abundant the environment is conducive to billion-dollar valuations. Finally, the *Integration* phase signals that an ecosystem is balanced and highly-competitive with some of the other top ecosystems of the world.

Figure 2c: Ecosystem Lifecycle Model[11]



[11] Found in *GSER 2017* (page 16).

While not all ecosystems were created equal – nor do they all have the same capacity for evolution – Startup Genome came up with an **Ecosystem Assessment Framework** to rank them all side by side[12]. The methodology buckets their metrics into five categories, *Performance*, *Funding*, *Market Research*, *Talent*, and *Startup Experience*, to assign a rank to each ecosystem.

> *"Made of more than 100 metrics, the broader methodology better captures the factors that drive the success of startups. It also better measures the performance of smaller, yet high-performance ecosystems like Stockholm…[and] provides the ability to better compare Silicon Valley to other ecosystems and discern where it is getting challenged" (GSER 2017, page 25).*

Here's how the *GSER 2017* ranked the current top 20 startup ecosystems in the world:

Figure 2: Startup Genome's Ecosystem Summary Table[13]

2017 Global Startup Ecosystem Ranking

Rank	Ecosystem		Performance	Funding	Market Research	Talent	Startup Experience	Growth Index
1	Silicon Valley		1	1	1	2	1	4.2
2	New York City		3	2	3	7	4	4.5
3	**London**	+3	**4**	**4**	**2**	**10**	**5**	**4.8**
4	Beijing	NEW	2	5	19	8	2	4.4
5	Boston	-1	6	6	12	4	3	4
6	Tel Aviv	-1	9	8	4	11	7	4.5
7	Berlin	+2	7	9	6	5	10	4.6
8	Shanghai	NEW	8	3	10	9	13	5.5
9	Los Angeles	-6	5	7	15	14	11	4.2
10	Seattle	-2	12	13	14	3	6	4.5
11	Paris		14	14	9	16	8	4.2
12	Singapore	-2	16	16	11	1	20	4.6
13	Austin		15	11	18	6	9	4.3
14	Stockholm	NEW	17	20	8	18	12	5.3
15	Vancouver	+3	19	19	7	15	15	4.3
16	Toronto	+1	18	12	5	20	18	4.7
17	Sydney	-1	20	10	13	12	17	6.3
18	Chicago	-11	13	15	20	13	14	3.9
19	Amsterdam		10	17	17	19	16	4.8
20	Bangalore	-5	11	18	16	17	19	4.7

With the addition of three new ecosystems since the previous report in 2015, North America claimed nine ecosystems, followed by Europe with six and Asia with five. The report also offered the following insight regarding today's global landscape – discussing the movement of startup valuations and exit value over the years:

> *"While still dominant**, the United States has been seeing a concerning decline of both its share of Startup Valuations and Exit Value**…While many governments in Europe and Asia have identified the growth of their innovation ecosystem as a priority and*

[12] Data taken from 55 startup ecosystems across 28 countries.

[13] Ranking methodology is comprised using a weighted average of the following factor scores: 30% Performance, 25% Funding, 20% Market Research, 15% Startup Experience, and 10% Talent. Specifications can be found in the *GSER 2017* under the "Methodology" (page 143).

> *invested aggressively to directly support its growth, the United States has more heavily relied on its private sector.* ***The result is a marked increase in shares of Exit Value and Startup Valuations for Asian and European ecosystems****" (GSER 2017, page 31).*

Pertaining to ecosystem of focus, London made one of the most significant jumps in the rankings; however, it falls significantly behind in Talent[14] and ranked 10th. London also lags noticeably behind European peers such as Amsterdam and Berlin when it comes to its Global Resource Attraction rate, which "has [an] acute impact on capital because it can flow in large amounts from all over the world without investors having to move" (*GSER 2017*, page 18). Despite the many uncertainties (political, economic, social, etc.) that come with Brexit, Startup Genome ultimately rewards London for its robust financial infrastructure:

> *"**The city's muscular financial arm provides ample support for investors and startups alike. In terms of total venture capital investments, and most other Funding metrics, London is leading in the European comparison. This directly translates into growth.** Tech Nation 2016 found that London's digital tech industries are growing 32% faster than the wider economy, reaching over $200 billion. At the same time, the high concentration of influential organizations provide ample exit opportunities. On a ten-year timeline, only two ecosystems have exited more tech startups at above $50 million than London: New York and Silicon Valley. **Due to proximity to the some of the world's biggest banks, sophisticated VC funds, and tech companies like Apple, Google, and Facebook, London startups have access to potential investors and acquirers alike**" (GSER 2017, page 45).*

But how well can the British ecosystem ultimately hold up against an event like Brexit? In general, what are the anticipated effects that startups should see during times of macroeconomic stress? One of the more surface-level effects of a depression is the immediate fall of exit values, followed by a sometimes-rapid recovery depending on the individual startup[15]. However, the underlying influences are harder to detect. "The notion that the economic conditions faced by a startup business at inception can have long-lasting consequences for their performance has received little attention [by] literature," as Sara Moreira of Sara Moreira of Northwestern University notes. In her research, "Firm Dynamics, Persistent Effects of Entry Conditions, and Business Cycles," she does however comment on the nature of recessionary vs expansionary startups regarding business growth, investment, and technical skill:

> *"**Recessionary startups are, on average, more productive than expansionary startups**. In addition, I find that **the composition of businesses born during economic downturns is tilted toward sectors that require a greater amount of technical skill and entrepreneurial quality**. Overall, these results suggest that the average quality of new entrepreneurs is countercyclical, which means that other economic forces must be responsible for the observed differences in initial investment and growth over time... **during economic booms, agency frictions between financial intermediaries and entrepreneurs are less pronounced**[16], which allows entrepreneurs to borrow and invest more."*

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[14] Measured by three sub-components: access to talent, cost of talent, and quality of talent.

[15] "Because [U.S. ecosystems focused on creating complex platform services and horizontal plays (e.g. Google, Facebook, and Amazon Web Services)], while U.S. Exit Values fell during the 2008-09 financial crisis and recession, they later recovered rapidly" (GSER 2017, page 31)

[16] Supported by *Bernanke and Gertler (1989)*

With so much gray space left to be filled in the academic literature, Brexit will play a pivotal role in adding more color to the macroeconomic impacts – some of which have never been discussed much, such as startup and labor migration – that adversely affect startups.

In this section we drew lines in our understanding of what constitutes a startup and placed heavy emphasis on the startup ecosystem. In the following section, we'll introduce more thoroughly a second protagonist in this narrative: the venture capitalist.

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III. Literature Review: Venture Capital

This section seeks to establish a base in our understanding of the venture capital space by answering the following questions: First, what is venture capital and how does it work? Second, what are some of the levers and catalysts that play into venture capital funding and startup investing? Last, what does the global and European venture capital environment look like in the status quo, and what developing trends are moving the market?

We begin with the general explanation: venture capital is the financing that investors provide to small businesses or early-stage startup companies carrying high, long-term growth potential. Within recent decades, the number of VC funds and invested capital has exploded, driving significant technological innovations and economic growth in many parts of the world. Some of todays' most well-known, successful companies – Facebook, Apple, Microsoft, and Apple, to name a few – came to fruition with the support of venture capitalists, creating a network of VC-backed companies that supported 11% of the private sector employment and generated 21% of the U.S. GDP in 2008[17]. The industry's niche developed as a result of capital market structures and rules that make it difficult for technology startups and entrepreneurs to raise significant amounts of capital from your average bank. Historically, a young company could not access the public market without revenues of nearly $15mm annually, an asset base of $10mm, and a reasonable profit history. To put this in perspective, less than 2% of the more than five million companies in the U.S. have more than $10mm in revenues (Zider, 2014). Furthermore, banks were not allowed by law to charge extremely high interest rates on loans issued out to these companies to compensate for their high-risk profiles, and as a result, the general financing window was shut off to the entrepreneur. While venture capitalists were able to fill the void and support many young companies, VC returns were relatively low by the end of the 1980s due to intense competition among startups, a sudden rush for companies to go public, and a market of inexperienced VC fund managers learning the ropes. However, by the late 1990s venture capital saw a period of historical growth paralleled with that of the broader private equity industry. Global VC investment volumes and returns rose, carried by firms in Menlo Park and Silicon Valley that benefited from the rise of nascent technologies and tried their luck on the IPO market. Amazon, eBay, Intuit, Netscape, Sun Microsystem, Yahoo! – the list goes on. While the history of venture capital has an abundance of young and thrilling storylines on the surface, literature on the underlying forces that drive VC investing and divesting is more subtly discussed and understood.

What is striking about venture capital literature is the lack of research from a macroeconomic perspective put forth over the past few decades – discussions on the levers that move VC investment back and forth is relatively uncommon. Most of the notable studies dating back to the 1990's only examine the theoretical or practical relationships between startups, venture capital firms, and investors[18]. In 2014, a group of researchers wrote a piece for the Springer *Small Business Economics* Journal in attempts to fill the gap in macroeconomic literature and examine the volatility and catalysts of VC investment in the

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[17] Data is obtained from ''Venture Impact: The Economic Importance of Venture Capital-Backed Companies to the US Economy (2009, 5th edition)" provided in Yixi Ning, Wei Wang, and Bo Yu's "The driving forces of venture capital investments (2014)" of the Springer *Small Business Economics* Journal

[18] According to Yixi Ning, Wei Wang, and Bo Yu's "The driving forces of venture capital investments (2014)" of the Springer *Small Business Economics* Journal

United States from 1995 to 2011. In their report, *The Driving Forces of Venture Capital Investment*, Yixi Ning from the University of Houston and his colleagues concluded with the following:

> *"We find evidence supporting the Macroeconomic Situation Hypothesis that* ***an expanding economy with a higher GDP growth rate, a greater industry production index, and a lower [unemployment rate] has a positive impact on the VC industry*** *by increasing the number of deals and the average investments for a single deal in general. The Public Market Hypothesis that the superior performance in the stock and bond markets can positively affect VC industry and drive up VC investments is also validated.* ***The NASDAQ Composite****, the most widely followed index for technology and growth stocks,* ***is the best predictor of VC activities****, better than the small-cap stock market index, the RUSSELL 2000 index."*

As it relates to macroeconomic phenomena, two of which occurred within the 17-year research window (the 2000 tech-bubble burst and the 2008 Financial Crisis), Ning writes:

> *"The analysis of total amount VC investments, total number of deals, Stage Funds Ratios, Stage Deals Ratios, as well as Financing Sequence Ratios which are used to gauge how venture firms make adjustments to their investment strategy in response to the 2000 high-tech bubble and the 2008 financial crisis, present consistent findings supporting the Crisis Hypothesis. We find that venture firms became more cautious and risk averse due to a large number of failed dot-com startups and the severe crash occurred in 2000. The fundamental change in the macroeconomic and industry conditions have forced venture firms to make adjustments to their investment strategies accordingly by investing less dollars and securing fewer deals, shifting a significant percentage of their deals and dollars to the later-stages companies, and injecting a lower proportion of cash in the first several sequences of financing as opposed to their overall committed amount of venture funds…The impact of the 2008 financial crisis on the VC industry is less dramatic than that of the 2000 high-tech crash…due to the success of the social media industry."*

While Ning's research has broad applications to the study of venture capital, it does not however test its hypotheses in other markets outside of the U.S. and therefore its findings should be "generalized to other countries/regions cautiously." Nevertheless, *it's a start.*

The last piece of this section seeks to illustrate a broad picture of the global and European venture capital environment along with recent trends in the status quo to be cognizant of. Once seemingly exclusive to American tech hubs such as San Francisco or Boston, venture capital has sprung into the scene for many cities around the world. A 2016 report from the Martin Prosperity Institute, *Rise of the Global Startup City*, collected data for the year 2012[19] from Thomson Reuters to map the venture capital landscape, providing granular information on investment values and corresponding recipient jurisdictions. Its main findings were as follows:

> *"****Venture capital investment across the world totaled $42 billion in 2012, spread across more than 150 cities and metro regions globally. The top 10 metros account for more than half (52%)****, the top 20 metros account for almost two-thirds, and the top 50 more than 90% of total global venture investment. The United States accounts for nearly 70% (68.6%) of total global venture capital, followed by Asia (14.4%) and* ***Europe (13.5%)****. The San Francisco Bay Area, which spans Silicon Valley and San Francisco proper, remains the world's leading center for venture capital investment attracting nearly $11*

[19] The most recent year that necessary Thomson Reuters data points are available, according to Richard Florida and Karen King of the Martin Prosperity Institute

billion dollars, more than a quarter of all global venture investment. Boston is second with $3.1 billion, followed by New York with $2.1 billion and Los Angeles with $1.5 billion. ***Outside of the United States, London ranks seventh with $842 million****, Beijing ninth with $758 million, Toronto 12th with $628 million, and Shanghai 14th with $510 million. Just two broad regions—the San Francisco Bay Area and the Boston-New York-Washington Corridor—account for more than 40% of global venture investment. Global venture investment is highly uneven and spiky — it is concentrated in a small number of large cities and metros around the world."*

Figure 2a: Global Venture Capital Investment[20]

Venture Capital Investment by City

Venture Capital Rank	Metro	Venture Capital Investment (mm)	Share of Global Venture Capital Investment
1	San Francisco	$6,471	15.40%
2	San Jose	$4,175	9.90%
3	Boston	$3,144	7.50%
4	New York	$2,106	5.00%
5	Los Angeles	$1,450	3.40%
6	San Diego	$1,410	3.30%
7	London	$842	2.00%
8	Washington	$835	2.00%
9	Beijing	$758	1.80%
10	Seattle	$727	1.70%
11	Chicago	$688	1.60%
12	Toronto	$628	1.50%
13	Austin	$626	1.50%
14	Shanghai	$510	1.20%
15	Mumbai	$497	1.20%
16	Paris	$449	1.10%
17	Bangalore	$419	1.00%
18	Philadelphia	$413	1.00%
19	Phoenix	$325	0.80%
20	Moscow	$318	0.80%
	Top 20 Total	**$26,790**	**63.60%**
	Total (Global)	**$42,121**	**100.00%**

Cities Ranked by Economy

Global City Rank	Metro	Venture Capital Rank
1	New York	4
2	London	7
3	Tokyo	54
4	Hong Kong	107
5	Paris	16
6	Singapore	79
7	Los Angeles	5
8	Seoul	37
9	Vienna	128
10 (tie)	Stockholm	40
10 (tie)	Toronto	12
12	Chicago	11
13	Zurich	97
14 (tie)	Sydney	85
14 (tie)	Helsinki	52
16 (tie)	Dublin	50
16 (tie)	Osaka-Kobe	N/A
18 (tie)	Boston	3
18 (tie)	Oslo	N/A
18 (tie)	Beijing	9
18 (tie)	Shanghai	14
22	Geneva	71

The European markets accounted for 13.5% of global venture capital investment in 2012, with much of the inflow coming from London at $842mm followed by Paris at $449mm (amounting to nearly 15% and 8% of European venture capital investment respectively) and smaller concentrations around Moscow, Copenhagen-Malmö, and Amsterdam-Rotterdam metros (Figure 2b). Investment volumes are concentrated in Western Europe, with only three metros that make the cut falling outside of that region.

[20] Florida, R., & King, K. M. (2016). Rise of the Global Startup City: The Geography of Venture Capital Investment in Cities and Metros across the Globe.

Figure 2b: European Venture Capital Investment[21]

Venture Capital Investment by City				
Venture Capital Rank	Metro	Venture Capital Investment (mm)	Share of European Venture Capital	Share of Global Venture Capital Investment
1	London	$842	14.76%	2.00%
2	Paris	$449	7.87%	1.07%
3	Moscow	$318	5.58%	0.76%
4	Copenhagen-Malmö	$254	4.46%	0.60%
5	Amsterdam-Rotterdam	$205	3.60%	0.49%
6	Berlin	$178	3.13%	0.42%
7	Stockholm	$148	2.60%	0.35%
8	Liverpool	$148	2.60%	0.35%
9	Stuttgart	$125	2.19%	0.30%
10	Munich	$120	2.11%	0.29%
11	Dublin	$103	1.80%	0.24%
12	Helsinki	$99	1.74%	0.24%
13	Saint Petersburg	$86	1.51%	0.20%
14	Bristol	$94	1.46%	0.20%
15	Frankfurt am Main	$78	1.36%	0.18%
16	Brussels	$67	1.18%	0.16%
17	Geneva	$66	1.16%	0.16%
18	Karlsruhe	$46	0.80%	0.11%
19	Istanbul	$44	0.77%	0.10%
20	Edinburgh	$42	0.74%	0.10%
	Top 20 Total	**$3,503**	**61.40%**	**8.32%**
	Total (Europe)	**$5,705**		**13.54%**

Since 2012, these figures have undoubtedly ballooned to staggering volumes. In KPMG's *Venture Pulse Report: Q2 2017* (reflecting the VC landscape pre-referendum), the firm details global venture capital figures, analyzes future industry outlook, and offers insight on developing trends in the market. The report's summary of global and European venture capital movement is as follows:

> *"Worldwide VC deal count slid again by just over 7% between Q1 and Q2'17. However, thanks to a surge of mega-rounds, the quarter-over-quarter increase in total venture capital invested was a staggering 55.3%... Analyzing year-over-year figures, even the massive $40 billion invested in Q2'17 was down by 14.2% relative to the $46.7 billion invested in Q2 2016, while deal volume fell by 24% across the same timeframe…Europe continued to see a pullback in the number of VC deals during Q2'17, with seed and early-stage deals plummeting. Despite a fifth straight quarterly decline in deals volume, however, total VC investment in Europe remained strong as a result of a number of mega-deals. Three $100 million+ deals together accounted for $1 billion in European VC funding, including $502 million to London-based Improbable, $397 million to Berlin-based Auto1 Group, and $100 million to London-based GammaDelta Therapeutics."*

KPMG's *Venture Pulse Report: Q4 2017* (reflecting the back half of the year since the referendum) offered the following observations:

> *"The final quarter of 2017 set a new quarterly high for total VC invested worldwide, at nearly $46 billion. This sum comes close to Q3'15 and Q2'16 tallies, which saw $46.5 billion and $47 billion+, respectively, yet also coincided with another slight decline in the total number of completed financings. Accordingly, the strength of venture funding is*

[21] Florida, R., & King, K. M. (2016). Rise of the Global Startup City: The Geography of Venture Capital Investment in Cities and Metros across the Globe.

still primarily exhibited by a concentration at the larger, later stage of financings, which further implies the continued influence of the vast inflows of capital committed to the venture asset class over the past few years… Q4'17 saw the highest quarterly tally for VC invested in Europe-headquartered companies, just barely outstripping Q3'15. Moreover, this occurred even as overall transaction volume slid for the third-straight quarter. A more stark microcosm of global venture trends, Europe is still both benefiting and suffering from a relatively more fragmented venture market. Certain metro areas are still hotspots of activity and seeing higher and higher sums invested while round counts steady, yet other areas are seeing the effects of round size and valuation inflation, with accompanying fewer financings"

KPMG's most recent outlook maintains that, "heading into 2018, the outlook for the global VC market is very positive" and "VC investment in Europe is expected to continue to thrive in 2018." Within both reports, there are several trends that are worth noting: first, Europe is seeing both the creation and freezing of venture capital resources available to young startups and tech companies. Second, venture capital investment is depicting a continued preference of London over other cities leading into the new year. Third, while capital may still be available, venture capital investment timelines are being squeezed under the current climate. These trends will be further discussed and tested on validity during the findings section of this thesis.

* * * * * * * * * *

IV. Literature Review: Brexit

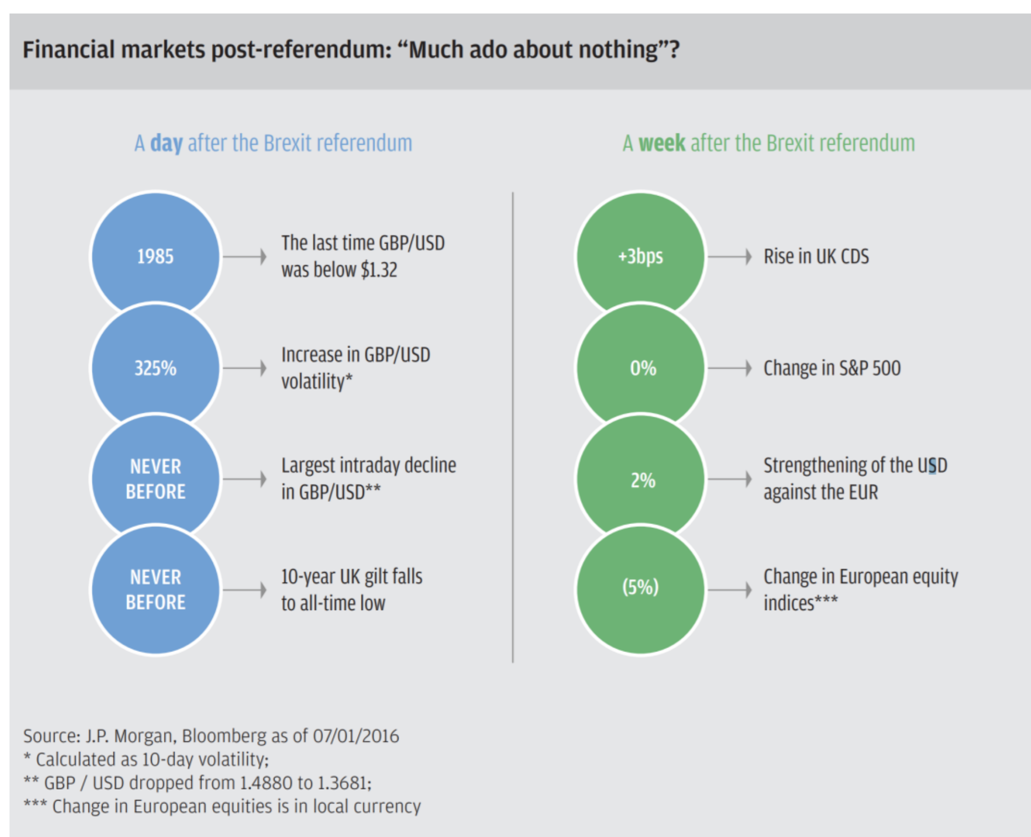
To Leave or Remain? UK voters were given a historical choice on Thursday June 23rd, 2016 to trigger Article 50 and turn the country to a new direction – destination unknown. No country has ever left the European Union (EU) before; the act of leaving itself had no legal standing or pathway until the Treaty of Lisbon was signed in 2007. I remember watching it all unfold distantly on the 28th floor of J.P. Morgan's office building in New York, where I interned for the Corporate Finance Advisory (CFA) arm of the investment bank. Colleagues on the floor glanced at the TV screens every now and then to catch updates from the screens surrounding our desks, and as night drew nearer, the voting results were becoming clearer and clearer, and the world was about to react.

The next morning, I was staffed by one of my associates to help compile research and put together a Brexit whitepaper, to be issued out by J.P. Morgan to private clients as well as to the general public by the end of the week. The challenge was, however, that Brexit told a different narrative every single day. Much of the analysis and language we put together in the first few days after the referendum were simply outdated by days four and five. The world was still figuring out then – and even now – what the impacts would be to the world of finance and the participants within it. This section attempts to familiarize the reader with the political and economic literature of Brexit and its forthcoming developments.

The immediate shock felt by the global economy was swift. In our whitepaper titled "Corporate finance post-Brexit: Financial policies for a lower growth, more uncertain environment[22]" (July 2017) the report illustrates a market that saw unprecedented highs and lows – spikes in volatility indicators, dips in treasury yields, fluctuations in GPB/USD and EUR/USD exchange rates, etc. – in a span of one week. Below, *Figure 4a* provides a recap of multiple market benchmark movements as well as their precedence:

[22] The Corporate Finance Advisory team's report can be found on J.P. Morgan's website: https://www.jpmorgan.com/country/US/EN/cib/investment-banking/corporate-finance-advisory/brexit

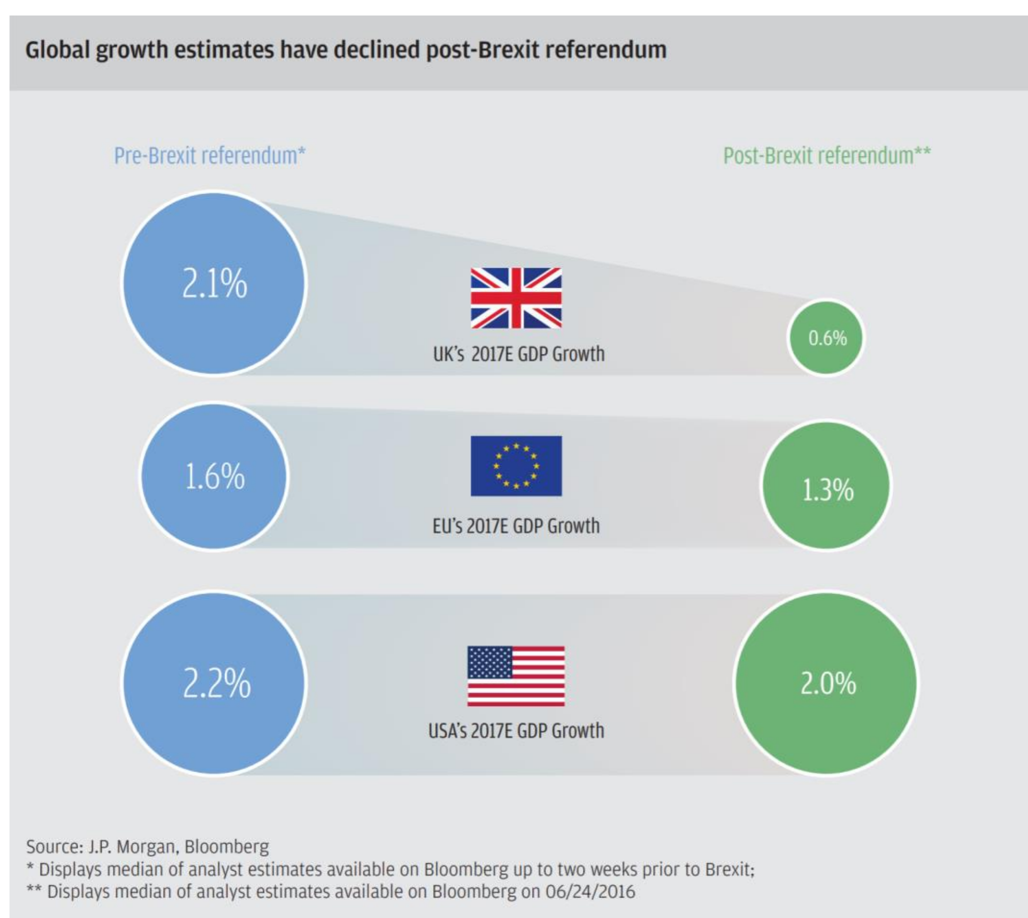
Figure 4a: Impacts of the Referendum After One Day vs. After One Week



As the figure depicts, some of these market effects quickly stabilized, such as the S&P 500 index surprisingly returning to its pre-referendum figures by the end of the week. However, other impacts of the vote inherently could not recover quite as fast, and in some cases the referendum triggered a change in economic outlook that many felt were *irreversible*. *Figure 4b* introduces one of such outlook changes: **projected GDP growth**. Using a median of analyst estimates available on Bloomberg up to two weeks prior to the referendum as well as new estimates recorded one day after the referendum, the graphic we created shows a dramatically different – and negative – outlook on UK's 2017E GPD growth, reducing from 2.1% to 0.6% in roughly two weeks[23]. Projected GDP growth for the EU fell as well albeit not as drastically, and the U.S. additionally saw slight downward adjustments.

[23] As of early 2018, the UK's 2017 calendar year GDP growth was estimated to be ~1.8%.

Figure 4b: Triggering a Change in GDP Growth Estimates, Pre and Post-Brexit

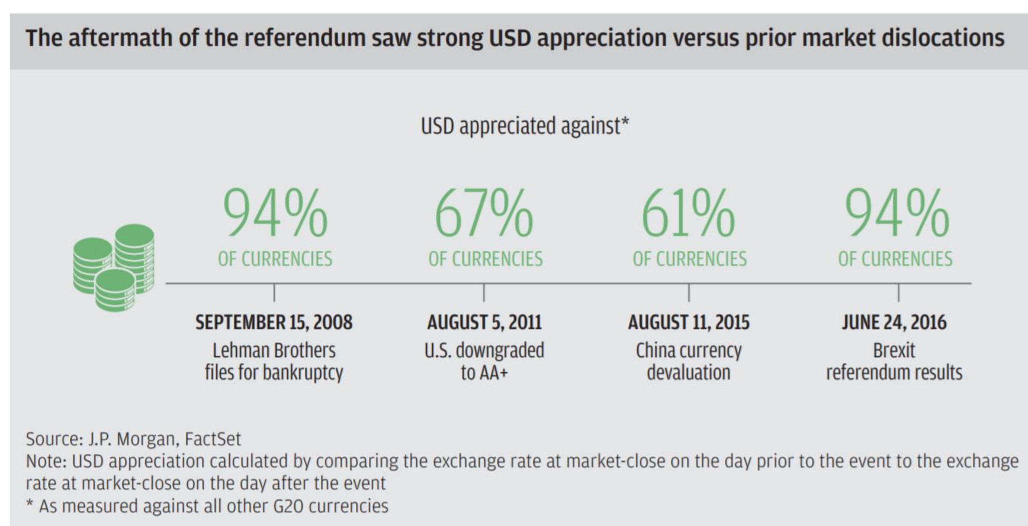


Why is this important? Earlier in our venture capital literature review, you may recall that Dr. Yixi Ning identified an "expanding economy with a higher GDP growth rate" as a tested and proven indicator of growth for VC communities in a given country. While the UK recently posted a 2017A (actual) GDP annual growth of ~1.8% (roughly three times the 0.6% expected growth from mid-2016 estimates, and ~40bps higher than later estimates of 1.4% recorded by economists[24]), the country's GDP profile moving forward remains questionable.

Another impact that had venture capitalists and entrepreneurs worried was the **exchange rate damages** affecting the British and European markets. Traditionally, a sudden drop in home currency value can benefit a corporation with significant foreign currency exposure – i.e. a British toy company selling 70% of its merchandise in USD overseas would recognize a foreign exchange gain after Brexit since their USD profits are worth more in GBP terms. However, unlike large multinational companies, smaller European venture capital funds and startups – especially those that are anchored to London – typically operate using the British Pound-Sterling or the Euro. As a result, unless they had money market hedges (unlikely for young companies slowly getting off the ground) in place to mitigate currency fluctuations, they took a hit. Figure 4c gives us an idea of how global currencies reacted:

[24] Javed, A. (2018). UK economy defies gloom with 1.8pc growth in 2017. *The Telegraph.*

Figure 4c: Post-Referendum USD Currency Impacts



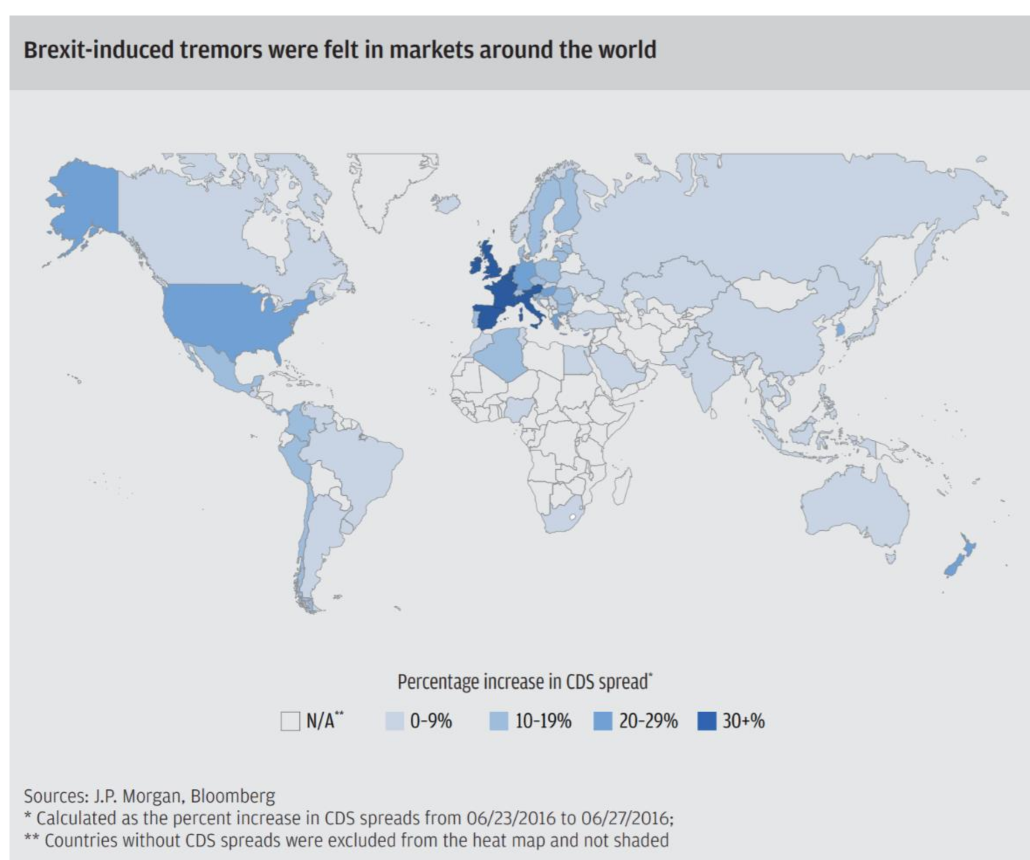
> *"The USD typically appreciates both significantly and rapidly during periods of market turmoil. Why is this time different from prior examples? On the day the referendum results were announced, the flight to quality was as strong as the day after the Lehman Brothers bankruptcy: in contrast to recent periods of heightened uncertainty, the USD appreciated against all but one G20 currency…Many firms immediately disclosed plans to shift strategies following the steep drop in sterling and political upheaval in the UK. This serves as a stark reminder that firms who swiftly re-evaluate their global exposures, along with their risk management practices, are the ones best positioned for global competition."*

Aside from financial statement impact that stemmed from currency devaluations, a broader concern for venture capital funds and startups revolved around **hemorrhaged valuations**. How attractive could a young startup be in the current climate? Would startups reach the right exit multiple needed for venture capital investors to meet their required return? Despite the GBP and EUR recovering modestly since the referendum, currency pressures still place the European market in a tough situation.

Additionally, we saw **market-based risk profiles** of countries *all over the world* spike upwards in the days following the referendum – with the obvious concentration of risk movement found in the UK and EU – by glancing at sovereign credit default swap (SCDS) spreads. SCDS are one of the most common forms of credit derivatives and are used as an indicator to assess the how expensive protection from default (or other credit events[25] such debt restructuring) would be for various sovereignties. Widening spreads were a signal to many, including venture capital firms and startups, to be "mindful of not only UK/EU exposure, but also global exposure" (J.P. Morgan, 2016).

[25] "Credit events include failure to pay interest or principal on, and restructuring of, one or more obligations issued by the sovereign," as per the Global Financial Stability Report (International Monetary Fund, 2013)

Figure 4d: CDS Spreads Widening Globally After the Referendum



Despite the depressed British and European economy, however, J.P. Morgan's report remarked that the new environment may provide an opportunity for **increased mergers & acquisition (M&A) activity**, which would especially hold true for foreign companies seeking to purchase now-cheaper British and European companies. The report writes:

> *"Brexit could both lower GDP growth and increase firms' cost of capital, twin levers that will likely impact existing M&A projects. In fact, both factors increase the attractiveness to sellers in already-announced combinations at pre-existing terms… Brexit uncertainty may…also have a silver lining for the M&A market. To the extent the current decline in equity market valuations is in excess of the true reduction in fundamental values,* ***well-capitalized firms will find attractive buying opportunities****. Further, an evolving global landscape should encourage firms to re-assess their global exposure. Geo-political uncertainty, even in developed nations, can provide compelling opportunities for firms to diversify into certain markets, thereby providing an additional impetus to M&A."*

The reactions and predictions of groups such as J.P. Morgan identified *immediate* areas of concern that predominately focus on economic outlook as well as both debt and equity capital markets – but what about the *longer-term* policy outlook, social implications, or other important areas such as trade, travel, and technology? The referendum broadly repositioned the trajectories of both the EU and the UK in a variety of these categories. ***POLITICO's*** policy reporters wrote an excellent piece in October of 2017 identifying 11 key policy areas that give the public eye a glance at what the Brexit cliff edge looks like a

few years from now. While several areas – healthcare, air travel, security & intelligence, environment & climate, energy, fisheries, technology, and citizen's rights – are not to be overlooked, other areas – trade, customs & ports, financial services, and demographics – fall more accurately within the scope of this thesis and are likely to create ripples in the VC and startup industries.

One of the more perplexing impacts that Brexit created is an uncertainty in **trade (imports and exports)** moving forward. In a pre-referendum climate, the UK imported £547.2B in goods and exported £517.4 billion in goods during 2015, with distributions shown below:

Figure 4e: UK Trade Import Data (2015 and 2016)

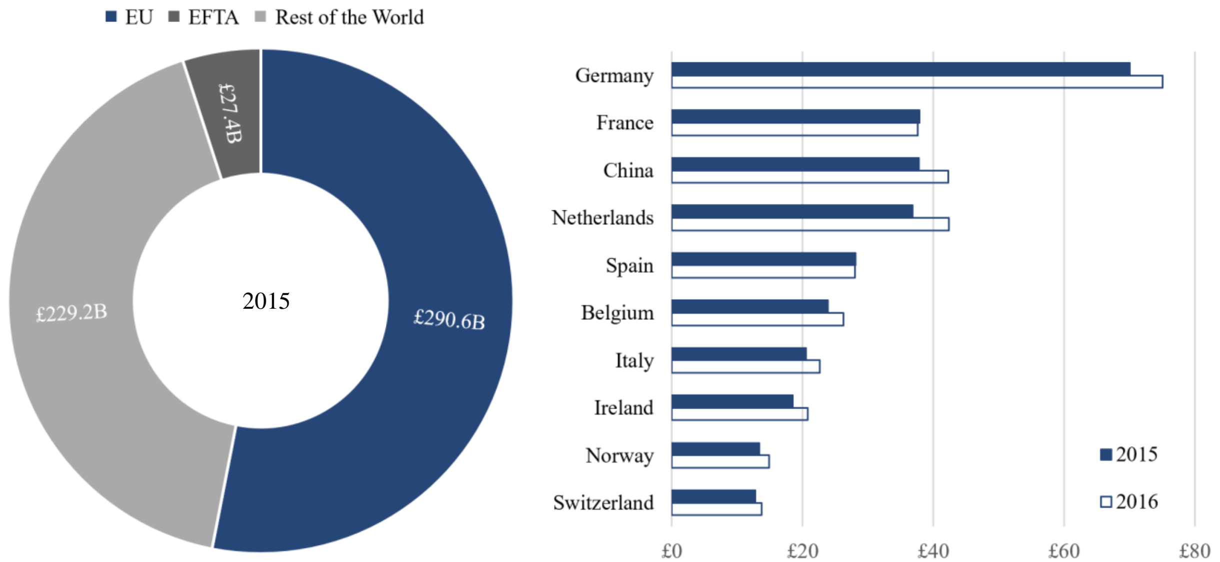
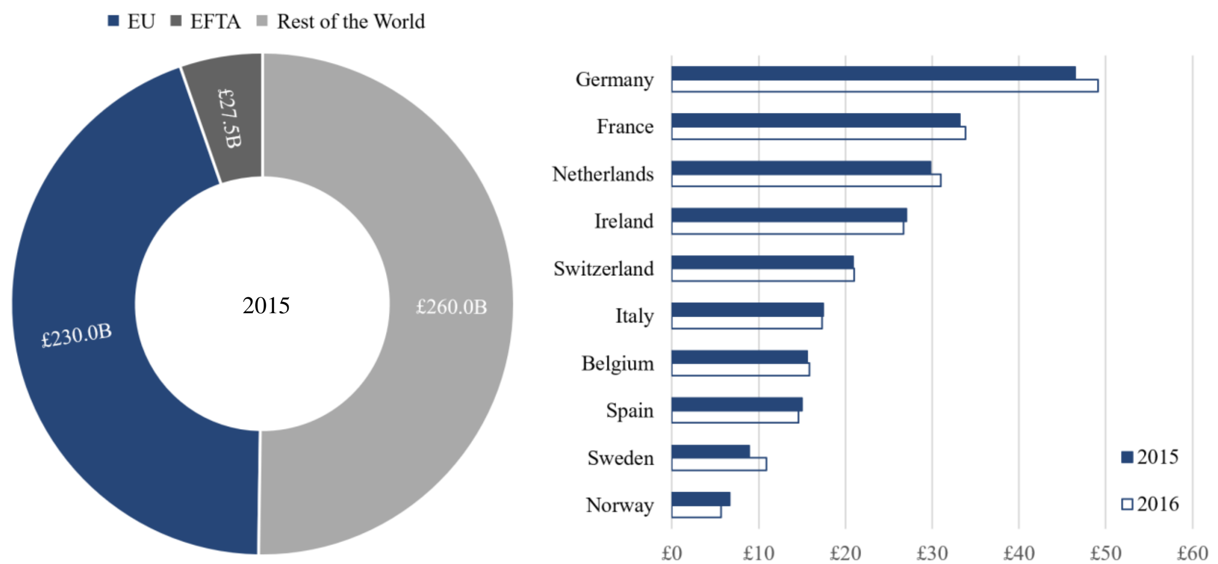


Figure 4f: UK Trade Export Data (2015 and 2016)



Will the UK find an avenue to stay connected to the internal markets? Or will the EU and its participating members take a hardline stance at the negotiation table, unwilling to concede market access without inflicting a heavy cost on the UK? *POLITICO* writes,

> *"**Free trade between the EU and UK ends at midnight on March 29, 2019 — and both sides fall back on World Trade Organization (WTO) tariffs**. The combination of such tariff barriers with delays created by new customs checks risks having a severe impact on food supplies and other goods that the UK imports from the EU. Within hours to a few days, **the additional costs of tariffs and delays will likely create problems for companies, supply chains and retailers that depend on goods traded with the EU27 — with impacts on almost every sector of the economy.** Prices in shops inevitably rise as a result… The only way out from the WTO dilemma is to negotiate a trade deal. Once trade talks are underway, WTO rules allow countries to bilaterally lower tariffs on goods."*

Depending on how negotiations unfold – assuming both sides can, by slim chance, reach an agreement before the UK's castaway date – venture capital and startups will inevitably bear financial cost and opportunity cost of operating in a market isolated from the rest of Europe. To further complicate trade implications, **customs and ports** would necessarily have to undergo changes as well. The article suggests a very possible reality:

> *"**Customs declarations at UK ports balloon to 255 million per year from the current 55 million**, according to government figures. As a result, long queues likely start to build up at entry points around the country. Fresh produce begins to rot as it waits for clearance and roads around major ports like Dover are gridlocked. "Just in time" supply chains that require rapid transport of goods break down — including those for heavy industry, carmakers and producers of high-tech goods with assembly plants in the UK"*

In this scenario, the UK would need to heavily invest in infrastructure – wider roads, handling facilities, etc. – at its major trading hubs. Customs control systems would need an upgrade to support and handle new logistic demands. However, to be fair, a softer Brexit may not alter customs and ports as dramatically as the article presents.

In addition, as the financial capital of Europe, London would undoubtedly see new challenges and changes to the **financial services** sector in the wake of Brexit, affecting hundreds of businesses in the process. The article writes,

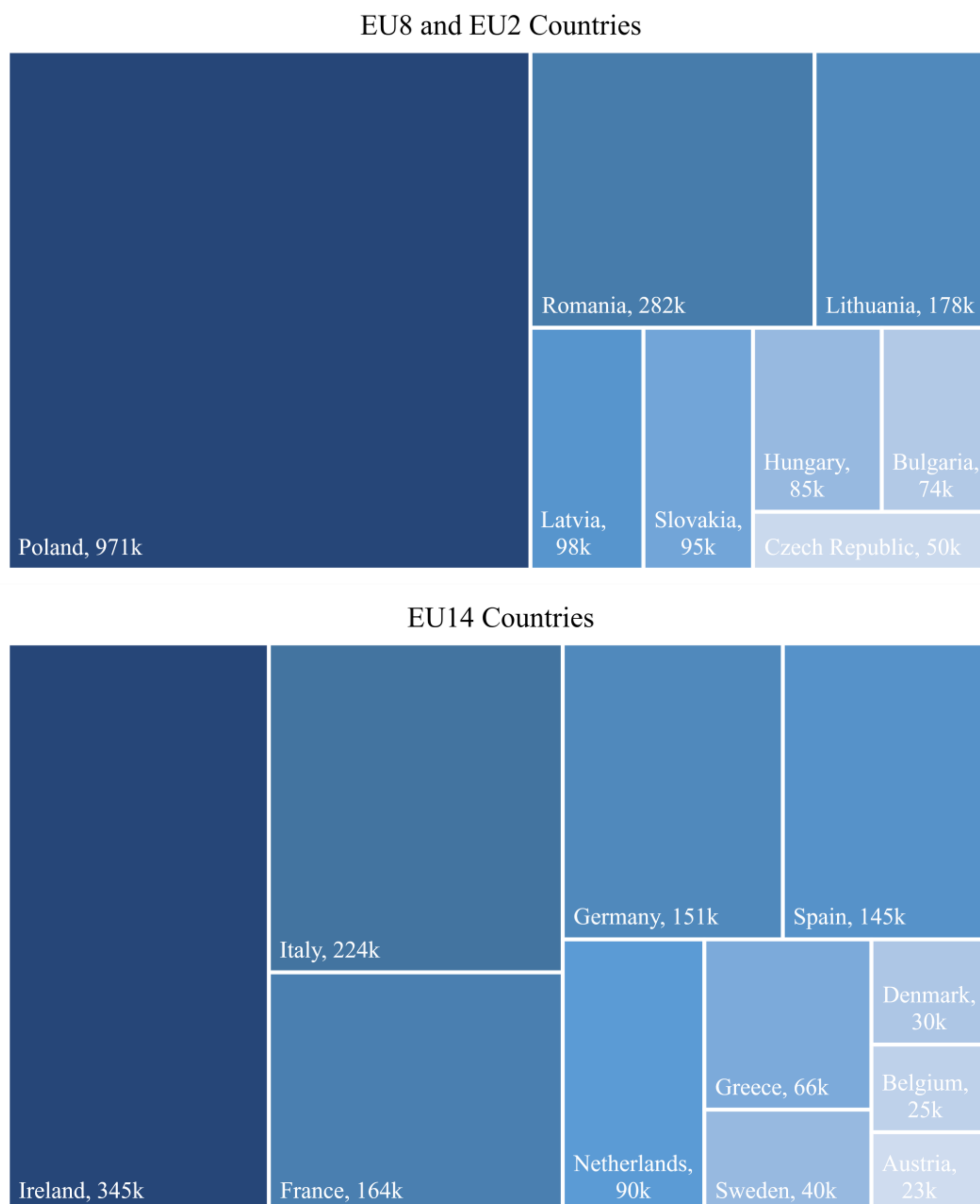
> *"**Contracts of all kinds** — from insurance to loans and derivatives **— are disrupted because UK firms are not able to continue servicing EU customers (or vice versa) under so-called passporting arrangements**. UK contracts may also be disrupted because they still reference EU laws or bodies… Financial lobby firms are calling for UK lawmakers to grandfather in old contracts as part of the EU (Withdrawal) Bill, meaning existing rules would continue to apply; while new contracts are subject to the new rules. EU member countries would need to adopt a similar approach under domestic rules."*

Passporting allows British-based financial institution (including venture capital) to sell their services to into the rest of the EU sans obtaining a license, opening a subsidiary, or needing additional regulatory approval. It's one of the reasons why venture capital funds have historically quartered in London. However, unless officials can negotiate a Swiss or Norwegian style deal[26] by early 2019, the UK

[26] The **Norwegian Model**, as explained by BBC, entails that Norway is a Member of European Economic Area (EEA), has full access to single market, is obliged to make a financial contribution and accept majority of EU laws, and free movement applies as it does in the EU. The **Swiss Model** entails that Switzerland is a member of the European Free Trade Association but not the

is likely headed down a negotiation path that could spiral into years of constructing, such as the EU's Free Trade Agreement with Canada – a seven-year dialogue that would frustrate British finance firms and their clients. Finally, we turn our attention to the **demographic challenges** that the UK may face in light of Brexit, given a citizen breakdown like the following:

Figure 4g: Britain's EU Citizen Breakdown (June 2016)[27]



EEA, has access to EU market governed by series of bilateral agreements, covers some but not all areas of trade, must make a financial contribution but smaller than Norway's, doesn't have a general duty to apply EU laws but does have to implement some EU regulations to enable trade, and free movement applies.

[27] **EU14** countries consist of pre-2004 European Union members (Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Luxembourg, Netherlands, Portugal, Republic of Ireland, Spain and Sweden). **EU8** countries are a group of eight of the 10 countries that joined the European Union during its 2004 enlargement (Czech Republic. Estonia. Hungary. Latvia. Lithuania. Poland. Slovakia. Slovenia). **EU2** countries (Bulgaria and Romania) were added to the European Union in 2007.

The figure above presents how many people live in the UK who are also nationals of a different EU country as of June 2016 (right around the time of referendum), according to the *Office for National Statistics*. The UK, specifically London, has had the privilege of attracting diverse talent from across Europe for as long as it has been a member of the EU – will that change? Is it already changing? What are the new challenges to both a business and an individual working in the UK, and are they better off returning to their home country or moving to another city within the EU? This perhaps may be the most important issue that impacts venture capital and startups, which are only as valuable as the talent and people that pulse through them.

Throughout the literature, it understood that Brexit is unprecedented and arguably unfortunate – but just how many standard deviations away from traditional economic uncertainty is it? In the next section of this thesis, we will attempt to present a few hypotheses of how venture capitalists and entrepreneurs may react moving forward.

* * * * * * * * * *

V. Potential Impacts of Brexit on VCs and Startups

As noted earlier, attempting to uncover the movements of Brexit is like throwing a dart at a moving target, given the shakiness of European politics and the ever-changing strategy responses from businesses and entrepreneurs. Placed on opposite ends of a spectrum, there are two scenarios described below that may unfold regarding how influential Brexit is on VCs and startups.

Scenario 1: The "Nothing to See Here" Argument

There are reasons to believe that VCs or startups will not be terribly affected by Brexit. While the European VC space is still maturing, the industry as a whole has arguably been tested and fortified in the past during the Tech Bubble Burst in 2000 and the 2008 Financial Crisis. Startups may share the same resolve and sentiment, and ultimately, Brexit's "macro stuff" may in fact not matter.

Scenario 2: The Slowdown and Flight of VC and Startups in the UK

The unprecedented referendum should not be overlooked, and if the UK leaves the Union, both VCs and startups will encounter challenges and pressures on multiple fronts – from fundraising to talent acquisition. Unlike older, established finance – such as financial services, general private equity, or hedge funds – the VC and startup communities are networks of dynamic and mutually exclusive ideas, timelines, and technologies. The pace of innovation is fast, and both venture capitalist and startups must be faster to succeed. If a Brexit impedes their ability to do so, funds and startups may elect to move out of the UK altogether.

Areas of Evaluation as Measurement

There are a few areas to consider that might explain why venture capitalists and startup founders *are* or *are not* worried, and therefore determine the validity of the post-Brexit scenarios mentioned above for both VCs and startups. These discussion areas are as follows:

- <u>General and VC Investor Appetite for the UK and EU</u>
  On a base level, what is the general sentiment towards investing in a company in the UK or the EU? How has that changed since the referendum, and what are the sentiments moving forward? Our literature review suggests that by looking at tracking indicators, there might be a case for a diminished appetite (i.e. considering a generally reduced GDP outlook especially in the UK) or a strengthening appetite (i.e. considering that since the referendum, the

NASDAQ, an index-benchmark for VC investment growth, has grown by nearly 47% by the end of 2017). Apart from what literature may suggest, what does the on-the-ground perspective in the region see as a catalyst for appetite growth or decline in a post-Brexit climate?

- *Fundraising Challenges and Opportunities*
  London has long been on of the most important sources of capital for young European companies, with the British government playing a key role in feeding capital through VC funds and into startups. Because the government faces new, unprecedented challenges ahead, will a VC or startup's ability to amass capital take a hit? While some sources may close, are there enough opportunities to fundraise effectively in these industries?

- *Trade and Access to Internal Markets*
  Undoubtedly one of the tallest tasks ahead for the British Parliament and participating EU bodies is the negotiation of trade terms moving forward. There are variety of trade models to take after – how will VCs and startups react and adjust to these negotiations? How concerned are these industries with a potentially limited access to internal markets and new financial constraints that may come of it?

- *Currency and Exchange Rate Impacts*
  A characteristic of macro-economic crises such as the 2000 Tech Bubble Burst or the 2008 Financial Crisis is the movement of currencies and exchange rates. These impacts have the capacity to help or hurt businesses, depending on what currencies their costs and revenues are exposed to, along with the hedging strategies they may or may not have in place. Since the referendum, the British Pound has faced currency pressures; how might that impact VC and startups as we approach the exit date?

- *M&A and Exit Implications*
  For venture capitalists and entrepreneurs, understanding the exit market is vital to making the right return considering the risk profile that young companies carry. Has the imminence of a Brexit triggered any trends regarding valuation multiples and transaction volumes? Has the buyer landscape shifted? Will the IPO market for British companies dry up?

- *Immigration and Access to Talent*
  A key social issue that sparked the referendum was the free movement of people – both skilled and unskilled – in and out of the UK. How does a Brexit, soft or hard, impact the labor market that feeds into VC and startup companies? From the Startup literature review, we know that access to talent has historically been an area that needs improvement within London's startup ecosystem, which ranks 10th in that category. The culture of VC is also characteristically more diverse than traditional financial services or general private equity – people in VC generally carry more varied backgrounds and experiences.

- *London's Outlook*
  Has London lost its touch in the way that it invites venture capitalists or entrepreneurs? While the city will undoubtedly anchor Europe's financial sector for years to come, has it begun to cede ground to other European cities socially or culturally? This section is the most intangible yet might be the most important regarding the future of British VC and startups.

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VI. Findings

Over the past few months, reaching as far back as October of 2017, I had the chance to speak with **16 industry professionals and academics** from diverse backgrounds around the world[28]. While the previous sections are supported by literature, research, and logical reasoning, this section includes interesting conversation pieces that provide on-the-ground perspectives that might otherwise not be captured in today's media or academic literature. *Figure 6a* serves as a visual summary to my findings.

Figure 6a: Heat-Map Overview of Findings

Area of Evaluation and Measurement	Startups	Venture Capital
General and VC Investor Appetite for the UK and EU		
Fundraising Challenges and Opportunities		
Trade and Access to Internal Markets		
Currency and Exchange Rate Impacts		
M&A and Exit Implications		
Immigration and Access to Talent		
London's Outlook		

Note: Severity of concern displayed from light green (little to no concern) to dark red (heavy concern)

General and VC Investor Appetite for the UK and EU

The first person I interviewed during my dialogue series was Miha Vindis, a European investor and PhD student at the University of Texas at Austin, with research areas including the role of the internet, technology, gaming, and history in policy decision making. After working with Shell for eight years in Poland and the Netherlands, Miha became an investor (with positions in EU, UK, and U.S. companies) and an entrepreneur. We immediately began to discuss the idea of general ambiguity in the European markets.

> *"Well, for one, my father and I pulled [out] from all of our investments in Europe. Instability is not bad for market; uncertainty and unpredictability [are]. We moved our capital into the U.S. – I wouldn't be surprised if future data shows increased flow of capital from the EU to the U.S., despite the political uncertainties here in the U.S."*

Despite a market rebound after the initial shock from the referendum, investor sentiment remained low in the EU and the U.K following the vote, and investors proceeded with immense caution. Many of our dialogue participants agreed that the mere *feeling* of investing in a post-Brexit climate was initially worrisome. Oxford graduate and entrepreneur Riham Satti notes,

> *"The original consensus for months was that no investor would be interested in investing in a UK company. For about 6 months, until the beginning of 2017, all the investors I knew said no to investments."*

[28] For a list of experts consulted, please turn to the *Industry Professionals & Academics Consulted* section of this thesis.

Even the academic community seemed to share some of the same inhibition towards the British market. Dr. Robert Lane from the University of Edinburgh adds,

> *"People like to invest in the UK because we speak English, we like to play golf, we are a [comforting investment] …but if I were to invest, I wouldn't invest in this country."*

However, as the conversations got deeper about market sentiment and appetite, the participants began to divert into two separate camps – a smaller group, including Dr. Lane, believed the UK was still a no-go, and a larger group believed the window of investment opportunity had re-opened from pre-referendum times. Within the latter group, three significant arguments (all of which could function independently) formed. Mark Evans, an Oxford graduate and UK entrepreneur with pivotal roles in three tech startups and sector experiences focused on high-tech (hardware and software), semiconductor, and healthcare applications, was one of the stronger voices of the bull group and outlined the first argument:

> *"We don't see any real softening in the market…partially because the strong global economy is mitigating any vast regional concerns for the UK."*

Mark and I began to discuss how one of the stark differences between Brexit and previous macroeconomic crises – the 2000 Tech Bubble Burst and the 2008 Financial Crisis – was that, ignoring the first three days after the referendum, the ongoing Brexit saga is unfolding in the middle of a *rocketing* global economy. According to the International Monetary Fund's most recent world economic outlook published in October of 2017, "The current upswing reaches more broadly than any in a decade — roughly 75 percent of the world economy …is sharing in the acceleration," citing the surging activity in the U.S., Japan, China, and Europe as key drivers (citation)[29]. Despite a damaged GDP outlook[30], As IMF Managing Director Christine Lagarde phrases it, the UK has the unique opportunity to "repair the roof while the sun is shining."

A few months after I had spoken with Mark, I had stumbled upon a chance to speak to former CIA Director General (Ret.) David Petraeus at a lecture series hosted by the McCombs School of Business. As one of the most intelligent and trusted sources for geopolitical and macroeconomic strategy, Petraeus now serves as Chairman of the KKR Global Institute (KGI)[31] in New York, in an effort to provide expertise and analysis to KKR's investment processes. When asked about his perspective on investment sentiment towards the UK, he remarked,

> *"Europe is a place where, in aggregate, [KKR] is pretty bullish…Ireland, Spain, the UK as well… we wouldn't avoid [investments in the UK], but we would look at with, again, a differentiated eye trying to appreciate what will Brexit do."*

It appears that investors are all becoming more okay with the idea of being bullish – or rather, not as bearish as they once expected to be. Furthermore, recent data has given us reason to maintain a fairly positive outlook on the UK as it pertains to investment volume and concentration. *Figure 6b* shows that the total amount of VC investment surged in the back half of 2017, resulting in the second highest aggregate yearly total within the past decade.

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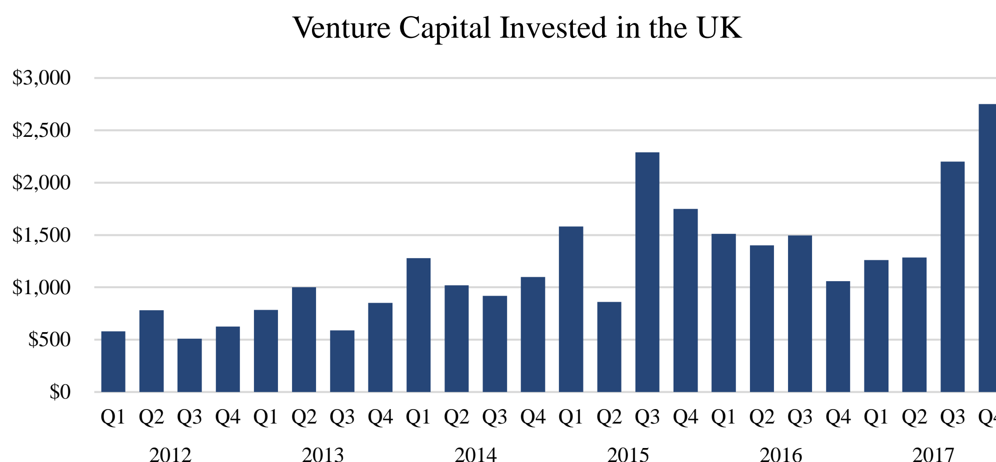
[29] Ignatius, D. (2017). Opinion | The real reason the world economy is surging. *Washington Post*.
[30] As of early 2018, the UK's 2017 calendar year GDP growth was estimated to be ~1.8%, a little over what the IMF had predicted with a 1.7% estimate in December of 2017. The IMF expects the UK's 2018 GDP to fall to ~1.5%.
[31] KGI is an arm of the KKR investment process which is designed to analyze developments and trends in geopolitics, macro-economics, demographics, energy and natural resource markets, technology, and trade policy, as well as environmental, social, and government (ESG) considerations.

Figure 6b: Quarterly VC Investment in the UK from 2012 to 2017[32]



I had a chance to ask Paul Thurk, Managing Director of ARCH Venture Partners in Dublin with close to 18 years of experience (focused on physical and life science opportunities), what he thought about the general climate, figures aside. He says,

> *"I don't necessarily follow the macro stats in the UK. But, anecdotally, from my on-the-ground-view, I think investment in start-ups hasn't been impacted… I see really interesting things coming out of the UK… better than elsewhere in Europe… I'm optimistic about the UK's future."*

Paul alluded to an excellent point. Not only has the UK boasted massive amounts of VC investment by volume last year, but it has also accounted for most the top financing deals too. After initially ceding eight of the top ten deals (to eight different cities) in the first quarter of 2017, London claimed seven of the top eight deals in the fourth quarter, all of which exceeded $100mm in capital (*Figure 6c*). Based on this slice of VC activity, it's arguably tough to make a case for another city displacing London in a post-Brexit climate.

Figure 6c: Top 10 VC Deals in Europe by City (Quarterly Breakdown of 2017)[33]

Q1 2017			Q2 2017			Q3 2017			Q4 2017		
Deal	Value ($mm)	Metro	Deal	Value ($mm)	Metro	Deal	Value ($mm)	Metro	Deal	Value ($mm)	Metro
Tricentis	$165	Vienna	Improbable	$502	London	Deliveroo	$385	London	Deliveroo	$482	London
iZettle	$127	Stockholm	Auto1 Group	$398	Berlin	Prodigy Finance	$240	London	Truphone	$337	London
Picnic	$109	Amsterdam	GammDelta Thera.	$100	London	SoundCloud	$170	Berlin	TransferWise	$280	London
Funding Circle	$101	London	Actility	$75	Paris	Tricentis	$165	Vienna	OakNorth	$203	London
Cell Medica	$75	London	Iterum Thera.	$65	Dublin	Grupa Pracuj	$95	Warsaw	ADC Thera.	$200	Epalinges
Vestiaire Collective	$62	Paris	Babylon Health	$60	London	Lilium	$90	Gilching	The Ink Factory	$180	London
AppsFlyer	$56	Hertzelia	Valens	$60	Hod Hasharon	Autolus	$80	London	Orchard Thera.	$112	London
Arralis	$53	Limerick	Shadow	$56	Paris	Revolut	$76	London	Secret Escapes	$110	London
Collibra	$50	Brussels	BIMA	$55	Stockholm	Darktrace	$75	Cambridge	BIMA	$107	Stockholm
Breath Thera.	$46	Munich	Algolia	$53	Paris	ManoMano	$71	Paris	CureVac	$100	Tubingen
Top 10 Total	**$844**		**Top 10 Total**	**$1,424**		**Top 10 Total**	**$1,447**		**Top 10 Total**	**$2,111**	

[32] Source: KPMG's *Venture Pulse*, Q4 2017 Report
[33] Ibid.

So far, we have identified that the strength of the global economy has given investors amnesia to the political turmoil that the referendum created and to the dented GDP outlook that the UK is expected to have for the next few years. Second, we see that venture-capital investment volumes and concentrations empirically have not shifted as economists predicted they would – if anything, we saw a short-lived depression, followed by a resurgence in venture capital activity.

A handful of conversations also revealed – or rather revisited – a *second* explanation for the strong post-Brexit investment appetite. As you may recall from the VC literature review, Dr. Ning of the University of Houston mentioned that the 2008 financial crisis had a "less dramatic" impact on the VC industry compared to that of the 2000 Tech Bubble Burst because of the rise of social media. Technology, if innovative and enticing enough for investors, has the potential to cushion the industry from external distress. The question then becomes, does today's tech climate offer enough? I reached out to Dr. Ning himself for his thoughts,

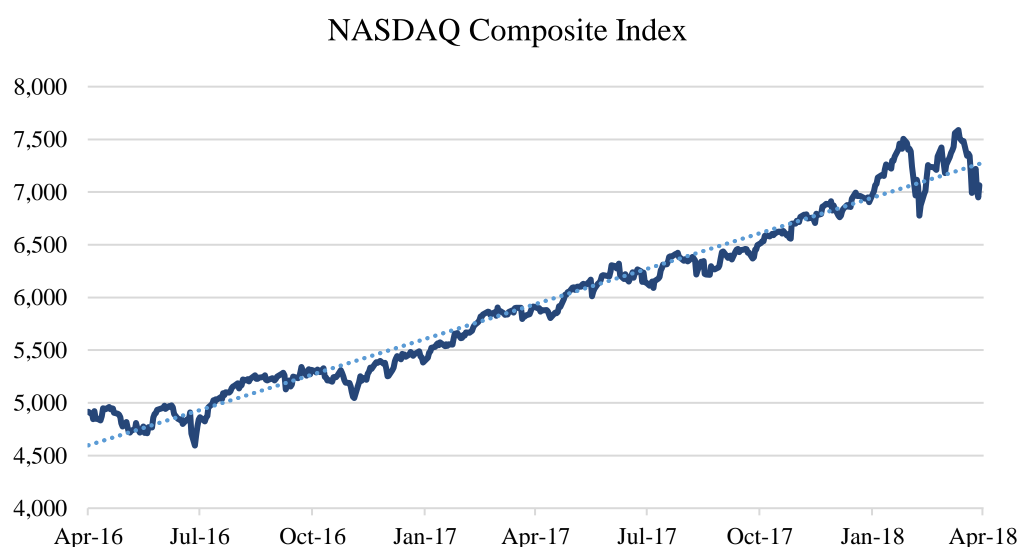
> *"Yes. I think the technology sector today is very promising…we [have] a lot of high-tech companies – Google, Microsoft, Intel – investing in technologies such as [artificial intelligence]. A lot of VC companies are investing heavily in AI. Even block-chain is something companies are thinking about…injecting capital is easier when there is new technology.*

Several other discussion participants agreed. Julius Kling, a former Morgan Stanley banker who now works at a hedge fund in London, adds,

> *"Most startups and venture [capital] might not be effected because the nature of startups [today is] digital... it's usually web-based products and services [that are] very attractive."*

Dr. Ning's research also indicated that the NASDAQ composite index – which historically has earned the reputation of a technology-focused exchange – was the best predictor of VC activity, and when glancing at the index's two-year price history, the tech-cushion story seems very plausible. *Figure 6d* shows a ~20% CAGR for the index dating back to just a few months before the referendum.

Figure 6d: Two-Year NASDAQ Movement[34]



[34] Yahoo! Finance data taken from 04/01/2016 to 04/01/2018.

There is a *third* logic that may explain why the market – and in my conversations, the larger group of bullish individuals – has not backed down from investing in the UK Dr. James D. Miller, a finance lecturer at the University of Texas with a decade of experience in the hedge fund space, thinks that Brexit holds a key characteristic that traditional market shocks do not account for.

> *"The fact that there is a negotiation process is what makes [Brexit] different from 2000 or the Financial Crisis. It's like taking a breath – it allows markets to regain confidence"*

He may be right – inflated valuations during the dot com bubble couldn't be negotiated once the bubble popped. The U.S. government and private banks couldn't re-negotiate a propped-up housing market, or an over-extension of loans once asset prices began to fall and debts became unpayable. While Brexit is unsettling to many, it may be simultaneously providing with investors comfort because of its minimum two-year negotiation period entailed in Article 50.

While the three arguments above offer some intuitive assurance to investors as we approach a post-Brexit environment, there is a fourth and final logic of British market success explained by Eddie Miller, a Texas-born investor and entrepreneur who moved to Britain nearly 40 years ago. After reaching Partner at McKinsey, Miller moved to New York in 1981 to pursue venture capital and is now the Owner and Managing Director of Palladian Limited (which he started in 1993) in the UK. Today, Miller is a staunch advocate of Brexit, is involved with *Economists for Free Trade*, and teaches at Cass Business School in the UK. On the topic of why the UK has seen success in the overall economy and VC sector, he comments,

> *"The economy is doing well because the economy is doing well. It has nothing to do with the referendum. In reality, I don't think there's a sense of uncertainty. It's all in the media… I don't believe that the average venture capitalist and the average startup has anything to be concerned about."*

Miller was a firm believer in the "nothing to see here" argument on Brexit and was unwilling to concede market uncertainty. While media-fabrication may be taking this sentiment a little too far, Miller represents a class of investors that maintain the pre-referendum climate does not differ materially from the post-referendum climate.

Overall, general investor appetite did not rank highly among the list of immediate concerns for venture capital and startup activity moving forward. Most of our contributors believed that capital flow would be healthy and perhaps even surpass pre-referendum levels, as a product of how robust the global economy has been, how lucrative the technology space currently is for investment, and how un-immediate the actual British exit is relative to past crises. Guiding these beliefs are indicators of success since the referendum, such as VC investment volumes and a surging NASDAQ.

Fundraising Challenges and Opportunities

Closely tied to general investor appetite, the ability to fundraise was also initially a concern of many VCs and startup founders after the referendum. Would there be enough capital to go around? Would startups have the same opportunity to execute multiple rounds of fundraising moving forward, or would they be confined to just a few? Would VCs find enough domestic and international sources to raise new funds with?

Most of my dialogue with Riham Satti revolved around the topic of fundraising. After graduating from Oxford with a concentration in computational neuroscience, Riham was introduced to Oxford University Innovation, a subsidiary of Oxford that provides young entrepreneurs with a year of resources, dilatable equity, experienced mentors, loan opportunities, and more. It's an incubation space that enabled Riham to successfully launch MeVitae, a platform that connects job-seekers to businesses, in 2014.

Today, while she personally has not seen noticeable change in her ability to find investors, she notes that the talk amongst the startup community certainly reveals a base level of concern for fundraising.

> *"A lot of people tell you to raise more money…literally today a lawyer said [to me], 'raise more than you need today,' as if to say that your revenues cannot be enough after two years."*

Riham mentioned that post-referendum funding freezes may have initially caused this sentiment. In May of 2017, The European Investment Fund (EIF) – which provides billions of euros in funding to financial intermediaries (banks, private equity, VC funds, etc.) that offer financial products to startups – froze funding to UK venture capital firms after the referendum. "Two sources said the EIF is not handing funding to anyone who applied, or was in the process of applying, after the UK voted to leave the EU," leaving companies to indefinitely seek out other investors for funding moving forward (Ghosh, 2017). However, Mark Evans, who is also an active member of the Oxford entrepreneurial community like Riham, was quick to point out that while some funding sources have pushed the pause button, new funds have opened in place to re-energize the startup community. The local government plays a big role:

> *"Compared to the U.S., the UK intervenes in early-stage venture financing much more often… [It supports] the early-stage community by pumping money out in the form of grants. The second thing the government is doing is… putting money into private sector VC funds and [uses] that to deploy into early-stage tech."*

To Mark's point, just a few months after the EIF freeze, the UK proposed a new National Investment Fund to abridge the $5.3bn funding gap between American and British technology startups[35]. The UK also announced that the British Bank would extend the limits on its current venture capital investment program and introduce new supports to help startups in the country. Paul Thurk from ARCH Ventures adds,

> *"The UK has great funding programs and has had some interesting successes (particularly in the Cambridge area) that has [led] to more available capital, and more experienced entrepreneurs to start companies."*

Interestingly enough, the same efforts are being made outside of the UK as well. Germany announced a plan to double VC funding availability by the year 2020, and France has decided to amass £10bn – through the sale of excess assets – in VC funding to invest in disruptive innovation technologies and companies. There seems to be plenty of new government-backed opportunities to claim capital. Mark comments further,

> *"One of the characteristics of an entrepreneur is that they are horribly optimistic. Many entrepreneurs will modify their story and use Brexit to their advantage."*

Miha, who has been a founding partner of two companies since January of 2016, agreed with Mark's sentiment. Entrepreneurs today have a variety of early-stage funding sources available to them. Echoing the startup literature review earlier in this thesis, Miha notes,

[35] According to the UK Treasury report, less than 10% of firms that receive seed funding in the UK reach a fourth round of investment, compared to nearly a quarter in the U.S. Furthermore, the UK accounts for just 4% of the world's "unicorn" startups valued at more than $1 billion, compared with 54 percent in the U.S. and 23 percent in China (Satariano, 2017).

"You can crowd-source funding, like an equity share. You can tap into the angel network. My observation is that there hasn't been much of an impact in [early stage] fundraising. People [in the UK] are worried about bigger things."

Dr. John Sibley Butler of the University of Texas furthered,

"The angel networks are more powerful nowadays than venture capital anyways. Startups have more sources at their disposal now."

Riham, Mark, and Miha – all of who, out of my interview set, seem to be the most well-integrated into the startup community – suggest that fundraising is not a big concern for them moving forward. There might be a base-level concern in the startup community, but it's not significant. Does the same sentiment hold true with VC? Jim Nolan writes,

"There are a few functional areas that venture capitalists are concerned with – raising funds, deal flow, portfolio management, and exits. Raising funds should have been the first and quickest thing to be impacted. But I didn't see anything there."

KPMG's *Venture Pulse Q4 2017* had a few observations on European[36] VC fundraising activity. While fundraising on a per-quarter basis has historically been fragmented, around "10 to 15 funds [were raised] per quarter since the middle of 2016, with fairly healthy totals of [capital] raised." Since the referendum, Europe saw a significant drop-off in micro-funds[37] but middle-market VC stayed strong. The report also notes that "LPs remain cautious when it comes to the European fundraising market, committing more to established or spun-out fund managers." Jim is partially right, since these smaller funds don't really move the needle on capital that is injected into startups. KPMG's report even refers to these smaller, first-time funds as "hardly impactful as of yet."

Eddie Miller proposed the idea that VC fundraising was minimally impacted because, quite critically, government-backed capital (like the EIF) never mattered in the first place. He argues,

"Most of the money that comes to London comes from the UK or the U.S…the main [startup] successes in Europe don't come from European funding… [funds like] the EIF put money on the silly deals that shouldn't be funded."

Ken Wiles also spoke to the ineffectiveness of sovereign funding, mentioning that,

"Sovereign [sources] have no profit motive. They are driven by political reasons, which undermines the whole system because you are not allocating capital in the best way."

However, when I spoke on the phone with Eddie, he admittedly noted that he was just an observer of the post-referendum funding climate – however, he knew someone that had actually raised capital in the wake of Brexit. A few emails later, I had the opportunity to speak to Richard Anton, a founding General Partner at Oxx (launched in January of 2017), a new B2B software growth-capital-oriented venture capital fund. Previously, he was a General Partner at Amadeus Capital for 18 years, which was preceded by 4 years at Apax Partners and at Autonomy, an AI company now part of HP. My conversation with Richard tells a different story of the post-referendum VC fundraising landscape:

[36] KPMG's *Venture Pulse Q4 2017 Report* does not break down UK fundraising activity.
[37] Funds with under $50mm of raised capital, according to KPMG.

> *"Immediately after the referendum, conversations between the EIF and other institutions (one in Paris and the other in Barcelona) went from warm to dead. That made the process much more difficult."*

As he told me that, my response was that he was still able to successfully raise capital through the back-end of 2016. Was it really that much harder to raise capital?

> *"It's tangibly much harder. We were a new manager, which makes it particularly hard. Whether we succeeded [or not] – we are an example of [a fund] that has – anecdotally, a lot of folks were severely misstructured when the EIF pulled back."*

After watching the referendum unfold, the markets crash, the markets rebound back up, and being left with a heap of political and economic uncertainty ahead to deal with, what was the thought process like moving forward?

> *"I had been planning it for a while. [Oxx] was a spin-out from another firm… My co-founder is based in Stockholm. [This was] one of our responses [to] Brexit – if it's an absolute [storm], we'll become a Swedish company. We had that hedge built in."*

Richard's response could be a hint at VC strategy long-term in the UK – find a way to offload risk by not exclusively operating in the UK. According to *Dealroom.co*, "In 2016, continental European VC fundraising surged, especially in France, Sweden, [and the] Netherlands… and in 2017 for the first time ever, France [led] with €2.7 billion funds raised, vs. €2.3 billion in the UK[38]." Unlike VC investment patterns, which are still concentrated in the UK, VC fundraising levels shifted away from the UK compared to previous years. In addition, the more we talked about fundraising, the more Richard brought up the EIF, perhaps because of how instantaneous its reaction to Brexit was. I decided to mention his friend Eddie's viewpoint on the entity, to which Richard replied with a small laugh,

> *"Oh – that's absolutely incorrect. You can look at the data, anybody here knows that. Historically, funding has come from the European Investment Fund. It's inherent in the name."*

To some extent, they might both be correct. According to *Dealroom.co*, the "EIF's contribution has increased in absolute terms, but it has diminished in [percent] terms." While we have seen a change in EIF contribution shrink from 47% of European capital raised in 2014 to only 26% in 2016, the absolute capital invested has nearly doubled from €1.7bn contributed in 2014 to €3.2bn in 2016[39]. This means that while the EIF continues to pump capital into European VC, the industry's growth and appetite for capital is simply outpacing the EIF – which is great for the economy. Figures aside, Richard believes that the EIF still represents more than just a written check. Reflecting on his direct experience raising capital from the EIF, he argues that the EIF serves as stamp of approval for venture capitalists during the fundraising process. He notes,

> *"The first closing of a fund is by far the hardest. Once that takes place, other tends to follow."*

Fundraising seems to be a non-issue for startups, given the breadth of options (private investors, institutions, etc.) available to source capital from. For VC, however, there are a few pieces to the story that are concerning. First, sovereign-backed funds are opening and closing

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[38] Data as of August 2017 from *Dealroom.Co*'s "Fundraising by European venture capital funds."
[39] Ibid.

simultaneously in the UK, which may partially be offsetting. Second, other foreign sovereignties (i.e. Germany and France) are pushing capital into their own VC sectors, which empirically has made a difference – the fact France outpacing the UK in fundraising was *unprecedented* should not be downplayed, and I would not be surprised if we see more quarters where the UK is outpaced in VC fundraising by other countries in a post-Brexit climate. Third, according to Richard Anton, who perhaps carries the most weight in this discussion as a venture capitalist who went through the fundraising process in 2016, the idea of a British exit has anecdotally made it more difficult to raise capital in the UK.

Trade and Access to Internal Markets

From the literature review, we know that trade and access to the internal European market is perhaps one of the most complex and time-consuming items at the negotiation table. Politicians, economists, and companies are broadly very concerned about how these negotiations will pan out.

I had a chance to speak with Dr. Robert Lane of the University of Edinburgh. Dr. Lane is a Senior Lecturer and Director of the EU Law LLB Graduate Program in Edinburgh, where he focuses on the constitutional and administrative law of the European Union and the European Community (EC), the law of the internal market, and EC competition law. Most of our dialogue centered on the future trade relationship between the UK and the EU. He comments,

> *"We will have more distant and ambiguous economic relationship to the EU than most [other] countries in the world."*

Most discussion participants agreed. Trade negotiations will undoubtedly take a long time and must be agreed upon by every single member of the union to be enacted. Dr. Lane continued,

> *"Look at negotiations with Canada [and the EU]. That took seven years [to] be ironed out. All 28 states had to agree… [The UK and EU] can extend their deadline, indefinitely, but that is unlikely. Each of the 27 [in addition to the UK] must agree."*

The Comprehensive Economic and Trade Agreement (CETA), the free-trade agreement between Canada and the EU signed in late 2016, was one of the most successes in defining lines with members of the EU. However, the talks drew strong opposition from the Belgian regional parliaments of Wallonia and Brussels primarily over agricultural competition with Canadian farmers. All it takes is one member of the union to prolong negotiations for months and even years. As it relates to the UK, Professor Dave Martin also touched on negotiation friction that might arise from Belgium, commenting:

> *"Pretty good chance [the UK and EU] won't reach that deadline. England is wanting to talk about trade agreements, but other parties like Brussels don't even want to talk about it. Brussels is more concerned about how much London would pay."*

It's clear that there is painful road ahead before the UK and EU find common ground on what their trade relationship will look like in the future. But what might this look like for VCs and startups in the UK? From my discussions, only a few topic areas stood out: the potential impacts on startup products, UK infrastructure concerns, and capital considerations. Professor Dave Martin and Dr. James Miller of the University of Texas offer a few concerns for growing British startups and their ability to competitively bring their products or services to the market:

> *"A product's ability to be marketed might be [harmed] with new agreements. But how much worse? 1% worse? 20% worse? It's unclear." – Professor Dave Martin*

> *"For the small businesses starting, there could be tariffs on items sold in the EU. Their products could be placed at a competitive disadvantage because of high pricing." – Dr. James Miller*

Regarding the physical ability of the UK to operate independent from the EU, our dialogue participants comment,

> *"It is unthinkable that there won't be supply chain shocks." – Mark Evans*

> *"London does not have the infrastructure in place to monitor trade in and out of the country." – Julius Kling*

Nothing out of the ordinary there – economists and companies have been commenting on these challenges since the start of this crisis, and none of my dialogue participants were willing to propose counter-arguments. However, when discussion how trade talks may alter the regulations of capital flow (which should be of interest to venture capitalists), my dialogue participants separated into two groups: the first commented on the limitations that trade laws may impose, while the second were more focused on the opportunities that may come of it. Dr. James Miller offered,

> *"How do you predict what areas are going to have larger tariffs, larger access fees. The capital flow of London to EU could face restrictions. Non-US citizens have restrictions; for example, a non-us investor cannot always invest in a domestic hedge fund. Structure for the funds may have to be altered, it's all a gray area. From a risk standpoint, it increases operational risk of fundraising and operational risk of investing."*

Of course, as he mentioned, this is all speculation. We may arrive to a place at the end of negotiations where fund-structuring and investment limitations are not largely affected, post-Brexit. On the flip side, a few of my dialogue participants pointed out the opportunities the UK may have once freed from specific capital and tax laws and procedures. They mention,

> *"EU rules constrain what you can do with [and] how you house capital. The U.S. is good at [housing] capital, storing offshore cash in Ireland and [such]. Now, the UK will have the opportunity to explore these similar financial opportunities." – Dr. Robert Lane*

> *"We'll just reset as a tax-haven and re-establish investment that way. The UK [will be able to] do things like that." – Patrick Swint*

Dr. Ken Wiles and Eddie Miller were both very keen to mention that separating from the EU would allow the UK to eliminate pains are currently imposed on them. They comment,

> *"Greater government oversight, regulation, control of the labor market… yeah it's a big deal. You can't fire people in France… you can't hire talent if you can't fire them… You have to pay higher electricity fees in Berlin… in the long-term, [separation] will make England more attractive." – Dr. Ken Wiles*

> *"I think if we can successfully get ourselves out of the bureaucratic hand of the EU, we are going to finally be able to run a proper free economy and free trade that we [can't have] inside the [EU]." – Eddie Miller*

Separation would allow the UK to write on a blank canvas – theoretically. But would the EU allow this to happen? It's as if this discussion is circling back to the original comments made by Dr. Lane.

Miha furthers,

> *"I'm worried that the EU will continue to play hardball. I think there is a fear that they cannot look weak right now… the EU can't afford to look weak."*

Ultimately, those who have the stronger startup voices – Miha, Riham, and Mark – didn't have anything moving to say about their concerns for trade negotiation impacts. Their only comments told me that yes, they understand that they *ought* to be concerned since trade relations between the UK and EU are obviously of paramount importance; however, they don't appear invested in the issue. While those on the buy side (i.e. private equity, VC, hedge funds) were interested in the impacts of capital movement and regulations, none of my VC-oriented participants seemed overtly concerned in the near term either. As Richard Anton comments,

> *"It's a non-issue. With the nature of how [trade negotiations] unfold, and the nature of the tech industry... I'm not worried."*

Throughout my conversations, each participant may have commented on the trade – as an issue of concern or opportunity – yet responses were not particularly passionate or revealing. While data could be used to craft a story in other findings sections of this thesis (i.e. VC investment volumes, immigration breakdown data, etc.), trade negotiations do not have very telling sets of information to base sentiment from. Yes, you will find plenty of data-driven, quantitative models that forecast scenarios based on different trade relationships between the UK and the EU, but it's all very much still speculative – just as this topic was a day after the referendum. This means that, second, the VC and startup communities do not have a firm grip on understanding how trade relations may impact their business or industry. They can't speak to specific impacts of something that is undefined at this point in time – they are better off focusing on other areas of concern and being productive in the current climate.

However, I think VCs could be overlooking the possibility of passporting rule changes. In the literature review, we uncovered that these rules have historically allowed British-based financial institutions (including venture capital) to sell their services to into the rest of the EU sans obtaining a license, opening a subsidiary, or needing additional regulatory approval. If the UK falls out of current or similar passporting laws after negotiations, VCs may encounter fundraising restrictions, capital movement limitations, and other costs of operation.

Currency and Exchange Rate Impacts

Consider the following. The day after the referendum, the GBP/USD exchange rate fell to historic lows – the last time the rate fell below $1.32 was in 1985. There was a 325% increase in GBP/USD volatility, and the exchange markets saw the largest intraday decline in GBP/USD ever[40]. While rates would eventually recover in the months that followed, economists are worried that we might see another shock – this time perhaps longer-lasting – to the British Pound if the UK successfully exits the union. However, while global markets (including banks, federal reserves, etc.) are concerned, our discussion participants were not. As Dr. Lane puts it,

> *"[Currency impact] is one of variables that we ought to be concerned about... [But] I wouldn't put that in the first rank of concerns."*

As a matter of fact, Mark Evans was the only one that brought up currency without being prompted to do so, and his remark wasn't even a concern, but rather a comment on the potential M&A opportunities that could arise from currency fluctuation. He notes,

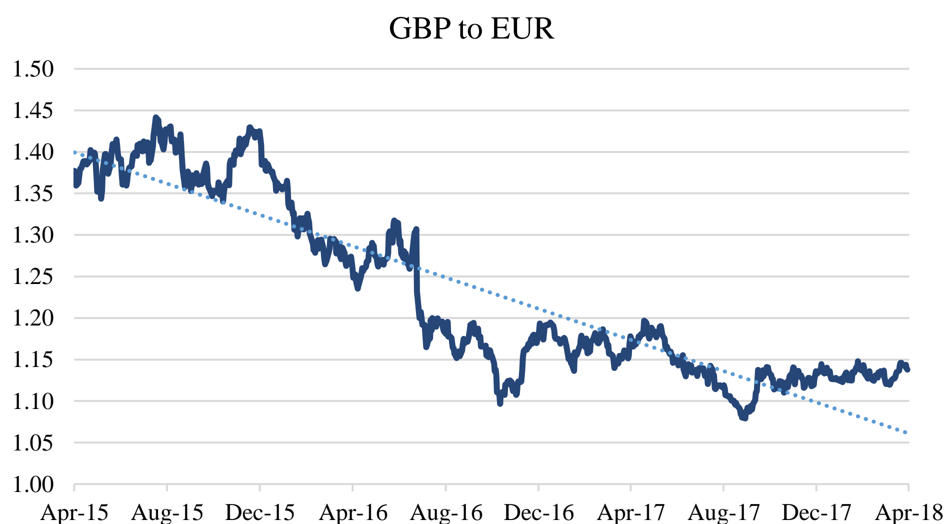
[40] Source: J.P. Morgan (see Figure 4a for more details)

"Now [might be] the time to buy… you had an economy [where the] GBP was overpriced, and now it may be underpriced."

International finance courses all over the world tell us to pay attention to currency movements and monetary policy. After all, the foreign exchange market boasts a volume of a little over $5 trillion per day in trading volume, which absolutely dwarfs equity markets. Yet none of that seemed to matter during my conversations. I pressed several of my interviewees for more and found a few logics that may help us understand why people don't really care about the exchange rate. First, Dr. Lane suggests,

"[Currency] a non-issue, since [the UK] was already not a part of the Euro – they had their own currency… [The British Pound] has already been historically sliding against the Euro anyways."

Figure 6e: Three-Year GBP/EUR Movement[41]



Dr. Lane argues that most companies inherently already assume the risk of operating under a currency separated from the Euro – Gen (Ret.) Petraeus agreed, commenting,

"You already had some issues of course, [because] they kept the [British] Pound as opposed to the Euro. You had to work your way through all that."

Furthermore, as shown by the three-year decline of the British Pound relative to the Euro in *Figure 6d,* the rate drop had started over a year before the referendum – surely VC funds and startups had enough time to take note. According to Jim Nolan, another reason why currency may be a non-issue is because,

"A lot of the tech companies that I work with don't even hedge [against currency fluctuation] anymore. They are willing to take the ups and the downs…people in VC don't think about currency [hedging] either. Maybe Brazilian VC might, since they lived through currency inflation and fluctuation. Maybe for Israeli VC. But not here in the U.S., not in the UK."

[41] Bloomberg data taken from 04/01/2015 to 04/01/2018.

Even though currency is something market players like to speculate about, it does not necessarily translate into day-to-day operational considerations for VC or startups compared to more established large-cap companies. Jim comments further with a third logic regarding locality:

"In general, the venture community doesn't think in terms of currency denomination, since most of VC is done domestically in their backyards anyways."

Richard Anton agrees, stating,

"Most of the tech sector is an exporting business, so a different exchange rate is not a bad thing. A high proportion of your costs are in the UK relative to your revenues."

Ken Wiles commented along similar lines,

"The Pound devalued, and now it [has gone back up]... but for VC, you're starting up and impacting the local market. It's company and regional-centric."

For a venture capitalist, locality plays a big role in targeting startups to inject capital into. As a result, the lens of investing for VCs are typically not wide enough to factor in currency movements. **Conclusively, currency and exchange rate impacts are not a concern of VCs and startups, contrary to what academic literature and economists might suggest.**

M&A and Exit Implications

Dr. Ning's research, *The Driving Forces of Venture Capital Investment (2014)*, was one of the pieces of VC literature to account for and comment on periods of macroeconomic crises. The data spanned from 1995 to 2011, uncovering important trends and predictors of investment. During my conversation with Dr. Ning, I asked him, "If you had to re-engineer your venture capital research and apply it to the scope of the UK, what would you be most interested in learning about?" After a brief pause he responded with,

"Well, people use London as the world financial center... [The] most important part is the exit. I would want to know if the exit would be harder."

The venture capital model relies on the successful exits of their portfolio companies. Would VCs in today's climate be able to make the return they originally desired, or would they have to settle for less? Does Brexit move the needle on the M&A landscape or exit opportunities available to young startups? During my conversations, the baseline opinion was, as presented by Dr. James Miller,

"Any time there is uncertainty, it is likely that [valuation] multiples will be driven down. It is likely that exit activity will be driven down."

Professor Dave Martin, an international finance professor at the University of Texas and former CFO of Dimension Fund Advisors (2007-2016) and Janus Capital Group (2005-2007) who currently works with domestic venture funds, agreed:

"Think in terms of uncertainty, think about it as a larger discount rate than usual. It affects business. It affects negotiations."

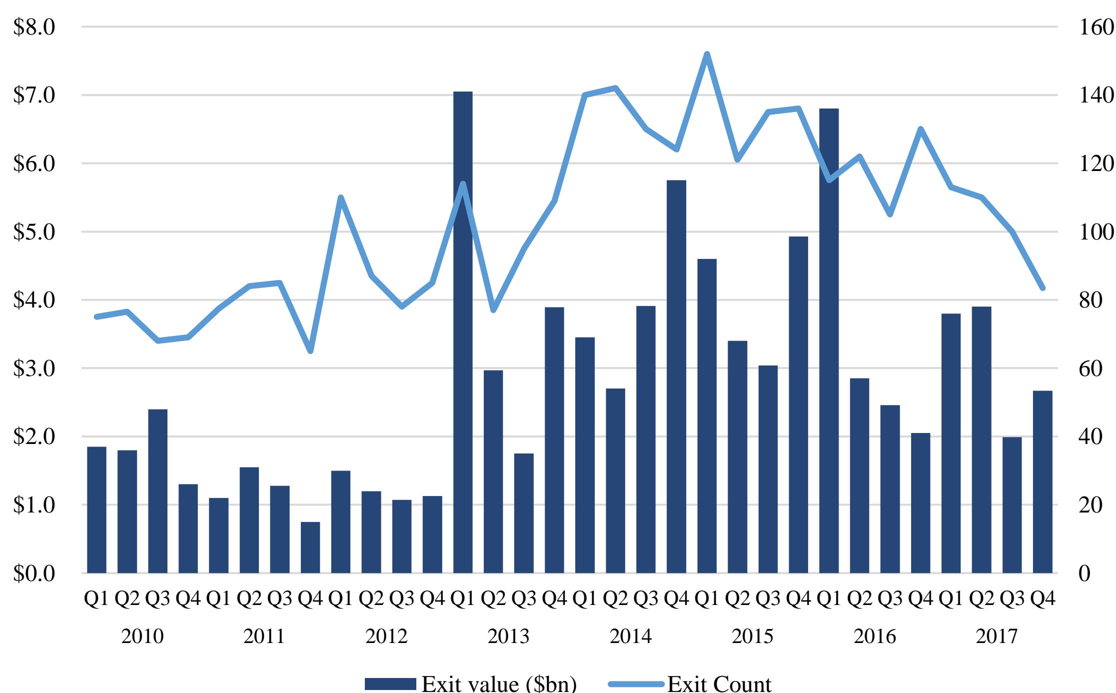
However, others with extensive buy-side backgrounds (in private equity, VC, hedge fund, etc.) were quick to counter the idea that multiples must go down. Dr. Ken Wiles, who serves as the Associate Director of the Hick, Muse Tate & Furst Center for Private Equity Finance at the University of Texas, has held experience serving as the president, COO, or CFO of more than 10 companies, two of which were taken public and one that was sold to Oracle. Speaking to the overall state of the exit market, he says,

> *"Valuation multiples [have been] really high… pricing in Europe is eight to nine times cash flow. A few years ago, it was [lower]. You could [have been] absolutely mediocre, have done nothing, and you still did well."*

Dr. Wiles noted that, both globally and in Europe, venture-backed exit activity has been quite healthy and respectable over the past few years. According to KPMG's Venture Pulse Q4 2017 Report, "the European VC-backed exit cycle is still well within historical norms and exit value still remains quite high… still far surpassing anything prior to 2013," (*Figure 6f*). Mark Evans, a University of California Berkeley Venture Capital Executive Program alum with experience in five VC-backed organizations over the years, also had a close eye on these data points as well. He remarked,

> *"One of the things I was worried about was a drop in exit activity driven by Brexit, but I have not seen any evidence to suggest that."*

Figure 6f: VC-Backed Exit Value and Exit Count in Europe from 2010 to 2017[42]



Perhaps the lack of direct exit movement attributed to Brexit reiterates the idea that the British markets – which still drive most of the exit activity – still provide underlying utility and value to both buyers and sellers (VC-backed startups). Deals will continue to be made, riding the typical ups and downs of the IPO market and financing environments. Gen. David Petraeus of the KKR Global Institute spoke to the consistency of the European exit climate when he said,

[42] Source: KPMG's *Venture Pulse Q4 2017 Report*

"The model often has been, that [UK entrepreneurs] start up something that's really good, gets up to maybe $100mm valuation and they sell. It's [still] really attractive."

Jim Nolan, who has also previously served as the Associate Director of the Hick, Muse Tate & Furst Center for Private Equity Finance, added,

"The London stock market is still going to be just as viable [as it has been in previous years], and your ability to exit or IPO has not changed."

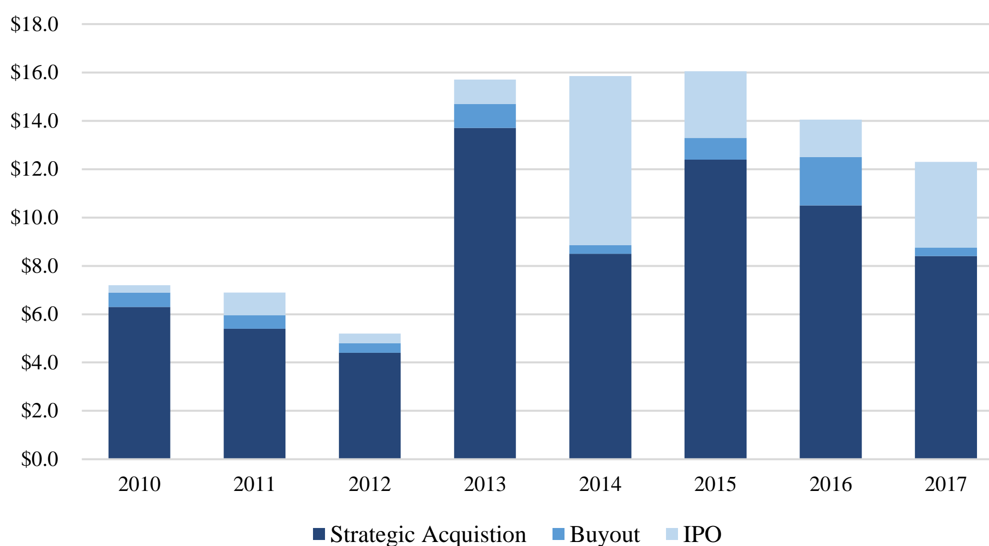
Richard Anton of Oxx Ventures adds,

"I'm not too worried about that actually. Investments in this sector, tariff or non-tariff… I haven't actually seen a drop off. The concerns about Brexit have been on the continent, and the M&A activity comes from the US."

But even if the vast majority of exit data has been unable to suggest that Brexit has played a direct role in driving exit activity downward (remember, 2014 to 2015 were globally historic years for exit activity that were unlikely to be sustained through 2017), are there any logics that could suppose what might happen in the future, perhaps in the next few years? Jim voiced the following concern:

"Remember that there are financial buyers and strategic buyers. Strategic buyers may be hesitant moving forward."

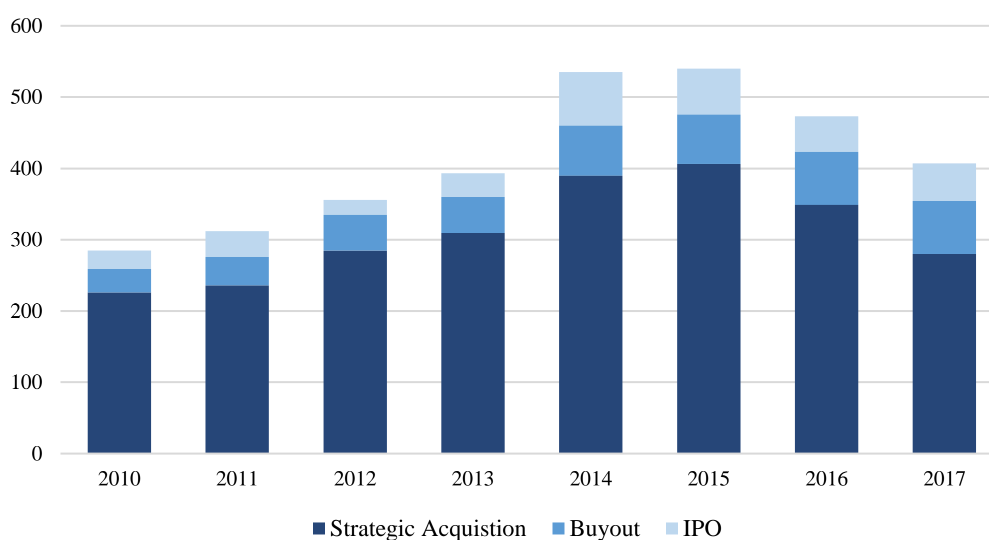
Figure 6g: VC-Backed Exit Activity ($bn) in Europe by Type from 2010 to 2017[43]



Looking at *Figure 6g* above, which Jim had not even seen when we talked, the exit activity decline (in terms of dollar-volumes) from 2015 to 2017 was in fact driven by lower strategic volumes. On a transaction-count basis, shown in *Figure 6h* below, traditional private equity and IPO counts have been relatively stable while strategic acquisition counts have fallen.

[43] Source: KPMG's *Venture Pulse*, Q4 2017 Report

Figure 6h: VC-Backed Exit Activity (Count) in Europe by Type from 2010 to 2017[44]



Because strategics are starting to pull back, Jim feared that there could be a ripple effect felt over the next few years. He comments,

> *"If there are fewer [strategic] bidders, then does that drive down valuation? Sure. And if you have lower valuations, you might eventually have trouble fundraising [later]."*

In 2012, Alex Gorbenko of the London Business School and Audrey Malenko of MIT Sloan School of Management produced a study titled *Strategic and Financial Bidders in Takeover Auctions (2012)*, where they found that, "consistent with the common belief, valuations of strategic bidders are typically higher than valuations of financial bidders." Furthermore, they found that "valuations of financial bidders are affected more by aggregate economic conditions" which is not favorable for sellers in low-GDP, slipping-GBP environments like that of the UK. If strategics continue to draw back on VC-backed exit involvement, we may see a UK market with lower valuation multiples for some time.

However, our pro-Brexit contributors did not share these mid-to-longer term concerns and remained very bullish. Eddie Miller again believed that the M&A and exit markets are in the same position now as they were pre-referendum, and Professor Wiles noted,

> *"In private equity, you drive value in three ways: operations, financial structure, and corporate governance… in the U.S., operations is the key driver – that's the only thing left. In the EU, you have more running room. [With] financial structure, in the EU, there's value on the financial leverage in the bottom half of the income statement… the use of debt is 10 years behind the U.S. – long term, [Brexit] will make England and the rest of the EU more attractive on a PE and exit standpoint."*

One important piece to notice in this section is that there were no comments from our startup-integrated participants – perhaps an indication that **M&A and exit viability is not really an immediate concern from the startup perspective. In aggregate, while economists and academics might argue that market uncertainty applies downward pressure to valuation multiples, most of my conversations suggest that there's no data to support this.** Discussion participants maintain that the

[44] Source: KPMG's *Venture Pulse*, Q4 2017 Report

IPO markets remain viable and are concurrent with traditional cycles. Data suggests that strategic buyers are pulling out, which might drive valuations down slightly, but these buyers will inevitably come back. British private equity is immature, and once financial opportunities (on the bottom half of the income statement) begins to get squeezed, strategics will once re-enter the market because the value-capture will now rest in the top half of the income statement.

Immigration and Access to Talent

Riham's startup, MeVitae, is a cognitive recruitment software that makes intelligent and personalized hiring decisions for clients. She's in the business of human relations. It would only make sense that her number one concern with Brexit is how immigration and access to different, talented people would impact the general startup landscape – not to mention her own business too.

> *"There is no company without people…where am I going to find that talent?"*

Riham and I talked about how the UK is incredibly diverse and multicultural. By extension, British companies function off the talent that the UK can attract. Yet today, that entire idea is of that access is now in jeopardy in light of the referendum. Every single person I spoke to – all 16 of them – indicated some level of concern or nervousness regarding the issue. Below are just a few of the quotes from our dialogues:

> *"[Brexit] has caused some people that would have stayed in the UK to leave, and some people that would have come to the UK to not come… it affects young companies." – Mark Evans*

> *"The Dutch will take medical [talent]… the French government is presenting Paris as a financial center alternative… London will become a shadow of itself. We may not have ghost towns or tumbleweeds, nothing like that, but we will suffer… [So] should I think about packing my bags? A lot of people have already done that." – Dr. Lane*

> *"Clearly, some jobs will be moving out. Talent is moving out." – Professor Dave Martin*

> *"I think [immigration is one of] the biggest issues going forward… will we be able to work [in the UK]? Will we be able to get an indefinite work visa and permit [and] travel at the borders? This will be the most pressing issues to resolve… jobs will move out, and that's pretty certain" – Julius Kling*

> *"Concerns for free-flow of people, talent… it has to be standard for something like this" – Dave Miller*

> *"Access to skills, [the] well-being of the workforce… A lot of people working in [finance and startups] come from different European countries... [and] they want to know if they are welcome… It's been hardest to recruit the brightest and best [in London]." – Richard Anton*

Even my conservative, pro-Brexit interviewee, Eddie Miller, was empathetic to the concerns of startup founders when he said,

> *"While there were a lot of mashing of teeth initially, I don't think Brexit is in the top 10 list of things startups should worry about... with the exception of one thing. They worry about the free flow of people from the EU to the UK."*

These perspectives share two observations. First, anecdotally, people are *leaving*. Talent is *leaving*. This could be critical to startups, considering that access to talent has historically been a huge problem-area for London, a city which ranked 3rd overall in the 2017 Global Startup Ecosystem Report but landed far below at 10th in talent base. Second, again anecdotally, not many people seem to be *entering* the UK. According to *The Guardian*[45], "EU nationals make up three-quarters of those who chose to return to their native country, in what official figures show as the largest drop since records began in net migration to Britain the past year." Furthermore, "evidence suggests a 'Brexodus' is taking place with official figures showing net migration to Britain fell by 106,000 to 230,000 in the past 12 months." While many of the changes (i.e. trade negotiations, private equity activity, etc.) may take a while to unfold, the flow of people to and from the UK is changing course quickly. As Riham explained, by March 2019, Brexit – whether a soft or hard one – will pose a variety of challenges regarding human capital. She comments,

> *"Being in the human relations space, I know it's hard to sponsor work visas. The legal process is always complicated… what happens to that? What if a lot of talent can't make it to the UK? Do you use contractors?"*

Startup developers may have to work from outside the UK, remotely. Founders – many of whom already have little interest in learning new HR legal and regulatory practices – may have to use different contractor structures or internship programs to find the right talent that fits their company's growing needs. Startups in the UK will inevitably incur new talent acquisition costs, in the form of both time and money invested.

While the VC industry may not rely on foreign talent nearly as much as young startups do, a handful of the people I talked to still voiced significant concerns. Jim Nolan comments,

> *"[As a venture capitalist], the question is, what does access to talent and customers, [by] not being in the Union, actually do to my portfolio companies? Will I still be able to get my returns? …Out of the functioning areas that VCs deal with – raising funds, deal flow, portfolio management, and exits – portfolio management will be most affected."*

Jim posits that portfolio risk intangibly increases as investments in startups begin to incur talent acquisition costs and associated risks. Any difficulty that young companies will face will impact a VC's bottom line. Dr. Ning adds quite simply,

> *"Venture capital depends on young talent to create new ideas, new businesses."*

For Richard Anton, the VC industry should be immensely concerned that the slowdown of free movement might specifically hurt a main source of startup generation and human resources – the local universities and other academic institutions. He comments,

> *"Having the immensely strong university sector in the UK – it's the only place in the world that competes with the U.S. – [is] phenomenal… so much of that excellent research comes in collaboration with Europe, which drives the world class intellectual property [in the UK]. That engine may well falter [because of Brexit]. Academics can't come here. They won't come here… the staff is filled will all sorts of European backgrounds, and the referendum is a great big [goodbye] to them"*

[45] Guardian Readers (2017). Are you an EU national who has left the UK? Tell us why. *The Guardian.*

It is rather inevitable, regardless of whether one is for or against Brexit, that the referendum has served as a repulsive mechanism to other nationalities. Whether this repulsion arises from legal, vocational complexities (i.e. difficulty in obtaining a work visa) or cultural discomfort (the idea of not feeling welcome by the British), the UK will see an exit of *skilled* labor when the intent of the referendum was to rid the country of *unskilled* labor. **The general consensus by all 16 discussion participants – the only completely unanimous sentiment – is that both startups and VCs believe access to skilled labor – which bring intellect, creativity, and performance to the UK – is the largest and most immediate concern moving forward.**

London's Outlook

The million-pound question is, *will London fall?* Will the city begin to lose the aura that had once attracted millions before us, and as a result stifle the interests of the millions that will come after us? Does Brexit set off a chain reaction of venture capitalists and entrepreneurs seeking out other cities outside of the UK to operate in? The responses to these questions were more polar and passionate than I had anticipated – almost every single person I spoke to seemed to have clear answer, one way or the other. Take for example, the responses from our two Oxford-University-bred startup founders:

> *"Absolutely, people are talking about it. A lot of people discuss Germany or Finland as two options." – Riham Satti*

> *"Nobody thinks that Frankfurt is cool. Nobody. Paris is stylish, and Dublin is a great night out…but London is here to stay." – Mark Evans*

According to Riham, leaving the UK seems to be an immediate option to many startup founders as opposed to a last-ditch move. She's even thought about the idea of opening a secondary office outside the UK for her own company. Mark's circles told a different perspective, and while he believes that Brexit is "economic shot in the foot," he has not thought about relocating at all. What would happen to other startup founders? Would VCs be disrupted as well? Throughout my conversations, I was frequently reminded why London held the highest concentration of venture capital activity and startup growth in the first place:

> *"We are in London because of the English law system, it's very reliable." – Julius Kling*

> *"London has a huge cosmopolitan community [with] some fantastic schools. It fits your needs. If you're a French banker, you can live in South Kensington and send your kids to a French school in a French community… the same for Spaniards, Italians… the UK has a housing and community system that caters to all" – Mark Evans*

> *"The UK [has] the distinct advantage of having a fantastic slate of third-tier educational institutions feeding innovation." – Paul Thurk*

> *"I think London is always going to be an international hub. Even as bad as things got in France, people stayed in Paris. I think the same thing about London...you still have London business school, Oxford, etcetera." – Jim Nolan*

> *"London is open for business… it's the most cosmopolitan city in Europe. [It's] been a trading center for two-thousand years." – Patrick Swint*

It's clear, the UK offered staples that are generally unchallenged by other parts of Europe. One of the ways to examine any immediate sign of startup or VC migration was by using property assessment in

the UK as a proxy. I had the pleasure of speaking with Patrick Swint, Founder and CEO of Knightsbridge Ventures in London, which he started in 2017 to facilitate investment into European property development. Patrick had been in the weeds of the venture capital community before, but primarily focuses on real estate. He offered the following insight,

> *"What you have on the tech side… Shoreditch is the hot spot in East London. These young tech startup guys want to work there… Cambridge is another tech center, and you can find research to support the case for Manchester too. You [have] Liverpool, Manchester, Birmingham, and Edinburgh – the top medical school is there… You might take a certain haircut here and there will real estate, [but] I don't see any [long-term] drop in values anywhere that I am looking at… The places that take the hit are way [out] in the perimeter… the outlying areas always tend to be affected. But in Central London, it's [still] very robust... there's nothing else that compares to it"*

Patrick mentioned that anecdotally, Brexit does not seem to be as bad as people are thinking – regardless of a soft or hard exit. Whether he spoke to cab drivers, business partners, or attended paneled discussions, the prevailing opinion was that London was irreplaceable as it related to the utility it offered. However, while the UK might not cede its grip on VC or startup communities to other European cities, conversations hinted at a more interesting threat: the U.S. Below are a few comments regarding the idea of VC and startup migration toe the U.S.,

> *"I wouldn't be surprised if future data shows increased flow of [venture] capital [and startups] from EU to the U.S. despite the political uncertainties here in the U.S." – Miha Vindis*

> *"Venture capital [and startups] in the world [are] not developed as I thought [they] would be... I think structurally, there has to be a reason why VC in the United States is doing so well – Dr. Yixi Ning*

> *"Are [startups] willing to actually go to the United States… [Israel] is Start-Up Nation, but we want to make it scale-up nation." – General (Ret.) David Petraeus*

The most vocal advocate of this idea was Dr. John Sibley Butler of the University of Texas. Dr. Butler currently serves as the Director of the Jon Brumley Texas Venture Labs (JBTVL) and holds the J. Marion West Chair for Constructive Capitalism at UT, with a research focus in entrepreneurship and new ventures. When asked about other parts of this thesis (i.e. general investor sentiment, valuation pressures, immigration reform, etc.), Dr. Butler usually replied by saying none of those items mattered – Brexit simply offers the opportunity to speed up the inevitable migration of entrepreneurs to the U.S. Below is a slice of our dialogue:

> *"If you want to be a movie actor, where do you go?"*
> *"Hollywood."*
> *"If you want to be successful in Western Country?"*
> *"Nashville."*
> *"— and if you want to start a company? You go where the ecosystem is. VC is going to follow the ideas. The entrepreneurs."*

Dr. Butler's recent paper, "Social Networks, Funding, and Regional Advantages: An Empirical Analysis of Factors Influencing Movement of Entrepreneurs," found that 63% of relocating entrepreneurs move to one of five metropolitan areas: San Francisco, Austin, New York City, Los Angeles, or Boston – all of which carry high "stickiness," or the ability to retain entrepreneurs within the ecosystem (2018).

The movement was a no-brainer to Dr. Butler, who mentioned that 98% or more of all companies that scale come from either Silicon Valley, Austin, or Boston.

While the next few years may uncover new startup migration patterns as it pertains to London and the UK, there are a few reasons to believe why VC industry might be less affected. First, the construct of venture capital, like the rest of private equity, lends itself to being rooted by developing niche strategies and a familiarity of doing business in a certain target market or region. Jim Nolan adds,

> *"I'm more worried about the entrepreneurs [moving out] than the VCs. If I'm a VC with roots in the UK, it's harder for me to uproot and pick up my belongings to move."*

Second, unlike startups (which are nimble and responsive) venture capital is much more institutionalized. Members of the VC community tend to be older, more experienced, and generally very systematic in the way they approach investing. Richard Anton comments,

> *"Institutional investors are incredibly sticky, it takes a while to move from one asset class to another... They tend to be very slow-moving. It takes a long time for these things to change."*

While the nature of VC may resist the idea that funds will see a significant movement or exodus from the UK compared to startups, the outlook is unclear moving forward – for startups as well – based on the conversations I had along with the data available. It seems that the UK (especially London) has all the resources a venture capitalist or entrepreneur would need, apart from foreign talent, which as we noted earlier was a significant problem-area for startup founders. It also seems like other cities around the world are bridging the gap (i.e. in terms of funding sources, talent availability, etc.) to what London has to offer, but does that translate to significant movement?

Here's the challenge: if you noticed, most of the participants that defended London's outlook and merits currently live in the UK or had previously moved to the UK from the U.S. Most of the participants that voiced concern for significant VC or startup exodus either currently live in the U.S. or had previously moved to the U.S. from the UK – there's an intuitive bias at play in my response group. The perspective that is necessary for this conversation – but incredibly hard to collect – is that of a venture capitalist or entrepreneur that *would have moved* to the UK but has otherwise reconsidered *because* of the referendum or the looming possibility of a British exit.

* * * * * * * * * *

VII. Conclusions

"We all love London and love the UK. But we are concerned…Brexit is not helping the climate, and they will pay a price for it."

~ General (Ret.) David Petraeus
February 7th, 2018

The case of Brexit is certainly fascinating. While there is plenty left of this story to uncover in the following months, this thesis makes several advancements in understanding the way people – academics, venture capitalists, and entrepreneurs – *think* about Brexit. From what these sentiments include or exclude, we can draw a few interesting conclusions and carry them forward to future discussions about Brexit or general cases of socio-economic crises.

The Observation of Dissonance

Throughout my conversations, the very idea of a Brexit was referred to as an *all-out calamity*. An *economic shot in the foot*. An *absolute disaster.* A *heartbreaking* development. However, offering these condolences did not stop people from walking me through logics that explain why certain functions of VC and startups will or will not be affected. In the case of General (Ret.) Petraeus, for example, his personal grievances for the city of London and the UK were preceded by his bullish sentiments on investment opportunities within the UK. What we can observe through this thesis is a bizarre disconnect in the way Brexit makes people *feel* versus their outlook on the UK as a matter of business or strategy. Venture capitalists and entrepreneurs may believe they are in some way insulated from Brexit's potential economic impacts (or at the very least, operate under the belief that these impacts are navigable or can be recovered from) and are instead more concerned with the intangible social impacts they may face.

Moreover, most of the people I spoke with are – or were at some point – "quant jocks." Savvy in their understanding of finance and entrepreneurship, they occupy roles in society that rely on the acute assessment of merit and risk. They rely on logic and intuition. However, on the topic of Brexit, suddenly their largest and most immediate concerns lay in a social and emotional context.

The Importance of an All-Encompassing Ecosystem

From the interviews, venture capitalists and entrepreneurs are more worried about the *ecosystem* rather than the specific trends that shape their respective industries. The thesis findings and observations remind us that ecosystems are not just economic; they encompass a variety of factors that must co-exist and compliment one another. If an ecosystem lacks strength in a certain area, whether that be cultural, economic, demographic, etc., those who occupy the ecosystem will start to wander to the next best one.

This conclusion brings us full-circle to the material and diagrams found in the literature reviews, which cautioned us that while London boasts a robust financial infrastructure and some of the world's most elite academic institutions, the city's Achilles' heel has always been its questionable access to talent and cultural tensions. The referendum has only drawn more attention to this weakness in the ecosystem, and a Brexit would not help this challenge.

Perception and Culture as Drivers of Change

This thesis is valuable in that it rules out what factors are probably not drivers of change in this story. For example, the dialogue indicates that currency is a non-factor for venture capitalists and entrepreneurs. Nobody cared, which is important to note down. If March 2019 passes by and we suddenly see a crash in the British Pound along with an exodus of entrepreneurs heading towards the U.S. – remember that *currency is not the story*. Currency movement might correlate with changes in the VC and startup space, but that does not imply causation. This thesis serves as a check to future business journals and academics that may craft certain incorrect storylines.

However, the question still remains, what *does* the thesis identify as drivers of change? Excluding immigration and access to talent (which we have previously commented on), what these conversations reveal about Brexit is that the *perceptions* created – about British people, lawmakers, the ecosystem, etc. – have carried more weight than the actual economic underpinnings of the crisis. This idea of perception being a driver of change was not prevalent during the 2000 Tech Bubble Burst or the 2008 Financial Crisis, and I fear the referendum has placed a dark cloud over London and the UK that will be difficult to ignore for venture capitalists and entrepreneurs moving forward. It's bizarre that that one of the biggest tragedies of the UK's most significant socio-economic crisis of the century will not be that of a faltering GDP outlook, or new regulatory trade challenges. Instead, one of the tragedies may be that Brexit is symbolic of a *cultural shift* that is antithetical to what VC and startup culture represents, and that we are observing economically quantifiable results come from unquantifiable sentiments.

What's even more bizarre – but completely within the realm of possibility – is that we may be witnessing the start of a negative feedback loop in the UK, caused merely by the perception or culture of a Brexit. Venture capitalists may be concerned that startups will, for whatever specific reasons, leave from the UK in groves. Startups may believe that venture capital or other sources of funding will, for whatever specific reasons, migrate to a more conducive, welcoming environment as well.

How the Thesis Informs Policymaking

Speaking directly to British Parliament and VC/startup advocacy groups for one moment: if you're looking for a smoking gun with Brexit's impact on VC or startups, you won't find it in economic arguments or data. As a result, if you are looking to curb possible venture capitalist or entrepreneur migration, economic policy won't work. The thesis findings posit that initiatives such as capital injection, trade-law negotiations, etc. are not as much of a difference-maker as one would like to believe.

Instead, there should be a widespread focus on social initiatives that mitigate Brexit's negative perceptions and associated culture. Promote more racial and gender diversity in the workplace. Provide more grants and visas to both international students and faculty who want to study or research at Oxford. Host more conferences for entrepreneurs and venture capitalists in London, inviting participants from across continental Europe. Repairing the ecosystem will *require* an acute attention to sociocultural needs.

Brexit as a Black Swan

Finally, it would be remiss of me if I did not comment on the most common phrase uttered during every single conversation I had regarding this thesis:

"We don't know what will happen."

Brexit reminds us about the story of the *black swan,* an expression that was common in 16th century London used to suggest impossibility. In Europe, everybody once believed that all swans were white, that is until the Dutch discovered black swans in Western Australia in 1697. The discovery changed the idea of a *black swan* from connotations of *impossibility* to that of *unpredictability*. Brexit is a *black swan* – it is unprecedented and is likely to have major ripples and effects. But in the end, perhaps the greatest risk is none other than the risk we don't know about. The factor we don't think to consider. It is my hope that this thesis points us in the right direction to finding our black swan and uncovering the truth and drivers of change in this developing story.

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VIII. References

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Industry Professionals and Academics Consulted

Richard Anton – London, UK

Richard is a founding General Partner at Oxx, a new B2B software growth-capital-oriented venture capital fund. Previously, he was a General Partner at Amadeus Capital for 18 years, which was preceded by 4 years at Apax and at Autonomy (an AI company now part of HP). Richard actively serves as a Board Member of four companies and has been involved with a variety of previous investments. Richard has also served as Chairman of the British Venture Capital Association and is a current Chairman of the Tel Aviv University Trust. He received his MBA from INSEAD and achieved both a B.A. and M.A. in Mathematics from Cambridge University.

John Sibley Butler – Austin, U.S.

Professor Butler of the McCombs School of Business at the University of Texas currently serves as the Director of the Jon Brumley Texas Venture Labs (JBTVL) and holds the J. Marion West Chair for Constructive Capitalism in the Graduate School of Business (Department of Management). Butler also holds a joint appointment in Organizational Behavior in the College of Liberal Arts, and the Darrell K. Royal Regents Professorship in Ethics and American Society (Sociology). His research is in the areas of Organizational Behavior and Entrepreneurship/New Ventures.

Mark Evans – London, UK

Mark is the CEO and Co-Founder of Adaptix Imaging with backgrounds in finance, management, and international business. An Oxford graduate, Mark has had pivotal roles in three tech startups and has sector experiences focused on high-tech (hardware and software), semiconductor, and healthcare applications. These experiences have ranged from pre-revenue startups to multi-national companies within 3 NYSE, 2 NASDAQ, and 5 VC-backed organizations.

Julius A. Kling – London, UK

After starting his career in investment banking with Morgan Stanley's M&A Execution Group, Julius has since worked for Oaktree Capital Management (2013-2016) and now for King Street Capital Management (2016-present). He earned a Bachelor of Science at the European Business School Oestrich-Winkel in Germany with concentrations in General Management, Economics, Finance and Accounting.

Dr. Robert Lane – Edinburgh, UK

Dr. Lane is a Senior Lecturer and Director of the EU Law LLB Graduate Program at the University of Edinburgh, where he focuses on the constitutional and administrative law of the European Union and the European Community, the methods and reasoning of the European Court of Justice, and the law of the internal market and EC competition law.

David Martin – Austin, U.S.

Dave is an International Finance professor at the University of Texas at Austin and formerly served as the CFO of Dimension Fund Advisors (2007-2016) and Janus Capital Group (2005-2007). His recent involvement with venture capital in addition to decades of fund management experience provides expertise on complex financial issues that may be affected by Brexit, such as bank interest rates, currency impacts, etc.

James "David" Miller – Austin, U.S.

David received his Bachelors, Masters, and Ph.D. from the University of Texas with concentrations in Economics, Finance, and Health Care Finance respectively. He now serves as a lecturer in the Department of Finance at UT to courses in investment management, theory, and business finance. David was a Managing Director at Great Hills Capital Partners (Quantitative Hedge Fund) in Austin for nearly a decade and had brief careers at Miller Chaffin (Portfolio Analyst) and Accenture (Consultant) prior to that.

Edgar "Eddie" Miller – London, UK

Eddie Miller is a Texas-born investor and entrepreneur who moved to Britain nearly 40 years ago. After a B.S. in Engineering Science from the University of Texas and an M.S. in Electrical Engineering from MIT, Miller began to work for Texas Instruments and Fairchild Semiconductor with colleagues who later formed Intel. A Harvard Business School MBA graduate, Miller went on to work for McKinsey & Company in London, where he fell in love with the city. After reaching Partner at McKinsey, Miller moved to New York in 1981 to pursue venture capital and is now the Owner and Managing Director of Palladian Limited, which he started in 1993. Today, Miller is a staunch advocate of Brexit, is involved with Economists for Free Trade, and teaches at Cass Business School in the UK.

James Nolan – Austin, U.S.

Jim is a Distinguished Senior Lecturer in the Finance Department and serves as the faculty advisor for the graduate Entrepreneurs Society and the Venture Fellows Program. Jim has also served as the Associate Director of the Hicks Muse Tate & Furst Center for Private Equity Finance. He is exceptionally knowledgeable about private equity and has been a successful investor in and advisor to a range of companies from early stage to publicly traded.

David H. Petraeus – U.S.

General (Ret) Petraeus joined KKR in the summer of 2013 and is now the Chairman of the KKR Global Institute, and arm of KKR that advises internal committees, clients, and limited partners on matters regarding geopolitical risk, macroeconomic outlook, and social-environmental-governance (ESG) challenges. General Petraeus has 37 years of military service to the U.S., including six consecutive commands, and went on to serve as the Director of the CIA under President Barack Obama.

Riham Satti – London, UK

Riham is the Co-Founder and CEO of MeVitae, a cognitive recruitment software that automates the talent acquisition process and tailored to company needs. Prior to her entry in the startup space, Riham obtained a Master of Science in Clinical Neuroscience at the Oxford University. During her time at Oxford, Riham was introduced to Oxford University Innovation, a subsidiary of Oxford designed to incubate startup ideas and support young entrepreneurs. After starting MeVitae in 2014, Riham became a member of Tech London Advocates, Business Mentor at Oxford, and board member at Techtonic – all platforms that promote the entrepreneurial spirit in London.

Patrick Swint – London, UK

Patrick is a University of Chicago Booth MBA graduate and retired Major in the U.S. Air Force who has had experience in investing and developing real estate for almost two decades. He is the Founder and CEO of Knightsbridge Ventures in London, which he started in 2017 to facilitate investment into European property development. Patrick earned a BA in Government/Pre-Med at the University of Texas at Austin with a minor in Latin American Studies.

Paul Thurk – Dublin, Ireland

After receiving his B.S. in Economics from the Wharton School of the University of Pennsylvania and an MBA from the University of Texas at Austin, Paul joined ARCH Venture Partners in 2000 from SSM Ventures, via a Kauffman Fellowship with the Partnership. During his nearly 18-year tenure with ARCH, Paul has worked on developing portfolio companies and guiding them to successful exits. He has served as the founder or CEO of a variety of companies, developing a focus on semiconductors, advanced materials, nanotechnology, electronics, and optoelectronics. Paul recently established ARCH's Dublin office to assess more European-sourced opportunities.

Miha Vindis – Austin, U.S.

Miha is currently a PhD student at the University of Texas at Austin, with research areas including the role of the internet, technology, gaming, and history in policy decision making. After working with Shell for eight years in Poland and the Netherlands, Miha became an investor and entrepreneur and in 2016 became a Founding Partner at Engage Leadership Consulting, a company focused on leadership assessments, learning, and team dynamics. Miha is useful in presenting his thoughts on general investor sentiment with European investing.

Ken Wiles – Austin, U.S.

Dr. Wiles is the Associate Director of the Hick, Muse Tate & Furst Center for Private Equity Finance, and a Clinical Associate Professor of Finance at the McCombs School of Business at The University of Texas at Austin. He holds a PhD from UT and has made contributions to leading academic journals, such as the J*ournal of Finance Economics and The Journal of Applied Corporate Finance. In addition to his academic accomplishments, Dr. Wiles has served as the president, COO, or CFO of more than 10 companies, two of which were taken public and one that was sold to Oracle.*

Yixi Ning – Houston, U.S.

After receiving an MS in Economics from Tsinghua University (1997) and a PhD in Finance from Southern Illinois University at Carbondale (2004), Dr. Ning joined the University of Houston-Victoria School of Business Administration in 2004. Dr. Ning has presented his research work in various national and international business and finance conferences, including the Financial Management Association (FMA) Annual Meeting, the Eastern Finance Association (EFA) Annual Meeting, the Annual Meeting of Midwest Finance Association, and the Asian Finance Association Annual Meeting, and more. He is also a member of several academic associations and has served as a reviewer of academic journals in his research field.

Other Groups Consulted

Human Relations Department of Undisclosed Investment Banks – London, UK

The British Private Equity & Venture Capital Association (BVCA) – London, UK

Business & IP Centre of the British Library – London, UK

London School of Economics – London, UK

BIOGRAPHY

Son of Mauritian immigrants, Ziyaad A. Khayrattee was born in Houston, Texas and raised with his older sister in the neighboring suburbs of Sugar Land. He enrolled in the Plan II Honors and Business Honors (BHP) programs at the University of Texas in 2014, pursuing an additional concentration in Finance within the McCombs School of Business. After his first year, Ziyaad spent time abroad at the Chinese University of Hong Kong as a part of the McCombs Short-Term International Supply Chain Management Program during the summer of 2015.

In college, Ziyaad interned or worked for the U.S. House of Representatives in Sugar Land, TRI Leadership, LLC. in Las Vegas, and J.P. Morgan in New York City, pursuing independent consulting projects in Houston as well. During his time on the Forty Acres, he served as the head of multiple groups on campus – the Texas Undergraduate Investment Team (TUIT), Punjabbawockeez dance crew, and the Texas Sports Analytics Group (TSAG) – spending a few years as the Director for Nonprofit Partnerships for Capital Community, a local financial literacy organization in Austin. In March of 2016, he was a TEDx speaker alongside distinguished community and faculty speakers at the University of Texas. In his last semester, he frequently spent time back in Sugar Land as a McCombs and BHP hometown recruiter.

Upon graduation with High Honors in May 2018, Ziyaad will be starting his career in New York as an investment banking analyst for Evercore in the summer. In the future, he hopes to return to academia and the education space after a career in finance.