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# Venture Financing & Investing

A PRIMER FOR ENTREPRENEURS + INVESTORS

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MONEY STRATEGIES | SPRING 2015 | STEVEN GILMAN

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***It takes money to make money.***  
*Businesses need varying amounts of funds at different stages and for almost every process. In fact, the flow of funds itself is a process that needs money to maintain. In our study we looked at both sides of the coin — what entrepreneurs/businesses can do to raise money, and what kind of investments might be valuable for investors to explore.*

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An **investor** is a person who allocates capital with the expectation of a future financial return. On the flip side, an **entrepreneur** is an individual who runs a small business and assumes all the risk and reward of a given business venture. An entrepreneur/business looks to the market to raise funds. The market will part with funds only if the risks are offset sufficiently by the potential of the business. Investors leverage their capacity to lend money to satisfy the demand with the intention of collecting returns. While the approach of each varies, the purpose — making a profit — doesn't.

We looked at a number of traditional routes entrepreneurs take to raise funds, as well as some variants across the globe. We also researched various sectors on the basis of current popularity and future growth prospects.

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Our report is useful for:

**Entrepreneurs:** *to get a very brief overview of some of the venture financing options out there*

**Investors:** *to describe some of the hottest sectors in the venture investing and startup worlds*

# Financing Options

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*There are a number of ways to finance a new venture. Some have been around for ages, while others are just now cropping up via innovative internet-enabled models. Here's a quick primer on what's out there.*



**BOOTSTRAPPING**



**BANK LOANS**



**ACCELERATORS/  
INCUBATORS**



**CROWDFUNDING**



**ANGEL INVESTORS**



**VENTURE CAPITAL**



**IMPACT INVESTORS**

# BOOTSTRAPPING



The most basic way of financing an entrepreneurial venture is to self-fund through savings and other non-institutional capital sources. This internal funding route is usually referred to as “Bootstrapping.” Typically, a bootstrapping founder’s goal is to transition from self-funding the business directly to funding via operating income. This, however, is not always the case, as some founders may need to raise funding from friends and family or from other outside sources if revenues are not growing fast enough.

One of the key benefits of bootstrapping is that self-funded entrepreneurs can focus more on meeting customer needs than on investor needs. When institutional funding is brought into the equation,

entrepreneurs are forced, at times, to compromise their own values in order to meet the expectations and chase the metrics of others. Another clear benefit is that the financing often costs less. Savings don’t carry interest costs with them, and without outside investors, a founder doesn’t have to give up equity points, which can be extremely valuable.

While bootstrapping may be less “expensive” and have less strings attached, the route does carry with it some disadvantages. First, venture capitalists offer connections, mentorship, and a certain cachet that can come in handy when founders are trying to do things like hire or close contracts.



# BANK LOANS

If you’ve got good credit and look like a reliable person, banks will be there to give you a loan (for a hefty interest rate).

In finance, a loan is a debt provided by one entity (organization or individual) to another entity at an interest rate, and evidenced by a note that specifies, among other

things, the principal amount, interest rate, and date of repayment. A loan entails the reallocation of the subject asset(s) for a period of time, between the lender and the borrower. The loan is generally provided at a cost, referred to as interest on the debt, which provides an incentive for the lender to engage in the loan.

# ACCELERATORS / INCUBATORS

Accelerators/incubators provide startups with small amounts of funding, mentorship, and important connections to help guide them along the entrepreneurial path in exchange for equity in their business. For those who are seeking seed funding or early-stage investors, it can be a good financing option.

There are a few key differences between accelerators and incubators. In general, an accelerator takes a small amount of equity in an externally developed idea in return for capital and mentorship, and the program typically lasts 3 to 4 months, at the end of which the start-ups “graduate.” An incubator is different in that it brings in an external management team to manage an internally developed idea; the idea can be in development for a longer period of time, and the equity stake is much larger when compared to an accelerator.

Some of the key benefits include assistance with/access to:

- business basics/training
- networking activities
- marketing
- accounting/financial management
- securing additional capital
- presentation skills
- strategic partners
- advisory boards & mentors
- technology

The most well known accelerator right now is Y combinator. This accelerator gives \$18K in funding over 3 months and has backed and mentored some of the most successful startups of the last few years.



# CROWDFUNDING

Gaining in popularity, are crowdfunding campaigns the “next big thing” in venture financing? Crowdfunding is a way to raise capital for new projects and businesses by pitching an idea online, soliciting small contributions from a large group of people that can add up to the amount being sought. There are four types of crowdfunding models:

- Donations, Philanthropy and Sponsorship where there is no expected financial return,
- Lending
- Pre-sales of products and reward incentives
- Investment in exchange for equity, profit or revenue sharing.

This new financing option has become a popular choice for many, allowing startups the opportunity to raise seed money

that may not have been obtainable through traditional financing means. It also gives online brand presence to the startup, which could make the business more credible to bankers and investors down the road. It is also much more attractive to crowd-financiers/supporters because they are only committing a small amount of money.

In 2012, 308 crowdfunding platforms worldwide raised \$2.7 billion and successfully funded more than 1 million campaigns. According to a 2013 study commissioned by the World Bank, the global crowdfunding market could reach between \$90 billion and \$96 billion — roughly 1.8 times the size of the global venture capital industry today — by the year 2025.



## ANGEL INVESTORS

An angel investor is a high net-worth individual who invests his or her own money in start-up companies in exchange for an equity share of the businesses. It is recommended that entrepreneurs work with investors who are accredited investors (who meet requirements of the Securities and Exchange Commission) and who can add value to the company via high-quality mentoring and advice. While in an angel group, individual angels join with other angels to invest collectively in entrepreneurial firms.

Many angels are former entrepreneurs themselves. They make investments in order to gain a return on their money, to participate in the entrepreneurial process, and often to give back to their communities by catalyzing economic growth. Angels make a return on their investment when the entrepreneur successfully grows the business and exits it, generally through a sale or merger. Angels tend to invest in companies that are located near them regionally (or to co-invest in a wider geography if a local investor they know and trust is involved).

The most common areas that angels invest in are software, medical devices, telecommunications, and manufacturing.

While some groups focus on a specific industry area, the majority are open to a variety of areas and select those markets with which some of their members have expertise.

Situations of angel investments are different geographically and culturally. For example, the concept of doing startups and getting angel investments did not become popular in mainland China until 2011. The current situation in mainland China is that investors are more focused on the team leader rather than the project itself. It is widely acknowledged that if you boast a job that is higher than Director level in Baidu, Alibaba or Tencent, you will be funded 100% when you launch your startup as the investors have faith in you.

Chinese angel investors are categorized into three levels: Super Angel, who are experienced entrepreneurs investing an approximate range of \$1 million to several million dollars, larger than typical “friends and family” rounds but smaller than most venture rounds; Asset Angel, who are relatively experienced entrepreneurs investing in the range of \$50k



## VENTURE CAPITAL

Today, especially in the Bay Area, Venture Capital funding has come to be known as a sort of “badge of honor” in the sense that if you’ve earned it, then your venture has been vetted and to some extent validated. While it is indeed a powerful tool for a number of reasons, Venture Capital isn’t always necessarily the best funding route for every startup.

Some key benefits of VC funding include a strengthened network, PR cachet, mentorship, and help with hiring and closing contracts. These benefits do, of course, come at the cost of equity, control over your company, and sometimes even your core values. One thing to remember before seeking out any Venture Capital is that closing a deal also means bringing other stakeholders into the fold. Thus, you, as a founder, may have to contend with the expectations and possibly even demands of these investors.

Typically, Venture Capital is raised in rounds from “Seed” to “A” to “B” and so on. For the most part, this nomenclature is meant to indicate what the startup will be using the funding for (e.g. prototyping, scaling, etc.). But with that said, there is still no clear delineation between each. And to complicate things further, the goals of these funding rounds have become dramatically redefined in recent years.

In 2015, the Seed round is typically meant to help gain product traction, while the A Round is used for scaling, and the B round is used for liquidity and the securing of competitive advantages. An average seed round today might fall around \$1-1.4M while an average A Round is typically between \$2-5M.



## IMPACT INVESTORS

Impact investments are investments made into companies, organizations, and funds with the intention to generate measurable social and environmental impact alongside a financial return. Impact investments can be made in both emerging and developed markets, and target a range of returns from below market to market rate, depending upon the circumstances.

Impact investments can come from private foundations (like Gates, Rockefeller, and Kellogg), private banks (like Deutsche Bank, JP Morgan, Morgan Stanley), development and government agencies (like USAID, DFID, OPIC and the SBA), and even privately held funds or individuals around the globe.

Some estimate that the impact investment market could grow to \$3 trillion. And as the more socially conscious millennial generation of entrepreneurs build impact-driven businesses, you can be sure the supply of impact investment opportunities will vastly expand accordingly. JP Morgan estimated in 2011 that in ten years the impact investing marketplace will be worth \$400 billion to \$1 trillion. According to the Global Impact Investing Network, over \$4.4 billion was invested in 2011 alone. But, to think that all of these new funds will be successful is a bit foolhardy. This is hard work.

Until the impact investment marketplace becomes a more rational market, with historically stable returns for different kinds of investments, the market will stay rather thin and fragile. Investment returns are not equivalent to the standard measurement – a new set of measurements are needed.

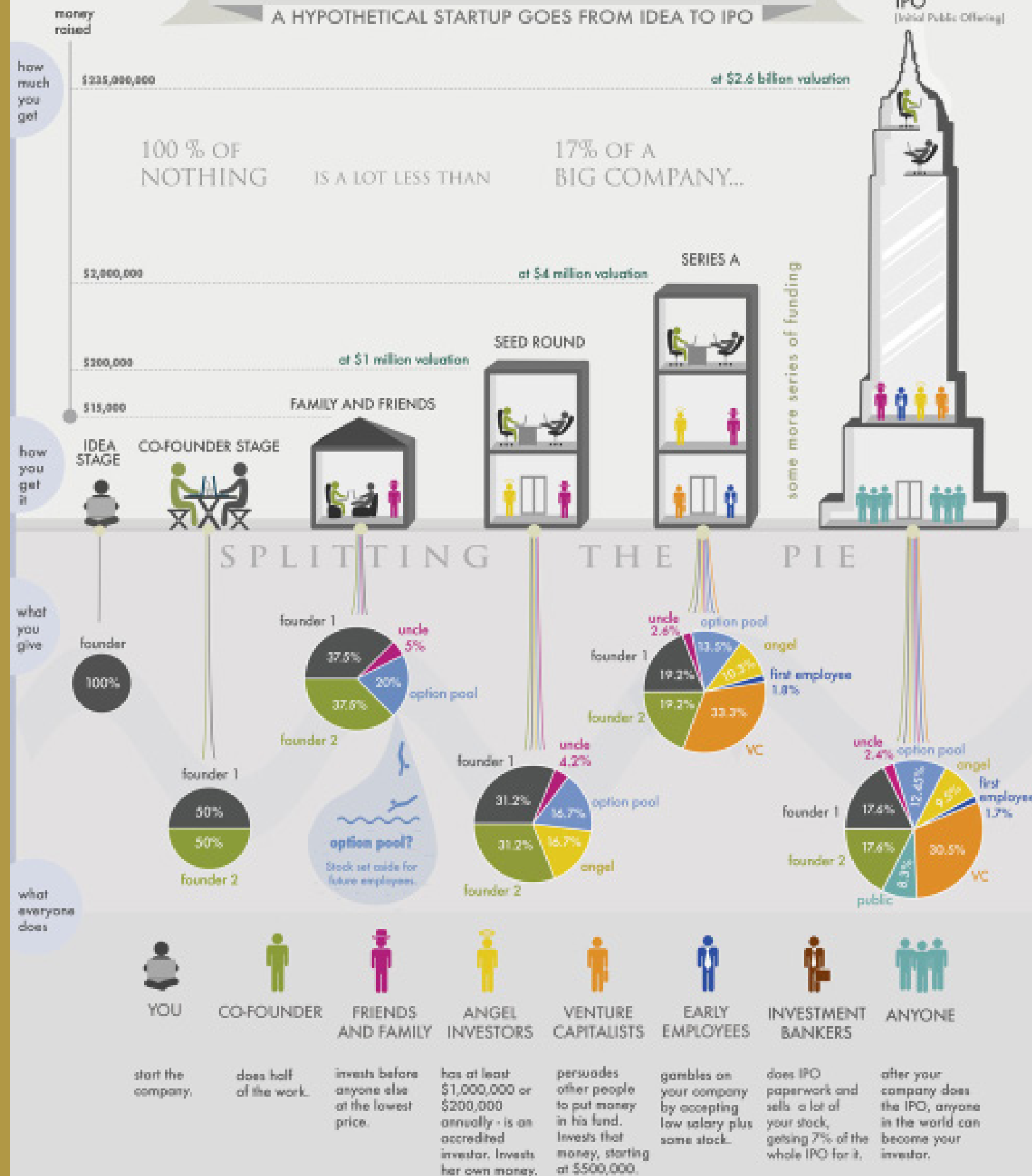


# HOW STARTUP FUNDING WORKS

BY ANNA VITAL

A HYPOTHETICAL STARTUP GOES FROM IDEA TO IPO

IPO  
(Initial Public Offering)





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# Target Sectors

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AI • HEALTHCARE • WATER • EDUCATION • EMERGING MARKETS

Through our research, we identified a number of different sectors that are becoming increasingly important in the worlds of entrepreneurship and investing. With this in mind, we decided to give an overview of each sector and share details on why it is important, specifically in 2015.





# Artificial Intelligence

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*Artificial intelligence (AI) is the intelligence exhibited by machines or software. As a field of study, it includes the theory and development of computer systems able to perform tasks that normally require human intelligence.*

In the 1970s, AI funding plunged after the U.S. and U.K. governments became fed up with the slow progress of efforts like autonomous robots. In the 1980s, the market for AI hardware collapsed further when personal computers from Apple Inc. and International Business Machines Corp. became popular.

BCC Research divides the global market for smart machines into five segments: neurocomputers, expert systems, autonomous robots, smart embedded systems, and intelligent assistance systems. Expert systems (e.g. medical decision support systems and smart grids) made up the largest share of the market in 2013, followed by autonomous robots. BCC Research expects the autonomous robot category to account for the largest share — 22.8 percent — of annual market growth until 2024 and thus to dominate the smart machine market.

## NATURE OF THE OPPORTUNITY

In 2014, investors poured \$309 million into AI startups across more than 40 deals, compared with \$75 million in 2013. Venture capital investments in companies developing and commercializing AI-related products and technology have exceeded \$2 billion since 2011. More than 170 start-ups have jumped on the AI bandwagon. The AI based solution market was valued at \$900 million globally in 2013 and is expected to grow exponentially over the next five years.

Artificial intelligence as an investment sector is heating up, as its underlying technologies become more accessible. This includes the breakthrough of cheap parallel computation, big data and better algorithms. In a study released in May 2014, BCC Research, a market research company that specializes in technology markets, predicted that the global market for smart machines will grow to \$15.3 billion by 2019, with an average annual growth rate of 19.7 percent.

AI shouldn't be seen as simply a trend in technology development. It is inevitably going to play a critical role in our civilization's development, particularly due to its contributions to neuroscience breakthroughs. For instance, The Human Brain Project (HBP) comprises 135 research institutions throughout Europe and is coordinated through the Ecole polytechnique fédérale de Lausanne (EPFL). At the project's launch, neuroscientists, doctors, computer scientists, and roboticists will begin to refine the project across the research platforms including neuroinformatics, brain simulation, high-performance computing, medical informatics, neuromorphic computing, and neurorobotics, each composed of technological tools and methods to ensure the project's objectives will be met. Healthcare is interwoven with AI in its near future.

Google has made major investments in AI in recent years, including acquiring eight robotics companies and a machine-learning company. Google has invested \$400 million in Deep Mind, while Elon Musk, Mark Zuckerberg and Ashton Kutcher have invested \$40 million in Vicarious FPC. Daniel Nadler and his company Kensho raised \$15 million recently in pursuit of an ambitious goal: to train computers to replace expensive white-collar workers such as financial analysts; in total, Kensho raised \$25.5 million. IBM has committed \$1 billion to commercializing Watson, its cognitive computing platform. Facebook hired AI luminary Yann LeCun to create an AI laboratory with the goal of bringing major advances in the field.

The development of AI is also catering to the demands of Big Data. Dr. Jim Hendler, director of the Rensselaer Institute for Data Exploration and Application (IDEA), commented, "The natural convergence of AI and big data is a crucial emerging technology space. Increasingly, big businesses will need the AI technology to overcome the challenges or handle the speed with which information is changing in the current business environment." Further, Gartner predicts that at least 10 percent of potentially life-threatening activities will be performed by smart systems by 2024. The heat is going to last at least for two more decades.

## CHALLENGES

There is a lot of room for AI to be improved. Talk to Siri and you will soon be confronted with the limitations of the software. This narrowness of current AI is a challenge. Software can be used to study or accomplish specific problem solvings or reasoning tasks -- Roomba to clean the floor; Siri to answer questions -- but it is difficult to use across disciplines.

Researchers at the University of Oxford published a study estimating that 47 percent of total U.S. employment is "at risk" due

Sources: <http://epfl.ch/>, <http://dupress.com/articles/what-is-cognitive-technology/#end-notes>

to the automation of cognitive tasks. The New York Times bestseller *The Second Machine Age* argued that digital technologies and AI are poised to bring enormous positive change, but also risk significant negative consequences as well, including mass unemployment. Silicon Valley entrepreneur Elon Musk is investing in AI "to keep an eye" on it. He has said it is potentially "more dangerous than nukes." Renowned theoretical physicist Stephen Hawking said that success in creating true AI could mean the end of human history, "unless we learn how to avoid the risks."

## Case Study

### VICARIOUS FPC



Vicarious FPC, Inc. develops AI algorithms that mimic the function of the human brain and is based in Menlo Park, California. Vicarious claims to have developed computer software that can solve anti-spam security tests. Artificial brains and security implications are claimed to be their two great features.

The company said it had used its Recursive Cortical Network software to solve Captcha tests as a step towards thinking machines, not for nefarious purposes. Vicarious hopes eventually to use the technology for robotics, medical image analysis, and online searching. "The Vicarious algorithms achieve a level of effectiveness and efficiency much closer to



actual human brains," Vicarious co-founder D Scott Phoenix said in a statement. The artificial intelligence software can "think and learn like a human" by mimicking processes in the brain. Facebook co-founder and Vicarious investor Dustin Moskovitz said that Vicarious was "at the forefront of building the first truly intelligent machines."

The company launched in February 2011 with funding from Founders Fund, Dustin Moskovitz, Adam D'Angelo (former Facebook CTO and co-founder of Quora), Felicis Ventures, and Palantir co-founder Joe Lonsdale. In August 2012, in its Series A round of funding, it raised an additional \$15M. The round was led by Good Ventures; Founders Fund, Open Field Capital and Zarco Investment Group also participated.

The company received \$40 million in its Series B round of funding. The round was led by such notables as Mark Zuckerberg, Elon Musk, Peter Thiel, Vinod Khosla, and Ashton Kutcher. An additional undisclosed amount was later contributed by Amazon CEO Jeff Bezos, Yahoo co-founder Jerry Yang, Skype co-founder Janus Friis and Salesforce CEO Marc Benioff.



# Healthcare

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*The Healthcare system in the United States is a complex industry that requires deep science and medical expertise, up-to-date understanding of technological advancements, and a team of lawyers to clearly understand policies and regulations — which means it's not an easy space for investors.*

However, it's not all doom and gloom. Biotech is redefining the way we cure diseases, grow new organs, and save lives using genomics and big data. Healthcare innovations using technology is helping patients digitally connect with their healthcare providers in meaningful ways that save time and money.

To understand the huge landscape surrounding health we must look at the subsectors of the industry:



### Life Sciences

Life Sciences is the umbrella of the Healthcare industry involving the scientific study of living organisms, their life processes and interrelationships. This includes the practices of medicine, biology, or ecology. Technological advances have resulted in many specializations and interdisciplinary branches such as genetics, neuroscience, and research. The life sciences are helpful in improving the quality and standard of life.



### Biotechnology + Bioengineering

Biotech is looking at how we can redefine biology and use technological advances to cure diseases, grow new organs, and save lives using genomics and big data. Cures and vaccines will be the best use of Biotech but there is also the preventative measures of keeping the industry safe, moral, and in good hands. In addition to the humanistic applications, there is also the merging of computers and humans via downloadable memories. The future of our health and the future of our planet depends on moral and ethical investment and advancement in biotech.



### Digital Health Solutions

Digital health solutions bring resolution to health and healthcare for society and medical providers. The digital space is the intersection of technology and genetic advances. We can track, manage, and improve our individual and family health using digital solutions. Furthermore, digital technology is addressing and improving efficiencies in healthcare delivery, improving access, reducing costs, increasing quality, and setting the stage to make medicine more personalized, precise, and accessible.



### Pharmaceuticals + Medicine

Pharmaceutical companies have greatly declined in popularity over the years. Not long ago, Pharmaceutical companies had the support of American people because they were curing diseases, protecting people from lethal but simple common ailments, like the flu. Since 2007, public opinion has drastically declined (from 84% to 40%) because public perception saw unethical lobbying practices with medical care providers and grossly engorged marketing budgets. Pharmaceuticals, which began with a mission, now was lining the pockets of doctors, Big Pharm executives, and sales managers. Furthermore, drug development is slower and more expensive.

Pharma is relevant because the future of our healthcare system and how we take care of ourselves and each other depends on it. It should be affordable to those that need it but should also be funded in order to take the big risks to solve for the big problems.

## NATURE OF THE OPPORTUNITY

Within the industry, there is investment coming in from all types of institutions: venture capital firms, corporate investors, growth/late-stage firms, micro VC firms, angel investment groups, accelerators/venture studios/holding companies, and healthcare acquirers.

In the past decade, Life Science financial investing was delivering 5x realized returns over Tech. Healthcare venture capital has been outperforming all other venture sectors, with healthcare services and biopharma performing as the two best sub-sectors.

*“More money is going towards later stage funding in Healthcare startups”*

Most recently, a StartUp Health Insights Report defined the Healthcare market as “maturing despite seeing less money move from investors to startups in Q1 2015” (\*) as more money is going towards later stage funding. Corporate VCs and traditional institutional venture investors are investing heavily in digital health.

Healthcare took over 80% of venture-backed IPO activity in Q3 of 2014. In Q1 of 2015, the top five companies received close to 30% of all funding YTD, and the top 10 deals represent 45% of all funding YTD. The subsectors invested in were Big Data/Analytics, Genomics, Wellness, and Patient/Consumer Experience. Digital solutions continue to show encouraging growth numbers. Although deal sizes vary, mid-stage deal volume overall is growing, accounting for 32% of deals in 2015, up from 28% in 2014.

## CHALLENGES

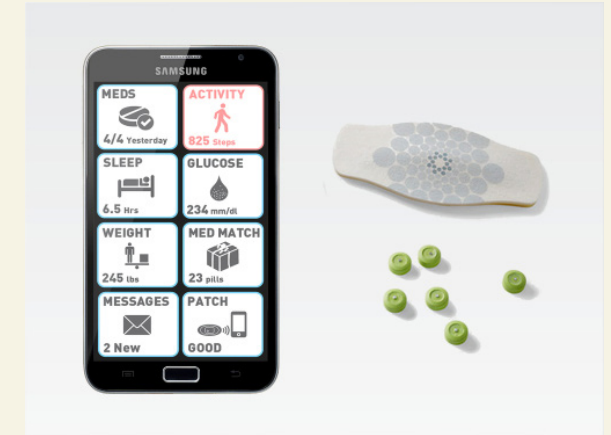
Because the entire Healthcare industry is so capital intensive and complex, it may never be as capital-efficient to develop a drug, a diagnostic, or a new medical device, relative to building a mobile app or a web service. Policies and regulations add an additional layer of complexities, as the FDA, Medicare policy and legislation, and/or healthcare reform in the government can make or break an investment or venture opportunity. Luckily for entrepreneurs and investors alike, the proliferation of digital solutions has opened up new spaces for investment financing, bridging the gap between IT and Life Sciences.

*“The entire Healthcare industry is so capital intensive and complex, it may never be as capital-efficient to develop a drug, a diagnostic, or a new medical device, relative to building a mobile app or a web service.”*

## Case Study

### PROTEUS DIGITAL HEALTH

**proteus**<sup>®</sup>  
DIGITAL HEALTH



Proteus Digital Health Feedback System is designed to provide actionable information that can improve self-health management and patient care. The service helps people of all ages and cultures take their own health and understanding of healthcare into their own hands. The Proteus vision is to “make healthcare more accessible, manageable and innovative.” The company develops digital products that aggregate behavioral, physiological, and therapeutic metrics collected from the bio-sensing ingestibles. Proteus is an industry favorite, and one that analysts are anticipating to likely go public soon.

Proteus Digital Health is valued at \$1.2 billion and is considered a “unicorn” — or a company that has a \$1 billion valuation or higher, based on fundraising. “Backed by a bull market and a new generation of disruptive technology”, the unicorns are becoming less and less mythical, at least from a valuation perspective.

Proteus Digital Health is a privately held company that has raised \$291.5 million in 9 Rounds from 6 Investors. Investors love Proteus and its compelling story, as seen by its successful fund-raising. Proteus can save healthcare providers and insurers money while providing value-based care resulting in investment dollars rolling in, quickly.

At the core of the Proteus Digital Health Feedback System is a tiny, all organic sensor that people swallow with their medication. The sensor contains tiny amounts of magnesium and copper that react together, sending a wireless signal to a battery-operated patch that’s worn on the patient’s abdomen. The patch, which lasts about a week, reports its data to a tablet or smartphone via Bluetooth, and the device forwards the information up to the cloud. Once the data is in the cloud, it can be monitored by doctors and other caregivers.

Proteus aims to save the cost of healthcare, which affects patients, companies, providers, and insurers. The number one cause of repeat illness and readmission to hospitals is often caused by human error. Either failing to follow medical orders or not taking medication while at home is the driving cause and Proteus offers a winning solution. The Proteus hardware and software give caregivers a way to make sure medicine is administered as prescribed.



# Water

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*It's been said that "water is Clean Tech's poor cousin when it comes to profile, deals, and dedication." The water sector is an outdated and underserved industry that is highly capital intensive and not likely to yield returns in the short term. However, it is a critical industry and one we must invest in for our future. According to the United Nations, by 2025, 1.8 billion people will live in regions that face "absolute water scarcity."*

The water sector is facing increasing pressures from population and economic growth, urbanization and land-use changes, and climate change that are threatening both water quality and the ability to meet demand, all the while its infrastructure is decaying. Innovation is critical to this sector but inhibited by a number of factors such as high fragmentation, public ownership, political pressure for low water rates, and reliability concerns; and technological change in this sector has been generally stagnant. Investments in infrastructure — including dams, reservoirs, aqueducts, and urban distribution pipes — as well as innovative water technologies are needed.

## WATER

The United States has the largest water market in the world at over \$100 billion in 2010, and it is growing rapidly. The global water market includes both water and wastewater sectors, and is divided into capital expenditures (spending on facility expansion and/or repair) and operational expenditures (spending on the cleaning, distribution, and collection of water and wastewater). The water sector can be divided into a number of subsectors, including water supply, conveyance, treatment, and distribution; the consumptive or end use of water by agricultural, residential, commercial, and industrial users; the collection, treatment, and disposal of wastewater; and water recycling and distribution. Unfortunately, the growth this market has seen is not aligned with a growth in innovative water technologies, especially when compared to the electricity and clean energy sectors.

According to a 2014 study conducted by Stanford's Woods Institute for the Environment, there are three categories of innovative technology that are of particular interest to water managers today:

### Supply Enhancement

Historically, this has been the dominant strategy to meet water demand in the United States and is still the main focus for water managers today. Technologies of interest include those that provide more drought-resistant water supplies such as reclaimed water or desalination, or those that can reduce energy such as recycling technologies that extract energy from wastewater. Additionally, more localized enhancement technologies such as rainwater and stormwater capture are of interest.

### Demand Management

Water managers are shifting to a focus on demand management. These technologies include those that encourage or enable water use efficiency or water conservation, such as water-efficient appliances, drip irrigation, and smart irrigation controllers, and those that encourage behavioral change by users, such as smart meters.

### Governance Improvement

There are inefficiencies in the overall governance of water, which is pivotal to both increasing water supply and reducing demand, so some new technologies are focusing on smart metering and advanced data collection methodologies that allow for better tracking of supply and demand, identification of leaky infrastructure and other failures, and improved system resource planning and management.

## NATURE OF THE OPPORTUNITY

In the US, key investors in the water sector include venture capital, corporate investment, and public investment.

**VENTURE CAPITAL INVESTMENT:** This is the largest source of investment in the U.S. water sector and is showing a positive trend, but it is still a very small portion of the nationwide total Cleantech venture investments. Water technologies are not attractive to venture capitalists due to the long testing and review periods that are required before the technology can be adopted by the highly regulated water industry.

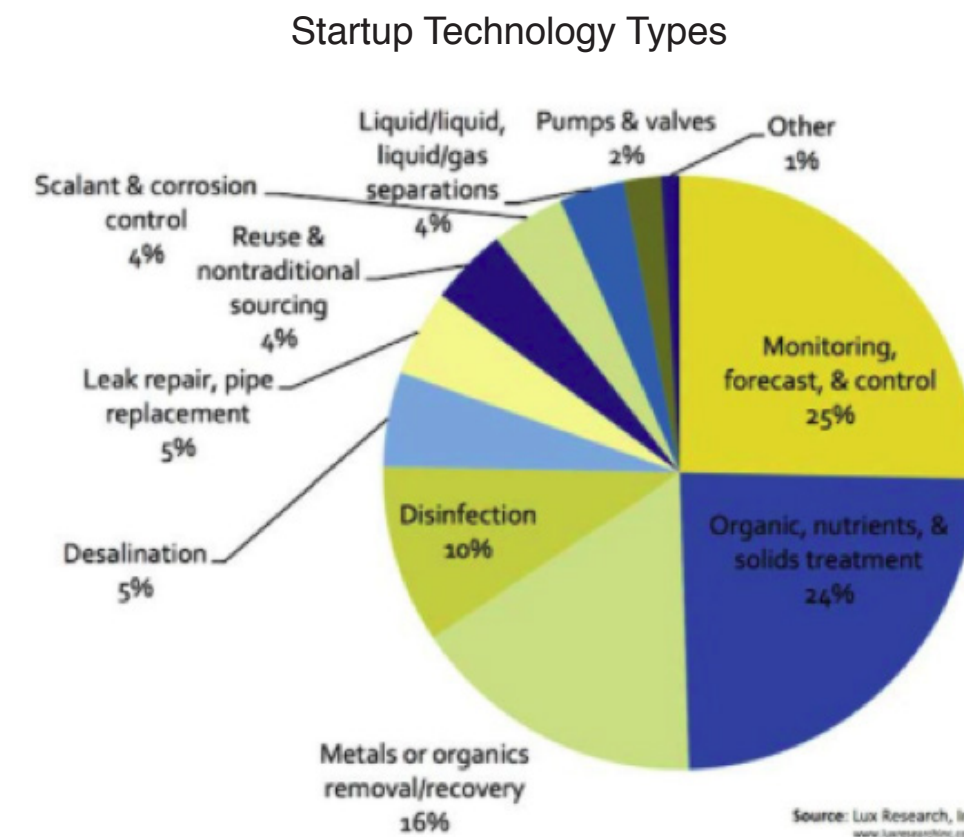
**CORPORATE INVESTMENT:** Corporations are a significant investor in the water sector, investing in both internal R&D as well as in other companies for the development of new technologies. Corporations may invest to improve their own internal operations (ex: food and beverage companies seeking new purification systems for their processes) or look for new market opportunities. As water becomes more scarce and environmental regulations more strict, corporations will be looking for innovative water solutions to help maintain and grow their businesses.

## WATER

**PUBLIC INVESTMENT:** Public investment comes in the form of grants, contracts, and loans that mostly go towards R&D. Over the past thirteen years, \$28 million in public investment has gone to the water sector compared to approximately \$8 billion to the clean energy sector.

From 2000 to 2013, sources of investment dollars for innovation in the U.S. water sector came primarily from venture capital and corporate ventures, accounting for 53 and 24 percent, respectively, of total investment dollars. Globally, investment banking was the largest contributor to the water sector at 27 percent of total investment dollars. Total investment in the U.S. was \$1.5 billion, with \$1.4 billion as capital investment. Total investment globally was \$8 billion, with \$6 billion as capital investment. Over the past decade, investments in clean energy have exceeded those in the water sector by an order of magnitude for all investment types, both globally and within the United States.

Below is a graphic of the water sector breakdown based on the number of startups that are targeting each space.



Source: The LUX Research Group

## CHALLENGES

As alluded to in previous paragraphs, one of the biggest challenges facing the water sector is the lack of development of innovative technologies. Water systems are complex and highly fragmented and this makes innovation difficult, but there are additional challenges that inhibit innovation that can be addressed through policy reforms:

**PRICING PRACTICES:** In the US, water prices do not reflect the true economic and opportunity cost of supplying water to society or the environmental externalities involved, and U.S. water prices are some of the lowest compared to other developed countries. This reduces revenues available to water suppliers to invest in innovation, can bias the decisions of water managers on innovation investment decisions, and can weaken incentives for water users to invest in new technologies to reduce water use.

**REGULATIONS:** Regulations can help but also hinder innovation. They can lock organizations into existing technologies and also create a barrier for new innovative technologies because of lengthy and expensive permitting or other types of regulatory approval.

**LACK OF ACCESS TO CAPITAL:** Operation and maintenance costs are rising while revenues decline from reduced demand from conservation efforts and water system leaks and inefficiencies. This combined with inadequate pricing, have affected the industry's financial stability and credit quality, which affects its access to affordable capital.

*“One of the biggest challenges facing the water sector is the lack of development of innovative technologies.”*

*“In the US, water prices do not reflect the true economic and opportunity cost of supplying water to society or the environmental externalities involved, and U.S. water prices are some of the lowest compared to other developed countries.”*

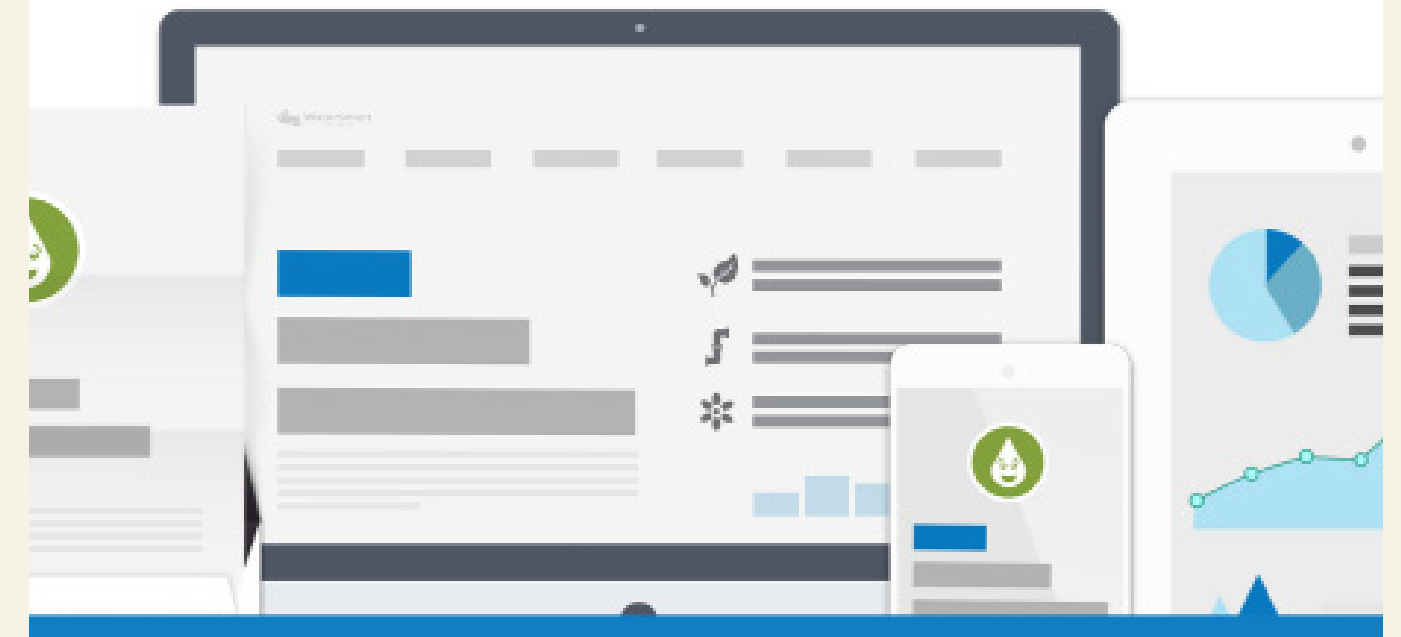
## Case Study

### WATERSMART



WaterSmart is the leading customer engagement and data analytics platform for the water industry.

[LEARN MORE](#)



WaterSmart is a software company that provides a customer engagement and data analytics platform for water utilities. It uses advanced analytics and behavioral science techniques to increase customer engagement and drive household actions that save water, energy, and money. The platform gives utility managers tools to segment customer water consumption data, generate targeted communications, and identify operational efficiencies. The company manages information for over 2 million water meters in North America. This April, the company announced the close of a \$7 million Series B funding round.



# Education

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*Education is a \$120 billion plus industry serving children K-12, postsecondary, and corporate training segments. This is actually only a small component (roughly 9.3%) of the estimated \$1.3 trillion to be spent on education in the U.S. in 2014.*

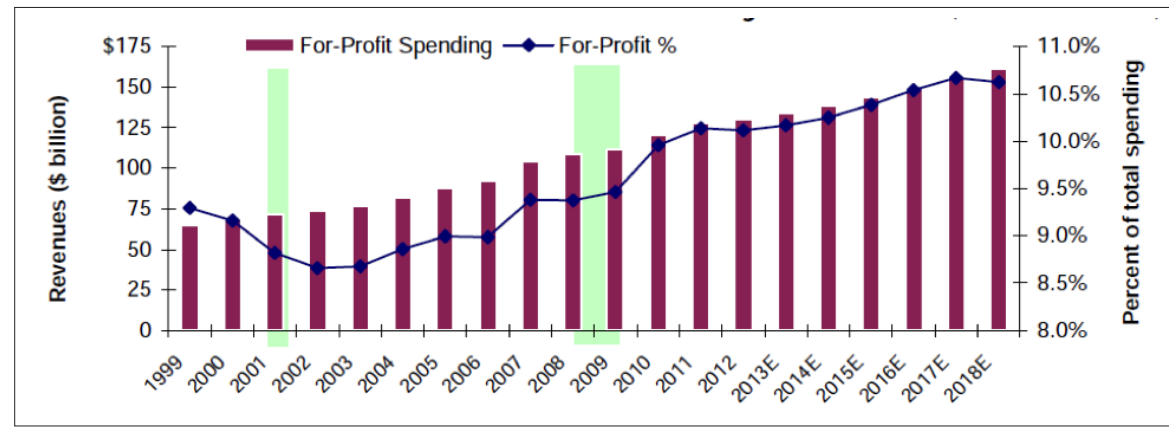
For-profit education revenues are projected to increase at a 3.8% compound annual growth rate (CAGR) over the next five years, reaching nearly \$145 billion in 2019.

U.S. for-profit Education Industry Revenues.

## Key Findings:

- Like healthcare, education is a highly regulated industry.
- It is not as resilient as popular belief. The ups and downs of the economy matters.
- Education has traditionally adopted a non-profit business model. The for-profit model has only recently emerged.
- The K-12 segment is a huge opportunity.
- Technology is a key enabler and driver for success.

## EDUCATION



### NATURE OF THE OPPORTUNITY

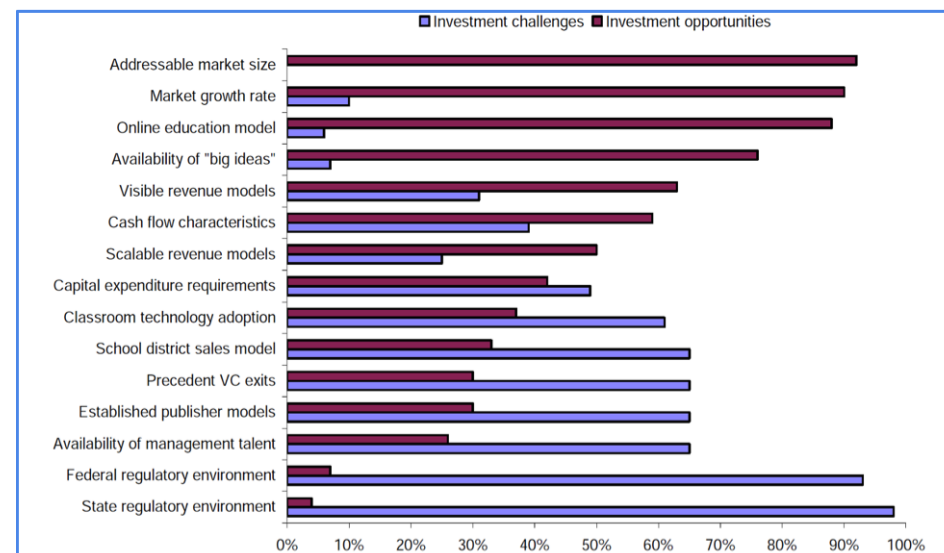
The for-profit sector has only recently emerged and is estimated to have generated over \$120 billion in revenue in 2014, or roughly 9.3% of the roughly \$1.3 trillion expected to be spent on U.S. education for the year. Many locales show increased K-12 spending. This is largely attributed to a rebound in state and local tax revenues post recession.

The opportunity is abundant, especially in the K-12 segment. Certain economically sensitive sectors (e.g., K-12, corporate training) could see accelerated growth over the next years, assuming an accelerated economic recovery, potentially offsetting the expected decline in the postsecondary sector.

In May 2014, Morgan Stanley Private Equity sold the Learning Care Group — the industry’s third largest provider by capacity (2013) — to buyout firm American Securities LLC.

The entire post-secondary segment—including not-for-profit schools—is under pressure to better define its value proposition as potential students rethink taking on debt loads. Competition across the sector has intensified and MOOCs (Massive Open Online Courses) are gaining more acceptance.

Corporations are beginning to spend training-related dollars. Corporate training is often seen as a recruiting and retention tool, which had been deferred during the recession.



Source: BMO Capital Markets estimates, U.S. Department of Education.

To get a better visual sense of where the maximum potential lies for investors and entrepreneurs, the following chart compares the investment challenges with the investment opportunities.

## EDUCATION

### CHALLENGES

While education is certainly an area ripe with opportunity, the sector also has a number of challenges worth considering, from both an entrepreneurial and an investment standpoint:

**REGULATORY RISKS:** In our opinion, government regulation is by far the biggest risk to investing in education companies, particularly those serving the K-12 and postsecondary markets. Companies generating a significant component of their revenues from the public sector could be affected by decisions that may be based more on politics or other issues than on business fundamentals.

**ECONOMIC CYCLICALITY:** During recent recessions, postsecondary providers saw enrollment growth accelerate, as a weak job market provided fewer options to graduating high school students and greater numbers of older students went back to school to enhance their skills. Conversely, providers to both the K-12 and corporate sectors saw revenues tumble as part of funding shortages and broader cost-cutting efforts.

**AGGRESSIVE NEW ENTRANTS:** What was once a sleepy industry is now one where competition has intensified. In addition to new pure-play entries in virtually every sector, competition has increased from traditional providers that expanded their reach (e.g., traditional universities growing their online and continuing education programs, publishing companies broadening their corporate training exposure). MOOCs have led to what we believe is a tipping point of traditional schools entering the working adult and online sectors.

**IMPACT OF PERFORMANCE OF COMPARABLE STOCKS:** The stocks of education companies within a specific sub-sector tend to move together. As a result, negative news — whether external or operational — relating to one company could have a detrimental effect on the share prices of others. Until investors truly segment the industry’s innovators from other publicly held competitors, this unwarranted negative association may continue.

**ACCESS TO CAPITAL MARKETS:** An influx of private capital fueled much of the early growth in the education industry; however, through and beyond the recession, investors have been hesitant to invest. Lack of liquidity has also affected the student loan market. With the markets looking better now, there has been an inflow of fresh capital.

## Case Study

### ABC LEARNING CENTERS

There have been some landmark mergers/acquisitions within the industry in recent years. One of the more interesting stories was the rise and fall of Australian-based childcare provider ABC Learning Centers (ABS.ASX). The company had been very active in both the U.S. and U.K. markets, acquiring (among others) The Learning Care Group (January 2006) for \$153.5 million and La Petite Academy (January 2007) for \$339.4 million. Unfortunately, ABC ran into some trouble after this aggressive expansion strategy and, in late June 2008, sold 60% of its U.S. business to Morgan Stanley Private Equity (MS), using the proceeds to pay down debt. This was not enough, as the company collapsed into bankruptcy in November 2008. Since then, most of its other units have been sold as well.



# Developing Countries

## *Emerging Markets*

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*The terms “Developing Country” and “Emerging Market” are sometimes used interchangeably, though there are some nuanced differences between them. “Emerging Market” is typically used when referring specifically to the stature of a country with respect to investment or entrepreneurial opportunities available. In that sense, investors sometimes refer to certain regions of the world (or even countries, specifically) as Emerging Markets when they exhibit a high rate of growth in characteristics like labor force, sheer size of economy, or technological advancements.*

Meanwhile, the term “Developing Country” is typically used when referring specifically to the economic and civic infrastructure of the country, as well as its standard of living as measured by the HDI (Human Development Index). In this sense, China can be considered a Developing Country. While it is, in many respects, “developed” technologically and economically, its standard of living for the majority of its citizens is still extremely low.

That said, there are no universally agreed-upon criteria for what makes a country or market “developing” or “emerging.” GDP is often referenced, but there is controversy surrounding its usage, since a measure of domestic

product doesn't capture the distribution of resources or the quality of life among citizens.

According to Bloomberg Business Week, the following list represents some of the most promising Emerging Markets from a business perspective (as of 2014):

Rank	Country	Total Score	Avg. GDP growth, 2014-2015	Avg. inflation rate, 2014-2015	Avg. government debt as % of GDP, 2014-2015	PP change in government debt as % of GDP	Avg. total investment as % of GDP, 2014-2015
1	China	69.61	7.35%	3.15%	20.08%	-3.60	48.54%
2	South Korea	68.44	3.53	2.55	34.89	-1.18	27.14
3	Malaysia	62.04	5.00	3.10	57.07	-0.17	27.66
4	Chile	59.26	4.33	2.90	13.32	0.56	24.83
5	Thailand	58.97	4.50	2.65	48.88	2.38	31.48
6	Panama	58.78	6.70	4.15	40.85	0.46	27.04
7	Peru	57.26	5.53	2.60	16.47	-2.82	28.50
8	Latvia	56.30	4.13	2.80	31.30	-10.40	26.48
9	Poland	53.24	3.15	2.25	50.35	-6.87	20.77
10	Czech Republic	52.63	2.10	1.65	49.25	1.96	22.53
11	Colombia	48.93	4.58	2.95	30.88	-2.18	23.39
12	Turkey	48.33	4.05	6.55	34.21	-2.49	20.34
13	Hungary	46.19	1.90	2.58	79.87	-0.07	16.56
14	Russia	45.78	2.50	5.20	14.86	1.03	25.40
15	Brazil	45.65	2.55	5.70	68.90	0.53	19.23
16	Philippines	45.30	6.13	3.90	38.00	-4.20	19.17
17	Mexico	43.75	3.68	3.70	46.23	2.61	25.01
18	Indonesia	39.59	5.72	5.93	26.57	0.13	33.82
19	South Africa	38.31	3.05	5.55	45.44	3.16	19.44
20	Morocco	37.89	4.37	2.50	63.01	1.10	35.21
21	India	28.55	5.15	8.58	67.92	0.55	35.15
22	Egypt	20.03	3.30	9.45	93.10	4.87	15.57

Source: Bloomberg Business Week.

*“The first player who can come in and effectively eliminate some of these seemingly intractable issues could be poised to capture billions of customers.”*

**NATURE OF THE OPPORTUNITY**

While this may sound opportunistic, the distressed state of regions identified as Emerging Markets makes them uniquely attractive sites for both entrepreneurs and investors to do business. In fact, the first player who can come in and effectively reduce or even eliminate some of these countries' seemingly intractable issues could be poised to capture billions of customers and an insurmountable share of market.

Many of the problems that these countries are dealing with represent tremendous opportunities for both entrepreneurs and investors. On one hand, entrepreneurs can seek to innovate and create socially relevant solutions that improve the quality of life for citizens or improve the infrastructure of these nations as a whole. And on the other hand, investors — either domestic or international — can provide financing, networks, and intellectual capital to help enable and support these solutions. This goes for Corporate M&A departments, Private Equity Investors, Venture Capitalists, and Angels alike.

With the above in mind, there are a number of problems worth noting due to the magnitude of opportunity they present:

**INEQUALITY IN GROWING ECONOMIES** (non-inclusive growth). In many of these regions, the divide between the rich and the poor is widening at an alarming rate. This can be seen as an opportunity for new platforms, products, and organizations to empower those in the lower brackets. Gaining economic independence is an aspiration for many, and things like marketplaces for labor or even free education platforms could help them achieve it.

**INEFFICIENT TRANSPORT SYSTEMS.** With populations growing uncontrollably in some regions, more efficient transport is becoming increasingly important. This paves the way for opportunities in alternative transportation modes, energy, and infrastructure.

**DISASTER PREPAREDNESS AND RESPONSE.** Whether you believe in climate change or not, natural disasters seem to be coming at an increasing rate, as evidenced by the regular pummeling of countries like Vietnam and the Philippines by superstorms. This could be yet another opportunity for infrastructure improvements or technological advancements in things like construction.

**LACK OF ACCESSIBLE HEALTHCARE.** With billions unable to afford regular healthcare around the world, there is a massive opportunity to develop more efficiency in this area as well as more preventative solutions.

**INEFFICIENT PAYMENT SYSTEMS.** The United States is going through its own sort of revolution in payment systems at the moment, with new platforms like Venmo, Apple Pay, PayPal, and Google Wallet cropping up. But if some of this same effort could be spent in the developing world with a specific focus on the unbanked, the number of new customers brought into the fold would be limitless.

But why is now the right time? Perhaps the biggest reason is internet penetration rates. In Africa, penetration has more than doubled over the last 5 years, while the same statistic has risen more than 50% in Asia and Pacific regions. Also, of course, the proliferation of mobile devices — “smart” and otherwise — is unquestionable. These high rates of growth in connectivity mark a tipping point, which has brought countless new consumers into the fold.

Meanwhile, governments and private companies alike have begun to support the creation of more modern internet-enabling infrastructure. Google’s Loon project, for instance, is bringing internet connectivity to the far reaches of the planet via connected hot air balloons. And Facebook’s internet.org initiative is bringing together technology leaders, nonprofits, and governments to work to the same end.

And investors are seeing the same level of opportunity in these regions:

- Alibaba was the biggest IPO with a market value of \$231 billion at the close of its first day of trading.
- Tech in emerging markets currently account for \$600 billion in total market cap.
- Ernst & Young polled global technology executives in 2014:
- 59% expect global deal volume to increase
- 61% see the global economy improving
- 66% expect to allocate the majority of their acquisition capital to emerging markets

**CHALLENGES**

While many of the problems that plague these developing regions can be seen as opportunities for innovation, they also represent some of the investors’ and entrepreneurs’ biggest challenges.

Payments, for instance, is invariably a challenge for every new entrant into these regions. With scalable, cashless transactions becoming the norm everywhere else, the sheer volume of unbanked, credit-less customers in developing regions makes it difficult to do business there.

Problematic government Infrastructure and corruption should also be considerations. While these issues generally exist elsewhere around the world, developing regions seem to lack many of the checks and balances necessary to curb corruption, which may mean huge risks for any incoming business.

Inefficient transportation is certainly a challenge as well. As workforces are being displaced farther and farther from metropolitan cities, commute times get longer and productivity rates lower.

And finally, cultural disconnection is a challenge that shouldn’t be overlooked. In many cases (some we’ve read about in our classes), businesses parachute into impoverished areas sniffing out opportunity, only to develop products and/or “solutions” that are completely context irrelevant or even worse, detrimental on environmental and social levels. This presents a challenge for any entrepreneur or investor to really understand the developing world context before attempting to scale to any degree.

*“Governments and private companies alike have begun to support the creation of more modern internet-enabling infrastructure.”*

Sources: <http://risecapital.com/5-trillion-opportunity.html>; <http://emergingmarkets.ey.com/>, [www.statista.com](http://www.statista.com)



**Case Study**

**RISE CAPITAL**

In studying Emerging Markets and Developing Countries as business and investment opportunities, an important case to look at is that of Rise Capital, “a global investment firm that backs internet-enabled business in Emerging Markets.” In 2014, the firm raised its maiden fund of \$146 million.

Based on the firm’s research, Managing Partner Nazar Yasin sees his target markets as being a potential \$5 trillion opportunity. This is tied to estimations of Emerging Markets as accounting for 87% of the world’s population and 50% of the world’s GDP in just the next decade.

Of course, the jury is still out on whether Yasin’s estimations are accurate or whether his firm’s investments pan out. But nonetheless, he and his Limited Partners are betting close to \$150 million on it.

## CONCLUSION

While we have covered venture funding from a birds eye view, our list is anything but comprehensive. There are more ways to raise funds today and currently the market is doing really well too. When it comes to raising funds its always a challenge - especially when the times are good. The target is always moving and there is no set formula; however, for each kind of requirement there is a funding opportunity that is more suitable than the others.

It is important for an entrepreneur/business to understand all the risks involved and ensure the benefits outweigh them. More importantly the match should not be based on the need for funds alone. Whether you are an Entrepreneur seeking funds or an Investor looking to invest in a great business plan, there are varying levels of control that you forgo at a risk and there are benefits in each funding route. Even when self funding is possible it might be wiser to look to the markets. In fact as long as the interest rates is lower than the profit percentage you should technically borrow. However, peace of mind is not something that can be bought.

In looking for funds or investing, it is important to stay level headed and look at the bigger picture in every deal. This is easier said than done as the pressure of meeting a commitment may force a business to make bad financial decisions or for an investor to fall for a bad business plan. It is hence important to take a step back to understand how the decision affects the various stakeholders of the business. Satisfying the investors can not be at the cost of disappointing the customer. Meeting short term goals can not be at the cost of long term goals. Many times a team of individuals are sought after rather than the business plan or funds. A great team of experience, motivated and hard working individuals can provide the business with the tenacity to endure.

Finding a win win deal forces an entrepreneur or business to be intrinsically more creative. On the other hand it is also wise to avoid red-oceans of highly competitive markets where the pressure to cut costs may lead to one dimensional solutions that does not have the power to sustain. As reasons abound in favor of or against any financial decision there is always an element of risk. We hope this report helps you understand where to ask those critical questions that might help mitigate those risks. But on what those questions should be is something you will need to figure out yourself - or hire a DMBA!