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A NEWSLETTER OF THE FINANCE LAB

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Financial Research & Trading Laboratory

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Indian Institute of Management Calcutta

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# Editorial

The first article show that mutual funds are doing right in putting a greater share of their funds in large cap stocks. This excessive flow is pushing the P/E multiples of top stock indices high. However, the author concludes that performance of fifty top companies are not good enough to turnaround the economic woes. In order to go anywhere near the 5 trillion-dollar GDP target, private domestic consumption should grow and for this to happen common citizens should have more money to spend. The second articles is on Supply Chain Finance and Block chain where the author discuss the number of concerns which may act as a deterrent for a supplier to proceed with a supply chain contract. In the third piece, the author discusses the latest edition of the Financial Stability Report by the Reserve Bank of India and concludes that it is rich in data and analysis, provides several meaningful insights, appears to pontificate to its peer market regulator, but stays away from the impact of GST rollout and demonetization. The fourth article discusses the steps to revive an economy that is faltering by establishing credibility with the markets. When this happens, agent expectations can be altered easily through forward-looking policy announcements, and this sets in motion a virtuous cycle that lifts activity economic activity. In the last piece, the authors seek to better understand the trends in the overall venture ecosystem in the U.S. and its implications for the future growth of venture financing. They are looking across different VC clusters in the U.S. and providing an analysis for each cluster compared to the others.

You may send your comments and feedback on this issue to ashok@iimcal.ac.in

Happy reading!

**Ashok Banerjee**

# Large is Beautiful

## Ashok Banerjee and Bobbur Abhilash Chowdary

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*Bobbur Abhilash Chowdary is a doctoral student in Finance and Control Department of IIM Calcutta.*

A recent news item[1] reports that when the world was in celebration mood for Christmas in December 2019, the BSE Sensex scaled a twenty-year high price-to-earnings (P/E) multiple of 29X, which is just about the same as the Sensex P/E of 30X during the peak of the tech boom in 2000. The news report further informs that much of the recent rally in the Indian stock market was not based on the fundamental performance of the underlying companies. In fact, during the whole year of 2019, while the Sensex had grown by 14%, the index underlying earnings per share (EPS) fell by 6.7%. Is this a precursor to a bubble? Is there a similar rally in the mid and small cap stocks? We attempt to address these questions in this article.

The general economic mood in India is not encouraging at present and yet popular stock indices are trading almost at their peak. The last two quarters of 2020 reported historically low GDP numbers. Economists are debating whether the present slowdown is cyclical (i.e., short-term) or structural. Some experts blamed GST (Goods and Services Tax) as the major dampener for the economy. In the first quarter of FY2017 (before the implementation of GST), India registered a spectacular GDP growth of 9.4% and when the recent quarter (Q3 FY2020) GDP growth was reported at 5%, policy makers sighed a relief that at least it was better than the previous quarter. The Finance Minister had taken several measures, in the past six months, to boost the economy. Corporate tax rates were cut, GST rates lowered on several items, massive infrastructure spending was announced, and yet the economy is not picking up. There is no contagion effect as such - the US economy is doing pretty well and China, though reported a modest GDP growth recently, is still at least one percentage higher than India. The headroom to spend money by the central government has shrunk significantly with lower GST and corporate tax collections. However, government has to spend money to generate enough domestic demand. It is now known to all that automobile and telecom sectors were worst affected in the past two years. However, the fast-moving consumer goods (FMCG) did reasonably well in FY2019. For example, two Nifty 50 FMCG companies (ITC and Hindustan Unilever) reported EBITDA margins of 38.5% and 22.5% respectively. Thus, it seems that the economic

[1] Sensex valuation nears 20-year high. The Economic Times 24 December 2019

slowdown and the effect of GST have impacted the medium and small companies more than the top Nifty companies. In fact, Nifty 50 companies have performed reasonably well, despite economic turmoil. Since the popular stock indices in India are quite narrow, these do not reflect overall economic situation of the country. Companies included in the top indices are popularly called blue chip stocks and are assumed to be more stable in their returns. Therefore, it may not be entirely surprising to notice significant buoyancy in large cap stocks even when the overall economy is struggling. These companies may have greater adaptive capacity to withstand rough weather. Analysts opine that investing in large cap stocks is a safer bet at all times as these stocks are less sensitive to economic turmoil.

**Flight to Quality**

Large cap index (NSE Large Cap 100) grew by 48% in the past five years (2015-2019), and small cap stocks (Nifty SML 100) performed the worst ending almost at the same level where it began in early 2015. The Nifty 50 was perfectly tracking the large cap index, as expected. What is interesting to note is small cap stocks did very well till December 2017 and thereafter it nosedived and lost almost 40% of value in the next two years. The story is very similar for mid cap stocks. Around the same time (between 2017 and 2019), large cap stocks made all the gains. One possible explanation could be the adverse effect of GST[2] on mid- and small-sized companies' profitability.

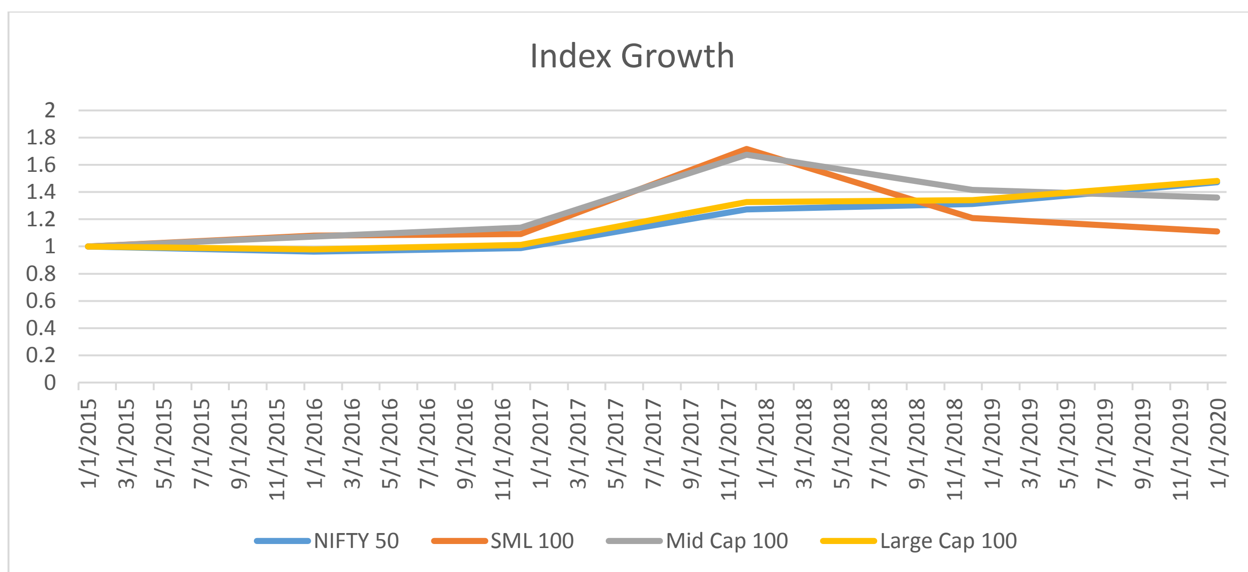


***Figure 1: Five-year growth of NSE Indices. Data source: Moneycontrol.com***

There could be another explanation- the flight to quality. The flight to quality phenomenon occurs when investors dispose of apparently riskier assets and buy relatively safer investments. Fund managers believe that during

[2] GST was introduced in July 2017

macroeconomic uncertainties, it is prudent to invest in safe stocks and large cap stocks are more shock resistant. If this argument were to hold, the fund flows to large cap stocks should increase during this period. We have looked at the investments by equity mutual funds in large-, mid-, and small-cap stocks (Figure 2) during the same period. We find that equity mutual funds in India (across different strategies) have held more than Rs.800, 000 crore (US$115 billion) in large cap stocks in 2019- a 2.6 folds increase in five years.

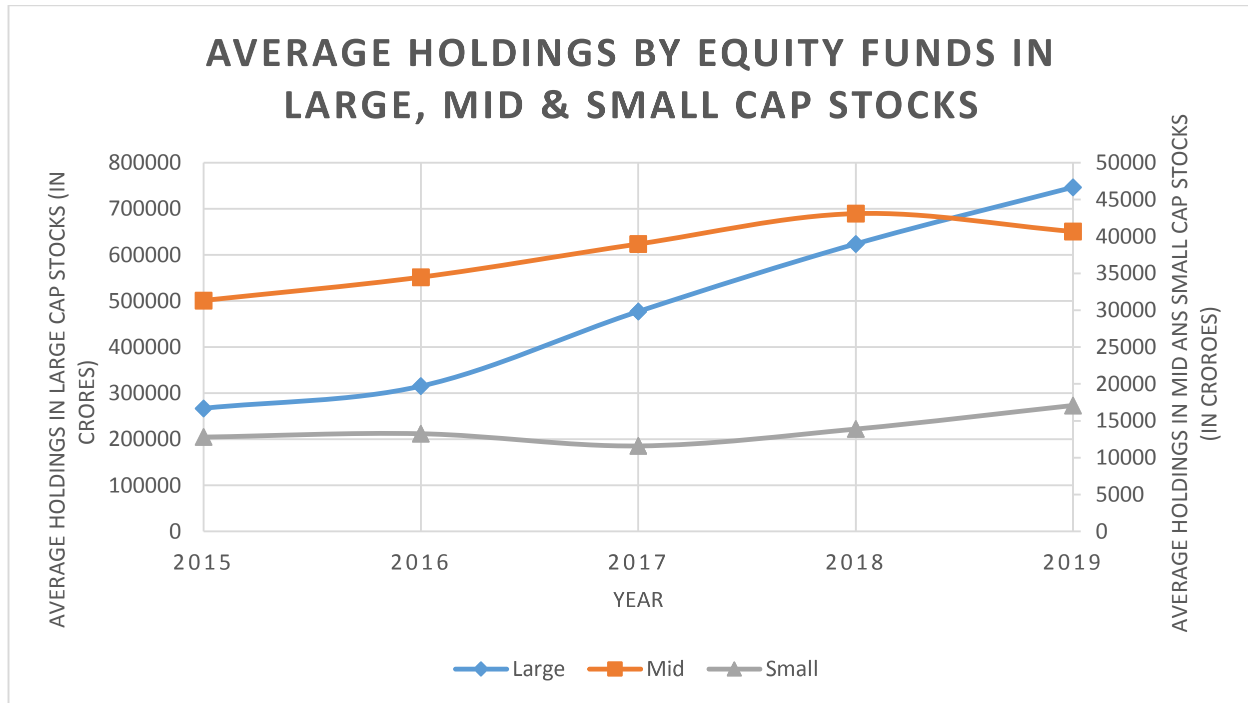


***Figure 2: Investments by Equity Mutual Funds. Source: Ace Equity Mutual Fund***

The share of holdings of equity mutual funds in large cap stocks has grown over the past five years at the expense of mid cap and small cap stocks. For example, large cap stocks accounted for 86% of total holdings by equity mutual funds in 2015 and that share has grown to 93% during 2019. Small cap stocks particularly account for only 2% of equity mutual fund investments in 2019.

A related question to ask at this stage is whether the relative preference for large cap stocks was driven by superior performance of large cap indices. We estimate Information Ratio of three categories of indices using total returns (TRI). It is observed (Table 1) that in the last two years, large cap indices outperformed both mid and small cap ones. Interestingly, the mid and small cap indices outperformed the large ones in the preceding three years (2015-2017) in both the markets. Thus, we find a clear linkage between funds preferences (exhibit 2) to large cap stocks and superior performance of large cap indices. Can we say that it was indeed a flight to quality?

**Table 1: Performance of Indices[3]**

| Information Ratio (Benchmark = Market) | | | | | | |
|---|---|---|---|---|---|---|
| | NSE Indices | | | BSE Indices | | |
| Year | NIFTY 100 - TRI | Nifty Midcap 150 - TRI | Nifty Small cap 250 - TRI | S&P BSE 100 - TRI | S&P BSE 150 Mid Cap - TRI | S&P BSE 250 Small Cap - TRI |
| 2015 | -0.05 | 0.09 | 0.08 | -0.07 | 0.13 | 0.02 |
| 2016 | -0.01 | 0.02 | -0.02 | -0.01 | 0.01 | -0.01 |
| 2017 | -0.10 | 0.16 | 0.13 | -0.10 | 0.14 | 0.13 |
| 2018 | 0.14 | -0.08 | -0.16 | 0.15 | -0.09 | -0.14 |
| 2019 | 0.13 | -0.06 | -0.11 | 0.11 | -0.06 | -0.12 |

Another possible explanation for increasing investment in large cap companies is the effect of a SEBI circular[4] on the categorization of mutual fund schemes. According to the circular, a large cap equity fund should invest at least 80% of its total assets in large cap companies (defined as 1st to 100th companies on full market capitalization basis). Similarly, any mid (small) cap open ended equity fund should invest at least 65% of total assets in mid (small) cap companies. Therefore, theoretically, any mid and small cap equity fund can invest the balance of their assets in large cap companies. That could be another reason for relative surge in fund flows to large cap stocks. The market performance (Table 1) indicates that large cap stocks performed particularly well post 2017. Was this performance backed by fundamental financial health of the large cap companies?

**A Bubble?**

The fundamental performance of the top 50 listed companies in NSE did not show any deterioration in period after 2017- post GST era (Table 2). In fact, the average EBITDA margin of the Nifty 50 firms have been maintained around 25% over the past five years. Annual growth in revenue did witness a marginal dip in 2017-18 but was followed by robust average growth of 17% in 2018-19. The earning per share (EPS) of these companies has also grown over the past five years.

**Table 2: Average Performance of Nifty 50 companies**

| Indicators | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|
| EBITDA Margin (%) | 24.68 | 25.06 | 25.04 | 25.35 | 25.38 |
| Return on Equity (%) | 17.61 | 16.95 | 17.72 | 17.55 | 16.06 |
| Revenue Growth | 10.38 | 6.41 | 14.60 | 12.21 | 17.39 |
| Net Capex (Billion INR) | 3580.44 | 3399.25 | 3944.56 | 4246.45 | 4825.18 |
| Earnings per share (INR) | 374.05 | 363.9 | 385.13 | 410.13 | 407.97 |

[3] We calculate Information Ratio (IR) as E (Ri-Rb)/Std.Dev (Ri-Rb). Here 'Ri' is index return and 'Rb' is benchmark return. We use daily data for calculating IR.
[4] SEBi Circular No. SEBI/HO/IMD/DF3/CIR/P/2017/114 dated October 6, 2017

Source: Bloomberg and Money control. Authors estimates. Each year ended in March. Thus, the year 2015 denotes the financial year 2014-15. Percentages are simple average numbers of the Nifty 50 companies. Net Capex represents capital expenditure net of depreciation.

The top companies did not cut back their capital expenditure program. The net capital expenditure registered a five-year CAGR of 6%- growing almost at the rate of wholesale price inflation. Thus, one may argue that there was no growth in real capital formation by these top fifty companies over the past five years. However, given the general economic mood of the country in the past two years, maintaining real capital is also an achievement.

We show that mutual funds are doing right in putting a greater share of their funds in large cap stocks- a safer bet. This excessive flow is pushing the P/E multiples of top stock indices high. Some of the blue-chip stocks are presently trading at very high multiples. For an economy as large as India, performance of fifty top companies are not good enough to turnaround the economic woes. In order to go anywhere near the 5 trillion-dollar GDP target, private domestic consumption should grow and for this to happen common citizens should have more money to spend.

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# Supply Chain Finance and Block chain: A Potential Integration


## Samit Paul

*Samit Paul is Assistant Professor, Finance and Control. Indian Institute of Management Calcutta (IIM-C). He has completed his fellowship from IIM, Lucknow in the area of Finance and Accounting. His primary research interests lie in the area of market risk management, volatility modelling and portfolio management.*


Economic downturn often creates extreme barriers in day-to-day operations of the firms that are dependent on liquid assets. The situation becomes worse when new loan granting by banks reduces significantly, cost of borrowing increases considerably and liquidity dries up in asset-backed markets. This essentially demands for some solutions which may optimise the working capital management of a firm. Supply Chain Finance (SCF) is one such popular approach that optimises liquidity condition of a firm. SCF, also known as reverse factoring, is well adopted by companies like Coca-Cola, Procter & Gamble or Walmart. Instead of adopting the conventional method of directly paying to the supplier within a given timeline (say, 30 days), firms prefer SCF where they pay certain fee to a bank or a financier to ensure 100% early payment to the supplier (as soon as 10 days). Thereafter, according to the nature of contract, firms repay the amount to bank. The entire exercise creates a "win-win-win" scenario for all three parties involved. The supplier receives early payment, the customer[5] extends the formal payment term with supplier as per their desire and the bank or financier optimises their exposure of risk weighted asset portfolio. Such benefits enhances the acceptance of SCF world-wide which has been further reflected in the estimation of Aite (US research and consultancy group) about the worth of the global SCF market. According to them, the current value of this market is around US$255 billion ($376 billion).

Despite the listed advantages, there are number of concerns which may act as a deterrent for a supplier to proceed with a supply chain contract. The first and most important factor is the 'control' aspect which is most probably hidden on the face of the contract. If the customer is a so called "big firm" and the growth of the supplier, to some extent, depends upon the orders generated from the customer, the supplier compulsively has to follow terms and conditions put forward by the customer. Clive Isenberg, chief executive of Octet, has said that – *"Once you're supplying the big end of town and you're so reliant on that big end of town buying from you and you're growing*

[5] The terms 'customer' and 'buyer' have been used interchangeably

*with them as they buy from you, you are being constantly pressurised to follow the way they're going. You've got to agree to their payment terms, and if their payment terms means it's a reverse factoring model, you take it or leave it".* The next important factor in this entire exercise is the 'trust'. Suppliers need to be watchful about the fact that the bank or financier only register security on their invoices rather than businesses. At the same time, the bank or financier would want to ensure a reasonable payment period as per the contract between the customer and the supplier. Very recently, the 'big four' accounting firms have sent a letter to the Financial Accounting Standards Board (FASB) of the US stating that few firms often try to negotiate the payment terms with the suppliers up to 180 or 210 days, whereas historically the payment term was binding from 30 to 60 days at maximum. Hence, the rating agencies, analysts and investors have started scrutinising SCF schemes as the firms (customers) may use this to camouflage problems related to cash flows and put pressure on suppliers for providing discount on invoices. Apart from these 'control' and 'trust' factors, the third and hopefully the last concern related to SCF is its 'cost' of development and maintenance. Since the funding is handled by the customer appointed bank, the bank may work in best interest of their own and the customers rather than in favour of the suppliers. For example – a bank may allow early payment on only a certain amount of invoices in a given month or the customer may keep an upper cap on the same. Besides, the cost related to invoice generation, recording and following-up can be huge at times.

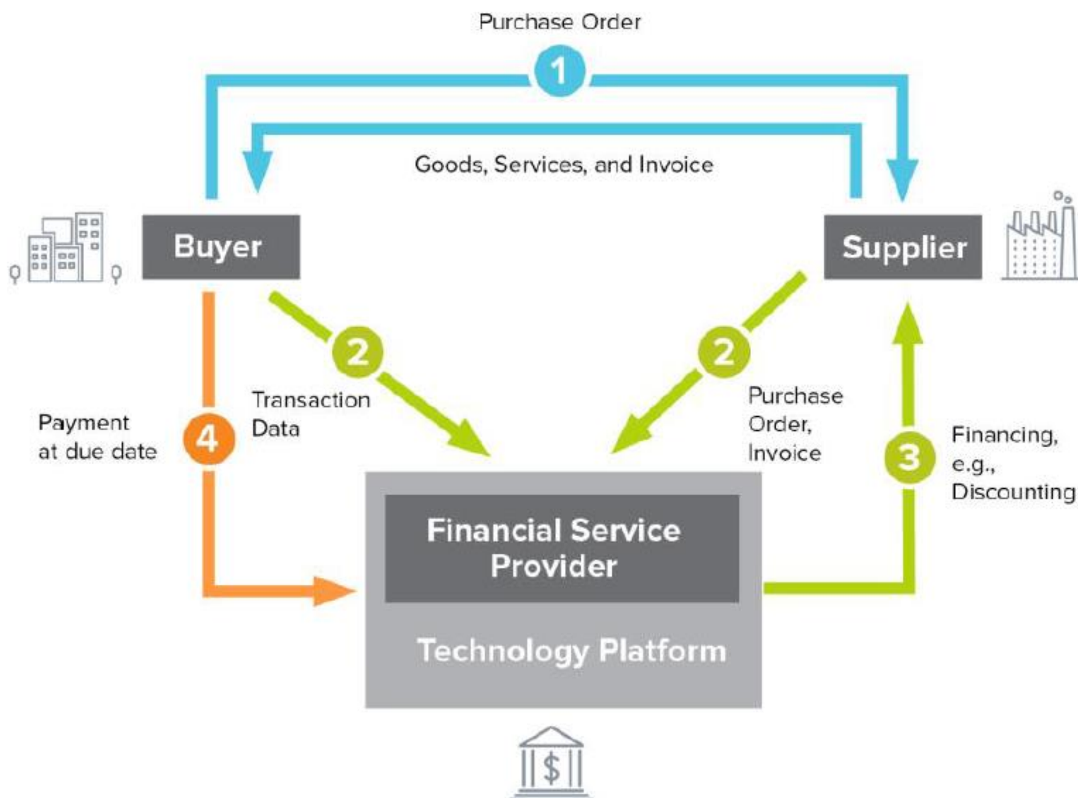


***Figure 1: Supply Chain Finance Network; Source: BSR | Sustainable Supply Chain Finance***

The above mentioned three issues, i.e. control, trust and cost, can be well addressed if the level of transparency and speed of execution in the entire supply can be enhanced significantly. Blockchain technology (BCT) can act as a promising solution in this regard. The BCT helps registering all the transactions cryptographically using a shared database. These blocks of data are chained in such a manner that they become long-lasting and immutable. Furthermore, automated version of contractual agreement (e.g. smart contract) between supplier and customer or between customer and bank provides more transparency in the system. In this system, there is almost no requirement of involving a neutral third party to eliminate related counterparty risk. Even it's possible to exchange value through BCT among peers. It also reduces cost of due diligence by facilitating KYC process digitally. Along with these improvements, new level of product and information integration would be possible due to open nature of a blockchain. Brigid McDermott, the vice president of Blockchain Business Development & Ecosystem has echoed the same -

*"If you talk to supply chain experts, their three primary areas of pain are visibility, process optimization, and demand management. Blockchain provides a system of trusted records that addresses all three."*

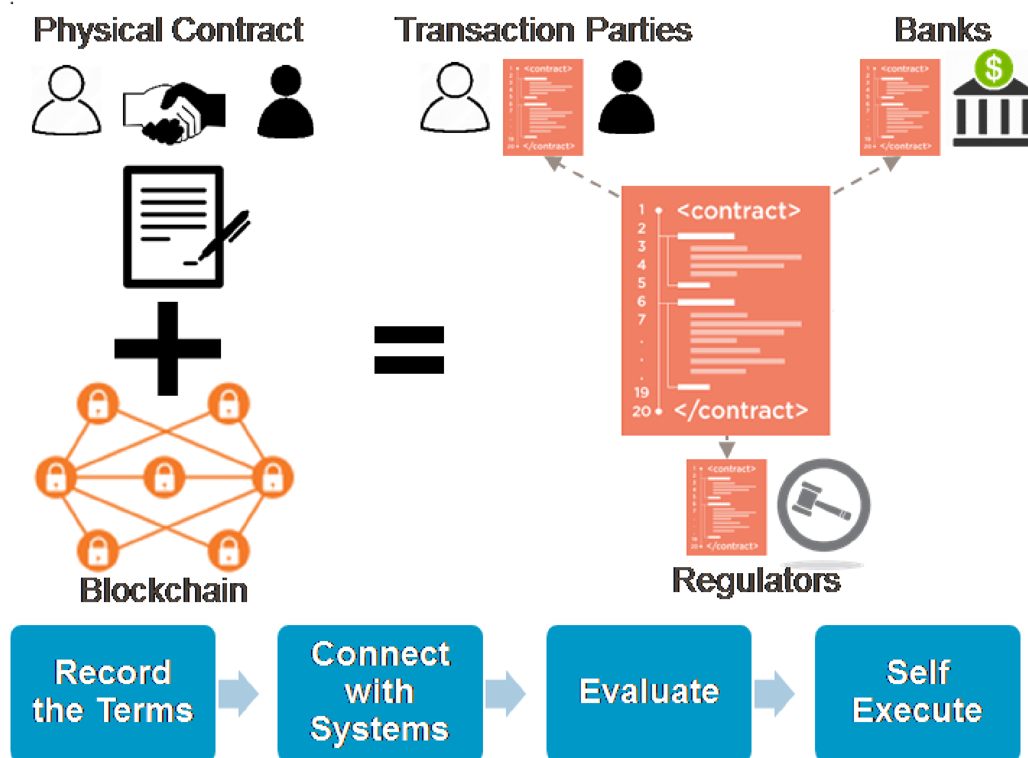


***Figure 2: Supply Chain Finance with Blockchain; Source: Capgemini Financial Services***

**Supplier's benefit with BCT**

As time passes, this technology will be gradually available to any small supplier. Thus BCT will make SCF available to suppliers with diversified business. Customers can easily on-board multiple suppliers in single set up. As SCF backed by BCT proliferates at different levels, competition is expected to be significantly enhanced. As marked by Hackett Group, marginal benefits will be of high importance for the suppliers in coming days. According to their analysis, even a small error in invoice processing or delay in delivery may be easily cascaded within SCF network. However, it's expected to gain huge efficiency in booking transactions, approval of invoices and dealing with foreign currency transactions. In addition, flow of inventory and its tracking will be pretty straightforward. The speed of transactions will be fastened if the relationship between the supplier and customer is strong. For example – prepayment of purchase orders will take place and in case of delay in delivery or defects in goods automated refunds can be initiated.

**Customer's benefit with BCT**

According to Mr. Robert Murphy of Forbes, the BCT allows the customers to set up a streamlined SCF with limited resources. Involving multiple suppliers on the same system, the customer will be in a better position to negotiate prices and other terms and conditions related to the agreement in its own favour. With the advent of cloud based technology and smart contracts, it's possible for a customer to involve some alternative sources of funding, e.g. – credit unions rather than depending only on the handful of banks that offer SCF. Pooling their funds will ultimately reduce administrative costs and overall overhead. This will strengthen the cash flow of both customers as well as suppliers. Another important aspect of SCF for the customer is to obtain a favourable payment term from suppliers as suppliers are using the customer's credit. BCT will be useful in involving the third-party payer as well in the negotiation process to keep the process more transparent.

**Financier's benefit with BCT**

Along with the supplier and customer, BCT also provides banks or financier much desired reliability, speed and increased control in SCF network at a fraction of cost. Since both the original contract and the order placed by customer are on display, bank can readily verify the origin and authenticity of the same. Moreover, if the contract is of any long term events, such as manufacturing or transportation, the progress can be tracked on real time basis. Hence, an easy collaboration between financial service and supply chain activities is catalysed by BCT.

Overall, BCT provides tremendous efficiency in the system. The time of initiation of payment, verification and approval are expected to be drastically reduced. Even due to less manual activity bank fees would be reduced. Therefore, compared to existing practices of SCF, BCT backed SCF would be much cheaper and efficient.

**Development and adoption of BCT**

Trade finance, now a days, is gradually shifting from a traditional paper based manual model towards a paperless digitized model. In order to achieve this, manual processes are largely replaced with automated transactions. For example, in 2016, export letter of credit has been launched in electronic form for the first time by Wells Fargo and Cargill (commodity trader). Thereafter, since last two years, firms have started implementing BCT in order to support SCF. The CEO of Hugo Boss, Andrea Redaelli, shared with the delegates of SCF forum in 2017 how their company has started implementing BCT to track inventories through a supply chain on experimental basis. Since then, number of start-ups have been coming up with as a provider of BCT in the domain of SCF. Few names among them which are becoming more popular are – Eximchain, Zero1 Capital, Tango Trade, Hijro etc. Some pilot projects on adoption of BCT have already been launched and completed. HSBC has performed financing of soybeans last May using BCT. This is their first transaction in trade finance using this sophisticated technology. Last year, Commerzbank in Germany had also propelled a pilot project on BCT, where their existing business process designed by SAP is integrated with Corda blockchain platform end-to-end.

**Challenges in adoption of BCT**

The popularity of BCT obviously brings number of questions on board asked by the critics. The most prominent among them is whether BCT can bring a long-lasting and real value in SCF network. In September 2018, the consultancy service firm Deloitte has reported that the technology is yet to come out of the notion of a brilliant idea and being actually implemented in real life. For most of the companies, the adoption of this cloud based technology is still limited for commercial use. According to this report, only nine percent of Chief Information Officers (CIOs) have declared that they are either planning to set up a blockchain project within a year or have already started with one of these. Deloitte has identified some complexities in adoption of this technology. One such complexity is to set up distributed ledger technology (DLT). Besides, processing speed of transactions by the existing systems is also a concern. Another important issue pointed out here is the lack of standards on front.

Apart from operational concerns as discussed above there are also regulatory and legal issues which may crop in. For example, privacy of data is always an important aspect which over the years becoming a major threat. Customers often become conscious when they have to share sensitive financial information (such as cost related information) in the supply chain. But, the main purpose of DLT is to bring transparency among the parties present in the network. This purpose will be completely defeated if the firms hesitate to share information.

Given the potential of BCT in enhancing efficiency of the entire system of SCF some effective planning is required to extract the best results. For example, one can differentiate private blockchains from the public ones.

The barrier of transparency created for sensitive information can be somehow controlled by using private blockchain instead of public blockchain. Here, it's required to grant certain rights to access to certain members of the chain only. One can sincerely hope that with such type of innovative steps, corporates will turn their heads towards this highly efficient technology and avail maximum benefit of SCF.

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ALUMNI CORNER

# Parsing the RBI's Financial Stability Report

**Balachandran R**

*Balachandran R is an alumnus of IIM Calcutta (1987-89) with extensive experience in corporate banking, investment banking and product management.*

The Reserve Bank of India sits at the apex of the financial system. It is the banker and debt manager to the Government of India, banker to banks, regulator, licensor and supervisor of banks, regulator of payment and settlement systems and manager of foreign exchange of the country. It has an important role to play in monetary policy formulation and subsequent modulation of liquidity conditions to ensure transmission of monetary policy to the financial system. It is the issuer of paper currency and can also create electronic money "out of thin air", when it pays banks for the securities it purchases from them.

Any action of RBI therefore attracts a flurry of attention in the financial media, even if it is something as mundane as the publication of a report on financial stability. The latest such report published in December 2019, has the usual platitudes like "India's financial system remains stable notwithstanding weakening domestic growth" and "risks arising out of global/domestic economic uncertainties and geopolitical developments persist". The report also provides many interesting insights into the state of the economy and the banking system. While underscoring the slowdown in aggregate demand, it has understandably kept away from touching upon sensitive issues like demonetization and GST implementation.

**The cobra effect**

Shunning the usual conservative language and adding a dash of spice to an otherwise routine report, the central bank governor, in the preface to the report, warns of a "cobra effect", alluding to the unintended consequence of ultra-low/negative interest rates in some economies, which can lead to asset bubbles, rather than bringing back growth and inflation to acceptable levels.

**NPA's, a bottomless pit**

The report anticipates that the Gross NPA (GNPA) ratio, based on stress tests, may increase from 9.3 per cent in September 2019 to 9.9 per cent by September 2020. This is surprising given the significant Rs 42,000 recovery expected by banks from Essar Steel in this period and the recognition of many large ticket corporate NPA's having taken place already in the last few quarters. Yet to be recognized NPA's like a defaulting non-banking finance

company with a Rs 1 lakh crore balance sheet, may be a contributing factor, among others. If a forensic audit indicates a fraud, banks would need to provide 100% of their outstanding with more stringent timelines compared to a default due to a "genuine" business failure. The industrial sector's GNPA ratio is by far the highest compared to agriculture and services, with the least being that of the retail sector.

NPA's merit categorization after 90 day default. This is the tip of the iceberg. While the extent of stressed assets in the 1-90 day default range (known as Special Mention accounts i.e. SMA's) is available with the central bank, strangely this information is not disclosed for all SMA accounts viz. 0,1,2. The only information available from the financial stability report is that SMA-2 loans increased by about 143 per cent between March 2019 and September 2019, with the SMA 2 ratio at 2.2%. This alarming but significant piece of information is buried somewhere deep in the report. SMA's are the immediate precursor to NPA's and an increase in SMA2 ratio is a harbinger of higher Gross NPA's at banks.

**Current account deficit**

The report, released in the last week of December 2019 has forecast that current account deficit is likely to be under control "reflecting muted energy price outlook". In just a week since then, the geopolitical situation has taken a turn for the worse in the Middle East, with the clash between the US and Iran, resulting in higher oil prices. Though the price quickly corrected, the Middle East situation continues to be volatile as always, putting India's current account deficit in a similar situation. Overall, the report appears to support a bearish view on energy prices, which is good news for a huge oil importer like India.

**Foreign exchange reserves**

In Q1:2019-20, current account deficit widened to 2.0 per cent of GDP from 0.7 per cent in the preceding quarter, but this was more than offset by net capital flows. Foreign direct investment (FDI) recorded net inflows of USD 13.9 billion in Q1:2019-20 as compared to USD 9.6 billion in the corresponding quarter of the previous year, along with increase in external commercial borrowings (ECB's). This has led to increase in foreign exchange reserves which now stand at a significant USD 454.49 billion. The RBI's intervention in the foreign exchange market "to curb rupee volatility" (perhaps a euphemism for preventing rupee appreciation and its impact on exports) would have helped in building the FX reserve war chest to face sudden outflows or speculative attacks on the rupee in the offshore non deliverable forward markets.

The report opines that as US monetary easing takes a breather, the exchange rate outlook for emerging market (EM) currencies will be a large determinant of EM local currency bond flows.

**Worries on credit growth highlighted**

The aggregate growth (y-o-y) in banking sector's gross loans and advances noticeably slowed from 13.2 per cent in March 2019 to 8.7 per cent in September 2019. This raises the issue of causality. Did the slowdown in the

economy result in lower credit offtake or did banks' aversion to lend to the fraud prone industrial sector, lead to economic slowdown? Perhaps, the truth lies in between, with each feeding off the other.

**Rating shopping, RBI calls it out**

It's been an open secret until now, that issuers shop around for the best credit rating and rating agencies fall into this competitive trap to secure business by providing rosy ratings, which therefore are of no value to the lender/investor. The central banks concludes, using data, that for ratings that are withdrawn, the new ratings assigned are either the same or an improvement over the earlier ratings. Although replacement of withdrawn ratings by better or similar ratings by a different rating agency is visible across all rating grades, such instances are particularly pronounced at BBB and below. The issue of possible rating shopping behavior on the part of obligors clearly requires serious attention, says the central bank. Whose attention?! That of the market regulator, which regulates rating agencies?

**Equity market, a better harbinger of defaults?**

The report, while hesitating to spell out that rating agencies are behind the curve in recognizing defaults, makes no bones of its opinion that a relatively vibrant and active equity price is the only source of emerging information for all stakeholders including rating agencies. In other words, equity markets can predict defaults better than credit rating agencies.

**Enforcement, a weak link**

During July 2019 to December 15, 2019, RBI's Enforcement Department undertook enforcement action against 29 banks and one NBFC, and imposed an aggregate penalty of ₹47.92 crore for non-compliance with/ contravention of directions on fraud classifications and reporting by the banks, reporting of fraud on the CRILC platform, fraud monitoring in NBFCs, discipline to be maintained while opening current accounts, discounting/ rediscounting of bills by the banks, monitoring the end use of the funds, violations of directions/ guidelines issued by the Reserve Bank on know your customer (KYC) norms, Income Recognition and Asset Classification (IRAC) norms etc.

Even discounting for the size of India's banks versus those in the US/EU, the circa USD 7 million penalty by the banking regulator in India, is an abject figure compared to the multibillion dollar penalties on banks in the US and Europe for violations. The Indian market regulator's similarly modest penalties on errant credit rating agencies, led to a rally in their share prices when the penalty figures were announced recently. The timid response of our banking and market regulators cannot act as a deterrent to the banking and market players from ever more egregious violations.

**Good news for real economies is bad news for the markets**

The drafters of the Financial Stability Report appear to have taken pot shots at traders chasing negative yielding bonds. The report highlights that the extraordinary monetary expansion in the wake of persistent economic weakness has distorted global yields and that about a quarter of investments is in negative yielding bonds. Investors are betting on negative yielding bonds for capital gains for which yields need to go down even further. However, when the tide turns, bringing in good news for the real economies, it turns out to be bad news for the markets.

To conclude, the latest edition of the Financial Stability Report by the Reserve Bank of India is rich in data and analysis, provides several meaningful insights, even appears to pontificate to its peer market regulator, but stays away from political hot potatoes like the impact of GST rollout and demonetization.

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*VOICE OF AMERICA*

# Reviving an Economy

## Ayan Bhattacharya

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Nowadays, any discussion among economists with an India connection invariably gravitates towards a familiar topic: the slow and painful unraveling of the Indian economic juggernaut. This quarter the inflation rose to 7.35%, far above the 2-6% band targeted by the central bank. Such huge rise in prices limits the future wiggle room for monetary policy. Meanwhile, credit growth remains low, new mounds of bad loans keep hobbling the system, tax revenues are stagnant, consumer spending is slowing, there are few takers for public sector firms on the block, and the fiscal deficit targets keep getting breached many months in advance. Policies that should normally give a big fillip – like the cut in corporate tax rates, or a large infrastructure spending plan announced last month – seem to have barely made a dent. It is as if the economy has decided on an autopilot course down into the ground, and no amount of cajoling and coaxing can bring it back to its senses.

While there are many details that are specific to the Indian system, economists have for long tried to understand better the broader phenomenon of foreboding that grips the economic climate at such times. In fact, the most well-known economist of the last century, John Maynard Keynes, earned his stripes by proposing what was then a radical solution to the depression that was holding back the western economies in the 1920s and 30s. Keynesianism, as his macroeconomic school of thought came to be known, is one of the many prescriptions that economists nowadays bring to the policy table when conjuring up new ways to treat a failing economy. Just like doctors, economists don't always agree on the best course of treatment. However, almost all economists agree that at this stage, all the myriad policy prescriptions have a simple underlying agenda: reviving the flagging expectations of economic agents.

## 1. Economic Expectations

Come to think of it, the real ingredients of any economic system are the expectations of the agents that volunteer to be a part of it. Economics does not dictate how the manufacturing process should operate, that is the subject matter of manufacturing. Neither does economics impose restrictions on the production process, optimizing supply chains is domain of operations. Nor does economics lay down strictures on how products must be marketed, or for that matter, how people must consume the multitude of goods and services that are peddled to them. What economics does, however, is to provide a template for the coordination of these disparate enterprises – manufacturing, production, marketing, consumption, and a host of other activities – that brings everything together and then moves it all forward in the best possible way. A manufacturer tries to figure out the how much to make by using the economic marketplace that allows him to gauge the strength of the demand. The consumer tries to determine the best price to pay by using the economic marketplace that allows her to gauge how much other rival sellers might charge. And so on and so forth. No individual economic agent knows for sure what the actual outcomes will be tomorrow, but by gauging the expectations of others in the system, all agents have a much better sense of what the tomorrow holds for them collectively. The crucial function of the economy is this synchronization, and the actual objects that are being synchronized are expectations of agents in the economy.

In a modern market economy, different marketplaces throw up prices for a diverse array of goods and services. You have price of onions, price of cars, price of homes, price of electricity, price for the cable and internet, price of medicine, and even price of entertainment in the form of a tickets at movie and concert halls. The price of any asset, whether it is a physical object or an intangible service, is the value that a buyer hopes to derive from its possession in the future. This value is all about expectations, because the future is yet to unfold when the transaction is sealed. Different people may expect to derive different value from possession, or they may expect the future to unfold differently—thus they bargain and trade. In the end, though, what they are negotiating about, is competing versions of expectations about the future that is inbuilt into the price. Thus, in a very concrete sense, a market system generates the best expectations of its agents for the future.

By this token, when an economy begins to disappoint, it fails because its agents expect it to fail. The actual failure is a consequence of the expectation of failure among the agents.

## 2. Managing Expectations

Running a modern market economy well is really an exercise in managing diverse expectations. While the functioning of the actual economic machinery is an important component of this exercise, what is equally crucial—but often overlooked—is the careful calibration of expectations of the participating agents in the economic system. In a way, economic expectations are self-fulfilling. If agents believe that the economy is on a

downward trend, they cut back on their investments, and this in turn pushes the economy further down south. On the other hand, if agents believe that the economy is doing well, they spend and consume more, and this in turn boosts the economy. This is the reason top economic managers in a country need to have strong credibility with markets—the markets need to believe in the pronouncements of the economic managers for the pronouncements to have actual effect on the ground.

Building credibility with markets is a long and arduous exercise. Markets need to be convinced that the economic managers know what they are saying, and further, that pronouncements made on paper will be backed by concrete action in the field. This is where reputation matters. For years the Turkish Central bank has been trying to bring its inflation under control through raising interest rates. However, the political leadership in the country has been at loggerheads with the Central bank, insisting on low interest rates to boost growth. The markets think the political leadership is more powerful than the economic leadership in setting the agenda in Turkey, so any pronouncement on interest rates by the Central bank is taken with a huge grain of salt, leading to limited effect on inflation expectations.

In India, too, there is a complicated relationship between economic and political imperatives. On the one hand the economic managers are urged to fight the menace of bad loans, on the other hand political leaders compete with each other in forgiving massive farm loans. On the one hand economic managers try to get bankruptcy proceedings done quickly, on the other hand legal challenges to the process drag on in courts for years. On the one hand the Central bank is promised a free run in its domain, on the other hand through periodic appointments and strictures, its powers are circumscribed. In the past, the Planning Commission was intimately involved in management of the economy and disbursement of central funds, thus announcements by the Commission were a credible signal. Its successor, the NITI Aayog is only an advisory body—their suggestions often overlooked—thus, the Aayog's proclamations carry limited credibility for markets. In other words, there seem to be very few sources for credible forward-looking signals in the Indian establishment today. This is one reason why forward-looking policy guidelines, that should normally give a fillip, are having little effect on the Indian economy.

**3. Reviving Credibility**

For reviving an economy that is faltering, the first step is to establish credibility with the markets. When this happens, agent expectations can be altered easily through forward-looking policy announcements, and this sets in motion a virtuous cycle that lifts activity economic activity. In fact, not just the economy, this maxim holds true in other domains, too. For a long time, Indian elections were a murky affair, till T. N. Seshan introduced and implemented a series of electoral reforms. More than the actual reforms, what mattered was the credibility that this exercise established for election commissioners. If the commissioners made an announcement, it got deviant

candidates worried, and they therefore desisted from going against the expected norm. In effect, a virtuous cycle was put in motion, the benefits of which Indians are reaping even today.

Keynes was among the first economists to realize the potency of credibility and expectations. The Bretton Woods agreement that he engineered was as much about expectations as it was about actual policy. By getting the governments to commit themselves to far-ranging reform, and bringing in well-known policy makers to helm economic activity, the agreement provided a credible template for sustainable economic recovery after the Second World War as India battles its own economic demons, hopefully the powers that be will heed the lessons of credibility and expectations.

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# U.S. Venture Capital Ecosystem: an overview

## Rosenberg Center for Global Finance Brief

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Over the past 30 years, venture capital (VC) has been an important source of financing for innovative companies. Not only have VCs harvested high profit from their portfolio of investments, but firms supported by VC too, including Amazon, Facebook, Google, Alibaba, and Intel have been high gainers. VC financing has had a large impact on the U.S. and global economy. With technology playing a more and more important role, we have seen that FinTech, Life Sciences/Biotech, and Information Technology have started to draw a large amount of capital from VCs in recent years.

In this study, we seek to better understand the trends in the overall venture ecosystem in the U.S. and its implications for the future growth of venture financing. Most importantly, we are looking across different VC clusters in the U.S. and providing an analysis for each cluster compared to the others.

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## DATA AND METHODOLOGY

We collected all the data of VC deals in the last three decades (1990.01 - 2019.08) from VentureXpert. It is a dataset that contains unique identifiers for each VC deal, its dollar amount & round number, and the detailed information of each VC backed company, including business description, SIC industry, public status, etc. The whole dataset dollar amount is then cleaned and adjusted by 2019 CPI index. After excluding international companies, there are 169,273 VC deals of 61,965 companies in total.

For further research, we segmented the data into different decades, industries, and geographical regions and compared across these different levels. The entire time frame of our analysis, is divided into three parts, where years from 1990 to 1999 is the first decade, 2000 to 2009 is the second decade and 2010 to August 2019 is the most recent decade. By working on the data from different decades, we can easily compare the growth rates of different metrics. For industries, we segmented them into Life Science, Information Technology, FinTech and other industries. As for the geographical regions, we chose to segment the dataset into different metropolitan statistical areas (MSA), which is a region with a high population density at its economic core. Looking at the data on the MSA level is more systematic for the analysis afterward.

## RESULTS AND ANALYSIS

**Figure 1: U.S. Venture Capital Deals**

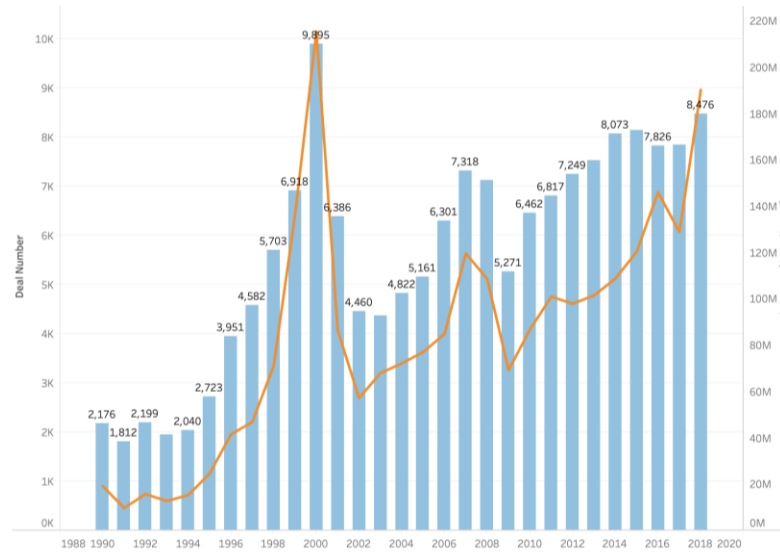
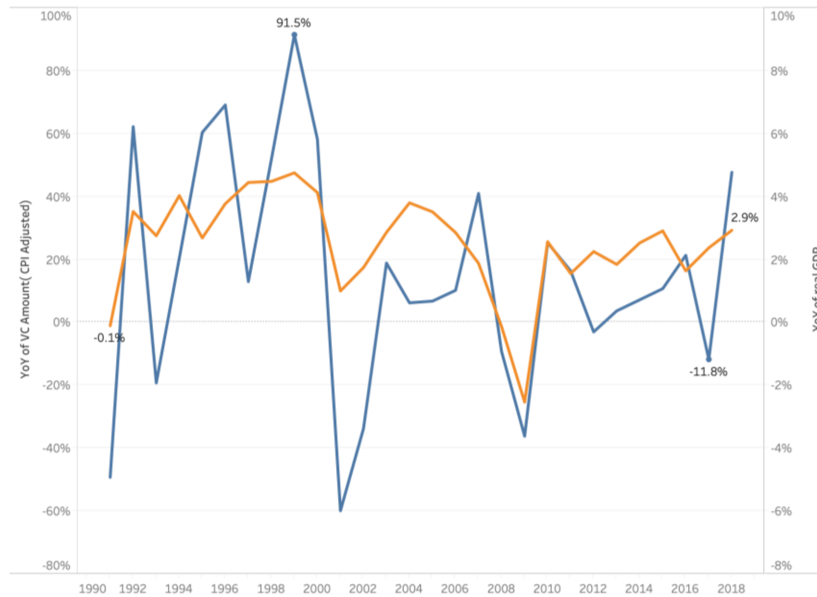


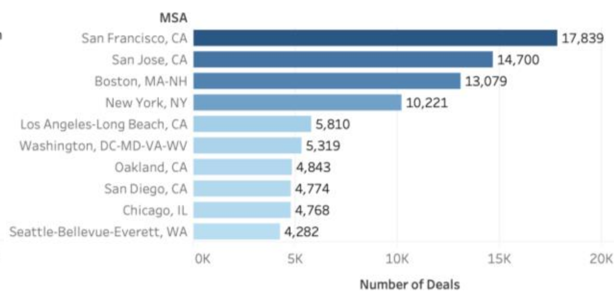

**Figure 2: U.S. Venture Capital and U.S. GDP Growth Rate**




In Figure 1, the bar and the line represent the total U.S. VC deal counts and the total deal amounts respectively. As can be seen, the VC industry has grown during the last 30 years from less than 20 million in 1990 to almost 200 million in 2018, becoming one of the most important financing sources for private companies. VC activity was affected by the dotcom bubble, as seen in Figure 2 but was able to recover in the following years. In general, the overall growth rate of VC activity moves closely with the U.S. GDP. Since they are correlated to each other, any drop in the VC activity can be explained by the macro economy to some extent.

**Figure 3: Top 10 MSA by Round Amounts**

**Figure 4: Top 10 MSA by Deal Counts**




As shown in Figures 3 and 4, the top 5 MSAs between 1990 - 2019 are almost the same whether analyzed by deal count or the total amount invested. Over these last thirty years, the leading MSAs in the U.S. for VC activity have been. San Francisco and San Jose, followed by New York, Boston and Los Angeles. In the last three decades, San Francisco based deals have totaled around $300 billion, with investments made in approximately 18,000 deals, while the Boston region has invested around $160.72 billion in approximately 13000 deals.

## Table 1: Comparison of Top 5 MSAs in the last three decades - Total Deals

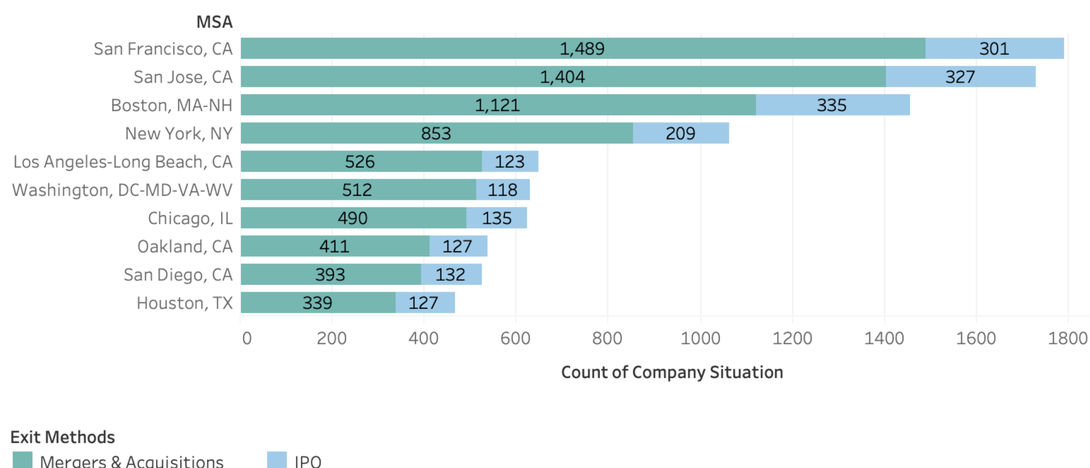
| Total Deals | Deal Numbers | | | Growth Rate | | Deal Amount($Million) | | | Growth Rate | |
|---|---|---|---|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | D1 to D2 | D2 to D3 | D1 | D2 | D3 | D1 to D2 | D2 to D3 |
| **San Francisco, CA** | 2,630 | 5,590 | 9,635 | 113% | 72% | 25,453 | 71,759 | 201,660 | 182% | 181% |
| **New York, NY** | 1,203 | 3,120 | 5,951 | 159% | 91% | 18,927 | 55,726 | 112,084 | 194% | 101% |
| **Boston, MA-NH** | 2,768 | 5,049 | 5,347 | **82%** | **6%** | 23,253 | 60,470 | 77,596 | **160%** | **28%** |
| **San Jose, CA** | 3,868 | 6,181 | 4,652 | 60% | -25% | 33,744 | 88,382 | 124,699 | 162% | 41% |
| **Los Angeles-Long Beach, CA** | 1,032 | 1,995 | 2,797 | 93% | 40% | 14,263 | 31,819 | 45,458 | 123% | 43% |
| Note: Define 1990-1999 as Decade1, 2000-2009 as Decade2, 2010-2019 as Decade3 | | | | | | | | | | |

## Table 2: Comparison of Top 5 MSAs in the last three decades - Early Round

| Early Round | Deal Numbers | | | Growth Rate | | Deal Amount($Million) | | | Growth Rate | |
|---|---|---|---|---|---|---|---|---|---|---|
| | D1 | D2 | D3 | D1 to D2 | D2 to D3 | D1 | D2 | D3 | D1 to D2 | D2 to D3 |
| **San Francisco, CA** | 1,545 | 2,905 | 4,966 | 88% | 71% | 11,993 | 34,816 | 52,891 | 190% | 52% |
| **New York, NY** | 836 | 1,972 | 3,415 | 136% | 73% | 14,160 | 38,790 | 55,049 | 174% | 42% |
| **Boston, MA-NH** | 1,463 | 2,354 | 2,307 | **61%** | **-2%** | 13,087 | 27,404 | 26,851 | **109%** | **-2%** |
| **San Jose, CA** | 1,896 | 2,826 | 2,154 | 49% | -24% | 14,535 | 35,708 | 30,453 | 146% | -15% |
| **Los Angeles-Long Beach, CA** | 676 | 1,219 | 1,747 | 80% | 43% | 10,823 | 17,514 | 23,198 | 62% | 32% |
| Note: Define 1990-1999 as Decade1, 2000-2009 as Decade2, 2010-2019 as Decade3 | | | | | | | | | | |

From Tables 1 and 2, we can see that not only are San Francisco and New York leading in absolute number, their growth rates have also remained high over time. The other three MSAs including Boston slowed down and even shrank in certain years. For example, the growth rate in VC deal amount in Boston is 28% from D2 to D3, which is much less than 181% of San Francisco. This continuous high growth rate in San Francisco could be explained as it is considered as the global center of innovation, Silicon Valley. In addition, San Francisco has also benefitted from innovation spillovers leading to a scale effect on entrepreneurship thus contributing to this great momentum from decade to decade. Another point that is worth noting is that Boston has been surpassed by New York during the last decade. Although Boston is where venture ecosystem got started in the U.S., New York has caught up in terms of both deal numbers and total amounts in recent years.

## Figure 5: Successful Exits for All Sectors



However, VC investments by itself do not tell us the whole story of a VC ecosystem. One has to consider the success of these investments and hence we also looked at the successful exits of VC backed companies to gain further insights. As shown in Figure 5, where the successful exits include IPOs & mergers and acquisitions, Boston ranks third in terms of successful VC backed outcomes, closely following San Francisco and San Jose, and leading New York by about 37%. Overall, among all companies that were VC backed, around 6% went public and 20% got acquired while 7% went bankrupt and around 8% were leveraged buyouts in the last 30 years. The remaining VC backed companies resulted in failure.

**Table 3: Comparison of Top 10 MSAs in the last three decades - Successful Exits Counts**

| Successful Exits Counts | | | | Growth Rate | |
|---|---|---|---|---|---|
| Company MSA | D1 | D2 | D3 | D1 to D2 | D2 to D3 |
| San Francisco, CA | 559 | 748 | 492 | 34% | -34% |
| San Jose, CA | 821 | 686 | 229 | -16% | -67% |
| Boston, MA-NH | 637 | 579 | 245 | -9% | -58% |
| New York, NY | 319 | 447 | 302 | 40% | -32% |
| Los Angeles-Long Beach, CA | 256 | 270 | 127 | 5% | -53% |
| Washington, DC-MD-VA-WV | 244 | 299 | 88 | 23% | -71% |
| Chicago, IL | 278 | 238 | 113 | -14% | -53% |
| Oakland, CA | 260 | 213 | 69 | -18% | -68% |
| San Diego, CA | 227 | 225 | 77 | -1% | -66% |
| Atlanta, GA | 228 | 209 | 81 | -8% | -61% |

| Successful Exits Counts / Population in Mill | | | | Growth Rate | |
|---|---|---|---|---|---|
| Company MSA | D1 | D2 | D3 | D1 to D2 | D2 to D3 |
| San Jose, CA | 51.91 | 39.18 | 11.99 | -25% | -69% |
| San Francisco, CA | 14.30 | 17.86 | 10.97 | 25% | -39% |
| Boston, MA-NH | 15.24 | 12.97 | 5.22 | -15% | -60% |
| San Diego, CA | 8.53 | 7.71 | 2.41 | -10% | -69% |
| Washington, DC-MD-VA-WV | 5.36 | 5.91 | 1.48 | 10% | -75% |
| Atlanta, GA | 5.69 | 4.41 | 1.63 | -22% | -63% |
| Chicago, IL | 3.22 | 2.55 | 1.19 | -21% | -54% |
| Los Angeles-Long Beach, CA | 2.81 | 2.47 | 0.97 | -12% | -61% |
| New York, NY | 1.79 | 2.39 | 1.52 | 33% | -36% |
| Oakland, CA | 0.07 | 0.05 | 0.02 | -23% | -68% |

Comparing the data segmented into three decades, we can get a few additional interesting insights. First, even though both Boston and San Jose have more successful exits in total than New York, they fell behind New York in the recent decade. Second, almost every MSA has seen a decline in the number of successful exits, even when scaled by population from D1 to D3. Most importantly, the growth rate of successful exit is negative for almost every top 10 MSA in the recent decade.

To analyze further, we did the same exercise by analyzing subsectors of FinTech, Life Science, IT and compared how start-ups trends changed in the last 30 years across the top 10 VC ecosystems in the U.S.

**Figure 6: Round Amounts of Top 10 MSAs by subsectors (1990-1999)**

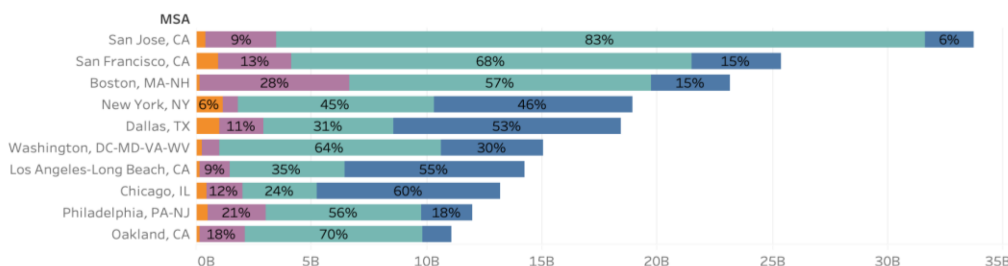



**Figure 7: Round Amounts of Top 10 MSAs by subsectors (2000-2009)**

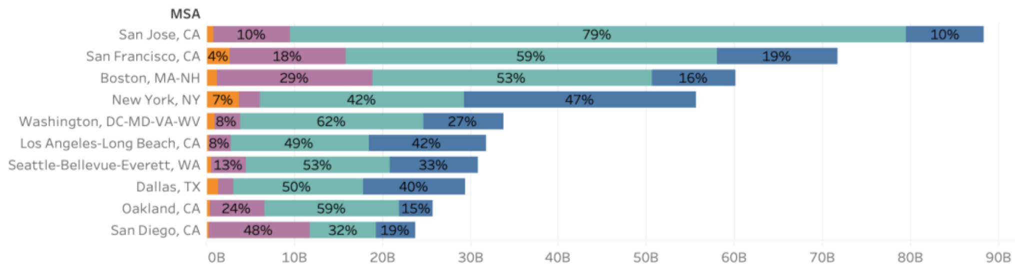
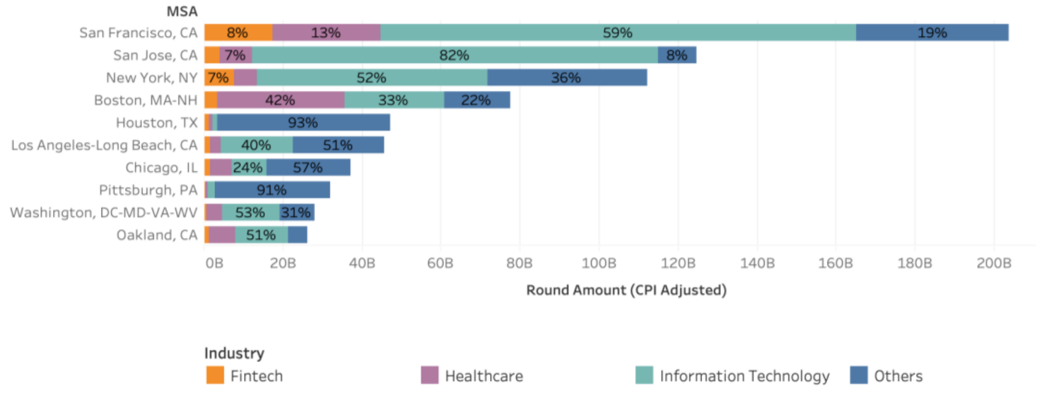



**Figure 8: Round Amounts of Top 10 MSAs by subsectors (2010-2019)**




Figures 6, 7, and 8 show the round amounts of subsectors in each MSA over the last three decades. As can be seen, most of the VC capital has been invested in the IT sector, especially in the early years when the information highway was a strong attraction. As for the other two subsectors, Life Science has been leading and growing in Boston and San Diego while FinTech is becoming a new focus in New York and San Francisco. Boston specifically, has been attaching greater importance to Life Science where the percentage invested has gone up from 28% to 42% in Life Sciences while the percentage of FinTech only grew from less than 1% to 3%.

**Figure 9: Early Round Amounts of Top 10 MSAs by subsectors (1990-1999)**

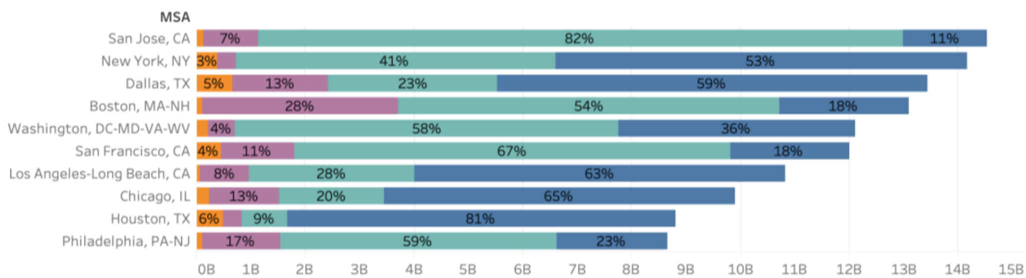



**Figure 10: Early Round Amounts of Top 10 MSAs by subsectors (2000-2009)**

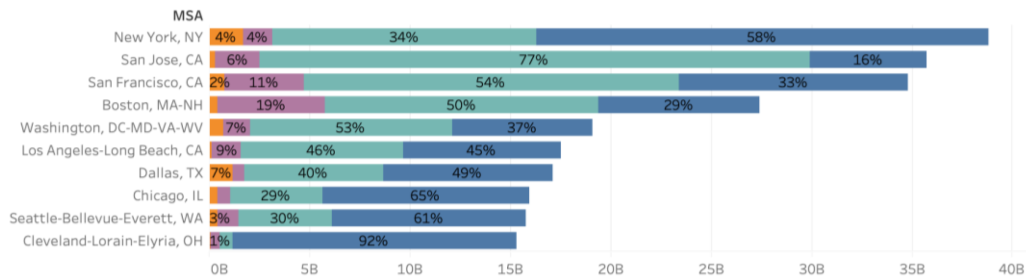
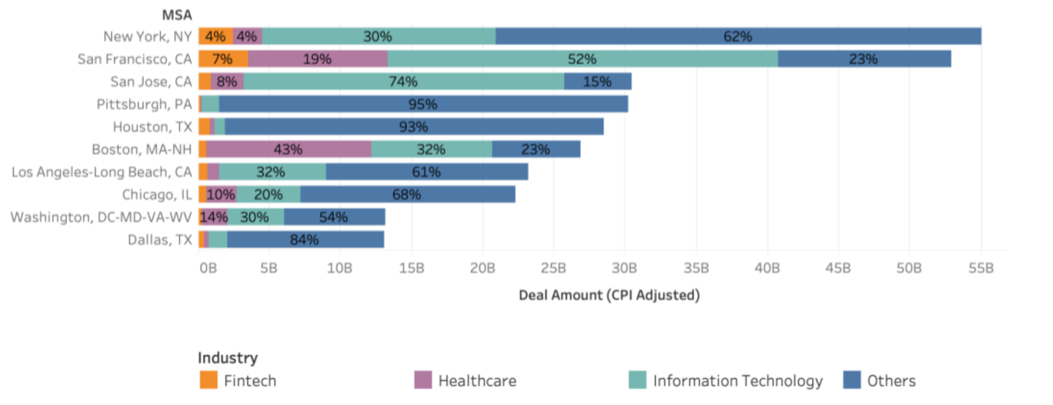



**Figure 11: Early Round Amounts of Top 10 MSAs by subsectors (2010-2019)**




Analyzing the early round amounts (i.e., only Series A and Series B investments) of sub sectors shown in Figures 9, 10 and 11, also provide us with some additional information. Overall, it shares the same pattern with the total round amount but there are some new geographic clusters that show up in the top 10, such as Cleveland and Pittsburgh. However, along with Houston and Dallas, they barely have capital invested in the three primary sectors we focus on, i.e., Fintech, Life Sciences, and Information Technology. Rather, most of the capital has been invested in other sectors, including capital intensive sectors such as manufacturing, transportation, communication, wholesale and retail trade. Since 2000, Boston is a few steps behind (by early stage amount invested), while San Jose and New York still come out at the top. Interestingly, San Francisco did not make it to the top 5 during 1990 to 1999, by early stage VC investments, but has caught up in the following 2 decades.

**Figure 12: Deal Counts of Top 10 MSAs by subsectors (1990-1999)**

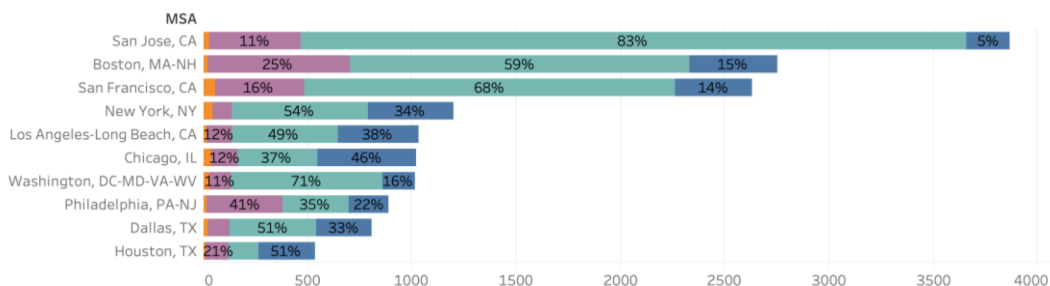



**Figure 13: Deal Counts of Top 10 MSAs by subsectors (2000-2009)**

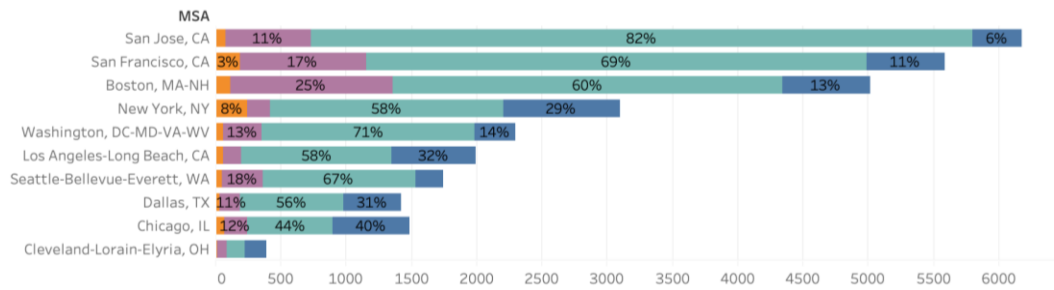
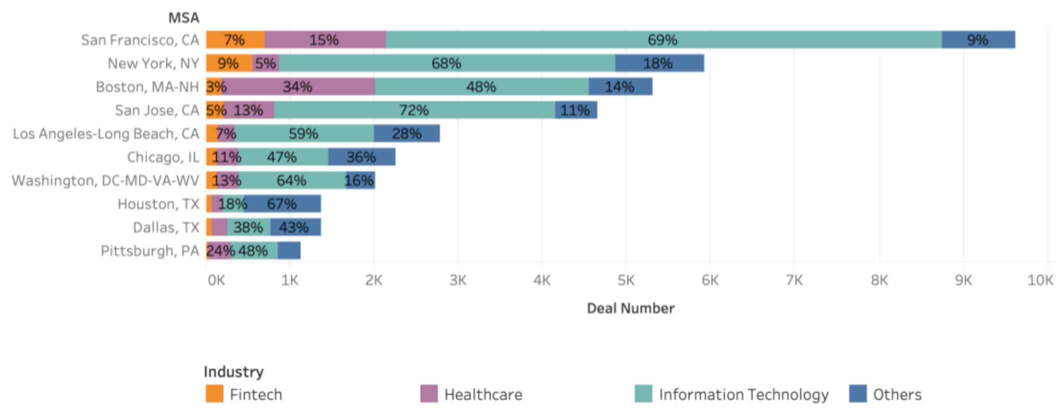



**Figure 14: Deal Counts of Top 10 MSAs by subsectors (2010-2019)**




Consistent with what is mentioned in the previous paragraph that "other" sectors are relatively more capital intensive, thus accounting for a lower portion by deal counts (Figures 12, 13 and 14) than when analyzed by deal amounts. Otherwise, the top 10 MSAs share the same overall pattern by deal counts as they do with deal amounts. San Francisco and New York have seen a drastic increase in the number of deals and their growth rates are more than 300% and 500% respectively, much larger than that of San Jose and Boston, which were the leading MSAs prior to the bust of the tech bubble. San Jose in particular, which was the number one MSA in the first two decades, has shrunk in the number of deals during 2010-2019, falling from 6,181 deals in the last decade to 4,651 deals in the current decade.

## Conclusion

Overall, the Venture Capital market in the U.S. is huge and is continuously growing. Except for the effects of the dotcom bubble and the financial crisis, the industry has been growing over the last thirty years. In 2018, there were more than 8000 deals and around 200 million dollars were invested. San Francisco, San Jose, New York and Boston are the four MSAs that have the highest deal amounts and deal numbers. However, they all have been showing very different venture ecosystem dynamics. In the U.S., Boston is where venture capital investments started; Silicon Valley and the Bay areas have over time developed more professionalized and institutionalized

VC funds, while New York has seen a very robust venture market over time because of the presence of Wall Street and institutional capital. A more detailed analysis by sector, would likely provide additional insights to the dynamic nature of VC ecosystems in the U.S.

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