Jan 2018

Finding Alpha

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VENEZUELA'S HYPERINFLATION: WHEN MORE IS NOT BETTER

BILL SHU

JANUARY 28TH, 2018

VENEZUELA, known as the nation with the most endowment of oil resources, was once a booming economy before the 1970s when its GDP (Growth Domestic Product) grew by 250% from 1958-1977. However, nowadays, when Venezuela pops up during people's conversations, it is almost always associated with the words "inflation," "hyperinflation," or "recession." In fact, Venezuela has been experiencing an economic recession since 2014 and is currently experiencing hyperinflation, with some estimates putting its annualized inflation rate at a ludicrous level of 4000%, as shown in Figure 1 (This effectively means that, if a bottle of water costs you $1 today, in one year, it will cost you $40!). One may wonder, what are the causes that pushed Venezuela, a once prospering land with a rich oil reserve, to run into such an economic predicament of hyperinflation and prolonged recession?

***Figure 1:** Venezuela's Annual Inflation Rate*
***Source:** Bloomberg*

Before the Crisis Unraveled:

While Venezuela's hyperinflation really grabbed the Western media's attention in 2014, Venezuela has actually been in a state of economic and social instabilities since the 1980s. GDP per capita in Venezuela stagnated at around the same level from the 1970s to the 2000s. Facing these social and economic grievances by the Venezuelan public, Hugo Cháve, a left-wing former army commander came under the spotlight and introduced a variety of interventionist structural reforms, including a new constitution in 1999, the takeover of the national exchange center in 2003, and various anti-poverty programs. These measures of nationalization and government spending would later plant the seed for the hyperinflation. Fortunately, the international oil market was experiencing a great boom in the early 21st century, which led to a long period of economic growth for Venezuela in the 2000s.

Everything seemed in place at the time, yet the Venezuelan economy has suffered almost four catastrophic years since 2014. The main reasons for this current economic crisis include an ongoing plunge *in* oil prices, a ridiculously high level of government debt and the price controls imposed to stop inflation. These factors, which has arisen mainly from Venezuela's economic structure and government interventions, have directly contributed to Venezuela's socio-economic turbulences since the 1970s, igniting the current recession.

Plunging Oil Prices

Venezuela, with its natural endowment of oils, has always been characterized as an "oil economy," where oil *activity* accounts for 20% of Venezuela's GDP. As we all know, oil prices can be extremely volatile. In the 1970s when OPEC colluded and ignited a spike in the oil price, Venezuela's economy also experienced tremendous gains as companies see their corporate profits rise and the economy's exports also sharply increase in value. However, the opposite also happened after the 1980s and once again, in 2014. Oil price, which previously peaked at US$115 per barrel in June, fell to as low as US$35 by February 2016.

1. https://www.bloomberg.com/view/articles/2017-12-19/venezuela-is-living-a-hyperinflation-nightmare
2. https://theconversation.com/inside-venezuelas-economic-collapse-80597

This is definitely devastating for Venezuelan companies as they see their profits turning into significant losses and thus dragging Venezuela's economy. Ultimately, Venezuela's economy is so reliant on the price of oil yet it doesn't have much control over its price. Hence, Venezuela's economic structure is what exposes it to recessions during times of low oil prices.

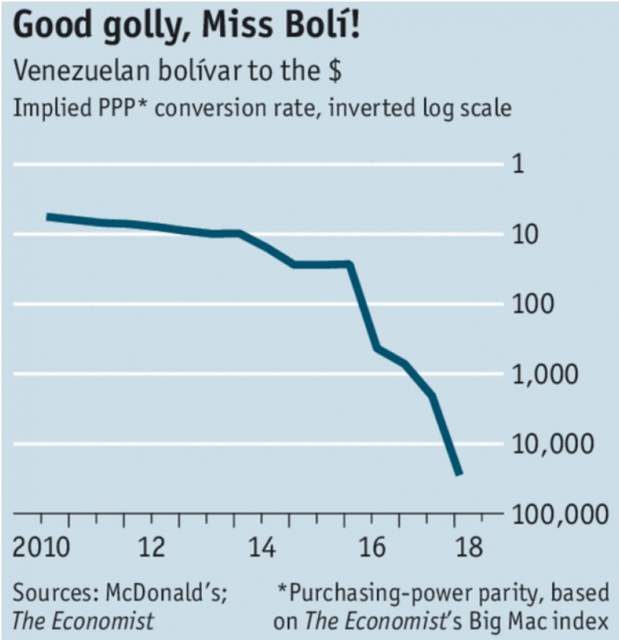


Figure 2: *The Exchange Rate between USD and the Venezuela Bolivar*
Source: *The Economist*

Government Debt

One could argue that plunging oil prices is uncontrollable to a great extent, yet the Venezuelan government can also be blamed regarding the current recession, in particular, its national debt. Since its economy is heavily correlated with the oil industry, so is its GDP and consequently, the government's tax revenue. During levels of high economic activity, tax revenue, along with GDP and national income, increased sharply and led to a lot of long-term government projects. But in times such as the 1980s and 2014 onwards, Venezuela's tax revenue has been insufficient to cover its government expenditure, leading to fiscal deficits. Since the 1970s, the Venezuelan government has nationalized many oil companies, which increased the exposure of its revenue to the oil industry (meanwhile, its nationalized oil companies are poorly managed). Thus, the Venezuelan government has a great deal of long-term public expenditure programs during times of fluctuating tax revenue, so it finances its expenditure through borrowing government bonds.

Often, the government simply prints money to meet payment obligations, but such printing of money directly leads to inflation and ultimately, hyperinflation. Even with such excessive printing and borrowing, the Venezuelan government still announced default in November 2017, mostly because it is running out of cash.

A huge proportion of these debts are external debts (borrowed from other nations), so Venezuela has to meet these principal and interest obligations using its foreign reserves, which has pretty much run out due to high levels of debt. Thus, the government must purchase more foreign currency and sell its own currency in greater volumes, lowering the exchange rate by the laws of supply and demand (as you might have learned in ECON 102). Moreover, the inability of the Venezuelan government to finance its debts with existing money, along with the deteriorating economic conditions caused by an oil plunge, also engenders investors and speculators to lose confidence and sell their Venezuelan Bolivar. All of these conditions only further lower the exchange rate and cause Bolivar to depreciate. Now, the Venezuelan currency has devalued to the point where 10000 Bolivar cannot even buy $1 USD, as shown in Figure 2. Such devaluation leads to inflation, as foreign goods become significantly more expensive when Bolivar experiences a huge drop in the exchange rate. Thus, the high level of government debt, which in turn leads to excessive printing of banknotes and significant devaluation of the Bolivar, ultimately engendered and exacerbated the current hyperinflation.

3.https://www.economics.utoronto.ca/diegor/research/MFHLA_paper.pdf
4.https://townhall.com/columnists/bgascmetals/2016/06/07/causes-of-venezuelas-hyperinflation-n2174301

Price Controls and Shortages

Just to make things even worse, the Venezuelan government also imposes price controls as an attempt to keep price levels low, which economically speaking, is unviable. According to the laws of supply and demand, if the government imposes a price ceiling below the market clearing price, there would be a shortage, which is exactly what has happened in Venezuela. Venezuelans have now grown used to standing in long lines waiting to buy daily essentials such as eggs, milk and paper towels since the current price where the ceiling is set is too low for food importers to sell at (as the currency has devalued significantly). As a result, various undesirable social issues such as food shortage and hunger, people dying due to lack of medicine, soaring homicide rates as well as numerous public demonstration of discontent has taken place in the past few years. Moreover, as wages tend to lag behind price levels during such period of hyperinflation, even if the price controls were lifted, most people still could not afford these essential goods.

Where To Go Next

There are definitely more factors and issues to consider and analyze regarding Venezuela's complicated economic condition, as this article is simply a snapshot of the main factors causing this economic deterioration. It is quite obvious the current economic issues in Venezuela is extremely complex and cannot be easily resolved, as IMF projects Venezuela will be in recession until at least 2019.
However, there are still ways to get out of this predicament. A previous study conducted by IMF (International Monetary Fund)'s researchers in 2007 have concluded that to eradicate hyperinflation, the government usually should implement a policy package that includes balancing the budget, liberalizing prices and exchange rates (that is, no more price/exchange rate controls), and tightening the money supply. This is definitely economically feasible, yet it might be politically difficult to introduce because (1) such policy measures take a long period of time to completely trickle down in the economy, (2) such measures would involve decentralization and force the government to permanently divert away from their current central planning approach, and (3) in the short run, balancing the budget and tightening the money supply might even deepen the recession (like what happened when the Fed raised rates as high as 20% in the early 1980s to fight inflation). Ultimately, one lesson can be learned: inappropriate government intervention definitely makes things worse, like, a lot worse.

5. *http://money.cnn.com/2016/10/25/news/economy/venezuela-breaking-point/index.html*
6.*https://www.economist.com/news/finance-and-economics/21735596-hyperinflation-has-seen-bol-var-lose-999-its-value-two*

THE ART OF THE DEAL: NAFTA RENEGOTIATION CONTINUES IN MONTREAL

BILL ZHOU

FEBRUARY 1ST, 2018

BY the time this newsletter is issued, NAFTA renegotiation would have undergone its 6th round of trilateral talks in Montreal. Some key areas have been deeply negotiated among the three countries' leaders, including agriculture, auto parts, energy, and alterations of specific trade chapters in NAFTA. The Trump administration demands a "sunset clause" that would automatically terminate NAFTA in five years if the three countries did not approve the modified NAFTA. The Trudeau government is proposing a periodic review without the threat of the deal being terminated while the Mexican administration rejects the idea altogether.

Free Trade: Buyers and sellers from different countries may voluntarily trade without the domestic government interventions

Tariffs: a tax imposed on import, can be protective tariffs or revenue tariffs

Import Quota: a limit on the number of products in certain categories that a nation can import

Embargo: a complete ban on the import or export of a certain product or the stopping of all trade with a particular country due to political disagreement

What is NAFTA?

NAFTA stands for the North American Free Trade Agreement, which is a comprehensive trade agreement that sets the rules of trade and investment between Canada, the United States, and Mexico. Having been in effect since January 1st, 1994, NAFTA aims to promote **free trade** and eliminate trade barriers, including **tariffs**, **import quotas**, and **embargos**, and to facilitate cross-border movement of goods and services. On January 1st, 2008, the last remaining tariffs were removed from North America. NAFTA has become the framework for regional trade co-operation in the last 20 years of globalization.

NAFTA: Free Trade vs. Trade Protectionism

The idea of free trade originated from Adam Smith, the author of The Wealth of Nations. It means absolute void of cross-border trade barriers among different countries. It has been theoretically beneficial for all sides of the trade parties due to the model proposed by David Ricardo, stating that each country should specialize in producing the product that it has a **comparative advantage** over other countries and trade among each other to obtain optimized benefits for the overall trade parties. This theoretical result resembles the economic changes in North America since NAFTA was implemented. Over the last 20 years, grocery prices in the US has decreased since Mexico is more efficient in producing food products, allowing the US to obtain these products without tariffs across the border. Similarly, oil prices have decreased in the US because importing oil from Mexico and Canada is cheaper than importing from the Middle East due to the elimination of trade barriers and a lack of political tension. On the other hand, US exports services, especially technology-oriented services, to Canada and Mexico. The lower price within the trade parties can be explained by omitted trade barriers and the increase of competitions level in all industries.

However, free trade also induces drawbacks within the trade parties. The idea of specialization in production results in high resource dependence on other countries. For example, by the end of 2017, Canada's GDP was mainly contributed by the manufacture sector and energy sector.

1. *http://trade.ec.europa.eu/doclib/press/index.cfm?id=1723*
2. *http://www.statcan.gc.ca/tables-tableaux/sum-som/l01/cst01/gdps04a-eng.htm*
3. *http://www.statcan.gc.ca/pub/13-605-x/2017001/article/14841-eng.htm*
4. *https://lop.parl.ca/Content/LOP/ResearchPublications/2015-138-e.html?cat=agriculture*

Meanwhile, 74.5% of Canadian export goes to the US and 67.8% of Canadian import comes from the US. According to figure 1, there is an increasing trend of trading closeness while Canada's merchandise trade with the US increases in both export and import over the last 8 years. Another drawback is the decrease in the employment rate of native workers. The apparent example can be the Mexican non-immigrant workers in the US. These workers are preferred by the US corporations since the Mexican labour force is cheaper than American workers and there are no trade barriers imposed on any human capital exchange due to NAFTA. Furthermore, in this case, free trade opens the sideway for illegal immigrants, which ignites social problems in the US. These drawbacks of free trade lead some government to accept **trade protectionism**. Since the Trump administration was in the White House, one of the most controversial points on the US political agenda is to build the border wall along the US-Mexico border. Despite its astronomical cost of construction, it is a symbolism of trade protectionism on any cross-border trades between the US and Mexico. To promote trade protectionism, NAFTA is the first objective for the Americans to tackle down. In the auto parts industry, Trump demands to increase the overall North American content requirements from 62.5% to 85% and US content to at least 50%. While in the agricultural industry, Trump wants to decrease year-round Mexican imports and put an end to **Canada's Supply Management System** to protect American seasonal farmers. These proposals are aiming towards creating jobs for the American workers, but the tradeoff will be a **cost-pushed inflation** on the price level of related products.

Globalization: the tendency of international trade, investments, information technology and outsourced manufacturing to weave the economics of diverse countries together

Comparative Advantage: a country has a comparative advantage in producing something means it can produce that product with less opportunity cost than any other countries

Trade protectionism: the opposite of free trade, it requires government intervention and implementation of protective trade policies

Canada's Supply Management System: A way for dairy, poultry, and eggs farmers to control the supply of their products. The regulatory framework uses production control, pricing mechanism, and import control

A War of Trade

The NAFTA renegotiation is part of the US trade protectionism measure. Protectionism may have downturns on each country's economy, but the downturns have different impacts on different countries. While Canada has about 280 billion USD (18% of Canadian GDP) exposure to the NAFTA, the US only has nearly 500 billion (3% of US GDP) exposure.

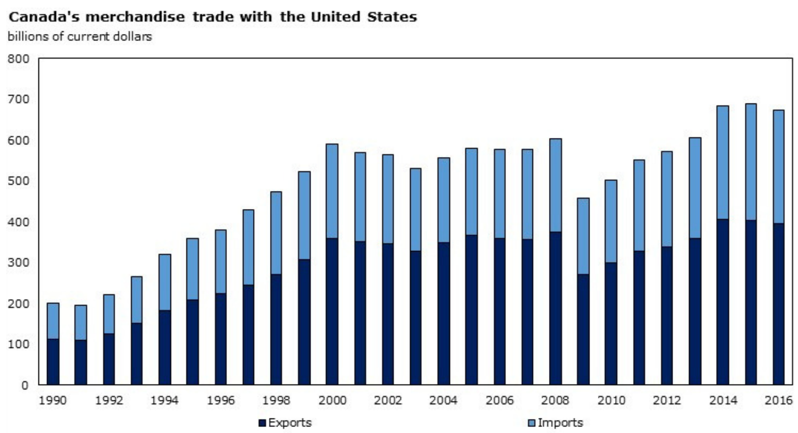


Figure 1: *Canada's merchandise trade with the United States (in billion USD) has an increasing trend over the last 8 years*
Source: *Statistics Canada*

5. *http://www.international.gc.ca/economist-economiste/performance/state-point/state_2015_point/index.aspx?lang=eng*
6. *http://business.financialpost.com/news/economy/forget-nafta-the-trade-war-with-canada-has-already-started*

Furthermore, if the NAFTA fails to exist, the Canadian exchange rate will decrease due to a decreasing trading power in North America. It will become even more expensive to import from the US, not to mention the higher tariffs. On the other hand, the US dollar value will not decrease as much since it has lower trade dependence on Canada and Mexico. There will also be huge damage done to specific Canadian industries, like dairy industry. US House Speaker Paul Ryan said the biggest problem with NAFTA "comes from the North," with Canadian dairy producers **dumping** low-cost products on the market to compete with Wisconsin farms. The Canadian low-cost dairy products will no longer be cost-competitive in the US once the NAFTA is gone. Overall, the omittance of the NAFTA hurts Canada more than the US. It is a trade war that the Canadians cannot afford to lose.

Dumping: selling products in a foreign country at lower prices than those charged in the producing country

Cost-Pushed Inflation: the increase in general price level due to increased cost of production

Plan B for Canada?

The longer the renegotiation lasts, the more uncertain businesses will be. The uncertainty makes it extremely hard for businesses to set prices for products, especially for export-heavy industries, like dairy, oil, and forestry. On the other hand, it is hard for export businesses to engage in long-term investment since the forecasts of business earnings and project profitability are not clear. Overall, the uncertainty creates an utter pause in economic activities within these industries which can be hurtful to the Canadian economy already. Therefore, it is important to settle the negotiation as soon as possible to make export functional again. Another method is to find new trading partners and promote free trade elsewhere. On 21st, September 2017, Canada and EU entered into Comprehensive Economic and Trade Agreement (CETA), which is now in effect. It removes tariffs on 98% of products that the EU trades with Canada. It also gives Canada more possibilities in terms of foreign investment. Even though Trudeau government did not reach a deal like this with China, it is a step towards to the backup plan for the NAFTA renegotiation.

7. http://business.financialpost.com/news/economy/the-real-nafta-problem-is-canada-not-mexico-paul-ryan-says
8. http://business.financialpost.com/pmn/commodities-business-pmn/agriculture-commodities-business-pmn/nafta-a-summary-of-where-talks-stand
9. https://www.investopedia.com/terms/g/globalization.asp

INTRO & VALUATION FRAMEWORK TO CRYPTOCURRENCY

DAVID JIN

FEBRUARY 1ST, 2018

THE *internet has fundamentally changed the world. Every second, millions of packets of information are exchanged between humans and machines through the Internet. Decades after the invention of the Internet, a rapidly emerging technology called* ***blockchain*** *has the potential to revolutionize the costs, security, and centralization of these transactions between humans and machines.*

Blockchain: A digitalized, decentralized, public ledger that is the platform of its cryptocurrency.

Hash Rate: The measuring unit of the processing power of the cryptocurrency network. A hash rate of 10 TH/s means 10 trillion calculations per second.

Mining: The process by which transactions are verified and added to the blockchain, and also the means through which new cryptocurrency units are released. Anyone with access to the Internet and appropriate hardware can participate in mining. Individuals who engage in the process of mining are called miners.

Proof-of-work: A system that effectively deters malicious uses of computing power through the application of mathematics and cryptography.

Valuation Framework

Due to the prematurity of cryptocurrencies as a whole, a considerable proportion of today's cryptocurrency trading activities are solely derived from technical analysis strategies paralleled to trading stocks. However, the main objective of this article is to provide valuation methods that are specific to cryptocurrencies, thus technical analysis is omitted. While there is numerous basis of evaluations to start from, they are not comprehensive, nor are they investment advice. With that said, a few key qualitative and quantitative characteristics that can use to analyze cryptocurrencies include White paper, Basis of Value, Community, and Issuance Model.

White Paper

A white paper is a document that outlines the purpose of cryptocurrency, the problem it addresses, and the technical details. While a white paper may be highly technical and difficult to understand, it is valuable to at least pursue the introduction and conclusion.

Basis of Value

Cryptocurrencies have two drivers of their basis of value: utility and speculation. Since a cryptocurrency exists solely in its blockchains, a significant portion of its utility value is dependent on the characteristics and functions of its underlying blockchain. Therefore, when reading the white paper, the first thing to consider is what problem it solves. There are lots of digital services in our world already, so a cryptocurrency should have a good reason to exist in a decentralized manner. For example, a cryptocurrency service called Swarm City aims to decentralize Uber, which is already a highly efficient service. It could be argued that the Swarm City drivers won't be losing 20% - 30% of every fare to a centralized business, so over time, the service may grow to be more favorable to its end users. However, the investor should question if this distinction is enough for Swarm City to gain a competitive advantage over Uber. Summarized by Vitalik Buterin (2017), "Projects really should make sure they have good answers for 'why use a blockchain'."

1. *https://blockchain.info/charts*
2. *https://medium.com/@cburniske/cryptoasset-valuations-ac83479ffca7*
3. *https://twitter.com/VitalikButerin/status/832299334586732548*
4. *https://etherscan.io/charts*

On top of utility value, there's a speculative value to a cryptocurrency. Since the world of cryptocurrencies is premature, much of their utility values have yet to be seen, so this is where the speculative value comes into play. Much of the speculative value of cryptocurrencies can be derived from its community, as it is more likely for a cryptocurrency to be widely adopted if it is crafted by a talented development team and supported by a high number of globally distributed miners. Lastly, as each cryptocurrency matures, it will converge on its utility value. This is evident in the rapid increase of interest and speculation of newer cryptocurrencies in comparison to bitcoin since the latter is the furthest along the transition from speculative to utility price as it has been around the longest and people are starting to use it relatively more regularly for its intended purpose than other cryptocurrencies.

Quantifying the Communities Behind Cryptocurrencies

The next best thing an investor can do is to know and understand the community behind the cryptocurrency - including its developers, miners, and users. Reddit, Twitter, and Slack groups are valuable information channels. While gaining a feel for the community, one should consider a few key points such as the commitment to the cryptocurrency by its miners and developers, and the adoption of the cryptocurrency by users.

Hash Rates

Proof-of-work (PoW), simply put, is a piece of data that is difficult to produce but easy for others to verify. It plays an instrumental role in sustaining blockchains because it is how the distributed computers, better known as miners, agree on which group of transactions will be appended to the blockchain next. The miners compete with one another to complete a proof of work, which earns them the privilege to choose transactions to group into blocks and add these blocks of transactions to the blockchain. New cryptocurrencies are issued and awarded to the respective miner everytime a PoW is solved. For many proof-of-work based cryptocurrencies, such as Bitcoin, Ethereum, Litecoin, and Monero, security is dependent on the number of miners and their combined compute power - known as hash rate. Figures 1.1 and 1.2 show Bitcoin's hash rate and Ethereum's hash rate over time. As of January 2018, Bitcoin's hash rate had increased 6-fold since January 2017, while Ethereum's hash rate increased 27-fold. A higher hash rate typically signifies more computers are being added to support the network, which means greater security and higher enthusiasm of miners about their potential future profits from the particular cryptocurrency.

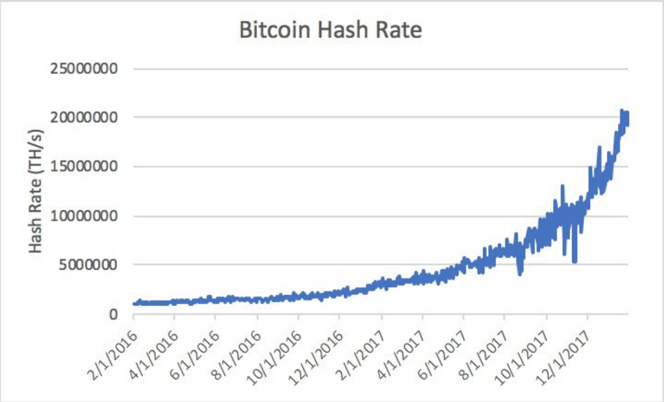


Figure 1.1: *Bitcoin's hash rate since 2016*
Source: *Blockchain.info*

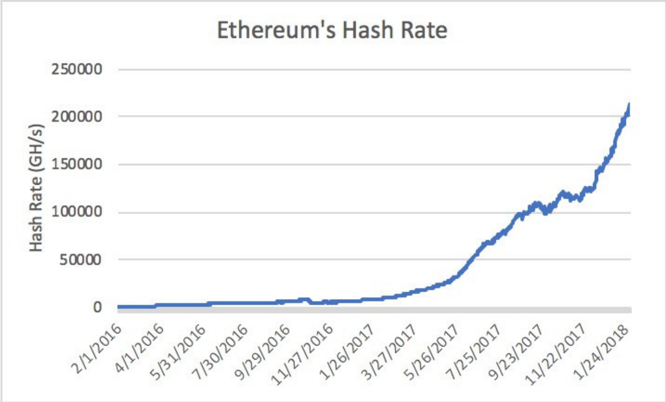


Figure 1.2: *Ethereum's hash rate since 2016*
Source: *Etherscan.io*

4. https://www.youtube.com/watch?v=wqpE8sXgazI
5. Cryptoassets: the Innovative Investors Guide to Bitcoin and Beyond
6. https://www.buybitcoinworldwide.com/ethereum/mining-hardware/
7. https://www.buybitcoinworldwide.com/mining/hardware/

Once the investor has examined the hash rate, often the best way to compare the relative security of cryptocurrencies is through a calculation of the equipment securing the network (Burniske & Tatar, 2017). As of January 2018, a Bitcoin mining machine that produced 14 terahash per song (TH/s) could be bought for $3,000 (Tuwiner, 2017), and it would take 1,430,000 of these machines to produce 20,000,000 TH/s - the hash rate of the Bitcoin network at the time. On the other hand, a 230 megahash per second (MH/s) mining machine could be purchased for $2,700 (Tuwiner, 2017), and it would take 900,000 of these machines to recreate Ethereum's hash rate. This translates into $4.3 billion and $2.4 billion in value for Bitcoin and Ethereum respectively. Taking into consideration the network values for the two cryptocurrencies at respectively US$170 billion and $104 billion, one can get a range of 2.3 to 2.5 cents of capital expenditure per dollar secured by the network. This range is a good baseline for the investor to compare with other cryptocurrencies since Bitcoin and Ethereum are the two most mature and secured assets in the cryptocurrency ecosystem.

User Adoption

While the metric of the number of users on the blockchain is an obvious giveaway, it is also worth examining the number of transactions on the blockchain, and the dollar value of those transactions in order to value the user network of a cryptocurrency. Figures 2.1 and 2.2 show the number of transactions using Bitcoin and Ethereum's blockchains respectively. The rising numbers are healthy signs for each of the blockchains and their associated cryptocurrency. Further, in order to gain an understanding of the monetary value of those transactions, one should examine the dollar value of transactions processed. Figure 2.3 shows the number of bitcoin. Throughout 2017, Bitcoin processed over $1 billion per day on average.

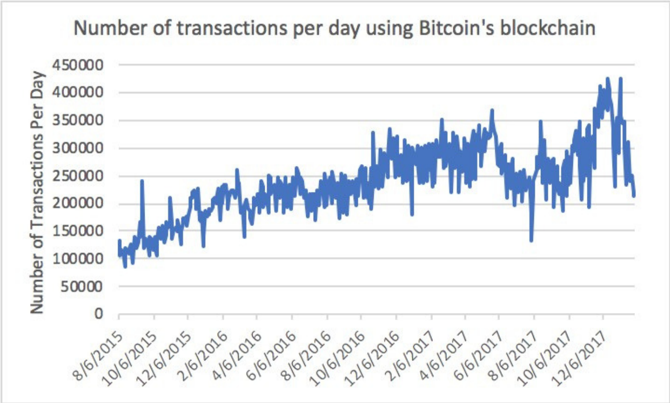


Figure 2.1: *Number of transactions per day using Bitcoin's blockchain*
Source: *Blockchain.info*

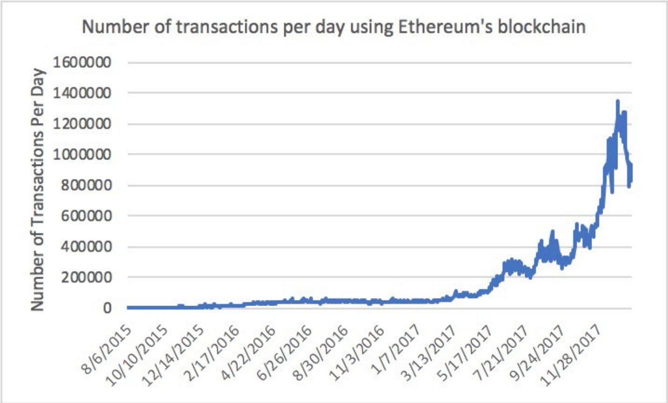


Figure 2.2: *Number of transactions per day using Ethereum's blockchain*
Source: *Etherscan.io*

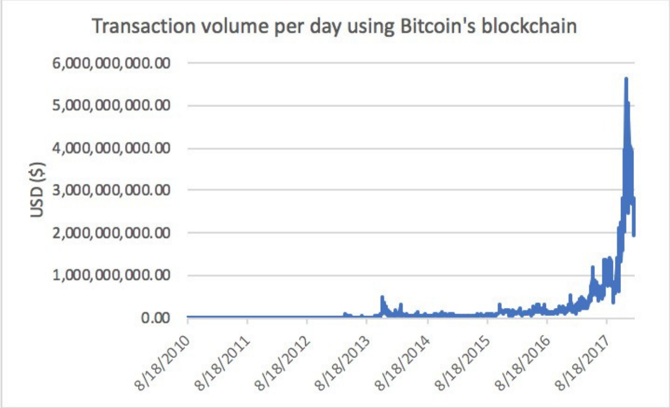


Figure 2.3: *Estimated transaction volume per day using Bitcoin's blockchain*
Source: *Blockchain.info*

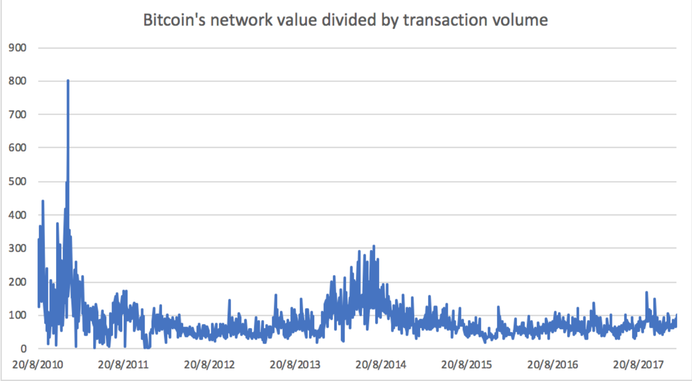


Figure 2.4: *Estimated transaction volume per day using Bitcoin's blockchain*
Source: *Blockchain.info*

One valuation method to calibrate how much the market is willing to pay for the transactional utility of a blockchain is dividing the network value of a cryptocurrency by its transaction volume. This valuation method shares some similarity with the PE ratio, except the denominator of valuation is in transaction volumes. A high ratio indicates that the network valuation is outpacing the value being transmitted on its blockchain. This can happen when the network is in high growth and investors are valuing it at a high return investment, or alternatively when the network value is overvalued. Over time, the market will find a suitable medium for this ratio, just as equity markets find a happy medium for PE ratios. Cryptocurrencies are still too premature with too little market data to claim exactly where this equilibrium ratio will stabilize around. With that being said, Figure 2.4 shows that bitcoin has a comfortable base when its network value is 60-70 times its daily transaction volume.

Supply Issuance Model

Much like with fiat currencies and businesses, the current and ongoing nature of supply is important to consider. The total planned supply is instrumental to a cryptocurrency preserving value over time. Bitcoin plans to reach a maximum of 21 million bitcoins by 2140, and it gets there by cutting the rate of supply inflation every four years. Additionally, a high rate of supply issuance might erode the asset's value especially if its utility isn't growing in line with expectations. The Steemit team initially chose STEEM to increase in supply by 100 percent per year. While they incorporated a clause that would decrease the total units outstanding by periodically dividing it, Steemit quickly discovered that even this would not be enough to avoid an unsustainably high rate of inflation and devaluation of the platform (Burnisk & Tatar, 2017). The case of Steemit is a noticeable example of why investors should investigate the monetary policy of a platform to make sure it makes economic sense. It is important to keep in mind that issuance models are evolving, as developers are still working their way towards gauging what works in the cryptocurrency world that is constantly progressing.

Conclusion

Although premature right now, cryptocurrencies and blockchain technologies are here to stay. The process of analyzing new assets such as cryptocurrencies is in its early stages. This means the valuation framework proposed in this article will grow and mature over time along with this field. As more data is created, new trends are formed, and more cryptocurrencies converge to their true values, investors will become smarter with their models and research.

HIGH RETURNS IN THE CANNABIS INDUSTRY

NATHAN SMITH **FEBRUARY 1ST, 2018**

IN the market lately, the cannabis industry has been at the center of attention due to the imminent legalization of weed in Canada and several US states. In this article, I will give a rundown of the current financial state of the industry, an update on events that could impact the weed market and a discussion on some newly emerging weed-related ETFs.

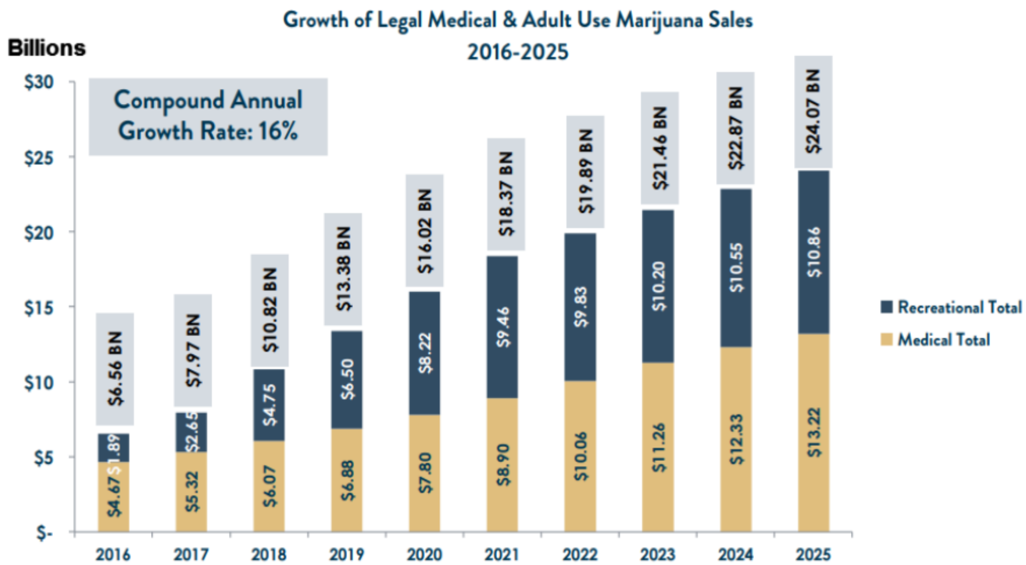


Figure 1: *2017 U.S. marijuana market growth & projection figures based on market cap, tax revenue, growth and more.*
Source: *Frontier Financial Group, Inc*

The Industry's Financial State

Grounding in 8 legal states, power in 29 states, not to mention all the companies north of the border are growing rapidly in preparation for July when weed becomes legalized in Canada – it is safe to say the weed industry is too solidified to be affected by potential law enforcement crackdowns. It has even been said that the weed industry has grown so large that it would be impossible for legislation to contain it (Chernis, 2018).

For reference, Figure 1 reflects how large the marijuana industry has grown in the past few years. In 2016, Deloitte predicted the Canadian marijuana market to be worth $22.6 billion CAD based on surveys analyzing Canadian consumer rate and comparing Colorado market figures. Following legalization, annual Canadian demand is expected to fall around $10 billion CAD, with Ontario's demand making up $2 billion CAD in sales (Crawley, 2017). To put in perspective, the National Football League (NFL) saw $14 billion USD in revenue last year, while the marijuana industry is expected to rise above the NFL, bringing in $25 billion USD in revenue (Speights, 2017).

Political Impact on the Weed Industry

On January 1st, 2018, California legalized the sale and recreational use of marijuana for adults, becoming one of eight states to have the use legalized. Just three days later, Jeff Sessions, U.S. Attorney General, announced he would be revoking the Obama-era legislation that provided U.S. attorneys with guidelines to follow when handling cannabis prosecutions in legalized states. While Sessions' actions could potentially have serious impact on the marijuana industry market, medical and legal weed companies seem to shrug off his actions as they continue to grow in size.

1.https://www.leafly.com/news/politics/task-force-report-gives-sessions-scant-ammunition-crackdown
2.https://www.rollingstone.com/politics/features/pot-showdown-congress-uniting-to-stop-sessions-war-on-drugs-w515595
3.http://www.cnn.com/2018/01/07/opinions/jeff-sessions-marijuana-move-bad-for-him-chernisopinion/index.html

In 2012, under Obama presidency, the first states to legalize weed were Colorado and Washington. By 2013, “The Cole Memo” was drafted by the then U.S. Attorney general, James M. Cole. This document essentially stated that, in legal states, prosecutors and law enforcement should only ‘lay down the law’ similar to how they would for alcohol law.

Currently, there are now 29 U.S. states to have legalized medical marijuana. Of these states, eight have legalized recreation sale, cultivation, and use. But Sessions has been clear on his opinions on marijuana, comparing it to heroin and correlating it with spikes in violence (The Press Associated, 2017). Days after the legalization in California, Sessions announced he would revoke the Cole Memo and switch to stricter punishment for weed prosecutions. This unpopular view has isolated him from many voters and officials, suggesting that cannabis companies should not be worried about being affected by his intended actions.

Should Sessions follow through with his repeal, only POTUS has the authority to overrule his decisions. Trump’s views on legalization have been for the most part unknown. While he has promised to let states have control over their legalization (Laslo, 2018), Trump has also said he intends to back Sessions. (Chernis, 2018)

Few are backing Sessions’ position, and many more officials are pushing to further legalize it. Amongst these officials include the well-known politician Bernie Sanders, who is pushing for the "Ending Federal Marijuana Prohibition Act of 2017”. The purpose of Sanders’ bill is to take marijuana off the federally controlled substance list as a Schedule I narcotic, which includes Heroin and LSD, and have it join with other industries such as alcohol and tobacco (Garret, 2017). This would ultimately take away the intensity and impact of minor offenses, and prosecution would be more comparable to that of alcohol.

In addition to societal views around legalization, there are also financial benefits to having marijuana legalized, although Sessions have argued otherwise. Figures from Colorado’s 2016 marijuana report shows that marijuana license and application fees, sales taxes, and other fees brought in over $160 million USD. This revenue was then put towards sectors like health care, education, drug treatment, drug prevention, and law enforcement programs (Lopez, 2017). While these amounts are relatively small contributions to statewide funding, California has predicted that it will be able to reign in $1 billion USD in just a few years from marijuana tax revenues.

Specific Weed Investments

The financial strength of cannabis companies and the upcoming weed legalization in Canada have created serious momentum for certain weed stocks. For example, two of the weed giants, Canopy Growth Corp (TSX: WEED) and Aurora (TSX: ACB), have seen a market growth of over 3-fold in the past year alone. Currently, these corporations have market capitals of $6.73 billion CAD and $6.02 billion CAD respectively. These companies are constantly making headlines whenever there is news surrounding potential acquisitions of smaller producers and cultivators.

Some setbacks these companies have faced involved investor financing. Due to legal issues in Canada and U.S., many investors have veered away from investing in companies like these. In fact, the Toronto Stock Exchange (TSX) has even said they may delist cannabis companies and marijuana-associated ETF’s from the exchange due to conflicts with U.S. federal law. However, it is becoming more and more clear that the industry will blossom regardless, so ETF’s are waiting to emerge in full force.

4. https://tomgarrett.house.gov/media/press-releases/garrett-introduces-legislation-remove-marijuana-controlled-substances-list
5. https://www.vox.com/policy-and-politics/2017/7/12/15956742/colorado-marijuana-taxes-schools
6.http://www.cbc.ca/news/canada/toronto/marijuana-ontario-price-market-sales-1.4298311
7.https://www.fool.com/investing/2017/06/04/will-the-marijuana-industry-really-be-bigger-than.aspx

For now, there are two (soon-to-be three) marijuana ETF's available in Canada and the U.S., all of which are based out of Canada's Aequitas NEO exchange. In April 2017, Horizon put together the "Horizons Marijuana Life Sciences Index ETF" (TSX: HMMJ), which is made up of mostly larger, non-U.S. producers like Canopy and Aurora and consists of 75% growers (Bell, N/D). Horizons' Life Sciences ETF attracted $126 million CAD inflows in the first week of 2018, the most of any Canadian fund over that period, according to National Bank Financial. As of late, it has assets of over $795 million.

The second one is an U.S.-traded "ETFMG Alternative Harvest ETF" (AMEX: MJX). A large cannabis company, Alternative Harvest saw its assets swell from $5.7 million USD on its first trading day to $355 million USD two day later. This ETF holds more than half its assets in Canada, with the top holdings in Canopy Growth Corp.

After the success of its Life Sciences ETF, Horizon had announced they will be introducing yet another marijuana ETF, "Junior Marijuana Growers Index ETF", which focuses on smaller U.S. growers and producers. This will be the third weed ETF introduced on the NEO exchange. In preparation for the legalization date this July, there is currently a high demand for more growers, with estimates showing that demand will soon surpass the supply options available. This is reflected by Aurora's recent buyouts of several growers in the market, like "CanniMed Therapeutics" (TSX: CMED) and "Newstrike Resources" (CVE: HIP) (Tilak & Saminather, 2018). As a result, the ETF is expected to see considerable growth when it is introduced in the market.

8. https://newfrontierdata.com/wp-content/uploads/2015/11/CIAR_Webinar_FINAL.pdf
9. https://www.bnn.ca/investing/video/horizons-plans-to-launch-junior-marijuana-growers-etf~1300751
10. https://www.canadiancattlemen.ca/daily/cannabis-firm-aurora-in-talks-to-buy-both-cannimed-newstrike

FACEBOOK - SOCIAL NETWORK OR SELLOFF NIGHTMARE?

EDMUND CHU FEBRUARY 2ND, 2018

THE last month has seen tumultuous development regarding the future of social media juggernaut Facebook (NYSE:FB). On January 11, Facebook shares plunged over 5% on the news that the Facebook News Feed would be overhauled to show less content generated by third-party sources, such as businesses and media outlets. This comes as a result of considerable pressure from politicians and the media, which claimed that Facebook played a key role in influencing the results of U.S elections. However, it is very difficult to differentiate fake content from content posted by real businesses and brands. On this end, Facebook is investing heavily into Artificial Intelligence programs that could automatically identify such malicious content. As a result, Facebook stated that operating expenses could rise from 45 to 60 percent because of additional costs associated with combating "fake news" content (Shinal).

What should investors expect going into Q4 2017 earnings for Facebook? Should they be concerned about the change in the direction of the company? What challenges and threats should investors expect in the coming years?

Earnings

Facebook earnings are dependent on three very crucial **KPIs**: Daily Active Users (DAU), Monthly Active Users (MAU) and Average Revenue per User (ARPU). DAU and MAU, which measure the health of the platform's user base, should remain growing at a steady rate. ARPU determines the company's ability to monetize the user base on its platform, making it arguably the most critical figure of the three. Given previous data from Q3 2017 financials, investors should expect a value of $5.07 for Worldwide ARPU and $21.82 for the U.S and Canada ARPU.

KPI: Key Performance Indicators. Key values which are used to gauge the performance of a company with respect to their specific industry.

From Figure 1, Facebook generates roughly four times as much ARPU through their North American segment compared to worldwide. Therefore, investors should expect growth in worldwide DAU, MAU and ARPU figures for Q4 2017. Such expansion would signify Facebook's ability to penetrate global markets, a key success factor considering that North America is transitioning into an over-concentrated market, as shown by the region's social network penetration rate of 67.7% versus the world average of 42% in 2018 (Statista).

ARPU	Worldwide	US and CAN
Q3 2016	$ 4.01	$ 15.65
Q4 2016	$ 4.83	$ 19.81
Q1 2017	$ 4.23	$ 17.07
Q2 2017	$ 4.73	$ 19.38
Q3 2017	$ 5.07	$ 21.20
Expected Q4 2017	**$ 5.18**	**$ 21.82**

DAU	Worldwide (in mil)	US and CAN (in mil)
Q3 2016	1,001	178
Q4 2016	1,047	180
Q1 2017	1,102	182
Q2 2017	1,142	183
Q3 2017	1,182	186
Expected Q4 2017	**1231.90**	**187.50**

MAU	Worldwide (in mil)	US and CAN (in mil)
Q3 2016	1,559	229
Q4 2016	1,629	231
Q1 2017	1,702	234
Q2 2017	1,770	236
Q3 2017	1,833	239
Expected Q4 2017	**1905.30**	**241.30**

***Figure 1:** DAU/MAU/ARPU Q4 figures estimated through linear regression.*
***Source**: Q3 2017 FB Earnings Presentation*

In its Q4 2017 earnings, Facebook announced that they have experienced a decrease in user engagement due to their tweaks regarding the news feed. This should come as a concern because there are now 50 million less active hours spent on the platform. Despite these figures, Mark Zuckerberg reassured investors that "the driver of our business has never been time spent by itself. It's the quality of the conversations and connections" (Ingram, Venugopal).

1. *https://www.cnbc.com/2017/11/01/facebook-says-costs-will-rise-to-go-after-fake-news.html*
2. *https://www.bloomberg.com/news/articles/2018-01-18/amazon-has-a-plan-tobecome-profitable-it-s-called-advertising*
3. *https://www.reuters.com/article/us-facebook-results/facebook-forecasts-rising-ad-sales-despite-dip-in-usage-idUSKBN1FK341?il=0*

Threat of New Entrants

As stated, Facebook is fraught with many challenges going into 2018. Due to the aforementioned News Feed updates, there is a chance that advertisers and media outlets will turn away from marketing efforts on Facebook. Currently, advertising makes up virtually all of Facebook's revenue (Facebook). In Q3 2017, global advertising fees accounted for $10.14 billion of the total $10.33 billion earned. Clearly, a decrease in potential advertisers is bound to affect Facebook's bottom line in the coming years, while creating valuable opportunities for competitors.

Amazon (NYSE:AMZN) recently declared its interests in the online advertising industry, citing that they will make a consolidated push to bring itself to the forefront of the competition in 2018 (Mark, Bergen). One of the largest online retailers of consumer goods, Amazon has a wealth of client information to draw from. They have already begun to place a heavy emphasis on sponsored items on its website, pushing producers to enter in a bidding war to obtain prime real-estate on customer searches. Although ad revenues for Amazon pale in comparison to those of Google and Facebook, Amazon's status as an e-commerce platform should significantly impact online advertising, as visitors are already in the mindset of making purchases. Overall, Amazon is a critical competitor and their entrance into the industry may signify an imminent shake-up.

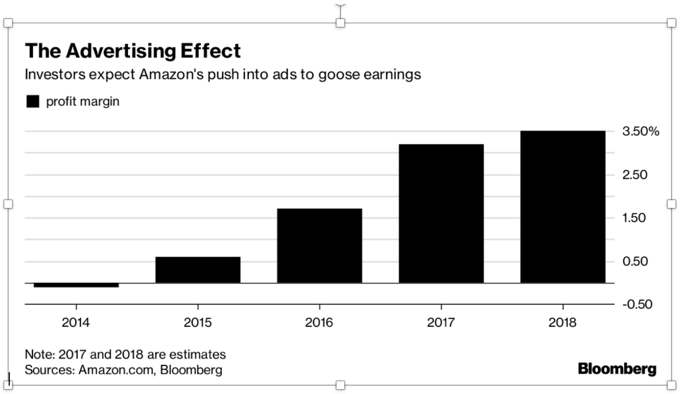


Figure 2: *Advertising Profit Margins for Amazon from 2014-2018*
Source: *Amazon.com, Bloomberg*

Mitigants

One of the largest risk mitigants to the challenges above is that Facebook owns one of the largest social media outlets outside of its own: Instagram. Currently, Facebook does not report on Instagram's sales revenue, making it very difficult to determine the profitability of the platform (Cherny). However, there are some silver linings. Instagram's MAU is estimated at 800 million, which makes it one of the most popular apps in the world (Statista) and thus a great monetization opportunity. In addition, Instagram has an international reach comparable to Facebook's, with only 77.5 million users in North America versus the latter's 239 million users. This means that U.S audiences account for only 9.6% of Instagram's MAU, whereas they account for 11.5% of Facebook's MAU (Facebook). Hence, Instagram could potentially mitigate the impact of U.S political regulation on company profitability.

Conclusion

This year will be an interesting period for Facebook. The results of the new News Feed feature should be reflected in the Q4 earnings reports and onwards. Moreover, the entrance of Amazon into the online advertising space may threaten to upend the entire industry. As well, returns on Instagram will be shown in financials going forward as new rules regarding revenue recognition take effect in 2018 (Cherny). In conclusion, despite Facebook's Beta at 0.59, which sits below the average Beta of the FANG peer group at 0.73, the threat of U.S politics, potential new entrants, a waning user base, and rising operating costs make it hard to recommend this particular company to risk-averse investors.

4. https://www.sec.gov/Archives/edgar/data/1326801/000132680117000053/fb-09302017x10q.htm
5. https://www.statista.com/statistics/253577/number-of-monthly-active-instagram-users/

TOP FIVE TECHNOLOGY TRENDS IN 2018

EDWARD SU FEBRUARY 15TH, 2018

THE technology sector has done impressively well in the past year with big blue chip stocks like Apple, Amazon, Microsoft, Facebook, and Google all doing relatively well. However, these big five tech companies are currently facing formidable competition from smaller companies who are just as determined to catch up. Some of these companies include Adobe, Broadcom, Cisco Systems, Hewlett Packard Enterprise, IBM, Intel, Oracle, Qualcomm, Symantec, and VMware. Many of these firms aim to reposition themselves in high growth areas by looking for the next emerging technology trends that will bring them success.

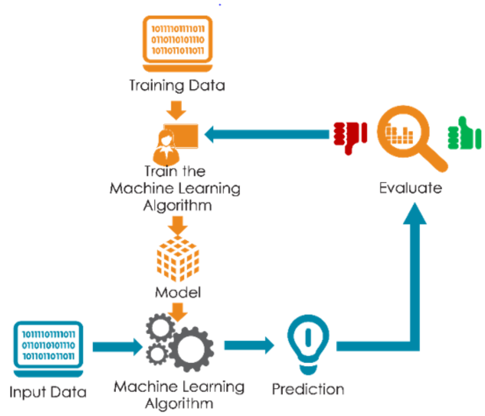


Figure 1: *Example of a feedback loop*

AI and Machine Learning

A wide variety of use cases exist across a wide range of sectors exist for artificial intelligence and machine learning. Efficient independent learning, human or machine, utilizes a feedback loop to generate solutions and improve the next iteration. Therefore, platforms that enable the control of parts of the feedback loop are valuable resources to the AI industry. Recent deals in this space include Microsoft's acquisition of AI cybersecurity firm Hexadite for $100M USD, Salesforce's acquisition of predictive analytics company Beyond Core for $110M (which had an EV/Sales multiple of 22x), and IBM's acquisition of AlchemyAPI a language processing and visual intelligence system. (Corum Group, 2018). As shown, companies are utilizing merger and acquisition strategy to gain a foothold in these emerging fields and they are willing to pay a high price to snag the best players in the space. One particular industry heavily impacted by the emergence of AI technology is the healthcare sector, one of the most crucial and largest industry in the world. By working with large datasets regarding patient history and records, scientists can better understand the mechanism of certain afflictions. Thus, AI software can supplement health professionals via smartphone apps, which practically act like personal nurses, by monitoring and analyzing warning signs on a constant basis.

Commerce Technology

Following Amazon's acquisition of Whole Foods last summer, the traditional methods of commerce have rapidly evolved. The picture on the right shows the market believes in this new trend as money moves away from traditional retailers. Traditional retailers, hospitality businesses, and consumer service providers have been forced to examine aspects of their businesses, including how they reach, serve and deliver goods. One of the largest e-commerce deal occurred in 2017 when PetSmart acquired Chewy, an online pet supply retailer, for $3.4B USD. Target, IKEA, Williams Sonoma, Office Depot and many others have incorporated innovative technology as well. Contextual shopping is a smarter, more individualized shopping experience, tailored based on buyer preferences, location, and inventory. Technology, in particular, has created a secular shift in the way consumers shop and live, causing offline and online worlds to meld and fuse.

1. https://www.corumgroup.com/
2. https://www.kaaproject.org/what-is-iot/
3. https://www.csoonline.com/article/3227065/security/cyber-attacks-cost-us-enterprises-13-million-on-average-in-2017.html

IoT Software

The “Internet of Things” is the network of physical devices, vehicles, appliances that use electronics and network connectivity to connect and exchange data. With an abundance of cheap processors and reliable internet, it’s possible to turn the billions of physical devices around the world into part of the IoT. This creates a level of digital intelligence in devices that allows them to communicate with each other without a human being involved. IoT providers offer other companies software for IoT enablement typically through a cloud based platform. Retail, healthcare, and industrial/supply chain industries will become the backbone of customer value as IoT software improves (Project, 2017). IoT software is especially applicable to the space of self-driving cars. IoT firm nuTonomy was sold to Delphia Automotive for $400M USD and Blue River Technology was acquired by John Deere for $305M shows that manufacturers are feeling the pressure to innovate in the IoT space.

Digital Currency Flow

To supplement the trend in commerce, $20B USD worth of M&A deals occurred in 2017. Across the tech sector, companies focusing on transaction processing, billing, and microtransactions tend to be valuated much more highly. Mobile payments in the US grew by 25% to over $134B last year. China on the other hand has almost completely erased physical currency in favor of payments through apps like WeChat and others. Credit cards in China have been displaced while mobile payments processed increased to over $9T USD. In addition to this, the allure of blockchain tech has spiked dramatically in 2017. The US Federal Reserve estimates that blockchain will reduce the costs of processing transactions by 20-25%. The major industries affected are banking, financial services, insurance, retail, gaming, healthcare, travel & tourism, transportation & logistics among a plethora of other niche applications. Industry players are showing more interest towards blockchain and making a partnership to discuss and understand the benefits of implementing this new tech. Few verticals have already started accepting cryptocurrencies as a payment option. One industry to note is the retail industry, which is set to be the leading vertical after financial services as the retail market revenue is expected to reach $10B by 2022.

Data Security

Major data breaches continue to grow in intensity, scale and impact in 2017. One of the biggest credit reporting agencies, Equifax was hit with what was termed “the mother of all hacks” exposing as many as 143 million consumer records. Just recently, basic chip design flaws and problems with Intel patches have exposed security weaknesses and strengthened the argument for more advanced security software. Big security players can’t keep up with the pace of innovation without filling product gaps by acquiring innovative technology.

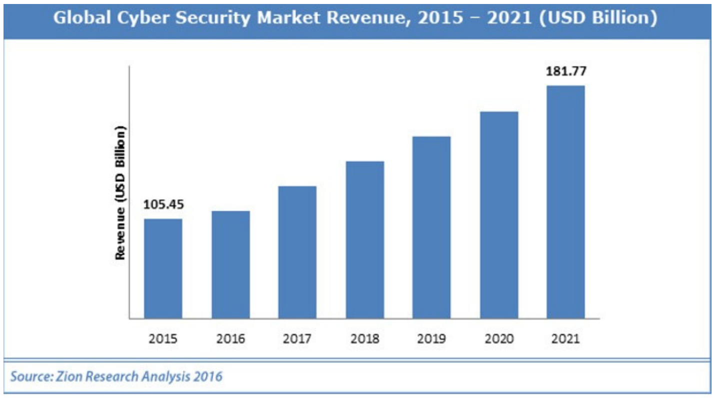
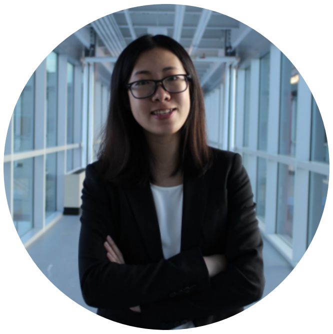


Figure 2: *Size of Global Cyber Security Market*

Symantec has been balancing its portfolio by both buying and divesting certain arms of its business. They sold their website protection service DigiCert for $950 million and used some of those funds to acquire Skycure and Fireglass, enterprise security solution providers. In 2017, cybersecurity attacks cost enterprises on average $1.3 million and small to medium-sized businesses over $100,000. In addition to legal repercussions from failing to secure private data, customers will have a negative image of the companies brand. This represents a growing opportunity for data security firms to flourish in 2018.

NEWSLETTER TEAM

CHIEF EDITORS



CINDY LUO
2B FARM

Cindy wants to create opportunities for students to enhance their financial knowledge. In her spare time, Cindy likes to watercolor, rock-climb and swim. She nurtures these passions by being active on campus and always being open to new opportunities.

JEFFREY MU
4B FARM

Jeffrey wishes to share his knowledge and guide the team to write interesting articles for readers. He has experiences working in capital markets doing quantitative roles at OMERS and G3 Capital. Jeffrey loves to cycle, play video games, and try not to lose money trading his personal account.

MARKET RESEARCH ANALYSTS

BILL SHU
1B FARM

Bill is extremely passionate about economics and finance and he is a seasoned DECA competitor. Outside of school, Bill reads about the financial markets, economic journals and business cases. He loves playing and watching basketball and his favorite NBA teams are the Lakers and the Warriors.

BILL ZHUO
1B FARM

Bill has great enthusiasm in the financial industry, especially in financial modeling using sophisticated mathematics. He has a lot of experiences in competitions such as DECA and Putnam. Bill likes to teach mathematics and work on recreational programming design. Also, watching DOTA2: The International has been his hobby for years.

DAVID JIN
2B FARM

David hopes to capitalize on his fields of interest to gain unique insights into finance and investments beyond just the numbers. In his spare time, he likes to pursue new investment opportunities. He is passionate about photography, videography, and product design, and he is in the midst of building a creative agency with his friends.

EDMUND CHU
4B FARM

Edmund's interests lie in Global Equities, with a focus in the technology industry. He previously worked at TAO Asset Management, where he assisted in company valuations and structuring of asset back securities. Edmund is an avid reader of hard fiction and non-fiction novels. He also co-founded the Waterloo Airsoft Club with a close friend in late 2014.

NEWSLETTER TEAM

EDWARD SU
2B MATH/BUS DD

Edward hopes to learn more about how financial markets work and the factors that drive investment decisions. He plans to further this goal by discussing and sharing his insights in this role. Outside of class, Edward is interested in discussing philosophy and the ethics behind society.

MONA ZHANG
4B FARM

Mona is passionate about learning what's going on in the finance market and the reasons and causes behind certain events. She likes to analyze and share her work with members and students. In her free time, she likes to play badminton and read and watch videos to self-educate.

NATHAN SMITH
2B FARM

Nathan enjoys reading about financial news and keeping up with cryptocurrency markets. In his free time, Nathan loves to gym and play soccer, futsal, and volleyball. When he's not drowning in schoolwork or keeping physically active, he enjoys watching shows and movies. He also likes keeping up with hockey and basketball teams such as the Raptors and Habs.

NEWSLETTER DESIGNERS

AMY WANG
1B FARM

Amy would love to learn more about financial markets and economics in this role. In her free time, Amy is interested in 3D designs and oil painting and music. She has been being an actress and stage designer for three years' school musicals. She also used to be an art show organizer and had her own art works exhibitions.

DANIELL YANG
1B CFM

Daniell is extremely interested in finance, specifically venture capitalism; he hopes to one day work in the startup scene, funding up and coming tech startups. In his free time Daniell enjoys playing badminton, painting and keeping up with the market.