MATHSOC

FARM STUDENT ASSOCIATION

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Finding Alpha

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MARKET PERFORMANCE AFTER AN "UP" MONTH

CAMERON COX

MARCH 15, 2019

For many passive investors the S&P 500 Index ($GSPC) serves as a risk-averse way of replicating market performance easily. However, perhaps contrary to hinted intuition, GSPC has yielded a negative return for 40.7% of the time since 1950 [1]. Despite this, over the same time frame, the index has yielded long-term investors approximately 7.7% YOY.

In January 2019, we observed the 26th largest GSPC monthly increase since January 1950 at 7.73%. Since 1950, the market has observed a variety of large events affecting the economy, such as the 1973-74 stock market crash [2], or more recently, the Dotcom Bubble [3] or the Subprime Meltdown [4].

The purpose of this report is to analyze the short-term and medium-term trends in the market following months where the S&P 500 yielded a higher return than January 2019 in hopes of identifying a pattern. The chart below outlines the market performance proceeding these larger-than-average monthly rallies, where MOM Return represents the historically high return (e.g. January 2019) and the rightmost time periods represents the overall return of the index following said month (e.g. “1 Month” would represent February’s overall increase in $GSPC).

Monthly S&P 500 Performance Following “Up” Months

Month	MOM Return	1 Month	3 Month	6 Month	1 Year	3 Year	5 Year
Oct-74	*16.58%*	-7.83%	5%	16%	20%	24%	39%
Oct-11	*14.02%*	-0.51%	5%	12%	13%	61%	70%
Mar-09	*13.85%*	9.39%	16%	33%	47%	77%	135%
Oct-98	*11.38%*	4.68%	15%	21%	22%	-2%	-6%
Jan-87	*11.21%*	2.37%	4%	15%	-8%	19%	49%
Jan-76	*10.96%*	-0.84%	1%	2%	1%	-1%	29%
Dec-08	*10.66%*	-8.57%	-12%	3%	23%	39%	104%
Aug-82	*9.66%*	0.76%	12%	24%	38%	58%	176%
Oct-82	*9.63%*	2.26%	7%	21%	21%	41%	86%
Jan-75	*9.61%*	6.69%	13%	14%	30%	16%	48%
Apr-78	*9.46%*	-0.44%	3%	-3%	4%	36%	66%
Dec-91	*9.36%*	-1.31%	-3%	-2%	5%	10%	81%
Apr-01	*9.04%*	-0.84%	-5%	-15%	-14%	-13%	3%
Nov-62	*9.00%*	1.87%	3%	14%	19%	47%	53%
Nov-80	*8.90%*	-1.06%	-4%	-3%	-8%	21%	46%
May-90	*8.72%*	-0.47%	-10%	-12%	8%	26%	45%
Mar-00	*8.66%*	-2.02%	-4%	-5%	-24%	-41%	-21%
Jan-85	*8.62%*	1.35%	-1%	6%	18%	42%	80%

[1] https://ca.finance.yahoo.com/quote/%5EGSPC?p=%5EGSPC
[2] https://en.wikipedia.org/wiki/1973%E2%80%9374_stock_market_crash
[3] https://www.investopedia.com/terms/d/dotcom-bubble.asp
[4] https://www.investopedia.com/terms/s/subprime-meltdown.asp

Jul-89	*8.41%*	1.32%	-3%	-6%	3%	23%	33%
Aug-84	*8.18%*	-1.24%	-2%	8%	13%	93%	110%
Jun-55	*8.09%*	4.22%	7%	9%	14%	10%	38%
Oct-15	*8.08%*	-1.12%	-8%	-1%	1%	30%	-
Jan-89	*8.05%*	-2.53%	4%	16%	11%	37%	62%
Jan-80	*7.94%*	-1.45%	-7%	7%	13%	25%	57%
Jan-67	*7.75%*	1.79%	8%	9%	7%	-2%	20%
Jan-19	*7.73%*	3.68%	-	-	-	-	-

Overall, a "down" month has proceeded a historically "high-up" month 54% of the time, a short-term undesirable result for passive investors hoping to “hop on” the market rally. A similar analysis of other time periods is provided below:

Probability of an “Up” Period following an “Up” Month						
	1M	3M	6M	1Y	3Y	5Y
“Up” Period	46.2%	56.0%	68.0%	84.0%	80.0%	91.7%
“Down” Period	53.8%	44.0%	32.0%	16.0%	20.0%	8.3%

It follows that, based on the pattern of similar historical rallies of the S&P 500, investors should be prepared to tolerate short-term uncertainty and be cautious of the persistence of said rally. However, as long as investors maintain a long-term outlook on the market, they should be confident that their portfolio will yield positive returns.

An insight that may provoke further analysis is the realization that, for the most part, the 1-year return after a historically high-up month is positive with the exception of up periods that occurred during the early-2000s. In these instances, it seems like the market took a longer time to recover after the historic crash; due to the market crashes in 2000 and 2008, market index investments made during the early 2000s did not consistently yield a positive ROI until early 2013, whereas investments made in the market index at its peak in 2008 saw a much shorter time until they consistently traded above book value.

Grasping this concept leads us to the unfortunate conclusion that it may be difficult to identify consistent patterns in the market for short and medium-term periods following historically large increases in a market index.

NO TIME FOR CYBER CRIME

DAWSON MACDONALD MARCH 15, 2019

Cybersecurity refers to the measures taken to protect a computer or computer system against any unauthorized access or attack. This sounds rather logical, but what does it really entail? How big of a problem is cybersecurity in a world where technology is becoming ever more prevalent? Who are the major companies in this space?

Recent Problems

Large data breaches happen every so often, and some are larger than others. Most notably, over 3 billion accounts were hacked right before Yahoo Inc. sold off their business to Verizon in 2013 [1]. This caused Yahoo to sell for less than its original price. Some of the accounts that were hacked led to details regarding email addresses, phone numbers, and credit cards stolen. Another recent hack was discovered in September 2018 involving Marriott International Inc (NASDAQ: MAR) where over 500 million accounts were compromised [1]. This resulted in the exposure of passport numbers, phone numbers, credit card numbers and much more.

Although these large hacks do not take place often, their effects are quite substantial. Other times, they do not affect personal accounts, such as the alleged Russian hackings that took place during the 2016 US presidential election. Investigations are still ongoing, but it is believed that the Russians meddled in the election to aid President Trump in winning.

With so much at stake, experts recommend that customers with online accounts change their passwords, use different passwords, and be cautious of sharing any information that could potentially compromise the security of their accounts.

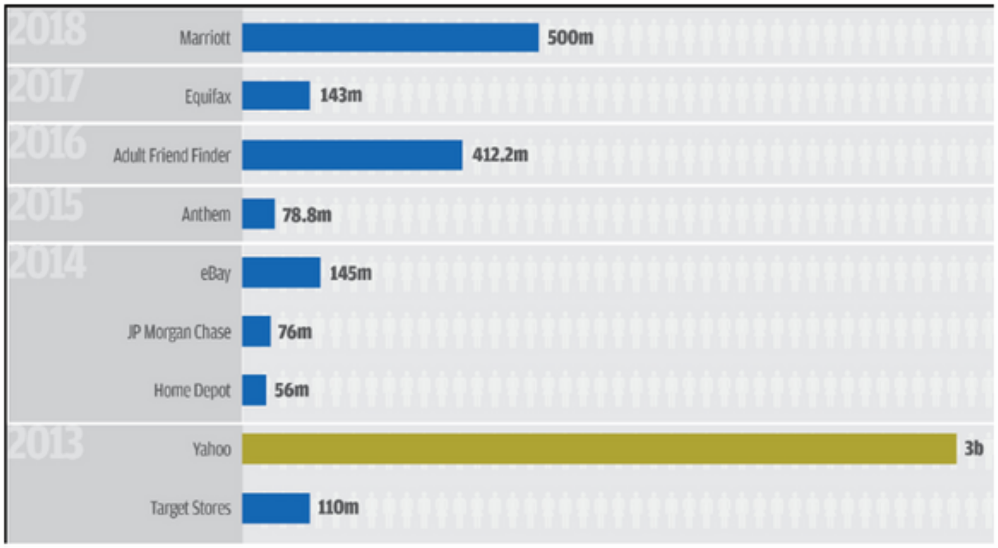

Figure 1: Largest data breaches in recent history - Source: CSO online [1]

[1] Armerding, T. (2018, December 20). The 18 biggest data breaches of the 21st century. Retrieved February 24, 2019, from https://www.csoonline.com/article/2130877/data-breach/the-biggest-data-breaches-of-the-21st-century.html

Scope of the Space

Cybersecurity jobs are in very high demand, and in 2018, the median salary was over $93,000. With over 2 million unfilled positions, and an expected rise to 3.5 million by 2021 [5], this space is in huge demand all over the world. For fiscal year 2019, the US federal government has budgeted $14.98 billion for cybersecurity, and total spending in the US reached $66 billion in 2018. Furthermore, according to the International Data Corporation [3], they expect spending to be upwards of $100 billion by 2020. So, it is evident that this is a rapidly growing space with money flooding into the market, and this is driven by companies wishing to keep their data and those of their customers secure.

Although these costs seems quite large, it is important to note that they pale in comparison to how much cybercrime attacks cost corporations and governments. According to McAfee, a computer software security company specializing in cybersecurity solutions, worldwide cybercrime cost $600 billion in 2018, up from $500 billion in 2014 [3]. Furthermore, it is believed that this number is expected to keep growing if proper measures are not put in place. As one can see, costs are currently heavily outweighing expenditure, and that begs the question; "Why aren't more resources being put into cybersecurity?"

Working Against Cyber Crime

All over the world, governments and companies are working towards establishing better security and detection for cybersecurity. As previously stated, there are already many workers and lots of money being poured into this space. One example is the Sydney Airport and the cybersecurity centre it plans to establish [4]. It will be a round-the-clock cybersecurity operations centre to protect its systems and data holdings from the threat of cyber-attacks. The new centre, which is expected to be up and running by April 2019, is aimed at enhancing "cyber defence capabilities", the airport said in its latest annual report. This is part of a broader cyber defence program to reduce security threats against the critical piece of national infrastructure and follows a refreshing of the airport's cybersecurity strategy last year.

Another way that governments are taking action against cybercrime is happening in Singapore, through the Ministry of Defense (Mindef) [6]. The Ministry of Defence (Mindef) is on a recruitment hunt for cybersecurity specialists whose mission will be to beef up its cyber defences. It has also set up a new cyber training school that will conduct courses for such specialized personnel and help improve cyber hygiene for servicemen and employees across the ministry and the Singapore Armed Forces (SAF). In a statement made on February 20, Mindef spokes on its hopes to recruit approximately 300 personnel to perform specialized operational roles in areas such as cyber incident response, monitoring of computer networks, and testing for security weaknesses in IT infrastructure and applications. These are just a couple of examples, but there are many other organizations putting in just as much work.

[2] Bouveret, A. (2018, June). IMF Working Paper. Retrieved February 24, 2019, from https://www.imf.org/~/media/Files/Publications/WP/2018/wp18143.ashx
[3] Gross, G. (2018, February 23). The Cost of Cybercrime. Retrieved February 24, 2019, from https://www.internetsociety.org/blog/2018/02/the-cost-of-cybercrime/
[4] Hendry, J. (2019, February 22). Sydney Airport to establish cyber security centre. Retrieved February 24, 2019, from https://www.itnews.com.au/news/sydney-airport-to-establish-cyber-security-centre-519622

Risks to the Financial System

With a large customer base and the holder of large amounts of capital, financial institutions are always on their toes when it comes to cybersecurity. Cyber-attacks can impact firms through the following three main aspects of information security: confidentiality, integrity, and availability. Confidentiality issues arise when private information within a firm is disclosed to third parties, as is the case of data breaches. Integrity issues relate to the misuse of the systems, as is the case for fraud. Finally, availability issues are linked to business disruptions.

These three types of cyber-attacks also have different direct impacts on their targets: business disruptions prevent firms from operating, resulting in loss of revenue; fraud leads to direct financial losses, and the effects of data breaches take more time to materialize through reputational damage as well as litigation costs.

More generally, given the reliance of financial institutions on the trust of their customers, the risk of a loss of confidence following cyber-attacks can be quite high for the financial sector. Regarding the financial system, when compared to fraud or data breaches, business disruptions are more likely to have direct short-term contagion effects, which tend to mainly impact the targeted firm. [2]

This graph represents where in the world cyber-attacks are happening, specifically cyber attacks on financial institutions.

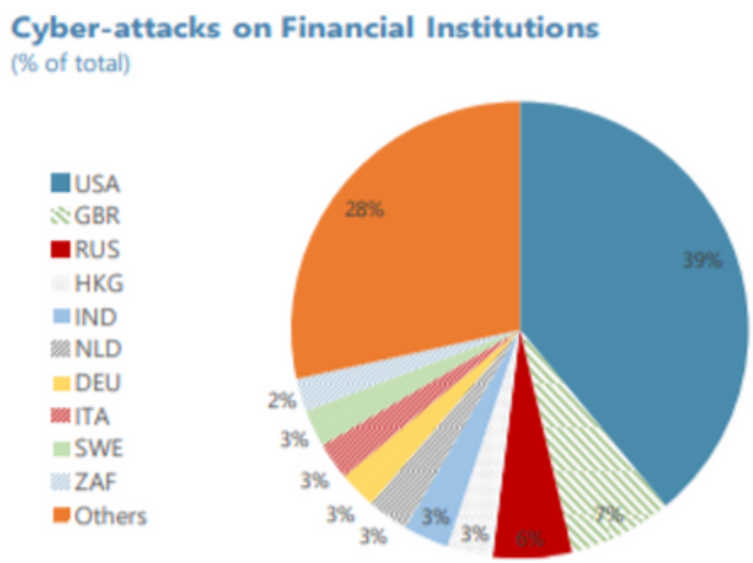

Figure 2: Cyber-attacks on Financial Institutions. Source: IMF [2]

[5] Morgan, S. (2017). Cybersecurity Jobs Report. Retrieved February 24, 2019, from https://www.herjavecgroup.com/wp-content/uploads/2018/07/HG-and-CV-The-Cybersecurity-Jobs-Report-2017.pdf
[6] Zhang, L. M. (2019, February 20). Mindef aims to recruit 300 cyber-security specialists. Retrieved February 24, 2019, from https://www.straitstimes.com/singapore/mindef-aims-to-recruit-300-cyber-security-specialists

Looking to Invest?

When it comes to investing in cybersecurity companies, there are many options. However, they are perceived as risky investments because they are small, young companies in a growing industry. Nonetheless, some of the largest fast-growing players in the space right now are Fortinet (NASDAQ: FTNT), Palo Alto Networks Inc (NYSE: PANW), and Proofpoint Inc (NASDAQ: PFPT). Although these stocks have already posted magnificent returns over the past 5 years, investors are still cautious of their valuations. This is largely the result of the uncertainty surrounding the credibility of their reported profits.

As always, ensure to conduct your own due diligence before investing, and invest carefully.

WARREN BUFFETT LOSES BILLIONS ON KRAFT HEINZ STOCK CRASH

STEPHANIE SHA MARCH 15, 2019

If you are someone like me, who can't live without ketchup or peanut butter, I'm sure you know Kraft Heinz! The iconic brand for ketchup and mustard in North America has been a mainstay for many fast food restaurants. Kraft Heinz (NASDAQ: KHC) was formed by the merger of Heinz and Kraft Foods in 2015. Following Pepsi Co. (NASDAQ: PEP) and Coca-Cola (NYSE: KO), it is the third-largest food and beverage company in North America and the fifth-largest in the world, with $26.2 billion in annual sales as of 2017 [1].

Figure 1: Kraft Heinz products Source: buisnessinsider.com

How Is Warren Buffet Related To Kraft Heinz?

Warren Buffet is known to be one of the most successful investors of all time. As the chairman and CEO of Berkshire Hathaway (NYSE: BRK), an American multinational conglomerate company, Warren Buffet swallowed an almost $4 billion loss due to Kraft Heinz's stock crash on the evening of February 21 [2]. A conglomerate is a corporation that is made up of several different businesses [3]. In the case of Berkshire Hathaway, it is made up of seemingly unrelated companies such as Apple. Inc (NYSE: AAPL), The Coca-Cola Company (NYSE: KO), Wells Fargo & Company (NYSE: WFC), and Delta Airlines, Inc. (NYSE: DAL).

The 27% drop in Kraft Heinz's stock price resulted from its announcement of a $15.4 billion write-down mainly due to the reduction of goodwill in its Kraft and Oscar Mayer Brands. The company periodically reviews the value of its assets, and if it recognizes that the proceeds of the acquisition may never be realized, the accounting rules require that the goodwill assets be written down. As a result of the goodwill write-down, Kraft Heinz's 2018 Q4 report indicated a net loss of $12.6 billion compared to its 2017 Q4 net income of $8 billion [4]. Investors are still left unsettled due to the fact that on February 23, 2018, Kraft Heinz revealed that Warren Buffet will retire from the board "as he decreases his travel commitments." [5]

[1] *https://en.wikipedia.org/wiki/Kraft_Heinz*
[2] https://observer.com/2019/02/warren-buffett-berkshire-hathaway-kraft-heinz-stock-loss/
[3] https://www.investopedia.com/terms/c/conglomerate.asp
[4] http://ir.kraftheinzcompany.com/news-releases/news-release-details/kraft-heinz-reports-fourth-quarter-and-full-year-2018-results

Shares*	Company	Percentage of Company Owned	12/31/17 Cost**	Market
			(in millions)	
151,610,700	American Express Company	17.6	$ 1,287	$ 15,056
166,713,209	Apple Inc.	3.3	20,961	28,213
700,000,000	Bank of America Corporation	6.8	5,007	20,664
53,307,534	The Bank of New York Mellon Corporation	5.3	2,230	2,871
225,000,000	BYD Company Ltd.	8.2	232	1,961
6,789,054	Charter Communications, Inc.	2.8	1,210	2,281
400,000,000	The Coca-Cola Company	9.4	1,299	18,352
53,110,395	Delta Airlines Inc.	7.4	2,219	2,974
44,527,147	General Motors Company	3.2	1,343	1,825
11,390,582	The Goldman Sachs Group, Inc.	3.0	654	2,902
24,669,778	Moody's Corporation	12.9	248	3,642
74,587,892	Phillips 66	14.9	5,841	7,545
47,659,456	Southwest Airlines Co.	8.1	1,997	3,119
103,855,045	U.S. Bancorp	6.3	3,343	5,565
482,544,468	Wells Fargo & Company	9.9	11,837	29,276
	Others		14,968	24,294
	Total Common Stocks Carried at Market		$ 74,676	$ 170,540

* Excludes shares held by pension funds of Berkshire subsidiaries.

** This is our actual purchase price and also our tax basis; GAAP "cost" differs in a few cases because of write-downs that have been required under GAAP rules.

Shares*	Company	Percentage of Company Owned	12/31/18 Cost**	Market
			(in millions)	
151,610,700	American Express Company	17.9	$ 1,287	$ 14,452
255,300,329	Apple Inc.	5.4	36,044	40,271
918,919,000	Bank of America Corp.	9.5	11,650	22,642
84,488,751	The Bank of New York Mellon Corp.	8.8	3,860	3,977
6,789,054	Charter Communications, Inc.	3.0	1,210	1,935
400,000,000	The Coca-Cola Company	9.4	1,299	18,940
65,535,000	Delta Air Lines, Inc.	9.6	2,860	3,270
18,784,698	The Goldman Sachs Group, Inc.	4.9	2,380	3,138
50,661,394	JPMorgan Chase & Co.	1.5	5,605	4,946
24,669,778	Moody's Corporation	12.9	248	3,455
47,890,899	Southwest Airlines Co.	8.7	2,005	2,226
21,938,642	United Continental Holdings Inc.	8.1	1,195	1,837
146,346,999	U.S. Bancorp	9.1	5,548	6,688
43,387,980	USG Corporation	31.0	836	1,851
449,349,102	Wells Fargo & Company	9.8	10,639	20,706
	Others		16,201	22,423
	Total Common Stocks Carried at Market		$ 102,867	$ 172,757

* Excludes shares held by pension funds of Berkshire subsidiaries.

** This is our actual purchase price and also our tax basis.

Figure 2: Comparison of Berkshire's ownership of different companies between 2017 and 2018
Source: berkshirehathaway.com

Berkshire Hathaway's Annual Report

The following figure shows a comparison between Berkshire Hathaway's ownership of different companies in 2017 and 2018, with companies outlined with blue rectangles representing those on the 2017 list but not on the 2018 list, and vice versa for the red rectangles.

Berkshire Hathaway's 2018 annual shareholder letter, released on February 23, reported a GAAP loss of $25.4 billion in Q4, with a $3 billion non-cash loss from an impairment of intangible assets [6]. Warren Buffet stated that "the loss arose almost entirely from equity interest in Kraft Heinz" [6]. The fact is that, as of December 31, 2018, Berkshire Hathaway held 26.71% of Kraft Heinz, which is nearly 326 million shares [6]. Not only did Kraft Heinz announce a $15.4 billion write-down on February 21, but they also reported an earnings per share below the Wall Street analyst consensus.

Furthermore, we notice that Kraft Heinz is not listed as one of the 15 companies in figure 2. This is because "Berkshire is part of a control group and therefore must account for this investment on the 'equity' method" [6]. So, what exactly went wrong with Kraft Heinz?

[5] https://www.cnbc.com/2018/02/23/warren-buffett-will-retire-from-board-of-kraft-heinz.html
[6] http://www.berkshirehathaway.com/2018ar/2018ar.pdf

What Went Wrong with Kraft Heinz?

Cost-cutting! The net loss of over $12.6 billion in Q4 of 2018 showed that cost-cutting was not able to save Kraft Heinz. 3G Capital, the Brazilian-American investment firm, is best known for implementing zero-based budgeting with its portfolio of companies such as Kraft Heinz, Tim Hortons, and Popeyes Louisiana Kitchen [7]. The zero-based budgeting method implies that expenses must be justified and approved for each new period, as opposed to the more common method of using last year's budget as your starting point, and then adjusting up or down [8].

In the past few years, Kraft Heinz has been more focused on cost-cutting as opposed to building an equity brand and investing in the research & development of new products [9]. The company's R&D expense shrank from $120 million in 2016 to $93 million in 2017, a decline more than 20% [10]. In June 2016, Harvard Business Review warned that "zero-based budgeting is not a wonder diet for companies" and "only a substantial, ambitious approach that can deliver sustainable cost transformation on a scale that makes all the effort required to implement zero-based budgeting worthwhile" [11].

Reasons for this Failure

In recent years, two of the main threats that Kraft Heinz faced were the changing consumer environment for a healthier diet and competition with generic brands. There is an increasing consumer demand for organic and healthier foods rather than packaged macaroni and cheese and processed, canned lunch meat, which can last for years before they expire.

U.S. Organic Food vs. Total Food Sales, Growth and Penetration, 2008-2017

Category	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Organic Food	20,393	21,266	22,961	25,148	27,965	31,378	35,099	39,006	42,507	45,209
Growth (%)	17.5%	4.3%	8.0%	9.5%	11.2%	12.2%	11.9%	11.1%	9.0%	6.4%
Total Food	659,012	669,556	677,354	713,985	740,450	760,486	787,575	807,998	812,907	822,160
Growth (%)	4.9%	1.6%	1.2%	5.4%	3.7%	2.7%	3.6%	2.6%	0.6%	1.1%
Organic (as % Total)	3.1%	3.2%	3.4%	3.5%	3.8%	4.1%	4.5%	4.8%	5.2%	5.5%

Figure 3: US Organic Food vs. Total Food Sales Growth
Source: Food Business News

In addition to the increasing demand for healthier food, the rising power of private labels, such as Walmart's Great Value and Costco's Kirkland, have played a major role in Kraft Heinz's recent form. In marketing, these are known as generic brands, which refer to the types of consumer products that lack widely recognized names or logos because they are typically not advertised. Generic brands are usually less expensive than brand-name products due to their lack of promotion, which can inflate the cost of a good or service [12]. Consider the following example: a bottle of 1.5 L Heinz Ketchup costs $4.47 (30 cents/100 mL) and a 1 L Great Value Tomato Ketchup is $2 dollars (20 cents/100 mL). People can easily save money by purchasing generic brands without sacrificing much on quality.

[7] https://en.wikipedia.org/wiki/3G_Capital
[8] https://www.investopedia.com/terms/z/zbb.asp
[9] https://www.wsj.com/articles/why-kraft-heinz-slashed-the-value-of-its-key-brands-11550866725
[10] https://www.marketwatch.com/investing/stock/khc/financials
[11] https://hbr.org/2016/06/zero-based-budgeting-is-not-a-wonder-diet-for-companies
[12] https://www.investopedia.com/terms/g/generic-brand.asp

Market Reactions

On February 22, 2019, UBS and Bank of America analysts downgraded Kraft Heinz from “buy” to “neutral” after the stock shock [13], suggesting that analysts feel that the future prospects of this stock have weakened when compared to their original recommendations.

For consumer markets, Kraft Heinz has stopped supplying Edeka, the largest supermarket corporation in Germany, due to the fierce dispute regarding prices; while Kraft Heinz wished to increase their supply prices, Edeka insisted on price reduction. For months, there have been disputes of this kind occurring in Germany, and in most cases, the retailer simply withdrew the supplier’s products off their shelves in order to pressure price negotiations. Recently, Lebensmittel Zeitung, a German trade and business newspaper, reported that the stocks of ketchup and barbecue sauces from Kraft Heinz in the Edeka Group were running out, leaving the shelves empty [14].

[13] *https://www.cnbc.com/2019/02/22/analysts-downgraded-kraft-heinz-after-the-companys-earnings-report--sec-investigation.html*
[14] *http://www.general-anzeiger-bonn.de/ga-english/No-more-Heinz-ketchup-at-Edeka-article4044446.html*

DR. COPPER'S 2019 DIAGNOSIS

DAVID ZHANG MARCH 15, 2019

Copper is a base metal that is ductile, malleable, and an effective conductor of heat and electricity. It is the only base metal that is used in all aspects of industrialization, ranging from infrastructure development to electronics and power generation. Its demand can be often depicted as a reliable leading indicator of an economy's health, earning its name of Doctor Copper in markets. This describes copper as the "only metal with a Ph.D in economics", due to its practicality and record with predicting future economic developments.

Copper's Current Situation

Figure 1: Price of Copper in the Past Year
Source: Business Insider

Due to recent global economic slowdowns and the ongoing trade tariffs between the United States and China, copper seems to be at some of its lowest in the past five years. As of March 1, 2019, copper trades at a price of $6,550.50 USD/ton, a slight rebound from August 2018 lows of $5,759.00 USD/ton due to US-China trade war causing a 17% decline in prices of all base metals [1]. This caused copper to reach prices levels of far below the 2017 average.

Because of Asia's consumption of copper being the majority of the entire world's demand, China's economic slowdown as a main component attributes to copper's declining demand. In early 2019. China's reported a slowdown to 6.4% economic growth for Q4 2018 and 6.6% economic growth for 2018 [2]. These rates were the lowest in a decade for China and that caused an immediate drop in copper's price.

With a lack of global demand, alongside a trade war with the United States, copper's price lacked the economic data to support it.

[1] https://investingnews.com/daily/resource-investing/base-metals-investing/copper-investing/copper-begins-2019-downward-trajectory/
[2] http://www.mining.com/copper-price-falls-chinese-economic-growth-hits-28-year-low/

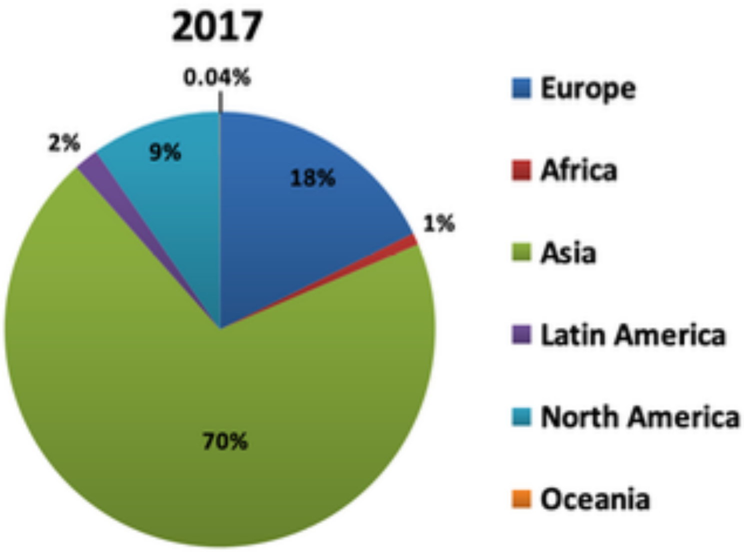

Figure 2: Copper Production and Availability to Use
Source: ICSG.com

Due to these considerations, many investors and companies have adopted a 'risk-off' approach that reflects their considerations of the trade war and current macro conditions. Investments and future expansions will be limited until issues regarding the trade dispute between the United States and China are resolved and there are clear outlooks for the future global economy.

Addition of the World's Largest Copper Mine

Coincidentally, the world's largest copper mine just recently opened in Panama. First Quantum Minerals (TSX: FM) put forth a $10 billion investment that involved building and developing a large copper mining and processing complex in Cobre Panama, alongside Panama's coast. This facility is projected to reach full production at 2021 and will turn First Quantum into one of the world's major copper producer [3]. This project is expected to grant Panama exposure to the copper market and establish itself as one of the country's largest investments. By way of the Panama Canal, the mined products will also be able to be shipped to anywhere in the world.

This is a bold investment by First Quantum and Panama as uncertainties lie within a slowdown of the global economy and of the physical mine itself. The mine is estimated to produce up to 150,000 tons of copper this year and possibly accumulate up to 350,000 tons in 2021 [3].

[3] *https://www.bloomberg.com/news/articles/2019-02-14/copper-miner-s-10-billion-bet-comes-to-life-in-panama-jungle*

Reduction in Copper Supply

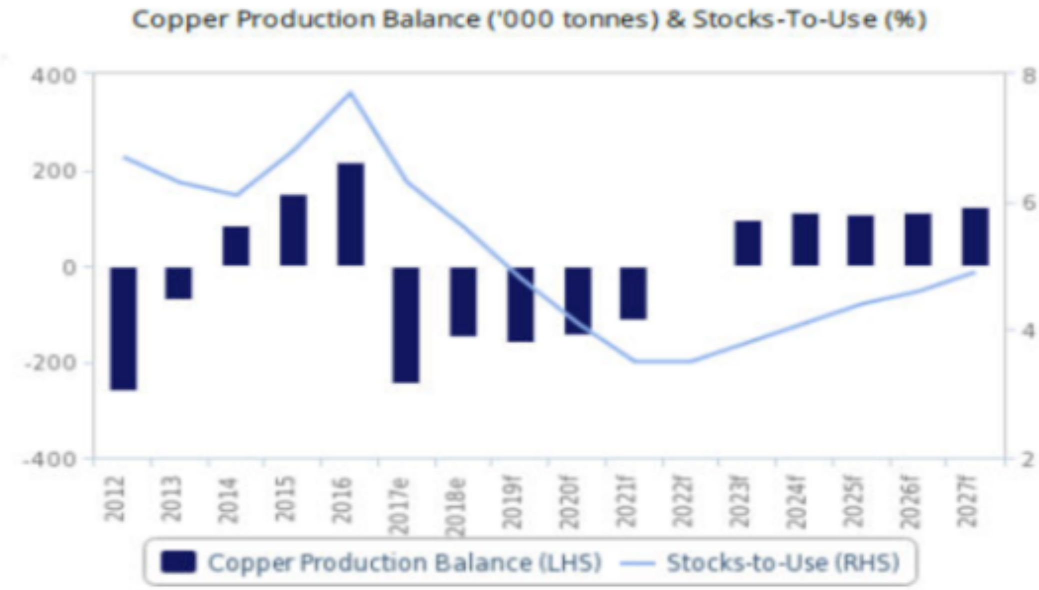

Figure 3: Copper Production and Availability to Use
Source: Mining.com

Despite the newfound projects for 2019, including Cobre Panama, which will increase the global output of copper for future years, net global production is still at a deficit. It is estimated that production will trail consumption to almost 200,000 tonnes in 2019 and that deficit could extend to 2021 [4]. This is due to lower production from existing mines that offsets the start-up of new mines. Especially for Grasberg mine in Indonesia, the second largest copper mine in the world, production is expected to be less than half of the amount produced in 2018 [5].

Moreover, smelter disruptions resulted in a reduction of copper supply in 2018. Causes vary from regulation for tighter emissions and technological issues, as well as various outages and shutdowns resulting in faltering production that may continue well into 2019 [5]. This supply deficit points at an expectation that copper prices should trend higher in 2019.

However, the strength of the U.S dollar is also a key factor that affects the price of copper. Due to the fact that the U.S dollar is the benchmark pricing currency for most commodities, appreciation or depreciation of the U.S dollar affects the buying power of investors. A weaker dollar will require more of the same dollar to buy the same amount of a given commodity, thereby raising the commodity's price in USD upwards while also giving foreign investors the ability to buy more amounts of the commodity with their currency. Thus, if the U.S dollar remains strong and trends upwards, prices of copper will be hurt, and its upwards price trajectory may be hindered. However, the U.S dollar is predicted to weaken through 2019 [1], and that would slightly boost the price of copper.

[4] http://www.mining.com/global-copper-market-supplied-demand-rise-report/
[5] http://www.mining.com/web/copper-five-things-look-2019/

Economic Outlook

With the current dwindling demand for copper, a global slowdown in the economy is imminent. The recent drop in prices indicates a fear of declining economic growth. As a leading indicator of the economy, the recent copper trends hint at a decrease in expansion and a decline in infrastructure development as many industrial developments require copper.

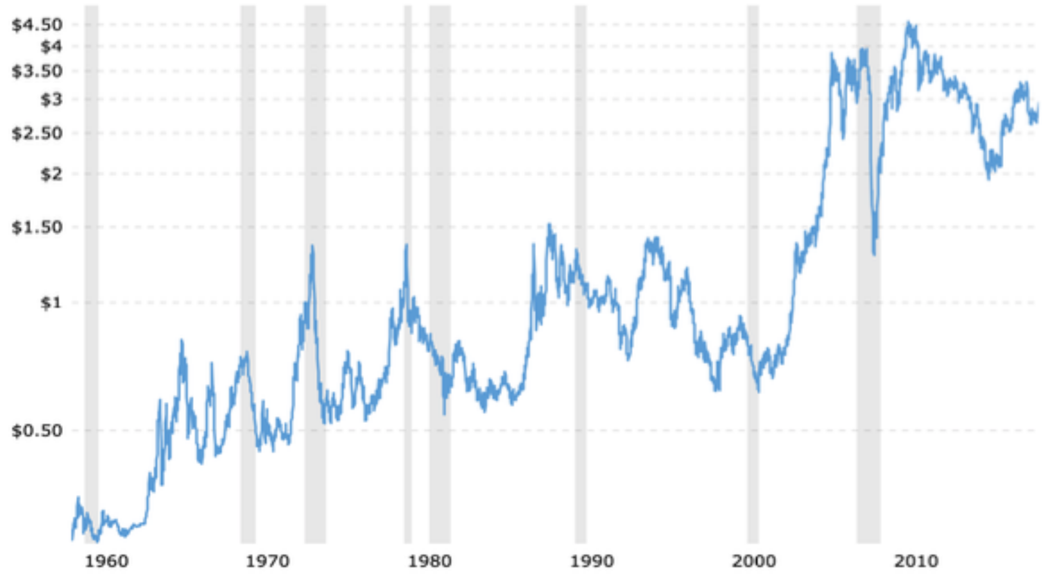

Figure 3: Historical Prices of Copper from 1960-2019
Source: Macrotrends.net

In figure 3, the historical price trend of COMEX copper price in USD per pound is plotted for the last 60 years. Dating back to 1960, many years of which copper price were at their troughs correspond with the economic sessions of which GDP growth were negative for two consecutive quarters. Indicated in the grey-shaded areas, periods of economic recessions seemingly match the price periods in which copper takes a harsh drop towards its cycle lows.

The recent developments, coupled with other factors of rising interest rates and strained international trade relations, indicates that there may be a possibility of economic instability incoming in the near future. However, since its 2018 low, the price of copper has been steadily recovering in the last two months, pushing back the cusp of recession once again.

Overall Copper Outlook

2019 seems to be another mixed year for copper: on one hand, improving U.S – China trade talks and a deficit in the supply chain projected for another year will push prices upwards. However, with a global economic slowdown, especially in China and developing countries with the need to develop infrastructure, a restricted supply will be offset by a faltering demand. Recovery is anticipated due to the low-price levels copper fell to in 2018, but the extent is unknown due to lingering macro fears and disputes. Furthermore, due to the role copper plays in gauging the economy's well-being, events of copper in 2019 may set the foundation for the world economy.

THANK YOU FOR READING!

Phew! February was a crazy month filled with midterms, quizzes, and interviews. We hope that, as the market rally steadily continues, your experiences at UW are also going well.

The market research team is already working on the March newsletter and we will publish it before April 5, the last day of lectures. Some of the topics include a walkthrough of a Discounted Cash Flow and various valuations methods. Meanwhile, one of the editors will provide a piece on an ongoing global industry-wide project known as the Fundamental Review of the Trading Book.

However, we still have some room for any topics that you, the readers, would like to know about, so email us at farmsa.editors@gmail.com, and we will do our best to deliver!

Hope you enjoyed this issue, and see you soon!

The Editors