# STUDENT MANAGED INVESTMENT FUND

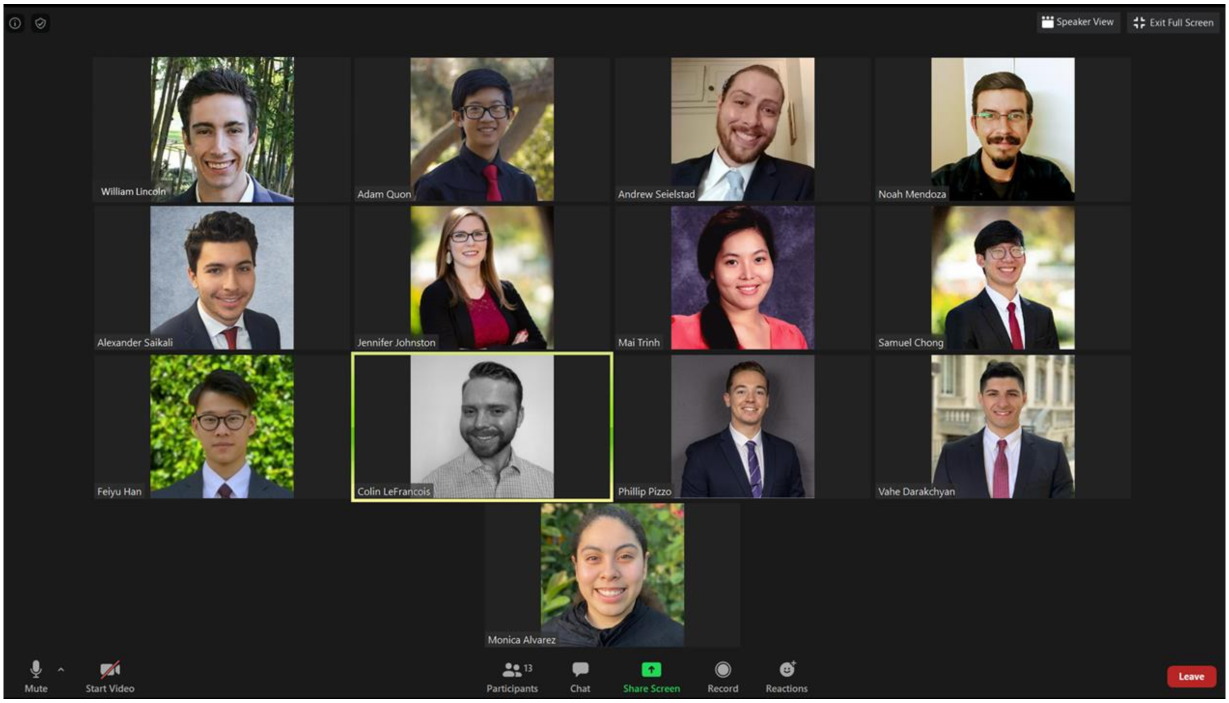
California State Polytechnic University, Pomona

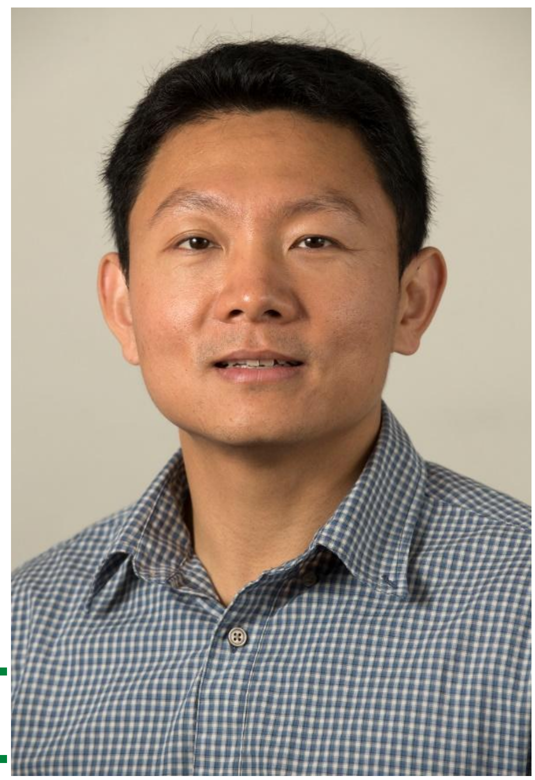

MAY 8, 2020

BRONCO ASSET MANAGMENT

3801 W Temple Ave,

Pomona, CA 91768



*Left: Pawan Tomkoria. Right: Dr. Alex Wei Wu*

| Date of Response: | |
|---|---|
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# UNIVERSITY OVERVIEW

Founded in the Fall of 1938, California State Polytechnic University - Pomona (Cal Poly Pomona or CPP) approaches higher education with a "Learn by Doing" philosophy. Beginning with a class of 110 students as a satellite campus of California State Polytechnic College - San Luis Obispo, Cal Poly Pomona is now a member of the 23- campus California State University (CSU) System, serving over 25,000 students of all backgrounds. Cal Poly Pomona is among the best public universities in the West and is nationally ranked in numerous categories, such as return on investment, diversity, social mobility, and overall ranking. CPP currently offers bachelor's degrees in 94 majors, 39 master's degrees, 13 teaching credentials and a doctorate across 9 distinct academic colleges. The College of Business Administration (CBA) at Cal Poly Pomona continues the overarching philosophy of hands-on learning for students majoring in Finance, Accounting, Economics, and other relevant management disciplines. The Finance, Real Estate, and Law (FRL) Department at the CBA serves approximately 800 students in the major and offers a broad curriculum covering investment management and analysis, as well as niche courses such as Derivatives, Valuation, Financial Modeling, Multinational Financial Management, and Applied Portfolio Management , just to name a few. In addition, the FRL Department has recently launched the Dr. J. Douglas Ramsey Financial Markets Room (Bloomberg Lab), complete with twelve Bloomberg terminals. In order for students to get experience in real-world applications, several finance classes have moved to the lab during lecture hours and have begun integrating Bloomberg terminals into the investment analysis curriculum. The lab is also used extensively by our Student Managed Investment Club and the Applied Portfolio Management course. Cal Poly Pomona also provides various other resources such as the WRDS analytics module, CRSP and CompuSmart Databases, and the Value Line Investment Survey which, when complemented with a wide range of specialized investment courses, give students graduating from Cal Poly Pomona a competitive edge in the job marketplace.

## DEPARTMENTS

**College of Business Administration**
Finance, Real Estate, and Law Department
Accounting Department

**College of Letter, Arts and Social Sciences**
Economics Department

# MAJORS & MINORS OFFERED

## Undergraduate Programs

Bachelor of Science in Finance, Real Estate, and Law

Bachelor of Science in Accounting

Bachelor of Science in Economics

Minor in Finance

Minor in Real Estate

Minor in Business Law

Minor in Accounting

Minor in Economics

## Graduate Programs

Master of Business Administration

Master of Science Business

Administration Master of Science in

Accountancy

Master of Science in Economics

Master of Science in Business Analytics

# INVESTMENT COURSES

## Undergraduate Courses

FRL 3000 - Managerial Finance

FRL 3301 - Investments

FRL 3671 - Corporate Finance Theory

FRL 4631 - Business Forecasting

FRL 4041 - Financial Modeling

FRL 4041 - Financial Modeling FRL 4311 - Financial Derivatives

FRL 4331 - Seminar in Portfolio Management and Capital Markets

FRL 4401 - Evaluation of Financial Policy

FRL 4671 - Business Valuation

FRL 4862 - Real Estate Investment Analysis

FRL 4990 - Applied Portfolio Management

# CFA PREPARATION

Cal Poly Pomona was recently approved for the CFA University Affiliation Program. Our Finance, Real Estate, and Law curriculum covers more than 70% of the topics within the CFA Level **1** Candidate Body of Knowledge (CBOK), including ethics. As a result, many of our students are better equipped to take the CFA Level **1** exam post-graduation. The CBA partners with the student-run Finance Society and Student Managed Investment Club at Cal Poly Pomona to inform students about the exam and its benefits. These organizations host events and guest speakers to discuss how the CFA can be an essential tool to further students' careers.

# BRONCO ASSET MANAGEMENT (BAM)

Bronco Asset Management (BAM) operates the Cal Poly Pomona Student Managed Investment Fund (SMIF) and the Student Managed Investment Club (SMIC). Dr. Alex Wei Wu and Mr. Pawan Tomkoria are co-advisors to the Club. SMIC is an on-campus organization facilitated by and open to all CPP students. Upper-level students who have taken the Applied Portfolio Management course serve in senior leadership positions while other students serve in supporting and learning roles.

# FINANCE SOCIETY

Cal Poly Pomona's Finance Society is a premier finance and investment management student organization. Students who join become part of a driven group with a collective passion for the finance industry and capital markets. The Finance Society routinely hosts informational seminars and relevant guest speakers, providing students the opportunity to identify potential finance related careers. Additionally, the society offers networking opportunities with alumni and is a Superior Chapter Award winning member of the Financial Management Association.

## CAMPUS CULTURE AND SUPPORT

Cal Poly Pomona provides a polytechnic education, enforcing a "Learn by Doing" academic philosophy. The College serves as a center of excellence for our diverse student population and faculty from a variety of backgrounds, including many first-generation college students. CPP strives to sustain a culture of inclusivity, community, and societal responsibility. The Bronco Asset Management program provides equal opportunity to all students. Specifically, opportunities such as CFA SMIF, CFA Institute Research Challenge, Dr. J. Douglas Ramsey Bloomberg Lab, and Argus competition for students to prepare them for career success, regardless of their backgrounds.

Finance, Real Estate, and Law Department Chair Dr. Wei Yu is extremely supportive of CPP SMIF and has made the Bloomberg Lab accessible for all students. In addition, Mr. Pawan Tomkoria and Dr. Wei Wu serve as co-advisors to the fund and the club.

## TEAM STRUCTURE

Our team of thirteen students is divided into four groups. Three teams are dedicated to analyzing economic data for the U.S., Asia, and Europe. The fourth team is dedicated to data analytics and fixed income. Each team is also assigned specific stock sectors to perform analysis on. Several program veterans serve as mentors, facilitating an invaluable exchange of ideas and experience. For a specific breakdown of team assignments, please refer to the organizational chart in the appendix.

## INTERNAL COMMUNICATIONS

The BAM team communicates primarily through scheduled meetings and various electronic telecommunications, including but not limited to Zoom, Telegram, e-mail, and Text Messaging. All data, scripts, and research are accessible through a shared Google Drive folder.

## MEETING SCHEDULE

Scheduled meetings are held weekly on Thursdays. Additional meetings are conducted on Tuesdays on an as-needed basis. Originally, meetings occurred from 5:30 pm to 8:15 pm and were held in the Dr. J. Douglas Ramsey Bloomberg Lab on campus. Due to campus closure as a result of COVID-19 (Coronavirus Disease 2019), meetings are held via Zoom.

# PROGRAM INCENTIVES

CPP grants 3 academic units to students participating in the BAM program, credited as FRL 4990 Special Topics for Upper Division Students.

# SELECTION PROCESS

Admission to the Applied Portfolio Management course is selective and based on an application followed by an interview process. However, club membership is open to all students. In addition to the minimum CFA Orange County requirements, applicants should have:

1. High overall academic performance.
2. Majoring in a business-related field.
3. Bloomberg Market Concepts certification.
4. Completion of the core Finance course "FRL 3000".
5. Taken an additional investment-related course.
6. Practical knowledge and understanding of the financial market.
7. Some prior investing experience.
8. Ability to work in a collaborative team environment.
9. Willingness to commit significant time to course work.
10. Genuine enthusiasm and a deep interest in an investment-related career.
11. Exhibit strength in articulating and communicating financial concepts.

~Any exceptions to the above must be approved by the course faculty~

# REPLACEMENT PROCESS

Senior club members who are departing due to graduation will be replaced by promoted senior members and qualifying junior members from the club. All fund management positions are filled through a voting process.

## BACKGROUND OF STUDENTS AND FACULTY

**Describe the background of the students and faculty advisor of the team:**

Bronco Asset Management is directed by motivated and diligent undergraduate students studying Accounting, Finance, Economics, Engineering, and Information technology who are interested in investments and wealth management. The diversity of the group allows for a multitude of perspectives in the decision making process. Several members have completed additional investment and finance related classes. This knowledge forms the bedrock of the BAM team's success. Members of BAM are high academic performers and campus leaders. They are heavily involved in extracurricular activities and have received various scholarships and accolades, such as the Dean's honors list. These members have completed internships with high-profile companies such as PIMCO, Citigroup, Goldman Sachs, JP Morgan, First Republic Bank, Foresters Financial, Cathay Bank, FastPay, Bank of America, MassMutual, LPL, Hotchkis and Wiley, Edgewood Ventures, Wilshire Associates, and UBS.

Faculty Advisor, Professor Pawan Tomkoria has over 30 years of experience in the medical and electronics industries, with positions in finance, general management, and international business. He joined Cal Poly as an adjunct faculty professor and is currently an investment and management consultant. Faculty Advisor, Dr. Alex Wei Wu, has published numerous articles in asset pricing, credit risk, and portfolio management. He has worked at Morgan Stanley and a leading hedge fund in direct lending. Dr. Wu and Professor Tomkoria combine their industry experience with academic excellence to set students up for success.

**Why is your team uniquely qualified to manage the investment portfolio of CFAOC?**

The BAM team is uniquely qualified to manage the investment portfolio because it consists of an eclectic group of individuals that bring experience, intellectual capital, and enthusiasm. Each student offers a unique background, wide array of knowledge, and intense interest in investment research. This provides the team with multiple insights and viewpoints on a variety of topics. Our team's qualifications are further bolstered by members with personal investing experience, licenses such as Series 7 and Series 66, and financial programming experience (which can help with optimization and monitoring the portfolio in the future). Each individual on the team has taken the time to carefully understand and apply their financial knowledge in building a portfolio that is based on data, fundamental analysis, and well-supported projections.

Our team embodies the "Learn by Doing" philosophy that Cal Poly Pomona is known for. CPP also takes pride in its student diversity and this is reflected in our team as well. The CPP team consists of diligent and knowledgeable individuals who strive to provide its clients with the best possible product through balanced reward/ risk management, while also embodying a high standard of ethics and transparency.

# INVESTMENT PHILOSOPHY

**Describe your team's investment philosophy:**

CPP BAM's goal is to maximize risk-adjusted returns for our clients while keeping their needs and expectations at the core of our investment decisions.

Our investment decisions are driven by fundamental research to build long-term wealth for our clients. The portfolio construction and management processes are positively impacted by selection of a diverse team to provide multiple perspectives.

All decisions will undergo a rigorous analytical process. We will remain patient and flexible to accommodate fluctuating market conditions.

We believe markets are efficient in the long-term; however, short-term inefficiencies do occur. By utilizing an active management approach, we can capitalize on those opportunities to add additional value for our client.

Our approach will balance risk and reward with a conservative inclination. Overall, the Student Managed Investment Fund will embody Cal Poly Pomona's "Learn by Doing" philosophy.

CPP BAM will operate with competence, diligence, and in an ethical manner, by placing the interest of the client before our own.

# PASSIVE MANAGEMENT

**Will your approach include passive strategies such as indexation? If so, please describe the role such strategies will play.**

The BAM team will follow an active strategy in the management of our portfolio. Within this portfolio, we have chosen to allocate a portion of our investments in several specialty Exchange-Traded Funds (ETFs) that track individual sectors in equities and fixed income sub-classes. Our reasoning behind this move is centered in the economic uncertainty stemming from the COVID-19 pandemic. Our intention will be a return to specific security selections within the equities asset class once this uncertainty is reduced.

At this time, we will invest in eight sector ETFs, representing the financial, consumer discretionary, industrials, consumer staples, real estate, utilities, materials, and energy sectors, for a portion of our equity allocation. These sectors were selected due to their greater sensitivity to overall economic conditions. We believe that the healthcare, technology, and communications sectors are less susceptible to current economic uncertainty. In these sectors we will invest in individual securities.

A portion of our fixed income portfolio will contain two passive ETFs, representing the aggregate bond market and short-term treasuries. We chose passive ETFs in these categories to minimize expenses, provide diversification, and to avoid the high spreads present in retail bond trading.

# MARKET OVERVIEW AND ASSET ALLOCATION

**What is your capital market outlook for the coming year?**

## INTRODUCTION

At BAM, our capital market outlook is guided by our overall investment philosophy. Our decisions are based on fundamental analysis. This leads our team to first analyze the underlying global economies that drive capital market returns and then determine our asset allocations. Our analysts reviewed the outlook for the economies of the United States, Brazil, European Union, China, Japan, and India. That analysis is summarized below.

## US ECONOMIC OUTLOOK

The US economic consensus is based on research from Bloomberg, The Wall Street Journal (WSJ), the International Monetary Fund (IMF), and Deloitte. These sources predict negative GDP growth in 2020, indicating a recession, with a recovery expected in 2021. Consistent with a recessionary outlook, Inflation and 10-year Treasury rates are expected to decline. Unemployment is projected to increase drastically in 2020, but a reversal of that trend is expected in 2021. In general, the consensus view is recessionary in the short term.

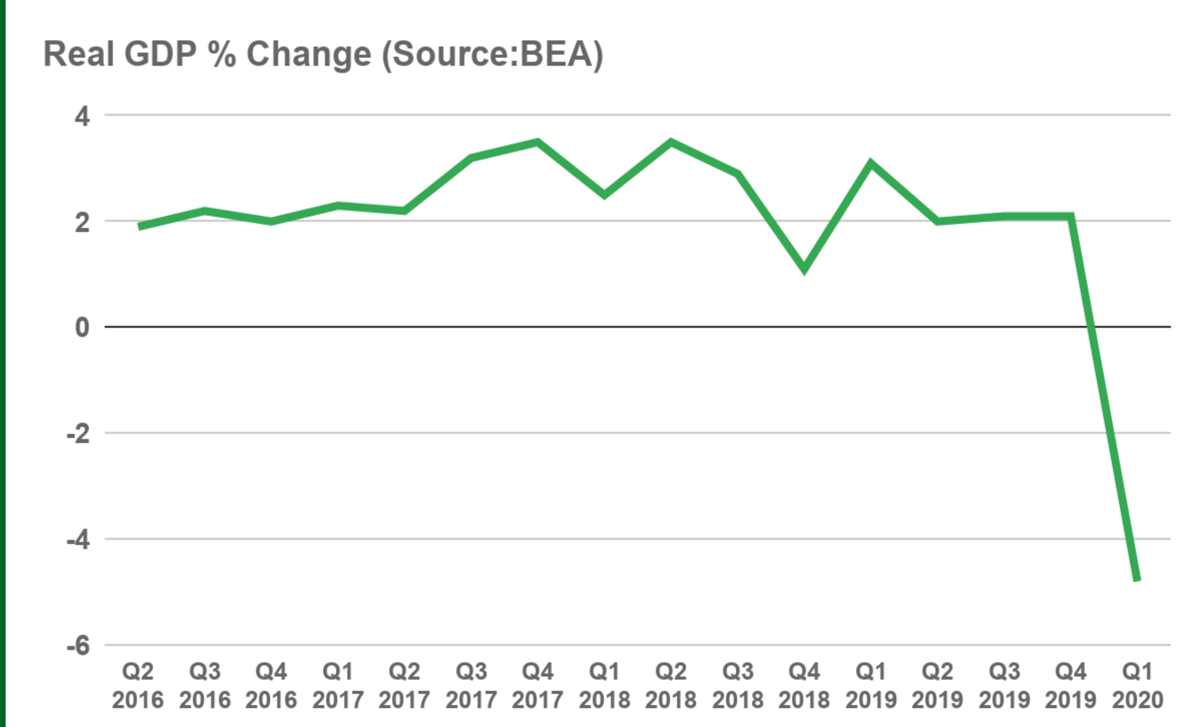
The table below relates a current consensus outlook from Bloomberg, WSJ, IMF, and Deloitte.

| | Real GDP (%) | | | CPI (%) | | | Unemployment (%) | | | 10-Year Treasury Note (%) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| **Bloomberg** | 2.3 | -3.2 | 3.4 | 1.8 | 1.2 | 1.9 | 3.7 | 8.2 | 6.3 | 1.9 | 1.0 | 1.4 |
| **WSJ** | 2.3 | -4.9 | 5.1 | 2.0 | 0.5 | 1.9 | 3.6 | 11.1 | 7.2 | 2.0 | 0.8 | 2.6 |
| **IMF Report** | 2.3 | -5.9 | 4.7 | 1.8 | 0.6 | 2.2 | 3.7 | 10.4 | 9.1 | - | - | - |
| **Deloitte** | 2.3 | -8.3 | 2.9 | 1.8 | 1.0 | 1.7 | 3.7 | 6.5 | 7.5 | 2.1 | 1.2 | 1.6 |
| **Average** | **2.30** | **-5.58** | **4.03** | **1.85** | **0.83** | **1.93** | **3.68** | **9.05** | **7.53** | **2.00** | **1.00** | **1.87** |

Consumer spending is the most considerable driver of economic growth in the United States, accounting 70% of GDP in 2019. Low unemployment and federal tax cuts had kept consumer confidence, and thus consumer spending, high until the devastating effect of COVID-19. Business investment is also an important factor, having contributed to 18% of GDP in 2019. Additional issues including a trade war with China and a slowing global economy have put downward pressure on business investment. In the following pages, we offer an in-depth analysis into the U.S. economy.

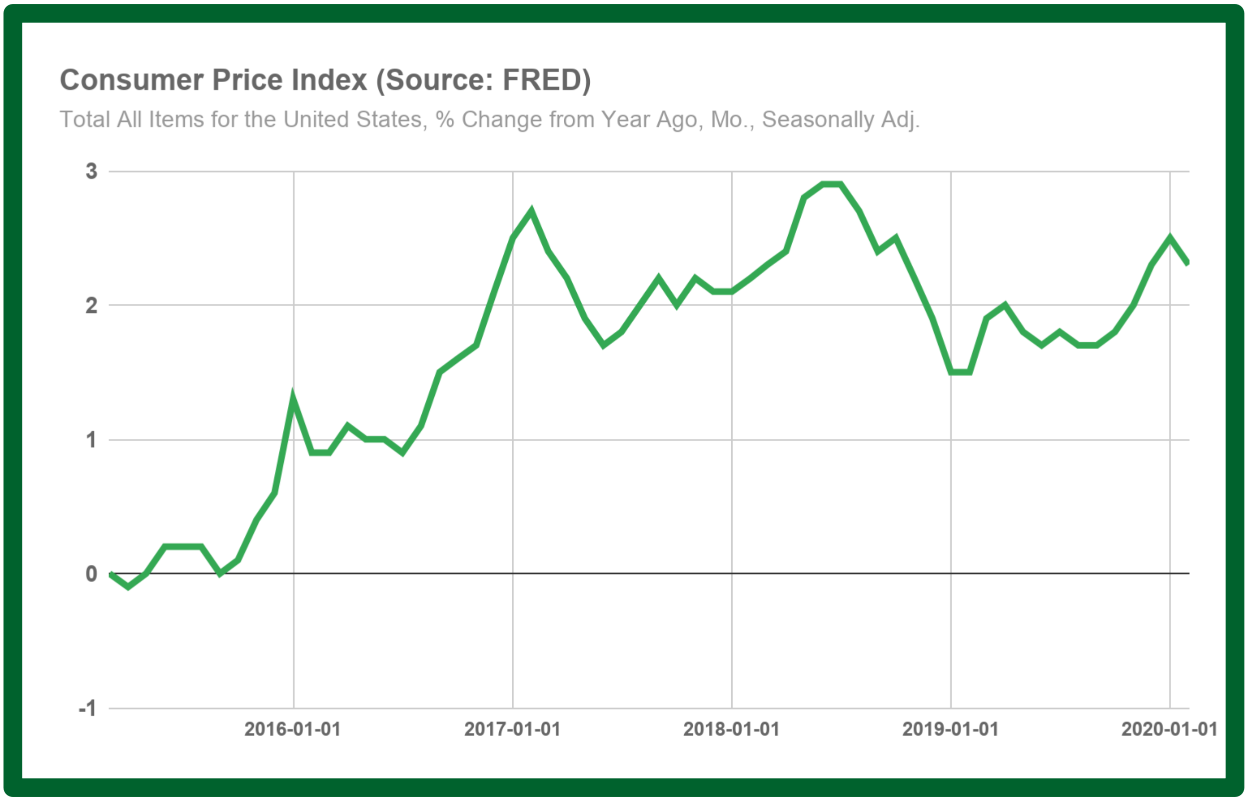
## GDP GROWTH

The graph below represents annualized real GDP growth by quarter, from Q2 of 2016 to the beginning of 2020. The U.S. economy achieved solid growth in the lead up to and following the 2017 tax cuts. However, since peaking at 3.5% in Q2 2018, this growth has slowed to 2% in Q4 2019. It is our opinion that while the tax cut provided an initial boost to GDP, that has been short-lived, and GDP has normalized at levels lower than peak. Growth is further impacted by slowing of the global economy and now the coronavirus impact as seen by the decline in Q1 of 2020. These factors, combined with the demographic trends of an aging population and lower replacement rate, point to slower growth, even before factoring in COVID-19.



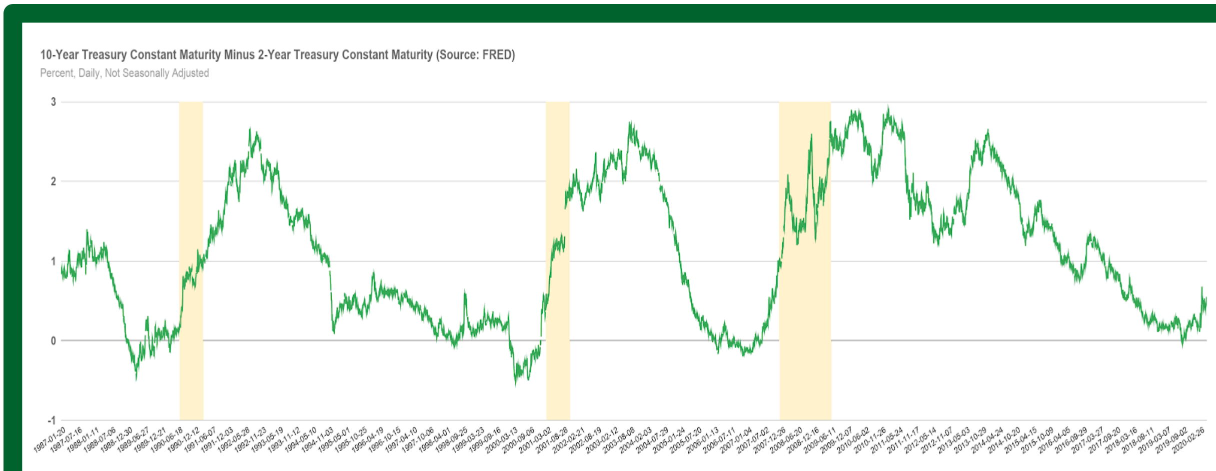
# INFLATION

This graph represents the Consumer Price Index (CPI) as a measure of inflation. A trend towards rising inflation can be observed from 2016 to mid-2018. Since then, we can see that CPI has fluctuated between 1.5%- 2%. This low inflation is consistent with our outlook of a slowing economy. The current pandemic is expected to exacerbate the trend.



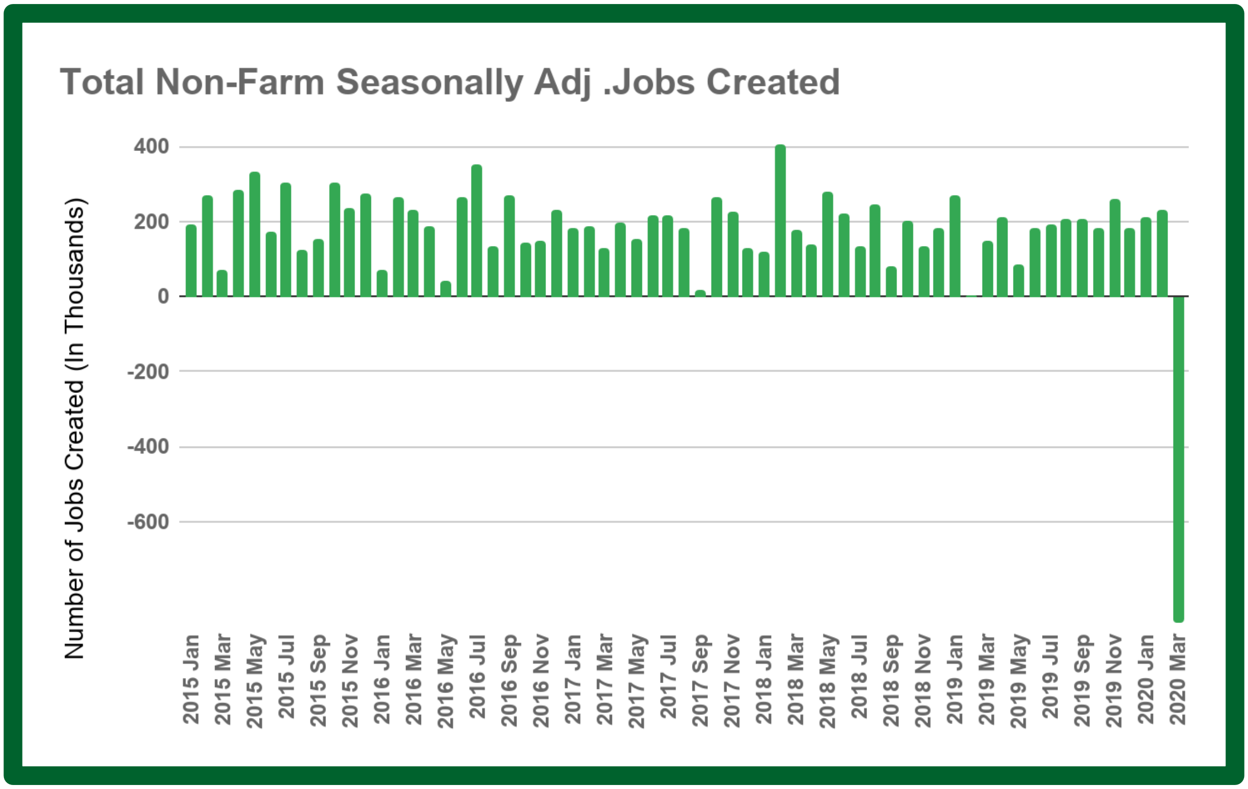
# INTEREST RATES

The Federal Reserve recently lowered its target for short-term rates and their current median projections show them holding this target steady through 2020 and into 2021. This recent cut has helped alleviate major concerns about the liquidity of financial markets and mitigate the impact of COVID-19. The chart below illustrates the spread between the 10-year and 2-year Treasury yield. This spread has dipped to and below zero in 2019. The FED's actions have fended off the yield curve inversion for now. However, we believe these inversions, and near-inversions, are still concerning, as they reflect a weak outlook for future growth. Additionally, we are of the opinion that the near zero interest rates are having a limited impact on growth and that they could potentially depress spending going forward, as consumers increase savings to offset lower investment returns.



# JOB CREATION

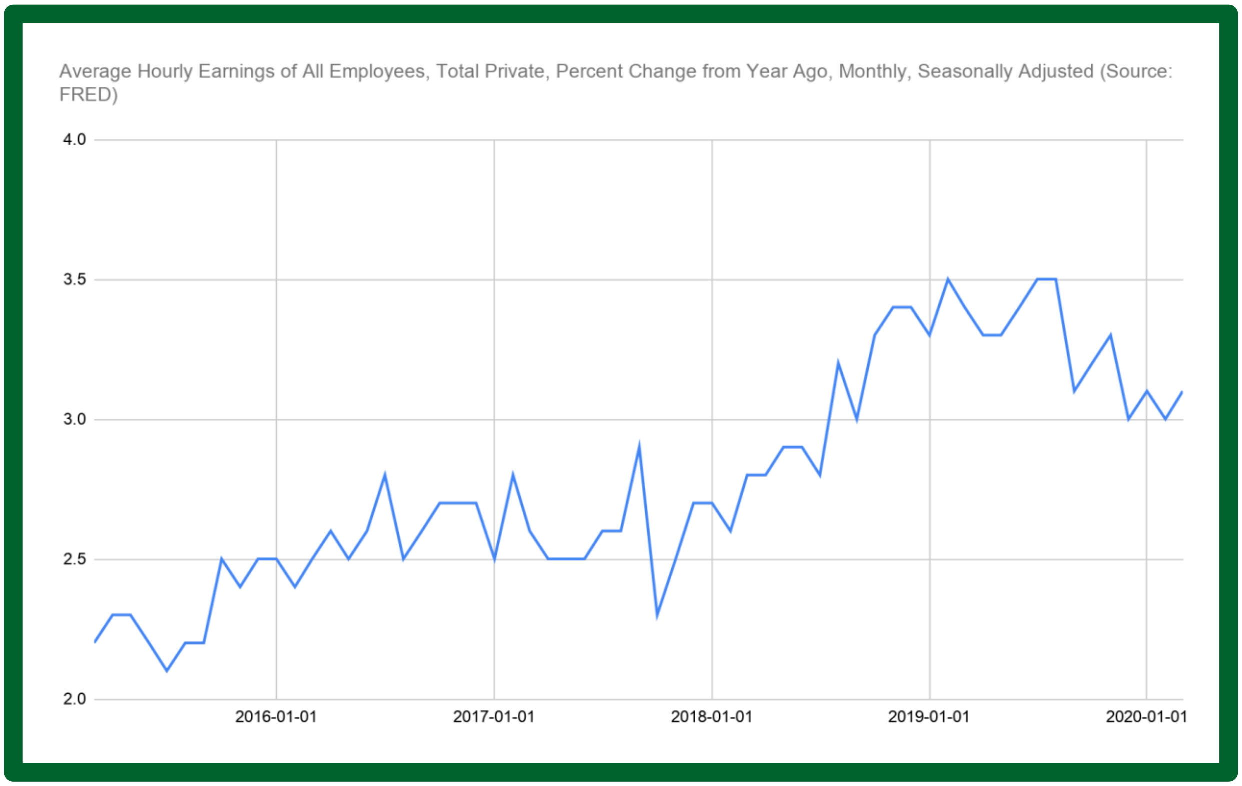
As mentioned earlier, consumer spending makes up the bulk of U.S. economic growth. One of the best predictors of consumer spending is employment, specifically growth in employment. This chart shows the number of new non-farm jobs created monthly. Job growth was solid from March 2019 to February 2020. A sharp decline can be seen in March of 2020. This decline in job creation, due to social distancing orders related to COVID-19, seems to indicate slowing momentum in economic growth. We expect a job recovery in 2021, but not to the normalized levels of 2019.




Source: Bureau of Labor Statistics

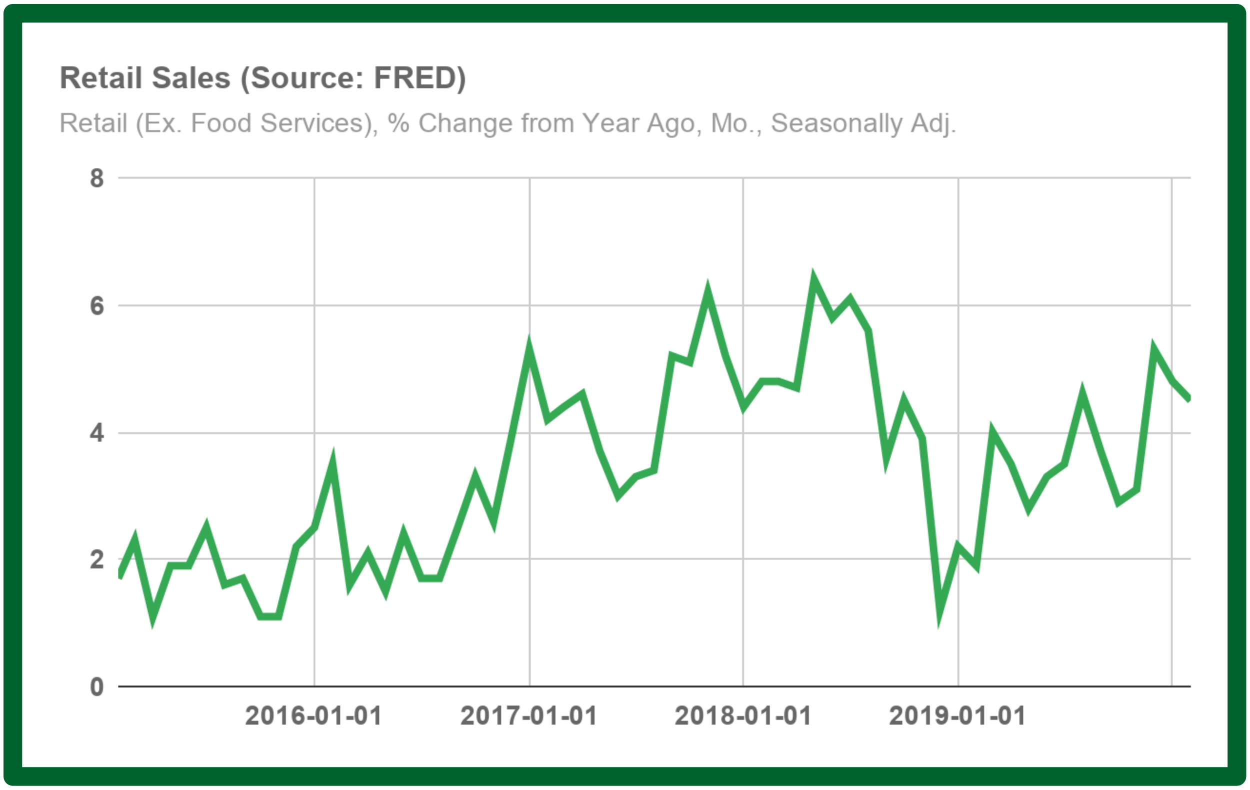
# Hourly Earnings

To assess consumer strength, our team looked at the rate of hourly wage growth. Wages were growing at around 2.5% for several years and, in mid-2018, they started trending over 3%. However, this trend has plateaued at 3.5% and reversed into 2020. We see slowing wage growth into 2020 as a potential indication of a weakening economy, even before COVID-19. As the unemployment continues to rise, we expect to see even slower wage growth as a result of an oversupply of labor.



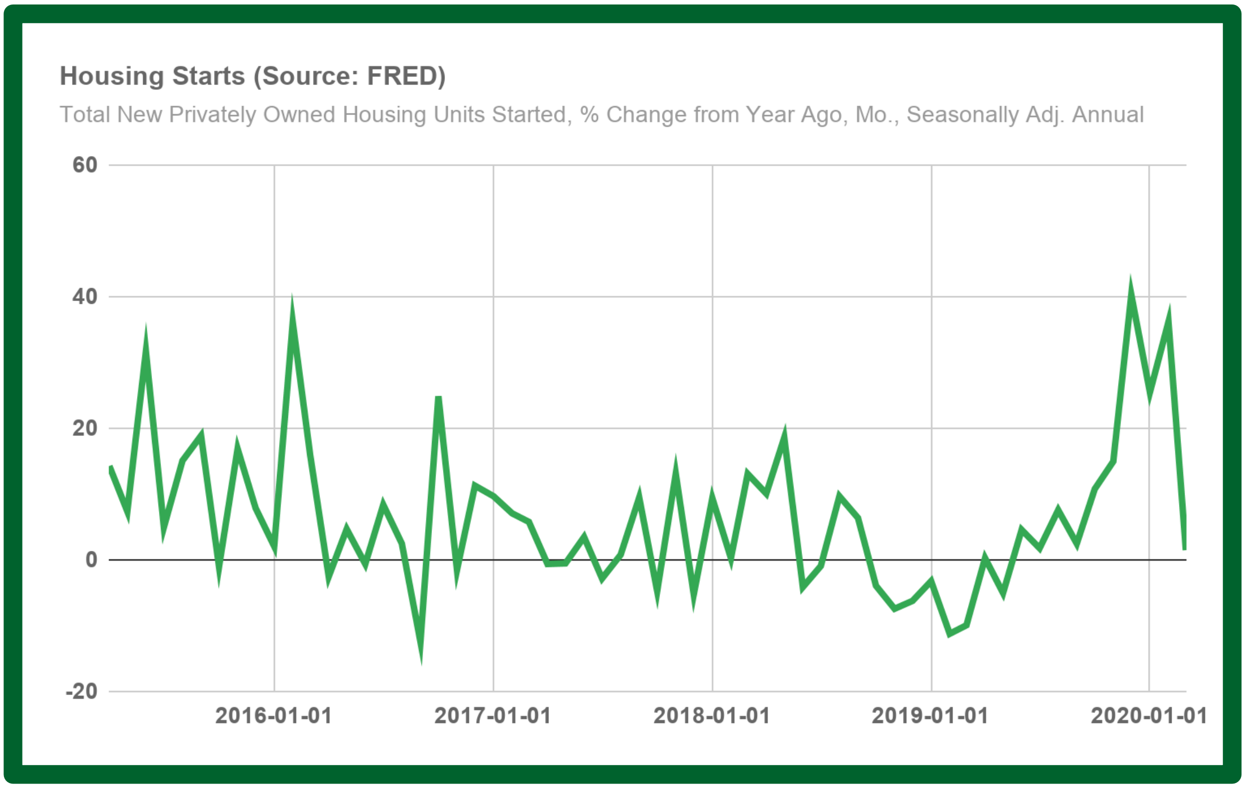
# RETAIL SALES

Retail sales, excluding auto and services, showed a generally accelerating trend until mid-2018. That trend has since corrected. More recently, we see that retail sales have been growing at around 3%. Due to social distancing measures, we expect that declining retail sales will be a major contributor to declining economic growth.



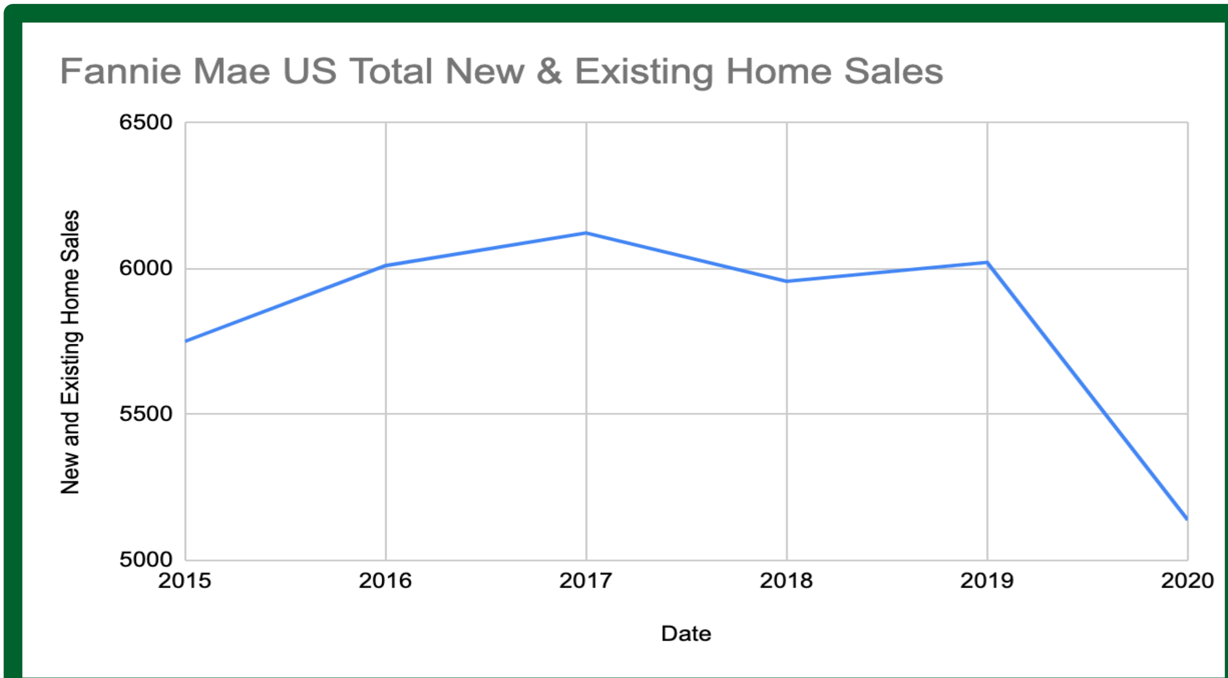
## HOUSING STARTS

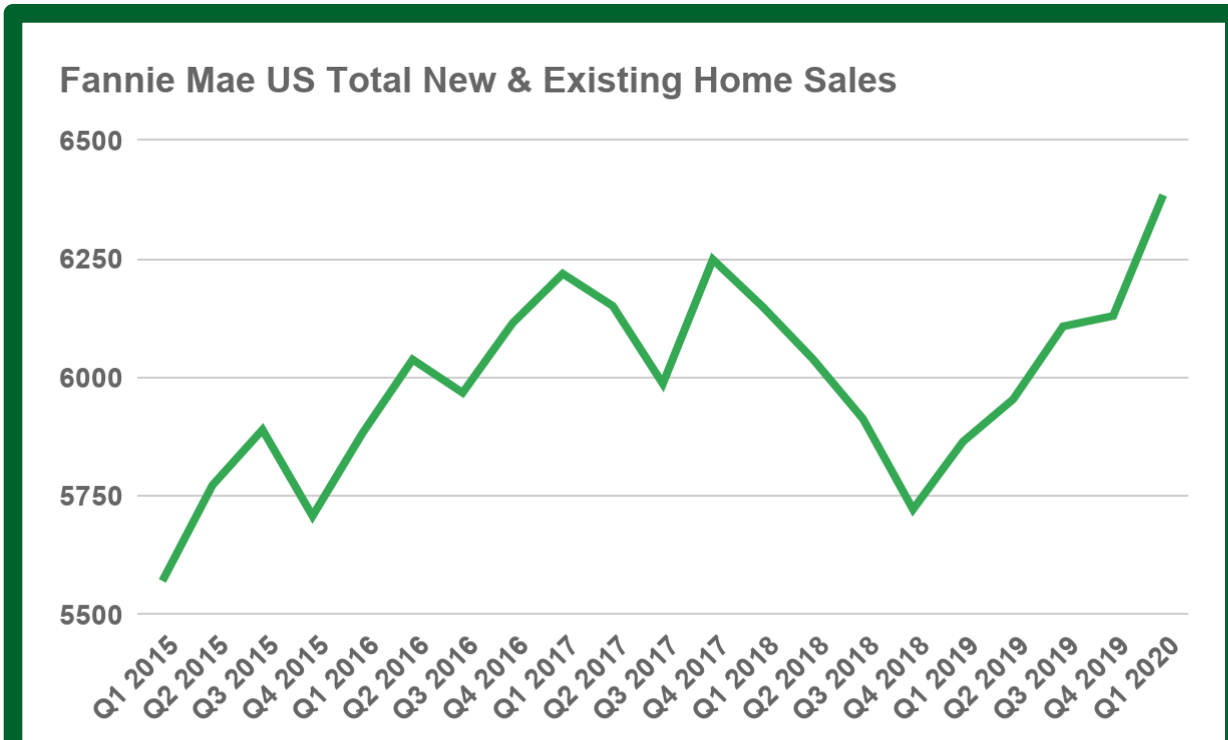
The strength of the housing sector remains an important driver of economic growth. We analyzed trends in housing starts to assess its current state. Housing starts faced a gradual, if not noisy, decline in growth between 2015 and 2019. However, housing starts showed tremendous strength throughout 2019. In line with our economic forecast, we expect housing starts to decline throughout 2020. In 2021, we expect a spike similar to what was seen throughout 2019, if not slightly less dramatic.



## NEW AND EXISTING HOME SALES

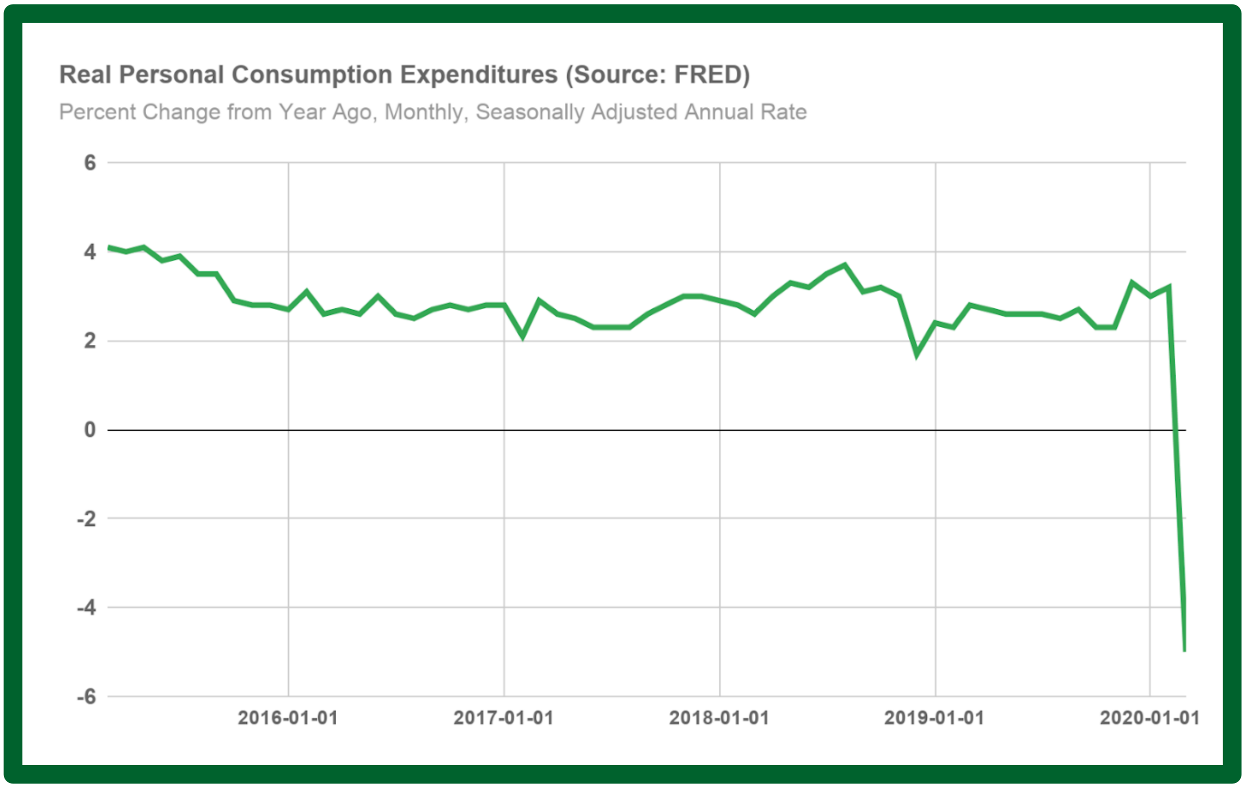
We looked at two data sets for home sales. The first shows quarterly actual home sales and shows an overall positive trend to the end of Q1 of 2020. The second graph, which shows yearly actual and forecasted home sales, also shows a steep drop off in 2020. This drop will contribute to slowing economic growth. Consistent with our overall outlook, we expect to see growing home sales in 2021.



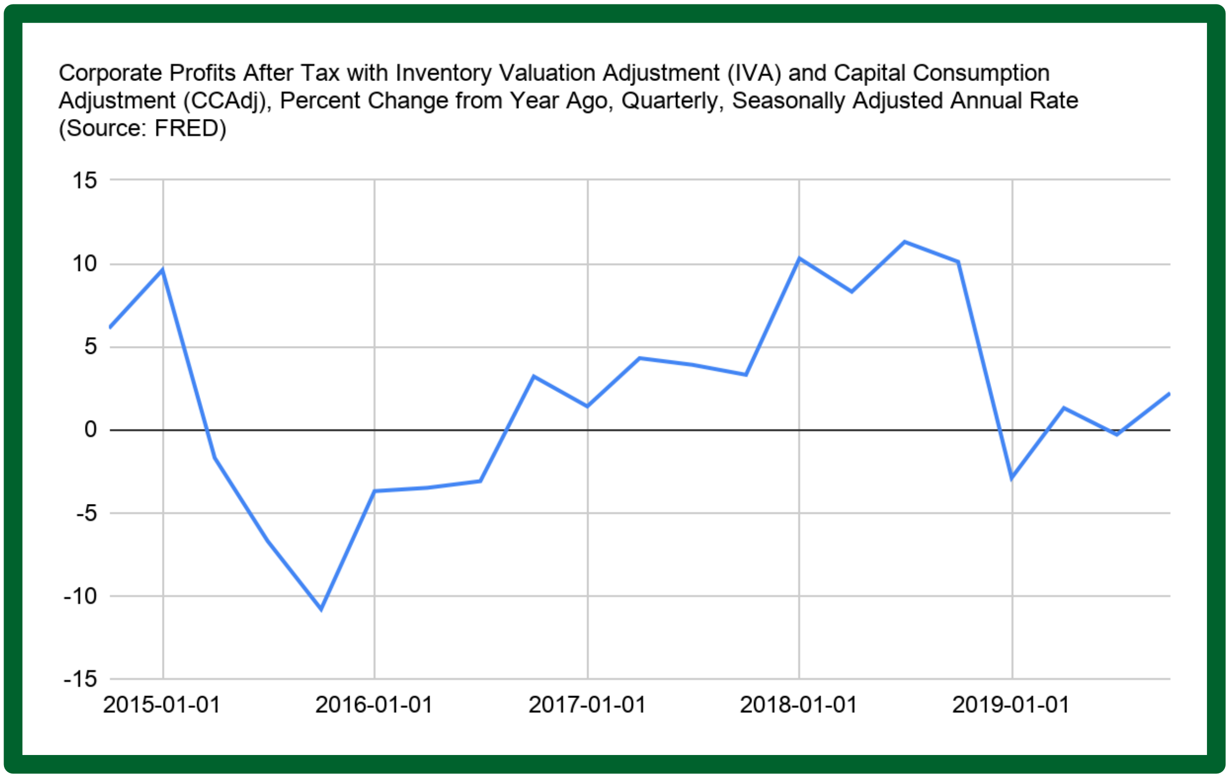
# CONSUMER SPENDING

Shown here is the change in consumer spending over the last five years. The trend beginning in 2016 is relatively flat, but we start to see a decline after the peak in mid-2018. Being the single largest component of U.S. GDP, consumer spending experiencing a slowdown weighed heavily on our forecast. This trend, which we expect to see continue, is a major sign of a slowing United States economy.



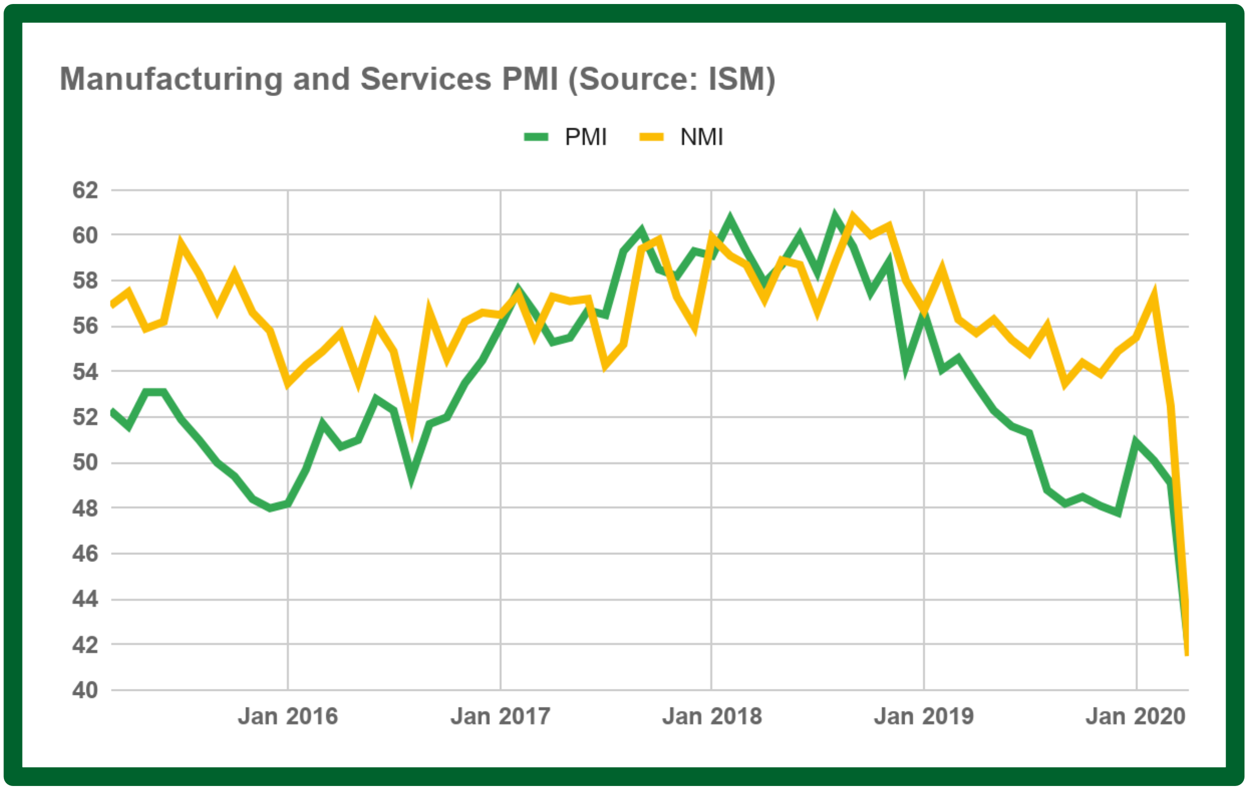
# CORPORATE PROFITS

According to data provided by the Bureau of Economic Analysis, Corporate Profits increased from late 2015 to late 2018, but growth has since started to stagnate. Growing Corporate Profits show strength in production and corporate spending. We see this slowdown acting with downward pressure on future growth.



## PURCHASING MANAGERS INDEX - MANUFACTURING

From August 2018 on, manufacturing PMI has displayed a sharp decline. We attribute this to a slowing of the global economy and the Trade War with China. Declining PMI is another warning sign indicating that slow growth is ahead.




## PURCHASING MANAGERS INDEX - NON-MANUFACTURING

Non-Manufacturing PMI (NMI) also shows a steady decline after peaking in September 2018. We expect this trend to continue through 2020, negatively impacting GDP growth. The service sector is 79.6% of U.S. private sector GDP, giving this metric significant importance in our overall forecast of a recessionary economic climate. Looking forward, we expect Non-Manufacturing PMI to recover as Stay-at-Home measures relax, however, it will remain weak.

**Other factors impacting the U.S. economy:**

The COVID-19 pandemic has begun to devastate U.S. and World economic growth in 2020. Additionally, disruptions in the Chinese supply chain have already had an impact on the U.S. consumer. Finally, news surrounding the 2020 U.S. Presidential election increased market volatility before COVID-19. The economic policy change that might take place if there is a change of administration is not taken lightly. We will be monitoring all of this intently.

**Overall U.S. outlook**

Of the major economic indicators our team considered, most point to weak or negative economic growth. This analysis originally led us to believe that Real GDP growth would be below consensus. Adjusting for COVID-19 and it becomes obvious the U.S. and the World will be in recession, introducing excess uncertainty into the outlook. We also expect Interest rates to remain low into and throughout 2021.

# BRAZIL ECONOMIC OUTLOOK

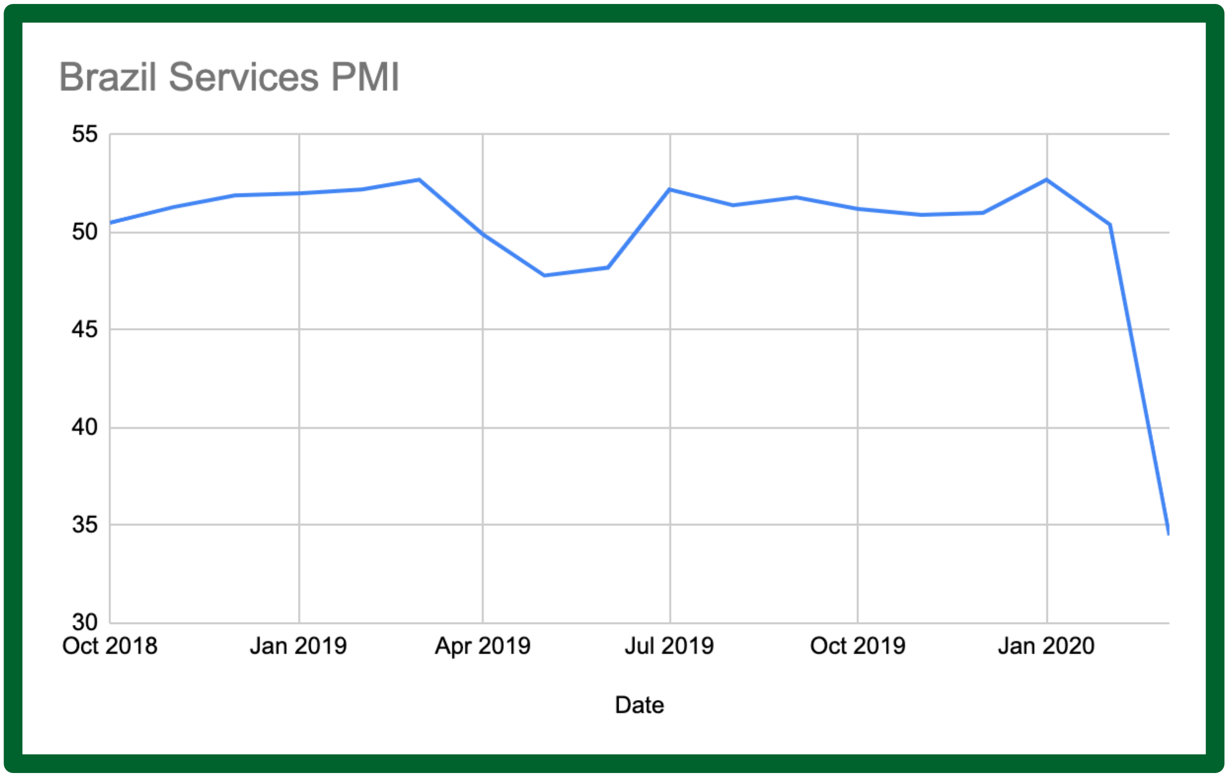
| | Real GDP (%) | | | CPI (%) | | | Unemployment (%) | | | 10-Year Treasury Note (%) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| **Bloomberg** | 1.1 | -1.5 | 2.6 | 3.7 | 3.4 | 3.7 | 11.9 | 12.1 | 11.1 | 6.8 | 6.3 | 6.0 |
| **IMF** | 1.1 | -5.3 | 2.9 | 3.7 | 3.6 | 3.3 | 11.9 | 14.7 | 13.5 | - | - | - |
| **OECD** | 0.8 | 1.7 | 1.8 | 3.7 | 3.1 | 3.6 | 11.8 | 10.8 | 9.5 | - | - | - |
| **BCB** | 1.1 | -2.0 | 2.9 | 3.6 | 3.7 | 3.7 | 11.9 | - | - | - | - | - |
| **Average** | **1.04** | **-1.78** | **2.56** | **3.66** | **3.46** | **3.58** | **11.88** | **12.52** | **11.35** | **6.79** | **6.28** | **6.00** |

Brazil is the largest economy in Latin America and the ninth largest globally. The county is still recovering in the wake of a recessionary period between 2014 and 2016. Brazil has remained weak, showing low GDP growth during 2019 and cutting interest rates to foster economic growth.

Economic consensus data for Brazil is compiled from Bloomberg, the International Monetary Fund (IMF), the Organization for Economic Co-operation and Development (OECD), and the Central Bank of Brazil (BCB). All projections, excluding OECD, have adjusted to account for economic conditions stemming from COVID-19. GDP and inflation are expected to drop and unemployment is expected to increase in 2020, however, these conditions will not be long-lasting. The downward trend in the 10-year note is anticipated to continue beyond 2020.

The service sector contributes 70% Brazilian GDP. Activity in services has declined massively in 2020, illustrated by this chart of Service PMI. This effect is certainly attributable to closures because of COVID-19.

## Purchasing Managers Index - Services

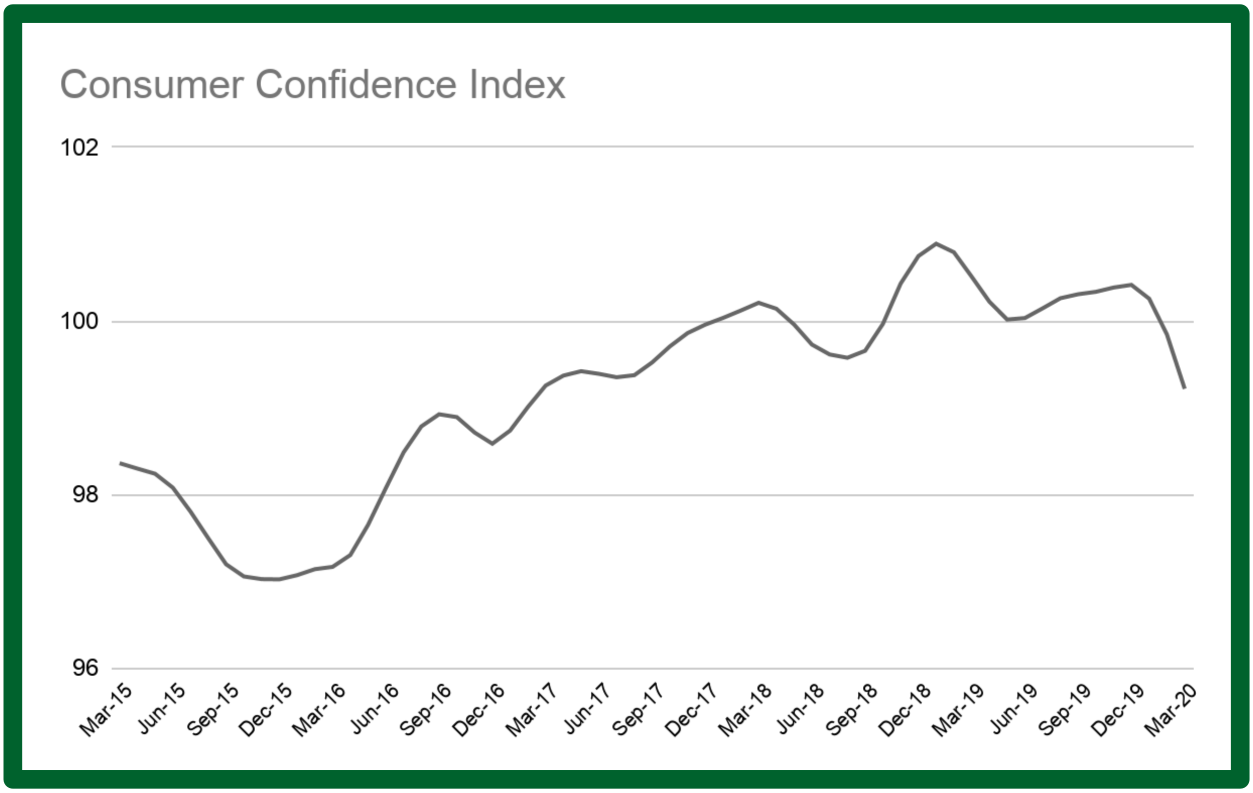



Source: IHS Markit

# Consumer Confidence

Consumer confidence in Brazil has also declined, with its roots in the recent pandemic. The effect of this cannot be overstated. Consumer spending accounts for about 66.7% of GDP.

Entering Q2 2020, the widespread effects of COVID-19 will drag on Brazil's already weak economy. Given the state of the indicators we looked at, full recovery should not be expected until at least 2022.




Source: OECD

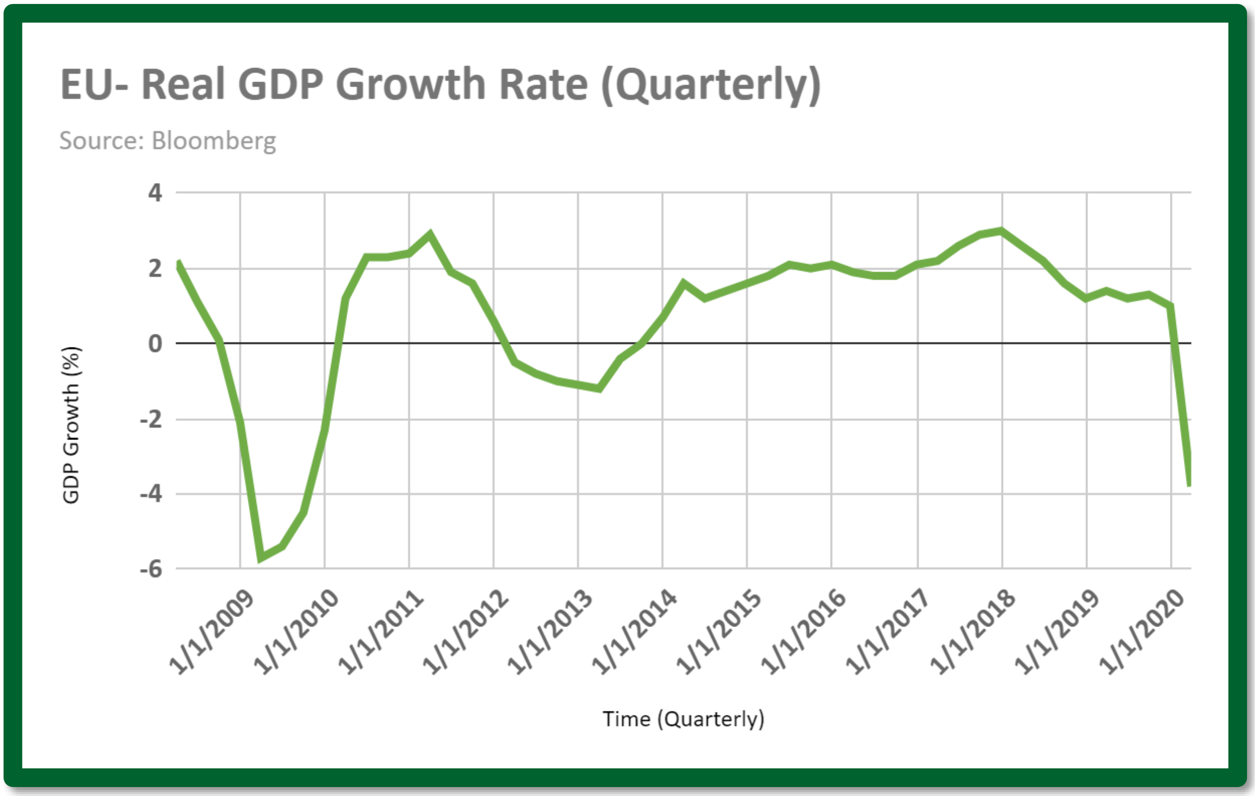
# EU ECONOMIC OUTLOOK

| | Real GDP (%) | | | Unemployment (%) | | | 10 Year Treasury Bond (%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | **2019** | **2020** | **2021** | **2019** | **2020** | **2021** | **2019** | **2020** | **2021** |
| **Bloomberg** | 1.5 | -4.8 | 2.1 | 6.7 | 7.9 | 7.7 | 0.49 | 0.42 | 0.67 |
| **IMF Report** | 1.5 | -7.5 | 4.7 | 6.6 | 9.2 | 7.9 | 0.3024 | 0.5 | 0.54 |
| **EU Commission** | 1.4 | -1 | 1.2 | 6.3 | 6.2 | 6.2 | 0.54 | - | - |
| **Average** | **1.43** | **-4.13** | **3.07** | **6.53** | **7.77** | **7.27** | **0.44** | **0.46** | **0.61** |

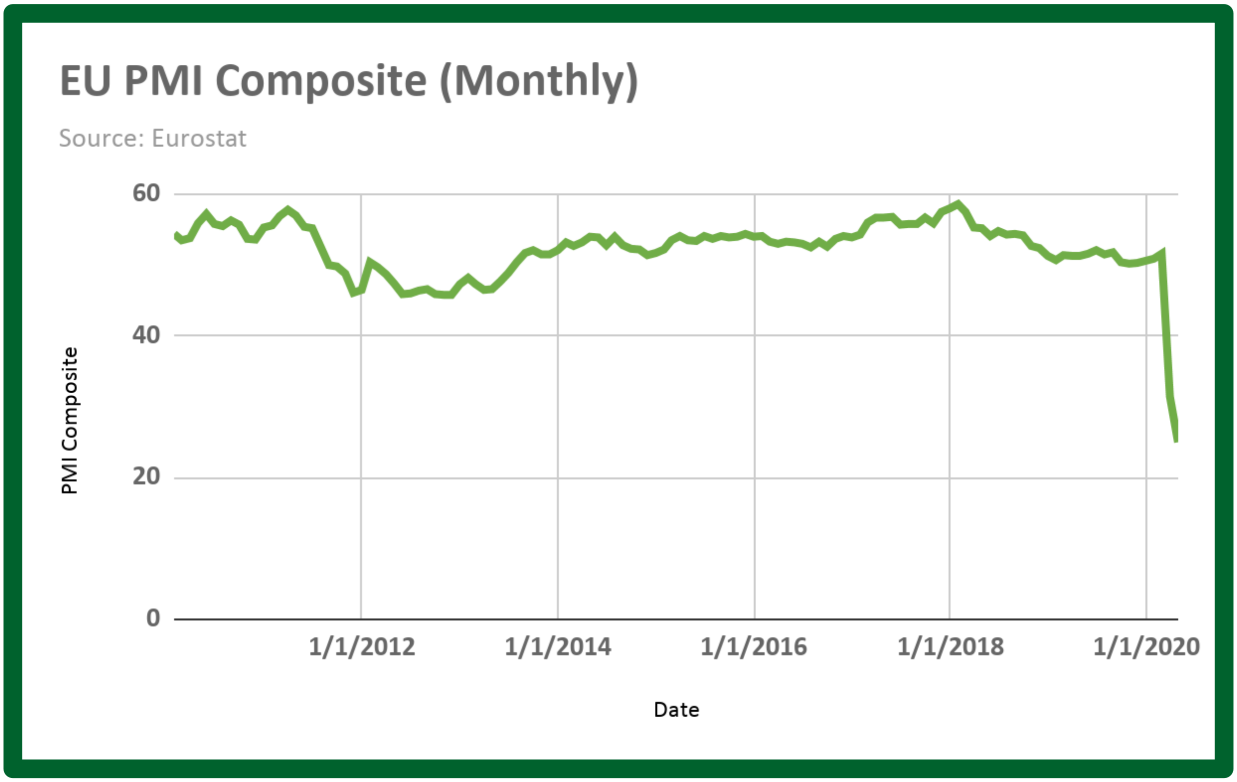
The 28 countries in the EU grew only 0.1% during the last three months of 2019 when compared to the previous quarter. According to the latest report and with Brexit becoming a reality, the outlook for EU economic growth is bleak. Factoring in COVID-19, the EU is expected to slide into recession in 2020. The EU Commission changed their projected Real GDP growth for 2020 from 1.4% to -1%. The IMF projects EU GDP growth to fall to -7.5% in 2020.

## Real GDP Growth Rate

The IHS Markit EU PMI Composite Index recorded the biggest monthly fall in March 2020, to a level of 29.7. The drop in activity can be linked to various stay-at-home orders in an effort to slow the spread of COVID-19. Travel, tourism and restaurant industries suffered the most, with slowing demand and massive unemployment, leading to a contraction in the services sector. Manufacturing PMI dropped to 44.5, contracting due to a reduction in new orders along with purchasing and supply-side constraints.

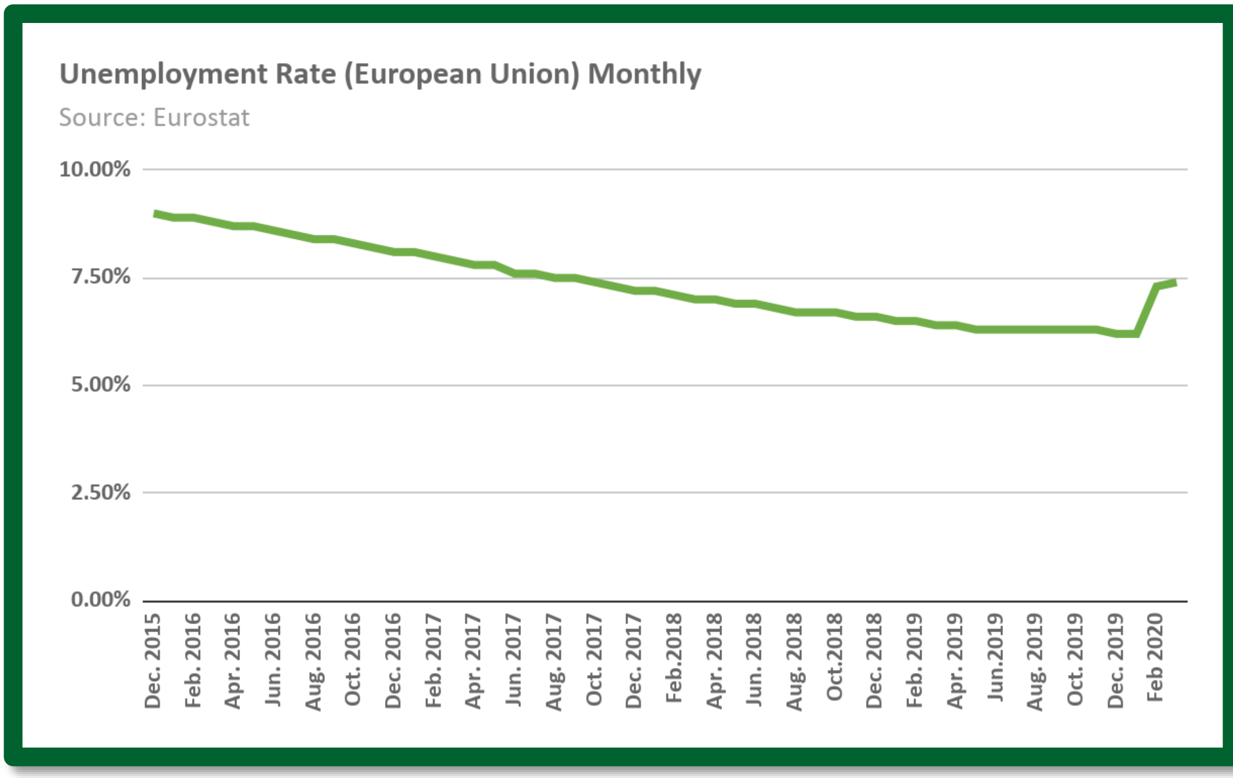


# Purchasing Managers Index – Composite

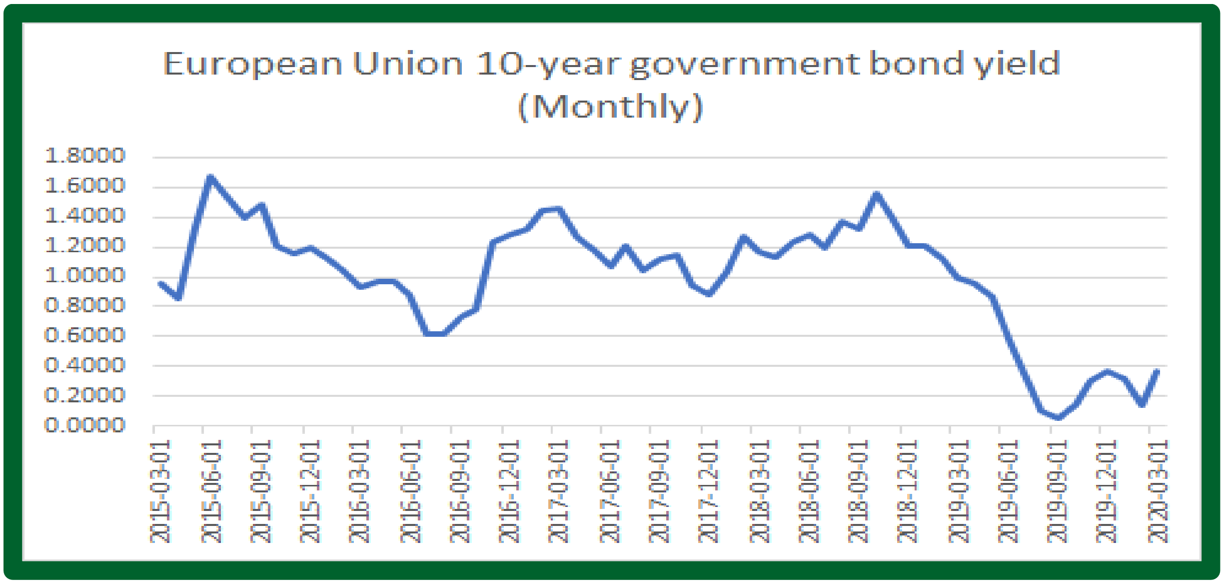


# Unemployment

Unemployment in the European Union has been improving since 2015, as shown on the chart below. However, the recent IMF report predicts that unemployment will spike in 2020. The unemployment level in 2021 is predicted to be higher than it was in 2019. Also shown below is data from the European Central Bank, which shows that the EU 10-year bond yield is holding steady at low levels.



## 10 Year Government Bond Yield




Source: Eurostat

## EUROPE SUMMARY

We believe the European Union faces recession as a result of COVID-19, along with BREXIT and the slowing global economy. BREXIT is likely to result in increased tariffs between the U.K. and EU countries, in addition to stoking political tensions. Being the union’s largest trading partners, slowdown in the U.S and Chinese economies is also expected to spread to the EU, because these countries trade the most with the EU. BAM concludes that EU GDP will fall below consensus and agrees with recent projections from the IMF, which reflects the EU economic outlook.

# ASIA ECONOMIC OUTLOOK

| | GDP Annual Growth (YoY) | | | Unemployment (%) | | | 10- Year Government Bond Interest (Rate) | | |
|---|---|---|---|---|---|---|---|---|---|
| | **2019** | **2020** | **2021** | **2019** | **2020** | **2021** | **2019** | **2020** | **2021** |
| **China** | 6.1 | 3.0 | 6.5 | 3.6 | 4.1 | 4.1 | 3.14 | 2.64 | 2.83 |
| **Japan** | 0.7 | -3.2 | 1.5 | 2.4 | 2.8 | 2.8 | -0.01 | -0.04 | 0.00 |
| **India** | 5.15 | 3.35 | 5.58 | - | - | - | 6.55 | 5.93 | 6.08 |

*(Bloomberg Consensus)*

# CHINA

| China | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| **GDP (YoY}** | 7.4 | 7 | 6.8 | 6.9 | 6.7 | 6.1 | 3.0 | 6.5 |
| **Inflation** | 2.0 | 1.4 | 2.0 | 1.6 | 2.1 | 2.9 | 3.3 | 2.1 |
| **Unemployment** | 4.1 | 4.1 | 4.0 | 3.9 | 3.8 | 3.6 | 4.1 | 4.1 |
| **10-year Rate** | 3.65 | 2.86 | 3.06 | 3.90 | 3.31 | 3.14 | 2.64 | 2.83 |

*(Bloomberg Consensus)*

China is the world's largest economy, in terms of purchasing power parity, and a major driver of global economic activity. China's economic growth has been decelerating since 2008. GDP growth in 2019 was 6.1%, the lowest level in decades.

We predict China's GDP growth will be at Bloomberg's forecasted level as a result of severe economic stagnation caused by COVID-19. We again expect GDP growth to match the forecasted level in 2021, as the economy recovers under the government stimulus. Inflation in 2020 is expected to be below forecast due to the African Swine Fever's impact on food prices. According to the Chinese government, pork prices in 2021 are not likely to rise or to return to the previous level, therefore we expect inflation to remain flat in 2021. Additionally, Unemployment in 2020 will be at the forecasted level. Many small and medium-sized enterprises had no revenue during the viral outbreak and had to pay rent. To help keep these enterprises afloat, the government has introduced a number of subsidies. As market uncertainty caused by the virus fades away by 2021, 10-yr Government Bond Yield in 2020 and 2021 is expected to be in line with Bloomberg consensus. Export growth in 2020 is expected to be below forecast due to negative growth during the viral outbreak. The growth in 2021 should remain unaffected. Finally, consumer spending growth in 2020 and 2021 is expected to be in line with the Bloomberg consensus. Although consumer growth has been crippled in 2020, it could spike in 2021 as a result of the sudden release of suppressed consumer demand.

In summary, China's economic growth has been decelerating since 2008, and the impact of COVID-19 will cause China's economy to lose even more steam in 2020. However, the effect of the virus is expected to fade by 2021. Therefore, we project that China's economy will return to the forecasted level in 2021.

# India Economic Outlook

| India | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Real GDP (YoY%)** | | | **CPI (YoY%)** | | | **10-Year Note (%)** | | |
| | **2019** | **2020** | **2021** | **2019** | **2020** | **2021** | **2019** | **2020** | **2021** |
| **Bloomberg** | 6.1 | 4.8 | 4.3 | 3.7 | 4.8 | 4 | 6.55 | 5.93 | 6.08 |
| **IMF** | 4.2 | 1.9 | 7.4 | 4.5 | 3.3 | 3.6 | N/A | N/A | N/A |
| **Average** | **5.15** | **3.35** | **5.85** | **4.1** | **4.05** | **3.8** | **6.55** | **5.93** | **6.08** |

The table above presents Bloomberg and International Monetary Fund (IMF) consensus data for the outlook of the Indian economy. The indicators that were analyzed point to a dramatic slowdown in India's growth. GDP growth has been trending down since 2017. The IMF and Bloomberg consensus expects this trend to continue throughout 2020 and into 2021. Slowing growth in India's rural areas has only contributed to the decline. Although India has a large population, it lacks infrastructure and resources, thus limiting its GDP growth potential. However, India stands to benefit from China-US and Korea-Japan trade wars, positioning them as one of the main exporters in Asia. Bolstering this prediction is India's closing trade deficit.

RBI's Consumer Confidence Survey shows that Indian consumers are becoming more pessimistic regarding the economy. Consumers have been spending less than in past years. This, combined with declining real wages, further leads us to conclude that India's growth will stall. The lack of any uniform unemployment information provided by the Indian Government is concerning. The most recent unemployment data is from October of 2019. At that time, the Economic Times of India reported an increase to 8.5% as of October 2019. Additionally, COVID-19 has left many Indians out of work since social distancing has gone into effect, driving employment numbers even further down. The Indian Government has less room for fiscal policy as a means of stimulation than many of its peers do and, according to Fitch Ratings, any more fiscal policy that will increase the Debt-GDP Ratio could weaken it's "BBB-" credit rating. The increase in unemployment and decreases in real wages and consumer spending all indicate a slowing economy and we remain pessimistic.

Given the aforementioned research, we agree with the consensus that the Indian economy will continue to worsen throughout 2020, yet we believe the consensus is a little optimistic regarding growth in 2021.

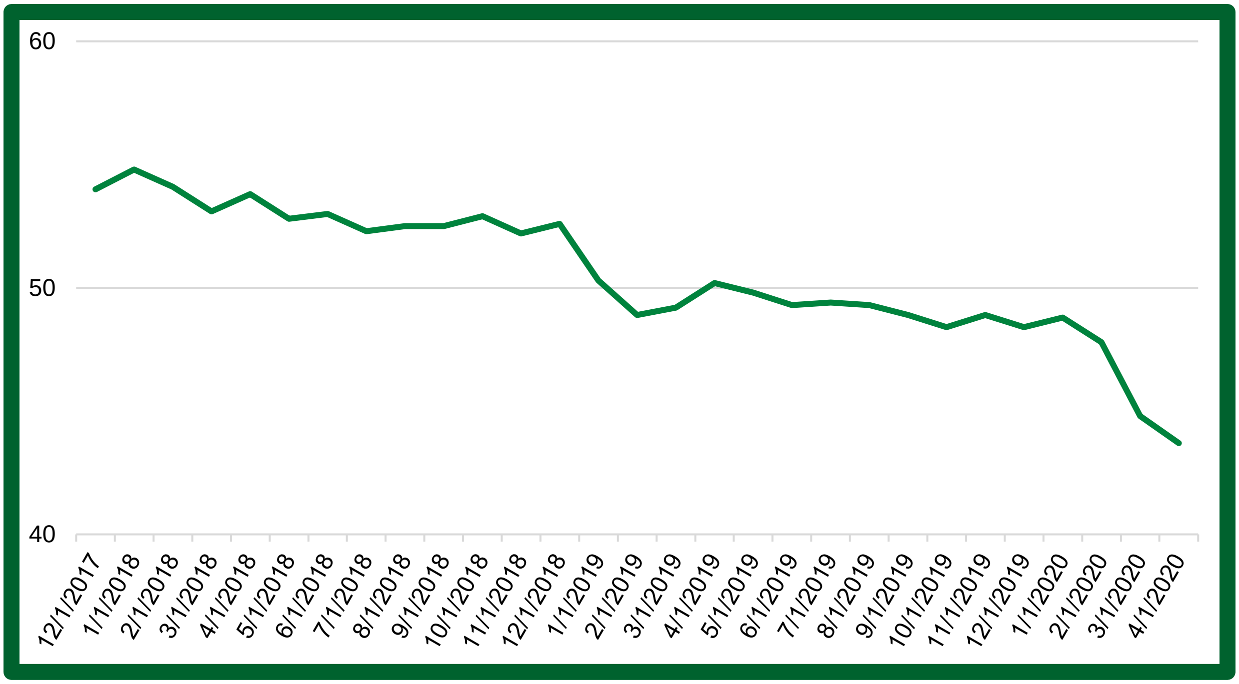
# Japan Economic Outlook

| Japan | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **2014** | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** |
| **GDP** | 0.4% | 1.3% | 0.6% | 2.2% | 0.3% | 0.7% | -3.2% | 1.5% |
| **Inflation** | 2.7% | 0.8% | -0.1% | 0.5% | 1.0% | 0.5% | 0.0% | 0.4% |
| **Unemployment** | 3.6% | 3.4% | 3.1% | 2.8% | 2.4% | 2.4% | 2.8% | 2.8% |
| **10 - year Rate** | 0.33% | 0.27% | 0.05% | 0.05% | 0.00% | -0.01% | -0.04% | 0.00% |

The Japanese economic consensus data is based on data from Bloomberg. It displays continually low GDP growth and inflation, despite the country having effectively full employment and interest rates near (or below) zero. We believe that GDP will be lower in 2020 as a direct result of COVID-19 and the US--China trade war. Inflation is expected to increase slightly, but still remain very low, staying consistent with the 20 year trend that can be attributed to ineffective monetary policy, an aging population, and large national debt.

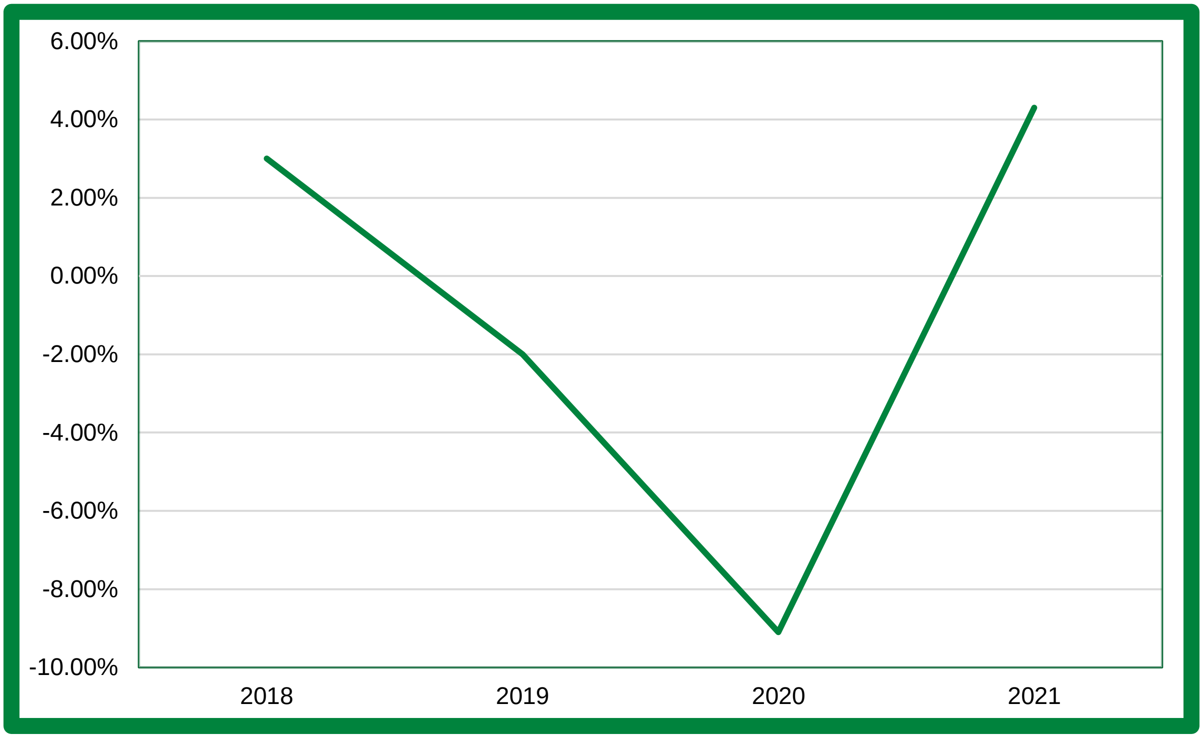
To better understand the economic environment and the effects of the US--China trade war on Japan, BAM analyzed several economic indicators. Japan's Manufacturing PMI has decreased significantly since December 2018, from approximately 52.8 to its current value of 43.7. This shows that the manufacturing sector of the economy is experiencing a contraction. Tourism, a major component of the Japanese economy, has seen a steep decline in the past year. Before the pandemic, the 2020 Olympics was posed to drastically improve tourism. The duration of lockdowns worldwide is still indefinite, and we believe that Japan's tourism will continue its downward trend. Total exports have been decreasing over the past 15 months, as have retail sales, displaying growth over the past five years, but with sharp declines recently. Together, these indicators paint a picture of a slowing economy. Factoring in COVID-19, Japan is posed to underperform in all sectors, leading us to believe that the Bloomberg consensus is correct in its pessimistic outlook for 2020. In 2021, growth is expected to recover, including rising exports, but overall the economy will still see minimal growth.

## Manufacturing PMI




Source: Bloomberg

## Total Exports




source: Bloomberg

## CAPITAL MARKET SUMMARY

BAM's capital market outlook is derived from the Capital Asset Pricing Model (CAPM) for equities and Yield to Maturity (YTM) for fixed income. To calculate CAPM, we employed an S&P 500 DCF model developed by Professor Aswath Damodaran (NYU Stern) in combination with a regression between the Russell 3000 and S&P 500. The model is based on the DCF of the S7P 500. This linear regression resulted in a Beta of **1.022**. Other inputs for the model were as follows:

- Current level of Index (S&P 500): 2878
- Index Cash yield (dividends & buybacks): Average yield (last 5 years)= 4.55%
- Expected earnings growth rate for the next 5 years: Slowing Economy = 3.44%
- Current long-term risk free rate: 10 Year T-bond = 0.66%
- Expected growth rate in the long term (after year 5): = 0.66%

Using these assumptions, the model resulted in a 5.96% expected return on U.S. equities. Our expected returns for different U.S. securities and equities in other markets are summarized below:

| Asset Class | Index | Historical Return (20Y) | Expected Return | Expected Return Models & Assumptions |
|---|---|---|---|---|
| **Cash** | T-Bill | 1.69% | 0.10% | 3 Month T-Bill |
| **U.S Fixed Income** | AGG | 5.27 | 1.44% | YTM |
| **U.S Equities** | R3000 | 6.06% | 5.96% | Damodaran model Slowing Economy |
| **Emerging Markets** | MIEF | 8.18 | 5.46% | CAPM |
| **Developed Markets** | MIEA | 2.91% | 5.10% | CAPM |

# ASSET ALLOCATION

**What is your target asset allocation?**

Our target asset allocation is 60% U.S. Equities and 40% Fixed Income.

To determine our target asset allocation across the major asset classes, we ran a portfolio optimization model in Excel. The following asset classes were used in our portfolio: Russell 3000 Total Return Index, MSCI Developed Markets Total Return Index, MSCI Emerging Markets Total Return Index, Barclays US Aggregate Bond Total Return Index, and the Barclays US Treasury Bills 1-3 Month Total Return Index (used as a cash equivalent). Two scenarios were run: one using our current capital market outlook and one using the historical capital market returns.

When running the first scenario, the data analysis team used historical, monthly returns spanning the past 20 years. The optimization model gave us three portfolio outcomes based on different goals: maximum return, minimum standard deviation, and maximum Sharpe ratio. The team selected the maximum Sharpe ratio portfolio to align with our investment philosophy of aiming to achieve the highest risk-adjusted returns. Under this approach, the optimized portfolio had expected returns of 5.74%.

In the second scenario, expected returns for each index were used. The optimization model again gave us three portfolio outcomes based on different goals: maximum return, minimum standard deviation, and maximum Sharpe ratio. The maximum Sharpe ratio portfolio yielded expected returns of 4.13%.

Both scenarios resulted in our current target asset allocation of 60% in domestic equities and 40% in fixed income.

# PERFORMANCE GOALS

**What do you think are reasonable performance goals for the coming year?**

Our goal is to meet or exceed the CFAOC benchmark in the coming year. Based on our economic outlook, capital market outlook, portfolio optimization, and securities selection, we expect our portfolio to return 4.90%.

| | |
|---|---|
| **BAM Portfolio** | **4.90%** |
| **CFAOC Benchmark** | **4.49%** |
| **60/40 Benchmark** | **4.15%** |

**Apart from the assigned blended benchmark, does your team utilize a different internal benchmark?**

Since our portfolio optimization yielded a 60% allocation in domestic equities and a 40% allocation in fixed income, BAM also decided to compare our performance to a blended benchmark matching this 60/40 split. The 60% equity portion of the benchmark will be represented by the Russell 3000, and the 40% fixed income portion by the U.S. Aggregate Bond ETF.

# FIXED INCOME

**Which of the following instruments would you regard as appropriate for the fixed-income portion of your portfolio?**

| | Appropriate (X) | Inappropriate (X) |
|---|---|---|
| Cash Equivalents | X | |
| U.S. Treasury Notes and Bonds | X | |
| Investment Grade Corp. Bonds | X | |
| Mortgage-Backed Securities | | X |
| High Yield Corp. Bonds | X | |
| Developed International Debt | | X |
| Emerging Market Debt | | X |
| Preferred Stock | | X |

BAM decided that investing in developed international and emerging market debt would be inappropriate for our portfolio. Emerging market debt exposes us to country specific and foreign currency risk, meanwhile interest rates are negative in many developed international markets. We are not directly investing in mortgage-backed securities (MBS) because we see an increase in mortgage defaults. Although we do have some diversified exposure to mortgage-backed securities in our Aggregate Bond Index, this MBS consist of safer, conforming mortgages. We also chose not to invest in preferred stock because of the high standard deviation (risk) and negative return. As credit spreads have widened, we believe high yield bonds now offer an opportunity to pick up some income. Based on this, we allocate our fixed income investments to a balance of the Total U.S. Aggregate Bond Market (60%), Short Term Treasury bonds (30%), and High Yield fixed income securities (10%), consisting of three ETFs. Historical returns and standard deviation since 1989 for various domestic fixed income sub-classes are shown in the table below:

| | Average Annual Return (%) | Average Standard Deviation (%) |
|---|---|---|
| **All Bonds** | 6.36 | 3.66 |
| **Investment Grade Corp Bonds** | 7.14 | 5.38 |
| **Preferred Stocks** | -0.56 | 15.76 |
| **US Treasury 1-3 Year** | 3.71 | 1.55 |
| **US Treasury 20+ Year** | 9.15 | 11.49 |
| **Short Term/ Cash** | 2.76 | 0.66 |
| **US Intermediate Treasury** | 6.53 | 4.90 |
| **US Treasury Index** | 6.17 | 4.42 |
| **High Yield Corp Bonds** | 8.10 | 8.68 |

**What is the target maximum, minimum, and average maturities and durations for the fixed-income portion of the portfolio?**

| | Maximum | Minimum | Average |
|---|---|---|---|
| **Maturity** | 8.30 | 2.00 | 6.11 |
| **Duration** | 6.22 | 1.90 | 4.73 |

**What is the target sector / industry allocation for the fixed-income portion of the portfolio?**

We do not plan on directly allocating across sectors for the fixed income portion of our portfolio. Rather, we are diversifying via the various sub-asset classes of fixed income, which are themselves diversified between sectors. We are invested in short term treasuries to offset some of the risk from our High-Yield Senior Loan ETF. The main source of diversification for our fixed income portfolio comes from our aggregate bond index ETF. This ETF holds many different types of bonds, such as U.S. government bonds of all different maturities, investment grade corporate bonds, and mortgage-backed securities. The bond ETFs that we have decided upon to represent these bond subclasses in our portfolio are Vanguard's Total Bond Market ETF (BND), Schwab Short Term U.S. Treasury ETF (SCHO), and SPDR Blackstone GSO Senior Loan ETF (SRLN). We decided not to invest specifically in long term bonds because we do not see interest rates lowering much further.

# EQUITY VALUATION AND SELECTION

**Discuss where your approach would line up along the following dimensions:**

## PASSIVE vs. ACTIVE MANAGEMENT

Passive management is not in line with our investment philosophy. Therefore, BAM is dedicated to actively assessing and reassessing everything from domestic and international economic climates to the fundamental qualities of every security in our portfolio. That said, due to the complex and unstable nature of the economy following the outbreak of COVID-19, analyzing individual securities would be impractical. We opted to only analyze securities in sectors that we feel will hold stable, which make up about 50% of our equity portfolio. The other 50% of our equity portfolio is positioned in sector ETFs. When we believe the economy has stabilized, we will sell our ETF positions and buy individual securities.

## TOP-DOWN vs. BOTTOM-UP

As stated in our investment philosophy, we believe markets to be mostly efficient in the long-term with some short-term inefficiencies that provide opportunities. We employed a Top-Down approach to capitalize on these opportunities by studying fundamental economics. This approach helped us determine where these inefficiencies exist and how best to invest to take advantage of them without taking on excessive risk. We used this extensive research to determine that we are currently in the recessionary phase of the business cycle. Thus, we have decided to employ a sector rotation strategy in which we overweight those sectors that have a history of outperforming in this economic climate while underweighting those that underperform.

# FUNDAMENTAL vs. QUANTITATIVE vs. TECHNICAL

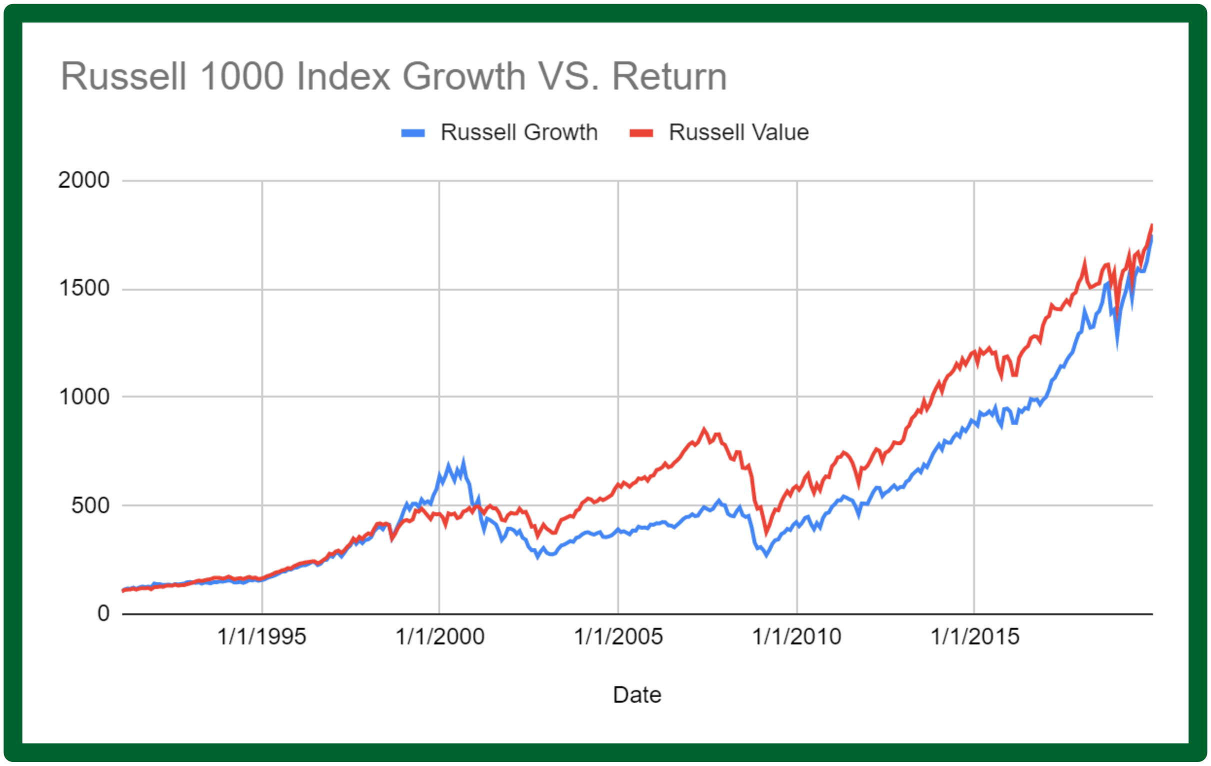
Fundamental analysis is at the forefront of our strategy to build long-term wealth for our clients. We rely on in-depth research to justify all investment decisions. We do, however, rely on quantitative measures in the screening process to help us identify securities that may outperform. The screening metrics we use are as follows:

- Market Cap (> $1 Billion)
- Revenue Growth (5-year historical and 1-year forward)
- Long-term 3-5 Year EPS Growth (and 1-year forward)
- Gross Profit-to-Total Assets relative to sector
- Return on Assets
- Price/Earnings-to-Growth (PEG)
- Price-to-Cash Flow (Price-to-Book for Financials)
- Debt/Equity Ratio

## VALUE vs. GROWTH

To evaluate value and growth strategies, we observed the historical performance of both strategies (see graph below) over the last 30 years. We examined both the Russell 1000 and S&P 500 value and growth indexes, as the two value indexes have different characteristics. Russell 1000 value index uses a price-to-book ratio to measure value stocks while S&P 500 uses price-to-book, price-to-earnings, and price-to-sales ratios. Looking at the performance of each index, we observed that both value and growth have taken turns outperforming one another across different time periods. This means that neither one shows consistent outperformance over the long run, although growth shows signs of outperformance in the S&P 500. Given that S&P 500 growth has outperformed value for about 15 years, we decided to lean towards growth in our strategy. Based on our projection of a recession, we added a value component into our strategy. As a result, the decision was made to follow a GARP strategy, in which we consider both growth and value metrics when evaluating our equities.


Source: Bloomberg




Source: Bloomberg

## LARGE-CAP vs. MID-CAP vs. SMALL-CAP

The BAM team made no additional strategic decisions based on market capitalization beyond the CFAOC minimum requirement of one billion dollars.

## INTERNATIONAL vs. U.S.

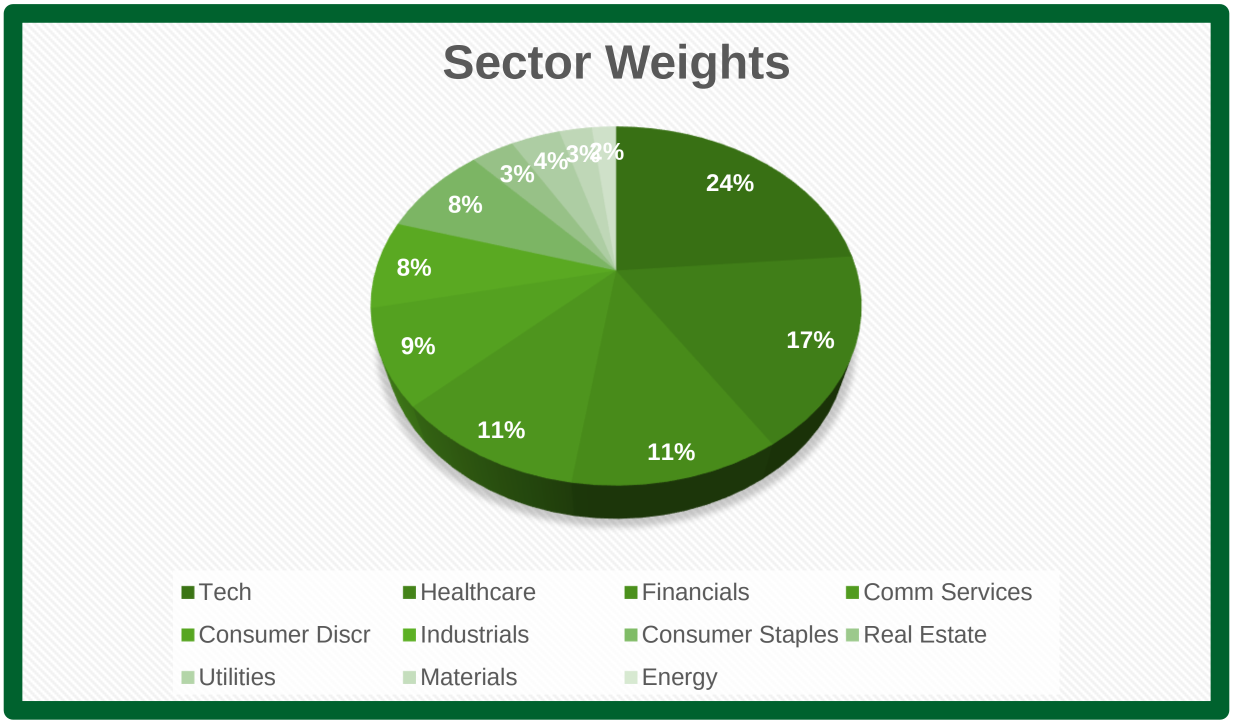
Staying true to our main goal of maximizing risk-adjusted returns for our clients, we mainly focused on maximizing the portfolio's Sharpe ratio to ensure that no additional, unnecessary risk was taken on. To make this determination where domestic and international securities are concerned, the team analyzed historical performance and volatility of the MSCI Emerging Markets Index, MSCI Developed International Markets Index, and the Russell 3000 Total Return Index. The portfolio optimization process eliminated investing outside of the U.S. on the basis that it would provide insufficient risk adjusted returns. The portfolio with the highest Sharpe Ratio ended being exclusively allocated in domestic equities. Although we are not invested in any international equities, it should be noted that domestic companies have substantial exposure to the international economy as approximately 36% of the Russell 3000's sales are derived from outside the U.S. As a result, our portfolio is still reasonably exposed to the global economy. Additionally, investing in only domestic equities allows us to capture higher returns while simultaneously shielding those returns from higher volatility (when compared to the Developed Markets Index, and Emerging Markets). The figures below compare historical returns and volatility (standard deviation) of domestic versus international equities:

| | **Average Return (%)** | **Standard Deviation (%)** |
|---|---|---|
| **Russell 3000** | 7.36 | 15.15 |
| **MSCI Developed Markets** | 4.49 | 16.65 |
| **MSCI Emerging Markets** | 10.28 | 21.58 |

# Market Timing vs. Sector Rotation vs. Long-term Hold & Buy

According to our economic analysis and forecast, we conclude that the U.S. economy is currently in the recessionary phase. We used the Fidelity Asset Allocation Research Team's work on the historical performance of each sector to analyze how they have performed across different phases of the economic cycle. We utilized this research to partly inform our over and underweighting of each sector within our portfolio. Additionally, we looked at how this recession will be different compared to recessions in the past. For example, we found that COVID-19 will likely have a lasting, positive impact on Healthcare and Communication Services and that Energy would be adversely impacted by the uncertainty caused by the price wars. A similar process was followed for each sector. In the table below, we outline Fidelity's recommendations, the true sector weights of the Russell 3000, our team's recommended sector allocations, and our reasoning. Our sector allocations are shown in charts below.

| Sector | Fidelity | R3000 Weight | BAM Weight | Reasoning |
|---|---|---|---|---|
| **Info & Tech** | -- | 24.50% | 23.67% | Only slight Decrease due to tech's prominence in today's society |
| **Healthcare** | ++ | 15.65% | 17.20% | Likely to see success due to the nature of the predicted recession |
| **Financials** | | 11.42% | 11.52% | No change |
| **Comm Services** | - | 10.08% | 10.64% | Likely to see success due to the nature of the predicted recession |
| **Consumer Disc.** | -- | 9.50% | 8.62% | Historically performs poorly in recessionary climate |
| **Industrials** | -- | 8.83% | 7.95% | Historically performs poorly in recessionary climate |
| **Consumer Staples** | ++ | 7.76% | 8.54% | Historically performs better in recessionary climate |
| **Real Estate** | -- | 3.78% | 3.40% | Historically performs poorly in recessionary climate |
| **Utilities** | ++ | 3.73% | 3.92% | Low Growth, High Valuation |
| **Materials** | | 2.60% | 2.60% | No Change |
| **Energy** | | 2.15% | 1.94% | Price wars and instability in oil markets |


Sector Weights
24%
17%
11%
11%
9%
8%
8%
3%
4%
3%
2%
Tech
Healthcare
Financials
Comm Services
Consumer Discr
Industrials
Consumer Staples
Real Estate
Utilities
Materials
Energy

# SECURITY SELECTION AND VALUATION

**Describe your process for selection and valuation of specific securities:**

## SECURITY VALUATION

**What valuation methods are used in analyzing stocks?**

The valuation method starts with our screening process, using the criteria we discussed earlier. Within the screened stocks, we compared each security using the BAM 13 framework (Please see below). Next, we reviewed Wall St. research reports such as Argus Reports, Value Line, J.P. Morgan, and Barclays. Additionally, we reviewed quarterly earnings reports and management presentations. These reports helped us understand the company's current position. To evaluate the intrinsic value of a company we used DCF and DGM valuation models.

| **BAM 13** |
|---|
| Has revenues grown 3 years in a row |
| Has EPS grown 3 years in a row |
| Has EPS growth exceeded revenue growth cumulatively vs 3 years ago? |
| Is next revenue growing? |
| Is next year EPS growing? |
| Is the current year and next year forecast EPS trend flat or up over the last 90 days? |
| Is operating income margin improving 3 years in a row? |
| Is working capital turnover ratio rising vs a year ago? |
| Is D/E ratio flat or declining the past 3 years in a row? |
| Are average wall street analysts rating a buy? |
| Is net insider buying exceeding selling over the last 4Q's? |
| Relative PEG ratio? |
| Piotroski F-score? |

# Market Capitalization and Liquidity

**What market capitalization and liquidity ranges meet your requirements?**

As per the CFA rules, we screen for companies with market caps greater than one billion dollars. We also looked for Average Daily Trading Volume of at least 10,000 shares, as a measure of liquidity.

# FUNDAMENTAL FACTORS

**What specific fundamental factors (P/B, earnings, growth, sales margins, etc.) are integral to the stock selection process?**

**In executing our GARP strategy, we use the following economic factors in our screening process:**

- **Historical Growing Revenue - 5 year**
- **Next Year Growing Revenue - 1 year forward**
- **EPS Growing - 1 year forward**
- **GP / Total Assets Ratio - last year**
- **PEG - current PE / next year growth**
- **P / CF (P / B for Financials) - last year**
- **ROA - last year**
- **DE Ratio - last year**

While most of the above factors are well known, the GP ratio deserves some further explanation. Gross profitability, defined as a company's gross profits (total revenues less cost of goods sold) to its assets, is a measure we utilize to identify firms with more highly productive assets than their peers. Through research detailed in Novy-Marx's paper "The Other Side of Value: The Gross Profitability Premium," it was found that investments based on this profitability strategy generate significant excess returns. In addition, when applied to the value component of GARP, the utilization was found to reduce the strategy's overall volatility despite "doubling exposure to risky assets." The rationale for using gross profitability as opposed to operational profit is that profitability becomes more diluted the further one goes down the income statement. Beneficial actions such as significant spending in advertising or R&D would incorrectly identify a firm as comparatively less attractive. We look to firms that exhibit larger contribution margins as the "cleanest accounting measure of true economic profitability." Compared with traditional growth metrics such as sales growth or earnings growth, gross profitability conveys more information about future performance and serves as a "powerful predictor of future growth in gross profitability, earnings, free cash flow, and payouts at both three year and ten year horizons." Firms with higher gross profitability ratios typically are categorized as "Growth stocks" compared to unprofitable firms being typically categorized as "Value stocks."

# DEVIATION DISCIPLINE

**Under what circumstances would the team deviate from this discipline?**

Based on the assumption that we will manage the portfolio for one year, our security selection discipline will only change if the business cycle changes. However, we do anticipate the economy will stabilize and we will revisit our allocation to ETFs vs specific securities.

# EQUITY PORTFOLIO CHARACTERISTICS

**How does your equity portfolio compare to the equity portion of the blended benchmark along the following dimensions?**

| | Equity Portions | |
|---|---|---|
| **CPP Portfolio** | **vs** | **Russell and ACWI** |
| 1.02 | beta | 0.97 |
| 157 billion | Market Cap | 29 trillion |
| 20.07 | P/E | 19.56 |
| 6.45 | P/B | 2.33 |
| 21.36% | EPS Growth 1YR (18-19) | -5% |
| 1.65 | Dividend yield | 2.63 |

| | Less Than | Approximately Equal to | Greater Than | Varies Widely |
|---|---|---|---|---|
| **Market Capitalization** | x | | | |
| **Portfolio Beta** | | x | | |
| **P/E Ratio** | | x | | |
| **P/B Ratio** | | | x | |
| **Dividend Yield** | x | | | |
| **Earnings Growth Rate** | | | x | |

# Equity Diversification Guidelines

**Discuss how you are achieving diversification within your equity allocation:**

Our asset allocation is diversified through investing 60% in domestic equities and 40% in fixed income. Of the 60%, our allocation by each sector and the corresponding weights are listed below. These weights were determined based on the Russell 3000 Index and then adjusted to make them more in line with our projection of recession. As part of our diversification effort, we invest in all eleven sectors. Given the dramatic impact COVID-19 has had on our economy, we decided to restrict our individual equities to the Healthcare, Technology, and Communications sectors. The remaining equity allocation will be invested in broad sector ETFs until we are confident the economy has stabilized.

**Average percent invested**

Our sector allocation is listed below. Within sectors, each stock is equally weighted. The average percent invested in each equity is 3.43%. Additionally, we have complied with the CFA criteria that no more than 5% of our equity allocation should be invested in any single equity security.

## Number of stocks/funds in portfolio

We are diversified in our portfolio by investing in 15 different equities and 8 broad sector ETFs across all 11 sectors. The specific number of securities per sector are listed in the table below:

| Sector | Sector Weight | Number of Stocks | Weight per Individual Security |
|---|---|---|---|
| **Technology** | 23.67 % | 6 | 3.95% |
| **Consumer Discretionary** | 8.62 % | ETF | |
| **Consumer Staples** | 8.54 % | ETF | |
| **Utilities** | 3.92 % | ETF | |
| **Healthcare** | 17.20 % | 5 | 3.44 % |
| **Energy** | 1.94 % | ETF | |
| **Industrials** | 7.95 % | ETF | |
| **Materials** | 2.60 % | ETF | |
| **Financials** | 11.52 % | ETF | |
| **Communication** | 10.64 % | 4 | 2.66% |
| **Real Estate** | 3.40 % | ETF | |

# Sell Discipline

**Describe your sell discipline/risk management for individual equities:**

To manage risk, the BAM team will carefully maintain the portfolio weekly to observe whether certain sell conditions arise. These conditions are as follows:

According to the CFA guidelines, a stock will be sold if it reaches a 30% stop-loss for all individual equities or if it increases to 10% of the equity portion of the portfolio. If the latter condition is met, the security must be sold down to at least 5% of the equity portion.

If we observe negative changes in the fundamentals of a company or industry over time, the BAM team will look at the most current company news, quarterly earnings reports, and overall perform a thorough analysis of the company to see if it still satisfies the criteria of our security selection process. If the criteria is not met, the stock will be sold and replaced with another security from the same sector.

If a stock reaches its intrinsic value calculated through our DCF or DGM model, we will update our analysis to determine whether to continue holding the security. If we decide to sell the security, it will be replaced with another security from the same sector.

We will monitor the business cycle and update our sector allocations if the cycle moves into a new phase.

It is not expected that the BAM team will deviate from the sell discipline described above.

# MUTUAL FUND AND ETF SELECTION

**What is your selection process for Mutual Funds and/or ETFs?**

Our team does not invest in mutual funds because of their high management fees and instead we invest in ETFs as a substitute.

# SELECTION CRITERIA

## Equity

Our team first screened all ETFs in each sector that were domestic and that did not use leverage. We then narrowed down the list to a small group of ETFs that had the best metrics in the following areas: Net Assets, Trading Volume, Expense Ratio, Tracking Error, Sharpe Ratio, and Number of Holdings. Next, we used the above metrics to further analyze the screened ETFs. Additionally, we looked at market cap exposure, industry exposure, and the concentration of the top 10 stocks in the ETF. Our final selection achieves a balance between liquidity, cost efficiency, and diversification.

## Fixed Income

For the fixed income portion, our team has decided to focus our investments entirely in ETFs rather than individual bonds. The reasoning behind this decision is two-fold. First, individual bonds have large spreads that would cut into our return; thus ETFs reduce this cost by leveraging their size. Second, research into individual bonds would be too resource intensive to make appropriate selections for our portfolio. Instead, we are allocating that research time into analyzing ETFs rather than individual bonds. We gave importance to metrics such as liquidity, tracking error, spread, duration, expense ratio, portfolio quality, governance rating, and experience of the fund manager (for actively managed funds). For our high yield ETF, we chose actively managed because we wanted intense credit research rather than blindly tracking an index given the current stressed credit markets.

# SELL DISCIPLINE - MUTUAL FUNDS AND ETFS

**What criteria will you use to recommend selling a mutual fund or ETF?**

We plan to track the performance of selected ETFs versus their stated benchmarks and will sell any ETF that has underperformed its benchmark for a duration of one month by 50 basis points or greater. This allows us to limit our losses on a poor investment while still being tolerant enough for our long-term horizon.

**Under what circumstances would you deviate from these criteria?**

BAM will deviate from these criteria in cases with extreme and unique circumstances. If additional research can reasonably conclude that the ETF in question will return to our accepted range within a month, then the team would allow for a deviation from the discipline. If the economy stabilizes, we will consider selling an ETF in favor of individual securities in that sector.

# PORTFOLIO CONSTRUCTION

**Describe your portfolio construction process:**

We start our portfolio process by first analyzing the historical risk and return of the following asset classes:

- Domestic Equities
- Developed International Equities
- Emerging market equities
- Fixed Income
- Cash (T-bills)

For equities, we developed our capital market outlook based on the CAPM and Damodaran models, as well as our economic analysis. For the Fixed Income portion, we used the yield to maturity of the U.S. Aggregate Bond Market as our expected return. For the cash equivalent, we used the current rate for the three-month T-Bill. We then utilize an Excel-based optimization model, including both historical returns and our forward-looking returns derived from our capital market outlook. Based on our investment philosophy, as well as the CFAOC portfolio guidelines, we optimized our portfolio to achieve the highest Sharpe ratio. This aligns our portfolio composition with our investment philosophy of taking on risk adjusted returns. Both methods yielded us the same results, a target asset allocation of 60% in domestic equities and 40% in fixed income.

**Equities**

Given our outlook of a recession, we allocated our equity portion amongst the eleven sectors, overweighting and underweighting each sector based on sector/economic cycle research done by the Asset Allocation Research Team of Fidelity ("The Business Cycle Approach to Equity Sector Investing"). While we did split our equity investments among the eleven sectors, we chose to invest in ETFs for a portion of our equity allocation due to current uncertainty in the economy. These represented eight sectors and approximately 50% of our equity portfolio. For the balance, we decided to invest in individual securities in the sectors that we felt would be least affected by these economic conditions. These sectors were communications, healthcare, and technology.

For individual stock selection, we screened within these sectors using the screening criteria described earlier. Moving on to individual securities, we performed a detailed analysis of the screened securities including DCF and DGM valuations to make our final selections. Allocations to individual securities were based on equal weighting within each sector while diversifying across industries.
Our final equity portfolio consists of eight sector ETFs and fifteen individual stocks.

## Fixed Income

We decided upon our fixed income strategy by analyzing the following sub-asset classes:

- Treasury Bonds (Short/Intermediate/Long)
- Investment Grade Corporate Bonds
- High Yield Corporate Bonds
- Preferred Stocks

| Bond Class | Historical Returns (%) | YTM (%) | Historical Std. Deviation (%) | Duration (years) |
|---|---|---|---|---|
| **Short Term Treasury** | 2.37 | 0.21 | 1.29 | 1.81 |
| **Intermediate Term Treasury** | 5.00 | 0.46 | 4.67 | 5.18 |
| **Long Term Treasury** | 8.91 | 1.22 | 13.30 | 18.69 |
| **Aggregate Bond Market** | 4.61 | 1.37 | 3.23 | 6.64 |
| **Investment Grade Corporate Bond** | 5.69 | 2.71 | 5.94 | 9.55 |
| **High Yield** | 7.07 | 8.33 | 9.80 | 4.12 |
| **Preferred Stocks** | -0.40 | 5.68 | 14.61 | - |

Of the above sub asset classes, we decided not to invest in preferred stocks due to historically poor returns and high risk. Long Term and Intermediate Treasury bonds were not chosen because they conflicted with our investment philosophy relating to maximizing risk-adjusted returns. In addition, given the bottoming of interest rates, there is limited remaining upside in long term bonds. Investment grade corporate bonds do show reasonable returns for the risk. However, rather than invest in them as a separate asset class, we decided to gain exposure to them through our aggregate bond ETF. The focus was placed on the short-term treasury bonds and high yield corporate bonds, in addition to our aggregate bond fund.

BAM is investing 60% of fixed income funds in the Vanguard Total Bond Market ETF. Allocating a large portion of the fixed income to the aggregate bond index allows us to capture a good risk adjusted return. We invested 30% of the fixed income section of our portfolio in Short Term Treasuries to provide a safety net and liquidity through this recessionary period. With the relatively flat yield curve, short term bonds may show little to no returns. The main purpose for these bonds is to ensure capital preservation and potential future investments.

Finally, we allocated 10% of fixed income to high yield bonds. We chose to invest in high yield bonds to capture the additional yield benefit. Although we are projecting a slowdown in the economy, even forecasting a high default risk in these bonds, we are willing to take on the increased risk for the highest potential returns. However, due to the inherent risk of high yield bonds, we are selecting an actively managed fund for better risk management during times of unforeseen market volatility.

## RISK

**What is your team's definition of risk with respect to this portfolio?**

We view risk through three different perspectives:

1. Tracking actual returns versus our benchmarks (CFAOC & the 60/40 portfolios),
2. Monitoring the information ratio for our portfolio
3. Analyzing the actual portfolio return attribution.
4. Track portfolio standard deviation

**How is portfolio risk managed and monitored? Describe all risk management functions and tools used. Please provide the Portfolio Beta.**

We manage the portfolio risk by using diversification. This takes place in our diversified ETFs across eight sectors and individual stocks in three sectors. Our portfolio also places investments in aggregate, corporate high yield, and short-term Treasury ETFs. We also believe that weekly monitoring of the performance is a critical risk management tool.

Our portfolio beta is 0.62

**Do you intend to use cash reserves as a method of risk control?**

We do not intend to use cash reserves as a method of risk control. The cash will be fully invested throughout the year.

## PERFORMANCE MONITORING

**What system is being used to monitor pricing relative to stop loss levels?**

Our team will keep track of the CFAOC portfolio positions in a shared Excel spreadsheet on Google Drive and frequently monitor the security pricing.
The performance and results will be analyzed weekly during the academic calendar, and every other week during non-academic sessions. Each meeting will be in a virtual group meeting format (via video conferencing) until social distancing guidelines are relaxed.

**How will you monitor the portfolio's adherence to its investment guidelines? What checks and balances do you have in place?**

We vote on all equity selections, and all decisions are based on the majority vote. We act accordingly to the CFAOC and BAM policies and guidelines, which are monitored by the Chief Compliance Officer. Furthermore, all decisions must be approved by the Managing Director, and all trades are executed by the Trader.
Faculty Advisors are copied on all trade proposals and have veto power on decisions.

**Describe your policy on rebalancing your portfolio: Frequency, triggers, or bands?**

The portfolio will be rebalanced quarterly if sector and security allocations have deviated significantly. Otherwise, we will rebalance annually to maximize time and cost efficiency.

## RESEARCH

**Describe the sources of information used to select securities and how this information will be processed:**

The team has used information from various sources for use in analysis, equity decision making, and portfolio construction. Bloomberg Terminals were mainly used to gather reliable economic historical data and forecasts, conduct trend analysis of factors impacting the economic outlook, perform stock screenings, and assist in the valuation of equity selections. Other sources of information include Fidelity, the International Monetary Fund, Federal Reserve Bank of St. Louis, the Organization for Economic Co-operation and Development, Argus Analyst Reports, Value Line, Financial Times, Wall Street Journal, and Yahoo Finance. We also obtain data for research from firm’s websites, strategy presentations, and quarterly and annual filings.

**Are you seeking unique sources of information? Are you applying unique approaches to process this information?**

Previously, our firm used the Nasdaq Dozen as one security analysis framework. However, in our opinion, Nasdaq Dozen is not as oriented toward fundamentals as our investment philosophy calls for. As a result, BAM has developed its own analysis framework called the BAM 13, which focuses exclusively on fundamental factors. For example, BAM 13 looks at growth consistency between historical and future rather than

technical indicators such as short interest ratios. We believe this will allow us to select stronger, more sustainable, and better managed companies.
BAM has also recently decided to modify its valuation process to incorporate cost of equity calculations to include not only classical CAPM, but also the Fama French Three Factor CAPM. While neither one of these are unique concepts, it is an improvement in how we process DCF valuations.

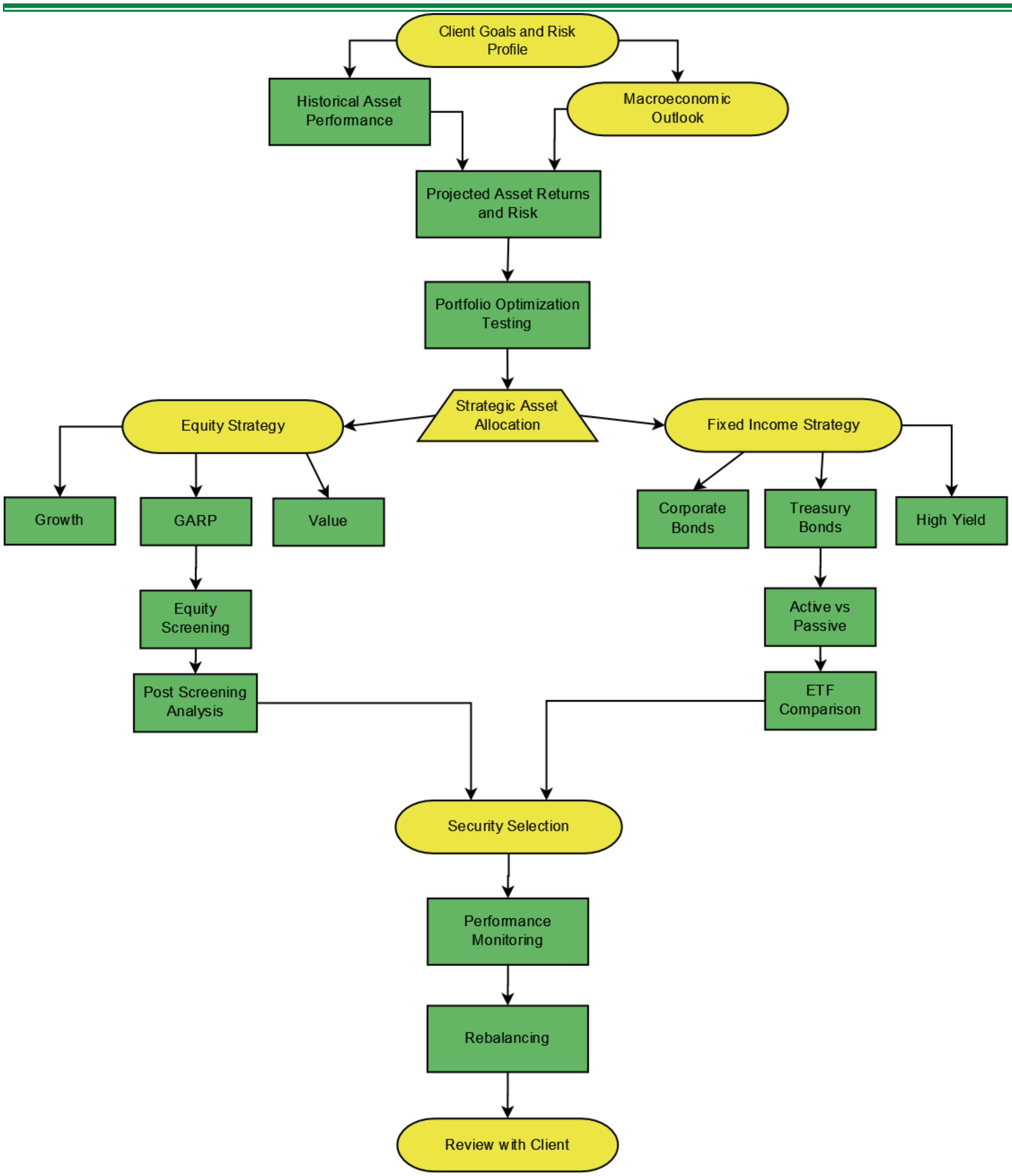
**What percentage of time and resources does your team devote to the top- down (macro-economic} aspect of your approach versus the bottom-up (security selection} aspect?**

The CPP BAM team allocated roughly 40% of research efforts to bottom up security selection with the remaining 60% allocated to the top-down macro-economic portion.

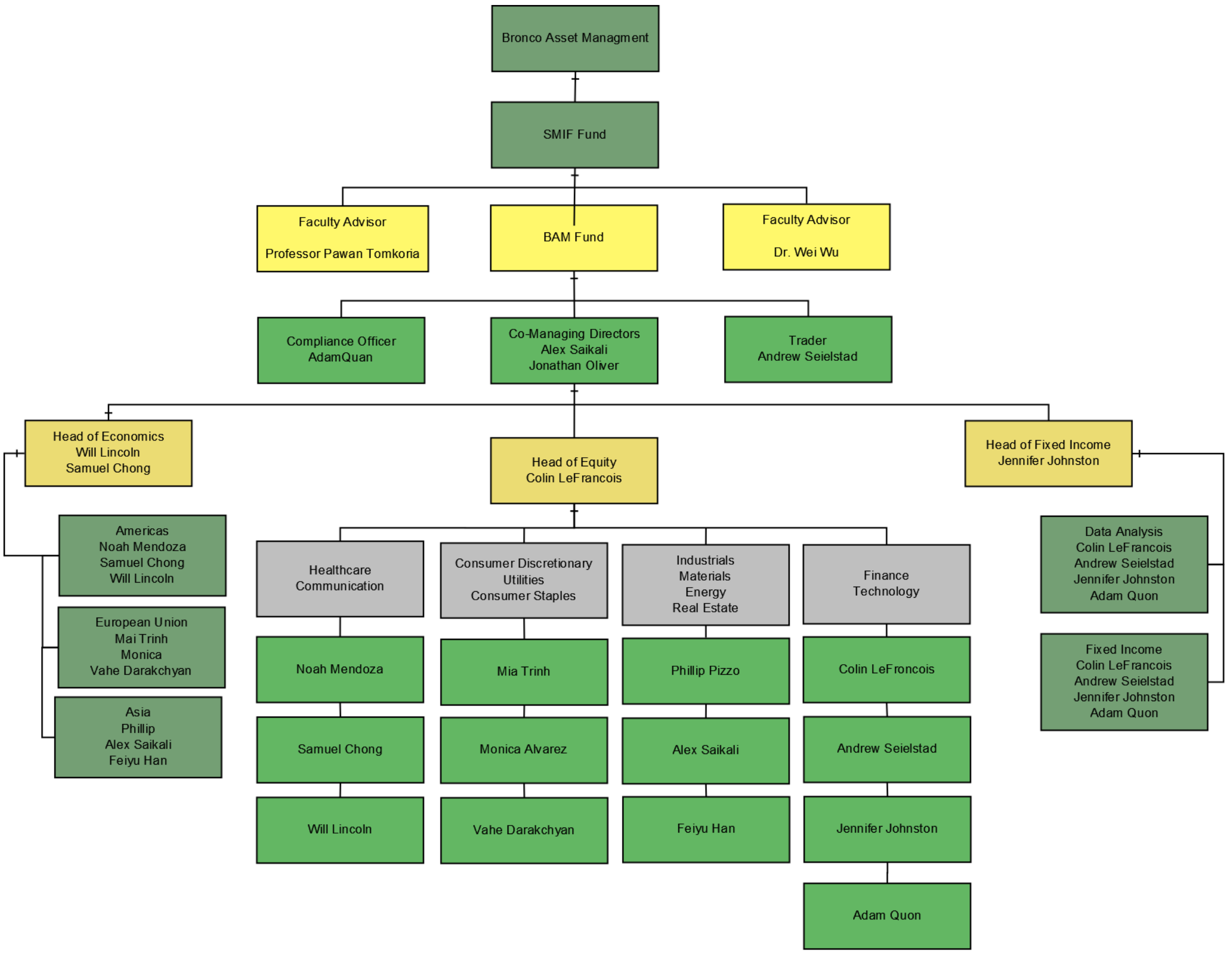
**Attach any additional information to describe your investment process that you would like the CFAOC to consider?**

None.

# INVESTMENT PROCESS FLOWCHART



# ORGANIZATION CHART



# APPENDIX I - CPP BAM PORTFOLIO

| Asset Class | Sector | Ticker | Name | Portfolio Weight |
|---|---|---|---|---|
| Equity | TECH | MSFT | Microsoft Corporation | 2.37% |
| | | AAPL | Apple Inc. | 2.37% |
| | | FICO | Fair Isaac Corporation | 2.37% |
| | | ADBE | Adobe Inc. | 2.37% |
| | | PAYX | Paychex, Inc. | 2.37% |
| | | ZBRA | Zebra Technologies Corporation | 2.37% |
| | HEALTHCARE | HUM | Humana Inc. | 2.06% |
| | | ALXN | Alexion Pharmaceuticals, Inc. | 2.06% |
| | | INCY | Incyte Corporation | 2.06% |
| | | CERN | Cerner Corporation | 2.06% |
| | | REGN | Regeneron Pharmaceuticals, Inc. | 2.06% |
| | COMM | EA | Electronic Arts Inc. | 1.60% |
| | | CMCSA | Comcast Corporation | 1.60% |
| | | GOOGL | Alphabet Inc. | 1.60% |
| | | FB | Facebook, Inc. | 1.60% |
| | FINANCE | XLF | Financial Select Sector SPDR Fund | 6.91% |
| | CONS DISC | XLY | Consumer Discretionary Select Sector SPDR Fund | 5.17% |
| | CONS STAPLES | XLP | Consumer Staples Select Sector SPDR Fund | 5.12% |
| | INDUSTRIAL | XLI | Industrial Select Sector SPDR Fund | 4.77% |
| | UTILITIES | VPU | Vanguard Utilities Index Fund ETF Shares | 2.35% |
| | REAL ESTATE | VNQ | Vanguard Real Estate Index Fund ETF Shares | 2.04% |
| | MATERIALS | XLB | Materials Select Sector SPDR Fund | 1.56% |
| | ENERGY | VDE | Vanguard Energy Index Fund ETF Shares | 1.16% |
| | | | **Total Equity Portion** | **60.00%** |
| Fixed Income | AGG | BND | Vanguard Total Bond Index ETF | 24% |
| | ST TREASURY | SCHO | Schwab Short-Term US Treasury ETF | 12% |
| | HIGH YIELD | SRLN | SPDR Blackstone GSO Senior Loan ETF | 4% |
| | | | **Total Fixed-income Portion** | **40%** |

| Total BAM Portfolio | 100.00% |
| --- | --- |
| **CAPM Assumptions** | |
| Risk Free Rate (10 Year T-bond) | 0.66% |
| Market Risk Premium (Damodaran Model) | 5.29% |
| Average Individual Stock Weight | 2.06% |

| BAM Portfolio - Equity Metrics | |
| --- | --- |
| Beta | 1.02 |
| Market Cap | 157 billion |
| P/E | 20.07 |
| P/B | 6.45 |
| EPS Growth | 21.36% |
| Dividend Yield | 1.65% |

| BAM Portfolio - Fixed Income Metrics | |
| --- | --- |
| Maturity | 6.11 |
| Duration | 4.73 |
| Tracking Error | 0.09 |

| BAM Portfolio Overall Expected Returns | |
| --- | --- |
| Expected Returns - Equities | 6.92% |
| Expected Returns - Fixed Income | 1.86% |
| Expected Returns - Weighted Total | 4.90% |

# APPENDIX II – SAMPLE ANALYST REPORTS & DCF/DGM MODELS

| Equity Research Report<br>Adobe Inc. (ADBE) | Analyst: Colin LeFrancois |
|---|---|

## Executive Summary as of 05/08/2020

Recommendation: BUY
Sector: Information Technology
52W High/Low: $255.13/$386.75

Mkt Cap: $162 B
Purchase Price: $ -
DCF Valuation: $360.78

Ent Value: $162.5 B
Current Price: $362.93
DGM Valuation: $ -

Adobe Inc. develops computer software products and technologies. Adobe's products have historically performed very well, aided by a loyal customer base and limited competition. Positioning itself as a major player in cloud and subscription-based services has been a huge driver of growth. Revenue and net income for the past five years has been steadily growing, with revenue during the first quarter of 2020 growing an impressive 19%. Additionally, its profit margin has grown from 6.5% in 2014 to 26.4% today. The nature of Adobe's business model puts it in a good place to continue growing revenues during the current COVID-19 Pandemic, despite stay-at-home measures. A stock price near our DCF valuation is attractive.

Key Metrics:

| | ADBE | | | ADBE |
|---|---|---|---|---|
| Past 5 Years Sales CAGR | 21.92% | | Price/CF (TTM) | 42.05 |
| Past 5 Years EPS CAGR | 62.47% | | PE (Forward) | 34.53 |
| 3-5 Y FWD EPS CAGR | 19.25% | | Value DCF | $360.78 |
| Dividend Yield | - | | Value DGM | - |

Summary Financials:

| ADBE | 2016 | 2017 | 2018 | 2019 | 2020 Est | 2021 Est |
|---|---|---|---|---|---|---|
| Revenue ($ MM) | $5,854 | $7,302 | $9,030 | $11,171 | $13,000 | $15,000 |
| Rev Growth % | 22.10% | 24.70% | 23.70% | 23.70% | 16.40% | 15.60% |
| EPS | 3.01 | 4.31 | 6.76 | 7.87 | 9.74 | 11.13 |
| EPS Growth % | 45% | 43% | 57% | 16% | 24% | 14% |
| ROE % | 16.20% | 21.33% | 29.07% | 29.67% | 38.08% | 37.96% |
| LTD/Equity Ratio | 25.48 | 22.24 | 44.06 | 9.39 | | |
| Year-End PE Ratio | 42.99 | 53.31 | 48.31 | 52.32 | | |

## Company Overview

Adobe Inc. produces software that allows its customers to create, distribute, and manage digital content from the cloud. One of the top publishing software providers, the company is well known for its ubiquitous content creation products such as Acrobat and Photoshop. Adobe serves content creators and web developers with its digital media products, while advertisers and publishers are aided by its digital marketing business. Subscriptions account for more than 80% of revenues. Adobe's Digital Media segment offers tools like Photoshop, Lightroom and Illustrator under the Adobe Creative Cloud subscription service and accounts for 70% of revenue. Tools for managing digital advertising initiatives fall under the Digital Experience segment, while the Print and Publishing segment encompasses authoring and publishing tools that are licensed to manufacturers of workflow software. Adobe serves a large customer base in a multitude of industries and therefore has a well-diversified product offering.

## Investment Thesis

Our Buy recommendation is based on the following key drivers:

- Consistent growth with increasing Profit/EBIT Margins.
- Strength and Versatility of the subscription model.
- Ubiquitous software available to a wide audience, including amateurs and professionals.
- Well-positioned to withstand COVID-19 and the Global Shutdown.

## Recommendation, Valuation, & Risks

We have a BUY recommendation.

Our recommendation is based on our above comments and attractive potential return based on our DCF Valuation and growth in Revenue and EPS. We value ADBE at $360.78 per share using a Discounted Cash Flow Analysis, forecasting a 5% perpetual growth rate.

Adobe’s main risk factor is that the markets for its products and services are intensely competitive and are characterized by short product cycles and the frequent introduction of alternatives with less functionality but offered at lower costs or free of charge. Adobe’s future success will depend on a continued ability to improve existing products and services, introduce new products and services, and anticipate emerging standards, business models, and software delivery methods.

**BAM CAL POLY POMONA**

**DCF Valuation Model: Shareholder Perspective: All Amounts in Millions** Spring 2020 | **DCF Valuation:** $360.78

| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024* | 2025 | 2026 | 2027 | 2028 | Perpetuity |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Assumptions** | Historical | | | | Stage 1, bloomberg and analyst estimates | | | | Stage 2, linear to perpetuity | | | | | Stage 3 |
| Sales Growth | 22.1% | 24.7% | 23.7% | 23.7% | 16.40% | 15.60% | 15.00% | 15.00% | 13.33% | 11.67% | 10.00% | 8.33% | 6.67% | 5.00% |
| EBIT Margin | 25.5% | 29.7% | 31.5% | 29.3% | 30.0% | 30.5% | 31.0% | 31.5% | 31.75% | 32.00% | 32.25% | 32.50% | 32.75% | 33.00% |
| Net Int Rate % | 2.8% | 2.9% | 1.7% | 3.0% | 2.00% | 1.00% | 1.87% | 2.00% | 2.17% | 2.33% | 2.50% | 2.67% | 2.83% | 3.00% |
| Tax Rate | 18.7% | 21.2% | 7.4% | 8.1% | 17.00% | 14.00% | 13.00% | 12.00% | 13.50% | 15.00% | 16.50% | 18.00% | 19.50% | 21.00% |
| Net WC Turnover (excluding Cash) | 2.9 | 5.2 | -8.3 | -9.3 | -9.30 | -9.30 | -9.30 | -9.30 | -9.30 | -9.30 | -9.30 | -9.30 | -9.30 | -9.30 |
| FA Turnover Ratio | 7.2 | 7.8 | 8.4 | 8.6 | 8.70 | 8.80 | 8.90 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 | 9.00 |
| 10 Year T-Bond Rate | | | | | 0.66% | | | | | | | | | |
| Equity Risk Premium (Damodaran) | | | | | 5.29% | | | | | | | | | |
| Beta | | | | | 0.90 | | | | | | | | | |
| CAPM Ke | | | | | 8.10% | Ke, Bloomberg (also, 2:1 weighted average of CAPM:FF = 8.08) | | | | | | | | |
| | | | | | | | | | *Bloomberg estimates exist, but only 1-2 analysts were reporting & values were abnormally optimist | | | | | |
| **Income Statement** | | | | | | | | | | | | | | |
| Sales | 5,854 | 7,302 | 9,030 | 11,171 | 13,003.39 | 15,031.92 | 17,286.71 | 19,879.72 | 22,530.35 | 25,158.89 | 27,674.78 | 29,981.01 | 31,979.74 | 33,578.73 |
| EBIT | 1,494 | 2,168 | 2,840 | 3,268 | 3,901 | 4,585 | 5,359 | 6,262 | 7,153 | 8,051 | 8,925 | 9,744 | 10,473 | 11,081 |
| Interest Expense | 70 | 74 | 89 | 157 | 104 | 52 | 97 | 104 | 112 | 121 | 130 | 138 | 147 | 156 |
| Income Before Taxes | 1,424 | 2,094 | 2,751 | 3,111 | 3,797 | 4,533 | 5,262 | 6,158 | 7,041 | 7,930 | 8,795 | 9,605 | 10,326 | 10,925 |
| Taxes | 266 | 444 | 203 | 253 | 646 | 635 | 684 | 739 | 951 | 1,189 | 1,451 | 1,729 | 2,014 | 2,294 |
| Net Income | 1,157 | 1,650 | 2,548 | 2,858 | 3,152 | 3,898 | 4,578 | 5,419 | 6,090 | 6,740 | 7,344 | 7,876 | 8,313 | 8,631 |
| | | | | | | | | | | | | | | |
| Diluted # Shares (Millions) | 504.3 | 501.1 | 497.7 | 491 | 491 | 491 | 491 | 491 | 491 | 491 | 491 | 491 | 491 | 491 |
| | | | | | | | | | | | | | | |
| **Cash Flow Statement** | | | | | | | | | | | | | | |
| Net Income | 1,157 | 1,650 | 2,548 | 2,858 | 3,152 | 3,898 | 4,578 | 5,419 | 6,090 | 6,740 | 7,344 | 7,876 | 8,313 | 8,631 |
| Depreciation+Amortization | 332 | 326 | 346 | 737 | 851.93 | 973.65 | 1,107.11 | 1,259.03 | 1,426.90 | 1,593.37 | 1,752.71 | 1,898.77 | 2,025.36 | 2,126.62 |
| Net WC (incr) Decr | 3,028 | 692 | (3,164) | 898 | 202 | 218 | 242 | 279 | 285 | 283 | 271 | 248 | 215 | 172 |
| Fixed Assets (Bought)Sold | (204) | (178) | (267) | (394) | (1,054) | (1,187) | (1,341) | (1,526) | (1,721) | (1,885) | (2,032) | (2,155) | (2,247) | (2,304) |
| Other Operating CF | 316 | 546 | 192 | 850 | - | - | - | - | - | - | - | - | - | - |
| Free Cash Flow | 4,629 | 3,036 | (345) | 4,949 | 3,152 | 3,903 | 4,586 | 5,432 | 6,081 | 6,731 | 7,335 | 7,868 | 8,305 | 8,625 |
| PV | | | | | 2,916 | 3,340 | 3,630 | 3,978 | 4,119 | 4,218 | 4,252 | 4,220 | 4,120 | 138,031 |
| Cumulative PV | | | | | 2,916 | 6,256 | 9,886 | 13,864 | 17,983 | 22,201 | 26,454 | 30,673 | 34,794 | 172,825 |
| Valuation/Share | | | | | | | | | | | | | | 352 |
| | | | | | | | | | | | | | | 360.78 |
| **Balance Sheet** | | | | | | | | | | | | | | |
| Net WC (excluding Cash) | 2016.88 | 1414.3 | -1086.7 | -1196.1 | **(1,398.21)** | **(1,616.34)** | **(1,858.79)** | **(2,137.60)** | **(2,422.62)** | **(2,705.26)** | **(2,975.78)** | **(3,223.76)** | **(3,438.68)** | **(3,610.62)** |
| Net Fixed Assets incl. Intangibles excl GW | 816 | 937 | 1,075 | 1,293 | 1,494.64 | 1,708.17 | 1,942.33 | 2,208.86 | 2,503.37 | 2,795.43 | 3,074.98 | 3,331.22 | 3,553.30 | 3,730.97 |
| Total Debt+Other LT Liabilities | 2,461 | 2,548 | 5,106 | 5,191 | 5,191.40 | 5,191.40 | 5,191.40 | 5,191.40 | 5,191.40 | 5,191.40 | 5,191.40 | 5,191.40 | 5,191.40 | 5,191.40 |

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Equity Research Report

# Cerner Corporation (CERN)

Analysts: Vahe Darakchyan

## Executive Summary as of 05/03/2020

Recommendation: BUY
Sector: Healthcare
52W High/Low: $80.90/$53.08

Mkt Cap: $20.30 B
Purchase Price:
DCF Valuation: $75.33

Ent Value: $22.06 B
Current Price: $66.71
DGM Valuation: $61.24

Cerner is one of the largest healthcare technology firms in the United States based off market capitalization. The company has a proven track record of growth, with five-year revenues CAGR of 4.5% and has shown ability to leverage this into faster bottom line growth, with EPS CAGR of 11.97%. As the company is well matured in the industry and diversified among its services and products, it plans to implement further strategic growth in their business plans to accelerate growth beginning 2020. With an increased medical demand globally, this gives Cerner a great opportunity to expand into other lines of business as its Electronic Medical Records business softens by 1-2%. With the current market price being slightly undervalued at $66 based off my valuation, I believe that the current price of Cerner is an attractive investment to expect future long-term growth. Lastly, a consistent performance of growth within the medical sector coincides well with the healthcare technology industry and will add long-term stability at a reasonable price to our portfolio.

Key Metrics:

| | CERN | | | CERN |
|---|---|---|---|---|
| Past 5 Years Sales CAGR | 4.5% | | Price/CF (TTM) | 17.27 |
| Past 5 Years EPS CAGR | 11.97% | | PE (Forward) | 19.075 |
| 3-5 Y FWD EPS CAGR | 11.83% | | Value DCF | $75.33 |
| Dividend Yield | 0.72 (1.08%) | | Value DGM | $61.24 |

Summary Financials:

| CERN | 2016 | 2017 | 2018 | 2019 | 2020 Est | 2021 Est |
|---|---|---|---|---|---|---|
| Revenue ($ MM) | $4796 | $5142 | $5366 | $5692 | $5877 | $6168 |
| Rev Growth % | 8.4 | 7.2 | 4.4 | 6.1 | 3.3 | 4.9 |
| EPS | 1.97 | 2.61 | 1.90 | 2.22 | 3.15 | 3.54 |
| EPS Growth % | 8.8 | 32.1 | -27 | 16.9 | 41.5 | 12.4 |
| ROE % | 16.37 | 19.95 | 13.01 | 18.062 | 22.256 | 23.767 |
| LTD/Equity Ratio | 0.14 | 0.11 | 0.09 | 0.24 | 0.25 | 0.21 |
| Year-End PE Ratio | 24.01 | 25.86 | 27.35 | 32.96 | 19.08 | 16.97 |

## Company Overview

Cerner is a leading supplier of healthcare information technology solutions and tech-enabled services. Their mission is to relentlessly seek breakthrough innovation that will shape health care of tomorrow. They offer a wide range of intelligent solutions and tech-enabled services that support the clinical, financial, and operational needs of organizations of all sizes. Cerner solutions and services help clinicians make careful decisions and assist organizations in managing the health of their patients. Cerner Corporation was founded in 1979 and is headquartered in North Kansas City, Missouri. Their business model focuses on six segments to generate and grow revenue, which are: Licensed Software, Technology Resale, Subscriptions, Professional Services, Managed Services, Support and Maintenance. They conduct their business and provide services both domestically and internationally.

## Investment Thesis

My Buy recommendation is based on the following key drivers:

• Consistent growth with increasing profit margins and solid financial strength.
• Growing patient population.
• Slightly undervalued with the upside potential for long-term growth.
• Cerner is a safe asset in comparison to the volatile Healthcare Industry.
• Recent partnership with Amazon Web Services.
• Government contract with the Department of Defense combined with strategic growth strategy in six new areas
which will expect up to 5-8% annual revenue growth between 2020-2024.

## Recommendation, Valuation, & Risks

We have a BUY recommendation.

My recommendation is based on the above comments and attractive relative value based on growth in Revenue and EPS, Price/Cash Flow (PCF), PE ratio, and dividend yield. Cerner trades at a PCF ratio of 17.27 compared to 65.83 for the industry while a forward PE ratio of 19.075 compares to the current industry PE of 66.83. The slight premium is, in my view, justified by Cerner's track record and industry leading position.

I value Cerner at $75.33 per share using the DCF analysis with a 3.5% terminal growth rate and $61.24 using the DGM model with an 8.10% cost of equity (KoE). Current street target price averages are around $74. Should these assumptions become realized, the stock should expect growth between 10-15%.

Risks include intense competition in the Healthcare Information Technology industry, which may put pressure on the company's pricing and margins. The Healthcare industry also faces heavy regulations by the government and with any sudden changes it may impact Cerner's products and services. Lastly, the company faces cutthroat competition due to rapid evolving technology and changes, its main competitors are: Allscripts Healthcare Solutions, Epic Systems, GE Healthcare Technologies, and more.

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| DCF Valuation Model: Shareholder Perspective: All Amounts in Millions | 2016 | 2017 | 2018 | Fall 2019 | | | DCF Valuation: | | 75.33 |
|---|---|---|---|---|---|---|---|---|---|
| | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** | **Perpetuity** |

| | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | Perpetuity |
|---|---|---|---|---|---|---|---|---|---|---|
| **Assumptions** | | | | | | | | | | |
| Sales Growth | 8.4% | 7.2% | 4.4% | 6.1% | 3% | 5% | 5.65% | 6% | 6% | 3.5% |
| EBIT Margin | 18.9% | 18.6% | 14.4% | 10.6% | 8% | 12% | 14% | 16% | 19% | 20% |
| Net Int Rate % | -1.2% | -1.2% | -3.2% | -3.4% | 1.1% | 1.1% | 1.0% | 1.0% | 1.0% | 1.0% |
| Tax Rate | 30.7% | 25.4% | 21.3% | 19.1% | 21% | 21% | 21% | 21% | 21% | 21% |
| Net WC Turnover (excluding Cash) | 10.8 | 6.5 | 9.2 | 10.8 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 | 13.00 |
| FA Turnover Ratio | 1.7 | 1.8 | 1.8 | 1.7 | 1.70 | 1.70 | 1.80 | 1.80 | 1.70 | 1.90 |
| 10 Year T-Bond Rate | | | | | 0.66% | | | | | |
| Equity Risk Premium (Damodaran) | | | | | 5.29% | | | | | |
| Beta | | | | | 0.86 | | | | | |
| CAPM Ke | | | | | 8.10% | | | | | |
| | | | | | | | | | | |
| **Income Statement** | | | | | | | | | | |
| Sales | 4,796 | 5,142 | 5,366 | 5,693 | 5,877.61 | 6,167.96 | 6,516.45 | 6,907.44 | 7,321.88 | 7,578.15 |
| EBIT | 908 | 956 | 775 | 601 | 470 | 740 | 912 | 1,105 | 1,391 | 1,516 |
| Interest Expense | (11) | (11) | (26) | (53) | 17 | 17 | 15 | 15 | 15 | 15 |
| Income Before Taxes | 918 | 967 | 801 | 655 | 453 | 723 | 897 | 1,090 | 1,376 | 1,500 |
| Taxes | 282 | 246 | 171 | 125 | 95 | 152 | 188 | 229 | 289 | 315 |
| Net Income | 636 | 721 | 630 | 529 | 358 | 571 | 708 | 861 | 1,087 | 1,185 |
| | | | | | | | | | | |
| Diluted # Shares (Millions) | 343.653 | 337.999 | 333.572 | 321.235 | 321.235 | 321.235 | 321.235 | 321.235 | 321.235 | 321.235 |
| | | | | | | | | | | |
| **Cash Flow Statement** | | | | | | | | | | |
| Net Income | 636 | 721 | 630 | 529 | 358 | 571 | 708 | 861 | 1,087 | 1,185 |
| Depreciation+Amortization | 504 | 581 | 643 | 688 | 723.80415 | 759.56008 | 757.89327 | 803.36686 | 901.66116 | 834.9856903 |
| Net WC (incr) Decr | 42 | (270) | 52 | (29) | 75 | (22) | (27) | (30) | (32) | (20) |
| Fixed Assets (Bought)Sold | (772) | (666) | (757) | (781) | (895) | (930) | (750) | (1,021) | (1,371) | (516) |
| Other Operating CF | 63 | 130 | 130 | 125 | - | - | - | - | - | - |
| Free Cash Flow | 474 | 496 | 697 | 532 | 262 | 378 | 690 | 614 | 585 | 1,484 |
| PV | | | | | 242 | 324 | 546 | 449 | 397 | 21,853 |
| Cumulative PV | | | | | 242 | 566 | 1,112 | 1,561 | 1,958 | 23,811 |
| Valuation/Share | | | | | | | | | | 74.12310883 |
| | | | | | | | | | | $75.33 |
| **Balance Sheet** | | | | | | | | | | |
| Net WC (excluding Cash) | 443.71 | 796.447 | 585.62 | 527.407 | **452.12** | **474.45856** | **501.26547** | **531.34139** | **563.22188** | **582.9346428** |
| Net Fixed Assets incl. Intangibles excl GW | 2,838 | 2,905 | 3,043 | 3,286 | 3457.4161 | 3628.2125 | 3620.2506 | 3837.4656 | 4306.9908 | 3988.500188 |
| Total Debt+Other LT Liabilities | 883 | 906 | 822 | 1,550 | 1,550 | 1,550 | 1,550 | 1,550 | 1,550 | 1,550 |

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Equity Research Report

# Facebook Inc (FB)

Analysts: Philip Pizzo
Feiyu Han

## Executive Summary as of 05/08/2020

Recommendation: BUY
Sector: Communication Services
52W High/Low: $224.20/$137.10

Mkt Cap: $519.64 B
Purchase Price:
DCF Valuation: $215.40

Ent Value: $466.72 B
Current Price: $212.35
DGM Valuation: $224.23

Facebook is the world's largest online social networker. The company is in the industry-leading position in terms of scale, growth, and profitability, with five-year Revenues CAGR of 41.49% and five-year EPS CAGR of 42.35%. Given Facebook's massive user base and best-in-class product execution around products of Facebook family, we believe the company can sustain top-line growth over the medium and longer-term. A stock price below our DCF, which employs a very conservative projection, provides an attractive entry point in FB. While existing regulatory pressure continues, given the contribution of internet giant's data gathering during COVID-19, it will be harder to make a negative case against FB around Anti-Trust, Privacy, and Misinformation. Finally, COVID-19 could severely hit the company's ad revenue, yet we expect the sales growth rebound to the previous strong position in 2021.

Key Metrics:

| | FB | | | FB |
|---|---|---|---|---|
| Past 5 Years Sales CAGR | 41.49% | | Price/CF (TTM) | 22.37 |
| Past 5 Years EPS CAGR | 42.35% | | PE (Forward) | 28.82 |
| 3-5 Y FWD EPS CAGR | 14.33% | | Value DCF | 215.40 |
| Dividend Yield | Nil | | Value DGM | 224.23 |

Summary Financials:

| | 2016 | 2017 | 2018 | 2019 | 2020 Est | 2021 Est |
|---|---|---|---|---|---|---|
| Revenue ($ MM) | 27.6 | 40.7 | 55.8 | 70.7 | 75.9 | 94.9 |
| Rev Growth % | 54.2 | 47.1 | 37.4 | 26.6 | 7.4 | 25.0 |
| EPS | 3.49 | 5.39 | 7.57 | 6.43 | 7.30 | 9.65 |
| EPS Growth % | 170.01 | 54.79 | 40.44 | -15.09 | 13.57 | 32.14 |
| ROE % | 20 | 24 | 28 | 20 | 23 | 23 |
| LTD/Equity Ratio | Nil | Nil | Nil | Nil | Nil | Nil |
| Year-End PE Ratio | 35.29 | 32.74 | 17.32 | 31.87 | 25.34 | 19.17 |

## Company Overview

Facebook, Inc. develops products that enable people to connect and share with friends and family through mobile devices, personal computers, virtual reality headsets, and in-home devices worldwide. The company's products include Facebook that enables people to connect, share, discover, and communicate with each other on mobile devices and personal computers; Instagram, a community for sharing photos, videos, and private messages; Messenger, a messaging application for people to connect with friends, family, groups, and businesses across platforms and devices; and WhatsApp, a messaging application that is used by people and businesses to communicate in a private way. It also provides Oculus, a hardware, software, and developer ecosystem, which allows people to come together and connect with each other through its Oculus virtual reality products.

## Investment Thesis

Our Buy recommendation is based on the following key drivers:

- Continued solid user metrics.
- Increased demand for online activities during viral outbreak could benefit FB’s business.
- Increased product diversification.
- Ongoing improvement in ad targetability will bring more ad revenue.
- Reasonable valuation with great upside.

## Recommendation, Valuation, & Risks

We have a BUY recommendation.

Our recommendation is based on our above comments and attractive relative value based on growth in Revenue and EPS, PE ratio, and PEG ratio. UNH trades at a PE (TTM) ratio of 28.94 compared to 31.54 for the industry while a PEG (5-Yr Proj.) ratio of 1.76 compares to the industry PEG of 4.21.

We value FB at $215.40 per share using a DCF analysis with a 4% terminal growth rate and at $224.23 using a DGM model with a 9.82% cost of equity (KoE). Should these levels be realized, the stock should return between 1.43%-5.59%.

Risks include a more lasting economic slowdown than currently expected, competition for users/advertising, and worse-than-expected impact from regulatory changes.

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| DCF Valuation Model: Shareholder Perspective: All Amounts in Millions | | | | | Fall 2019 | | | DCF Valuation: | | 215.40 |
|---|---|---|---|---|---|---|---|---|---|---|
| | **2015** | **2016** | **2017** | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** | **Perpetuity** |
| **Assumptions** | | | | | | | | | | | |
| Sales Growth | | 54.2% | 47.1% | 37.4% | 26.6% | 7.40% | 25.00% | 20.00% | 15.00% | 10.00% | 4.0% |
| EBIT Margin | | 45.2% | 50.7% | 45.4% | 35.1% | 35% | 37% | 39% | 41% | 43% | 45% |
| Net Int Rate % | | 0.0% | 0.0% | 0.0% | 0.0% | 0 | 0 | 0 | 0 | 0 | 0 |
| Tax Rate | | 18.4% | 22.6% | 12.8% | 25.5% | 21% | 21% | 21% | 21% | 21% | 21% |
| Net WC Turnover (excluding Cash) | | 1.2 | 1.1 | 1.6 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 | 2.2 |
| FA Turnover Ratio | | 2.5 | 2.6 | 2.1 | 1.5 | 1.5 | 1.62 | 1.75 | 1.8 | 2 | 2 |
| 10 Year T-Bond Rate | | | | | | 0.66% | | | | | |
| Equity Risk Premium (Damodaran) | | | | | | 5.29% | | | | | |
| Beta | | | | | | 1.05 | | | | | |
| CAPM Ke | | | | | | 9.82% | | | | | |
| | | | | | | | | | | | |
| **Income Statement** | | | | | | | | | | | |
| Sales | | 27,638 | 40,653 | 55,838 | 70,697 | 75,928.58 | 94,910.72 | 113,892.87 | 130,976.80 | 144,074.48 | 149,837.46 |
| EBIT | | 12,489 | 20,594 | 25,361 | 24,812 | 26,575 | 35,117 | 44,418 | 53,700 | 61,952 | 67,427 |
| Interest Expense | | - | - | - | - | - | - | - | - | - | - |
| Income Before Taxes | | 12,489 | 20,594 | 25,361 | 24,812 | 26,575 | 35,117 | 44,418 | 53,700 | 61,952 | 67,427 |
| Taxes | | 2,301 | 4,660 | 3,249 | 6,327 | 5,581 | 7,375 | 9,328 | 11,277 | 13,010 | 14,160 |
| Net Income | | 10,188 | 15,934 | 22,112 | 18,485 | 20,994 | 27,742 | 35,090 | 42,423 | 48,942 | 53,267 |
| | | | | | | | | | | | |
| Diluted # Shares (Millions) | | 2925 | 2956 | 2921 | 2876 | 2876 | 2876 | 2876 | 2876 | 2876 | 2876 |
| EPS | 1.29 | 3.48 | 5.39 | 7.57 | 6.43 | 7.30 | 9.65 | 12.20 | 14.75 | 17.02 | 18.52 |
| **Cash Flow Statement** | | 170.01% | 54.76% | 40.44% | -15.09% | 13.57% | 32.14% | 26.49% | 20.90% | 15.37% | 8.84% |
| Net Income | | 10,188 | 15,934 | 22,112 | 18,485 | 20,994 | 27,742 | 35,090 | 42,423 | 48,942 | 53,267 |
| Depreciation+Amortization | | 2,342 | 3,025 | 4,315 | 5,741 | 6362.15 | 7363.60 | 8179.91 | 9145.59 | 9054.14 | 9416.30 |
| Net WC (incr) Decr | | 758 | 1,887 | (1,527) | 7,250 | (1,735) | (8,628) | (8,628) | (7,765) | (5,953) | (2,620) |
| Fixed Assets (Bought)Sold | | (9,495) | (20,105) | (11,578) | (19,925) | (11,304) | (15,331) | (14,675) | (16,829) | (8,326) | (12,298) |
| Other Operating CF | | 2,882 | 3,370 | 4,374 | 4,838 | - | - | - | - | - | - |
| Free Cash Flow | | 6,675 | 4,111 | 17,696 | 16,389 | 14,317 | 11,146 | 19,967 | 26,975 | 43,716 | 47,766 |
| PV | | | | | | 13,037 | 9,243 | 15,077 | 18,547 | 27,371 | 514,103 |
| Cumulative PV | | | | | | 13,037 | 22,280 | 37,357 | 55,904 | 83,275 | 597,378 |
| Valuation/Share | | | | | | | | | | | **207.71** |
| | | | | | | | | | | | **215.40** |
| **Balance Sheet** | | | | | | | | | | | |
| Net WC (excluding Cash) | | 22778 | 36954 | 33925 | 32778 | **34513** | **43141** | **51769** | **59535** | **65488** | **68108** |
| Net Fixed Assets incl. Intangibles excl GW | | 11,126 | 15,605 | 25,977 | 45,677 | 50619 | 58587 | 65082 | 72765 | 72037 | 74919 |
| Total Debt+Other LT Liabilities | | 2,892 | 6,417 | 6,017 | 17,307 | 17,307 | 17,307 | 17,307 | 17,307 | 17,307 | 17,307 |