The Henry Fund
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RESEARCH HenryFund.Org

JPMorgan Chase & Co. (JPM)

Sept. 12, 2020

Financial Services – Diversified Banks

Stock Rating **Hold**

Investment Thesis

We recommend a hold rating for JPMorgan Chase & Co. with 9% potential upside. On an absolute basis, JPM has a well-regarded management team and is expected to generate long-term revenue growth and stable dividend payout. On a relative basis, the firm is expected to continue to outperform relative to their peer groups. However, we are closely monitoring the risk in macro environment, including changes in interest rates, lower demand in oil, and global economic recession.

Drivers of Thesis

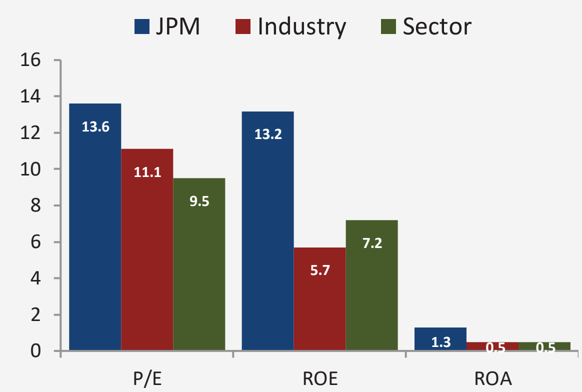
- **Outperformance Relative to Peers:** JPM is one of the most dominant bank in the U.S. with leading share in many aspects of banking and financial services. Its ROE outperformed their peer group by 6% [1].
- **Long-Term Revenue Growth & Stable Dividend Payout:** JPM continues to expand their business by acquiring new customers, establish footprint in international market, and grow their investment banking business. Therefore, we expect to see strong long-term growth in the revenue and hence a stable dividend payout that are modeled into our Henry Fund financial model [5].
- **Well-Regarded Management Team:** Leading by Chairman and CEO Jamie Dimon, JPM has various highly respected managers with talent, loyalty and vision to collectively lead the company to outperform its peers [4].

Risks to Thesis

- **Global Economic Recession:** With slowing economy and ongoing market uncertainties following the COVID-19 outbreak, we are already seeing higher delinquency and defaults in the current market. If the COVID-19 pandemic lasts longer than expected, the economy is likely to stall and deteriorate further across regions. As a result, our model assumes 0.25% CV growth that aligned with the current Fed Fund rate from the impact of a weaker economy [3].
- **Potential High Inflation Rate Contributed by Low Interest Rate Environment**: The Federal Reserve has announced with long-term target of near-zero interest rate and higher inflation rate tolerance [5]. As a result, bank's profitability might be weaker than expected as the firm is highly dependent on the interest rate cycle and its effects on credits and debt cycles.
- **Decline in Oil Price Coupled with Rise of Awareness in Sustainability :** JPM holds the largest fossil fuel loans in the industry (10% of all fossil fuels finance from 33 major global banks). With the recent declined in oil demand and price, the default rate on these loans will likely increase.

Target Price

Target Price	$100 - 110
Henry Fund DCF	$99
Henry Fund DDM	$100
Relative Multiple	$112
Price Data	
Current Price	$101.7
52wk Range	$76.9 – $141.1
Consensus 1yr Target	$115.1
Key Statistics	
Market Cap (B)	$308
Shares Outstanding (M)	3,048
Institutional Ownership	71.8%
Five Year Beta	1.1
Dividend Yield	3.6%
Est. 5yr Growth (EPS)	15.2%
Price/Earnings (TTM)	13.6x
Price/Earnings (FY1)	12.9x
Price/Sales (TTM)	2.6x
Price/Book (mrq)	1.3x
Profitability	
Operating Margin	32.1%
Profit Margin	25.9%
Return on Assets (TTM)	0.9%
Return on Equity (TTM)	9.5%

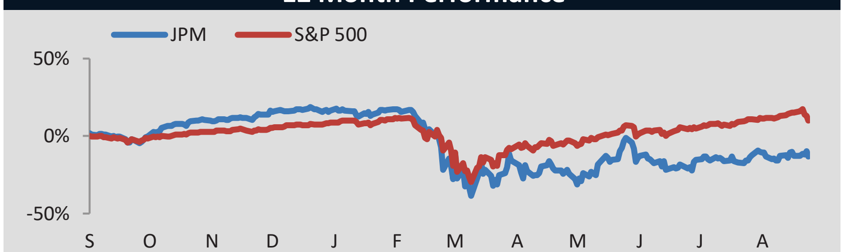


Source: Yahoo! Finance, FactSet

Earnings Estimates

Year	2017	2018	2019	2020E	2021E	2022E
EPS	$6.35	$9.04	$10.75	$5.77	$8.72	$10.44
HF est.				$8.91	$8.34	$6.78
Growth		*+42.36%*	*+18.92%*	*-20.93%*	*+30.47%*	*+6.13%*

12 Month Performance



Source: Yahoo! Finance

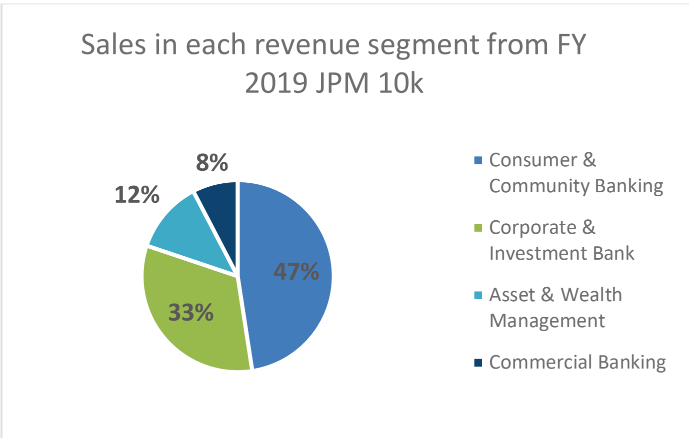
Company Description

The Company is headquartered in New York City and oversees approximately 5,100 Chase branches across 23 states. JPMorgan Chase is one of the world's largest diversified banking firms, and the largest bank in the U.S. It operates across four segments: Consumer & Community Banking (CCB), Corporate & Investment Bank (CIB), Commercial Banking (CB), and Asset & Wealth Management (AWM).

COMPANY DESCRIPTION

JPM had $2.7 trillion in assets and $261.3 billion in stockholders' equity which is 10% total shareholder equity as of December 31, 2019 [6].

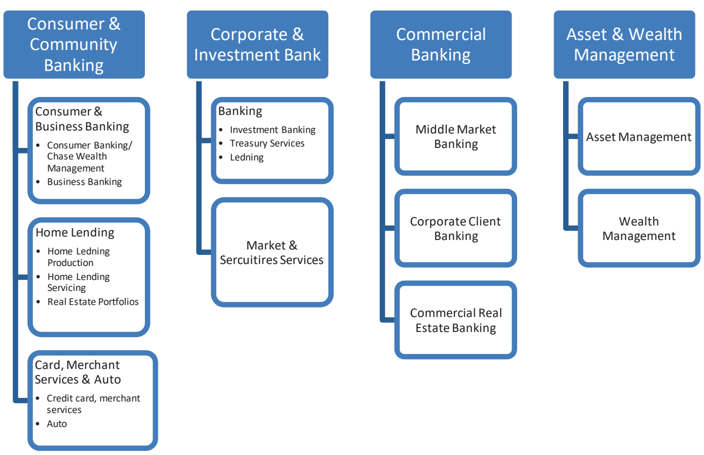
The company operates in four major business segments which are consumer & community banking, corporate & investment bank, asset & wealth management, and commercial banking.



Source: JPM 10K

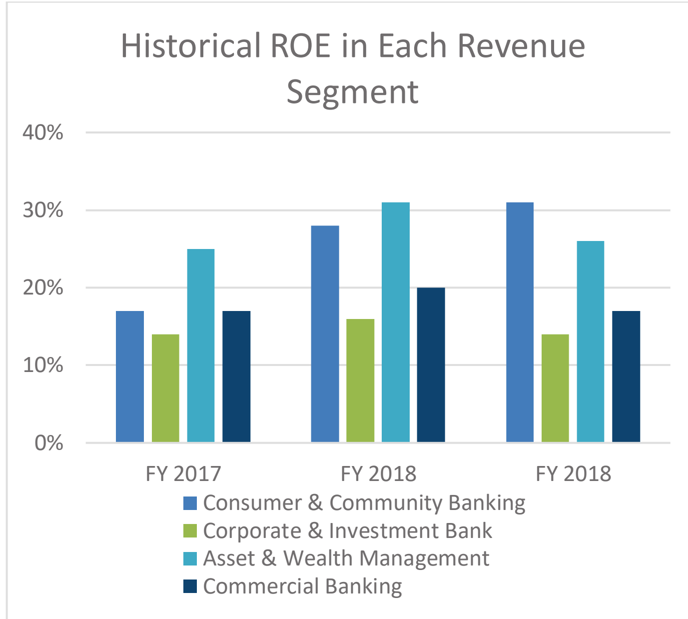
The following charts provides a more in depth look of types of businesses that are classified within each revenue stream:

JPM Business Segments and their services as of 12.31.2019



Source: JPM 10k

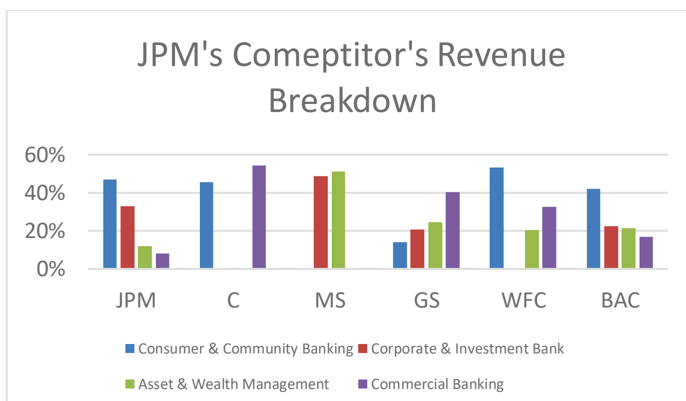
The following chart shows each revenue segment return on equity (ROE) and its growth over the past three years:



Source: JPM 10K

Return on equity in consumer and community banking segment, which is near half of the company's total revenue, has increased throughout the trailing three years. During the same time period, asset and wealth management revenue segment, which is around 8% of the company ROE, has decreased [6]. However, due to the recent economic downturn since March 2020, we expect a weaker revenue in consumer & community's banking segment this year [8].

The chart below shows JPM's competitor's revenue breakdown:



JPM, Citi Group, and Wells Fargo all have around 50% of their revenue coming from consumer & community banking. Wells Fargo reported its first quarter 2020 report on in July 2020 in which it showed a net loss of $2.4bn and reduced its dividend because not only of its sales scandal but also its strong revenue stream that depends on the economy. JPM's revenue breakdown is more spread out compared to Wells Fargo, so we believe JPM will still be the best position in the industry.

The following sections detail further information about each revenue segment and its profitability for JPM:

Consumer & Community Banking

Consumer & Community Banking makes up 47% of the firm's revenue. This segment offers services to consumers and businesses through bank branches, ATMs, digital (including mobile and online) and telephone banking. Within this revenue stream, the services include Consumer & Business Banking, Home Lending, and Card, Merchant Services & Auto.

The following table shows each sub-sector within consumer & community banking revenue segment:

Sub-Sector	Services	% of Total Revenue in Consumer and Community Banking
Consumer & Business Banking	• Deposit and investment products to customers • Lending • Deposit • Cash management and payment solutions to small businesses	47%
Card, Merchant Services & Auto	• Issues credit card to consumers and small businesses • Offers payment processing services to merchants • Originates and services auto loans and leases	43%
Home Lending	• Mortgage origination and servicing activities • Portfolios consisting of residential mortgages and home equity loans	9%

Source: JPM FY 2019 10K

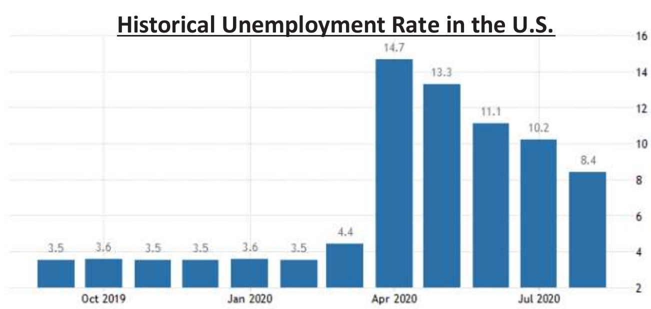
Net income in this segment increased 12% year over year, mainly driven by higher loan balances, margin expansion in card, higher auto lease volume, higher net mortgage production revenue [6].

Consumer & business banking, and card, merchant services & auto are the main sub-sectors of this segment. These two sub-segments are also closely related to the change in interest rate. As we are now in a near-zero interest rate environment, we expect consumers to deposit less in the bank. However, we also expects more loan volume going forward as the economy continues to worsen. Specifically, we model a 3% annual lending and deposit related fees which is 1% higher than the historical average annual growth rate [3].

On the other hand, even though the loan volume may increase going forward, we also believe the delinquency rate and default rate will also increase as consumers lose income source to repay their loans. For this reason, we projected an average of 1% loan losses going forward as more delinquency is expected and JPM will start to adjust the company for more cushion for losses [3].

In particular, we expect more customers to enter the payment deferral programs as JPM is participating in the Paycheck Protection Program (PPP) established by the Coronavirus Aid, Relief, and Economic Security (CARES) Act. Since the pandemic started, JPM has funded more than 280,000 PPP loans totaling more than $32 bn [23]. These PPP loans are part of the Congress and the White House record-breaking $2 trillion stimulus package, and the loans are designated to help small business owners to repay their employees' payroll and other related expenses with forgiveness program. However, it was recently discovered that JPMorgan, Wells Fargo and other banks were accused in lawsuits of harming small business by prioritizing these emergency loan requests from larger customers [23]. We view this PPP loans to be low risk to the banks as the banks are only serving as the intermediaries to these PPP loans and it's the Small Business Association paying for the loans [23]. Therefore, these PPP loans generated small processing fees for JPM but in the same time JPM does not need to hold credit default risk or losses related to PPP loans. However, the consumer related loans that are generated directly from JPM will face higher delinquency rate as the economy continue to worsen.

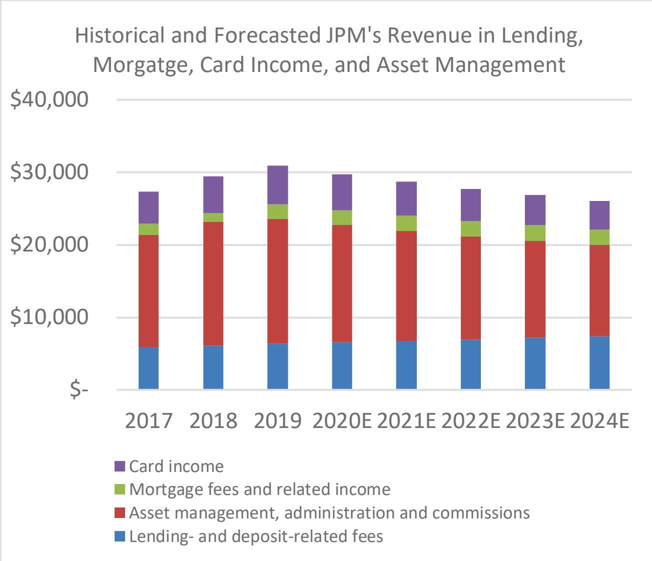
The following chart shows the U.S. unemployment rate as of August 2020:



Source: Trading Economics

Though the unemployment rate seems improved from April 2020, the number is still considerably higher than last year during the same period.

Overall, we expect a 3% growth in lending and deposit related fees, but 1% growth for the mortgage fees and related income, and 0.5% annual growth in asset management, administration and commissions due to higher demand in cash management and payment solutions to small businesses that are affected by the pandemic, and -6% in card income in our Henry Fund financial model [3].



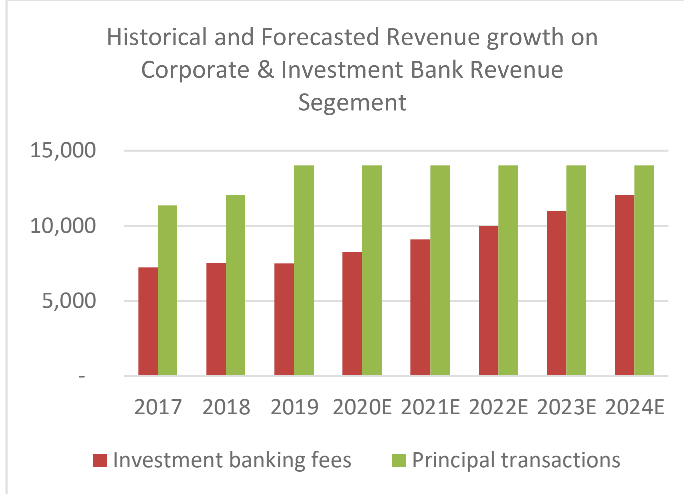
Source: JPM FY 2019 10K, HF Model

Corporate & Investment Bank

The Corporate & Investment Bank takes up 33% of JPM's total revenue. This revenue segment consists of Banking and Markets & Securities Services to serve the global clients including corporations, investors, financial institutions, government and municipal entities. Banking service offers investment banking products and services in all major capital markets, including advising on corporate strategy and structure, capital-raising in equity and debt markets, as well as loan origination and syndication. Markets & Securities Services also include Securities Services, fund accounting and administration, and securities lending products principally for asset managers, insurance companies, and public and private investment funds [6].

Though 85% of the employees are currently still working from home since March 2020 but majority of the business is still doing great in general. As of the second quarter this year, net income has increased 85% year over year. Due to higher volume of employees working from home and the effect from the pandemic, JPM has incurred a decrease of 1% in 2Q 2020from professional and outside services expenses quarter over quarter, but a 1% increase in 2Q 2020 in technology services fees quarter over quarter [3].

JPM has also panned to have investment bankers, salesperson, and traders to go back to office on September 21, 2020 [23]. With lower expenses in travel and other expenses, we expect this revenue segment to grow at 10% rate, which is higher than the average growth rate over the 5-year historical data [3]. The principal transaction's revenue is also driven from trading financial instruments, we expect this revenue stream to grow steadily over the next year due to the low interest rate environment.



Source: Henry Fund Model

Also on a relative basis, JP Morgan is ranked the number one bank that has the highest amount of global investment banking fees when compared to its peers as of 2020.

Global Estimated Investment Banking Fees

	Year-to-Date			Year-to-Date Last-Year			
Investment Bank	Fees US$m	Rank	% of Wallet	Fees US$m	Rank	Mkt. Share	Chg. In Mkt. Share
JP Morgan	2,110.2	1	7.8	2,052.8	1	7.1	0.7 ▲
Bofa Securities Inc	1,783.2	2	6.6	1,526.6	3	5.3	1.3 ▲
Goldman Sachs & Co	1,710.4	3	6.3	1,749.4	2	6.0	0.3 ▲
Citi	1,520.6	4	5.6	1,412.8	4	4.9	0.7 ▲
Morgan Stanley	1,453.7	5	5.3	1,367.1	5	4.7	0.6 ▲
Barclays	881.7	6	3.2	927.5	6	3.2	0.0 ▲
Credit Suisse	851.3	7	3.1	896.7	7	3.1	0.0 ▲
Wells Fargo & Co	721.2	8	2.7	502.5	13	1.7	0.9 ▲
RBC Capital Markets	558.1	9	2.1	563.9	10	1.9	0.1 ▲
Deutsche Bank	555.4	10	2.0	773.3	8	2.7	-0.6 ▼
Top Ten Total	**12,146.1**		**44.7**	**11,772.6**		**40.6**	
Industry Total	**27,186.7**		**100.0**	**29,024.5**		**100.0**	

Source: Wall Street Oasis, data as of FY 2019

Commercial Banking

Twelve percent of the firm's total revenue is generated from Commercial Banking segment. Commercial Banking provides comprehensive financial solutions, including lending, treasury services, investment banking and asset management products across three primary client segments: Middle Market Banking, Corporate Client Banking and Commercial Real Estate Banking.

In our model, we forecast an annual average growth rate of 2% as we expect more lending and deposits will occur as the economy worsen over the next five years [3]. These effects led to our projection of

Asset & Wealth Management

Eight percent of the firm's total revenue is generated from Asset & Wealth Management segment. This segment includes a client asset of $3.2 trillion. JPM is a world lead leader in investment and wealth management who mainly serve institutional clients, high-net-worth individuals and retail investors in major markets around the world. The majority of this segment client's assets are in actively managed portfolios.

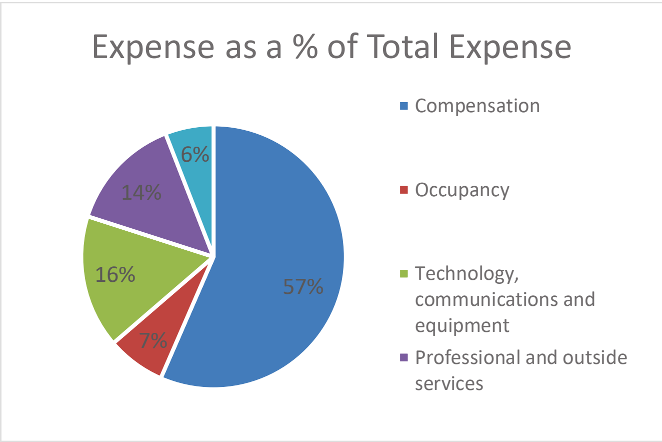
In our model, we forecasted a 0.6% annual growth as percentage to total asset under management as we expect more digital platforms to rise. On the other hand, we expect an average of 2.5% annual growth in average expense ratio which is 0.2% higher than the historical annual average growth rate as more expenses will be incurred to create digital platform for JPM to adjust itself to the rise of digital asset management services.

Therefore, in general we forecasted an average annual growth rate of forecasted a -6% growth rate over the next five years as we expect more competition from the digital platform with similar service but lower costs.

Cost Structure

JPM incurs costs in relation to the operation of its branch and automated teller machine network, the maintenance of its IT and communications infrastructure, the implementation of marketing schemes, the management of its partnerships, the payment of professional and banking fees, and the retention of its personnel [22]. JPM's key advantage also comes from its certain fixed cost, fixed platform business that different from other banks in which JPM offers a low-cost deposit base [23].

The following chart shows JPM's cost breakdown as of fiscal year 2019 annual report:



Source: JPM FY2019 10K

RECENT DEVELOPMENTS & INDUSTRY TRENDS

JPM Second Quarter Earnings

The table below shows JPM's street consensus EPS and revenue for 2Q 2020 which was announced on 7/14/2020 :

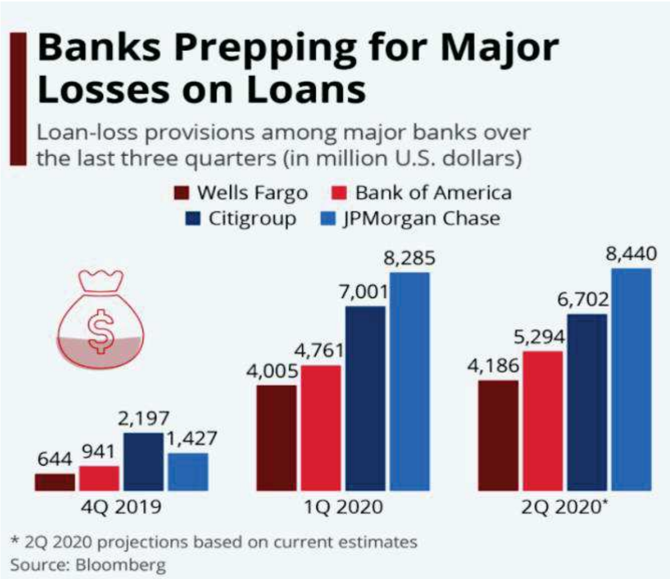
	Street Consensus	Actual	Miss/ Beat?
EPS	$1.38	$1.04	Beat
Revenue	$33 billion	$30.3 billion	Beat

Source: CNBC

In JP Morgan's 2Q 2020 report, JPM reported a better than expected financial results.

- EPS: $1.38 per share
- Revenue: $33 billion
- Loan: +4% YoY and +4% QoQ
- Deposits: +25% YoY and +16% QoQ (driven by retail branch expansion that's developed over the past two years, and servicing digital accounts and transactions online allowed cheaper costs)
- Net interest margin -0.3% YoY driven from lower interest rate environment
- Announced suspension of repurchases at least through the end of 3Q20 (this effect was also modeled into financial model)
- CEO Jamie Dimon indicated that "the firm is prepared for all eventualities as JPM's fortress balance sheet allows them to remain a port in the storm." [11]

Overall, trading revenue surges as the volatile markets helped provide a revenue source to boost revenue above analyst's expectations. On the other hand, net interest margins declined more than expected as the Fed's decided to drop interest rates unexpectedly. In the meanwhile, JPM is proactively positioning itself as the safe haven in the banking sector for the potential loss that we might see going forward. When comparing it to its competitors, JP Morgan set aside the most amount of money even when its quarterly result outperform street's expectation and shows no sign of financial distress yet. In fact, JP Morgan has set $8.4 billion aside for the expected loan losses during this current recession.



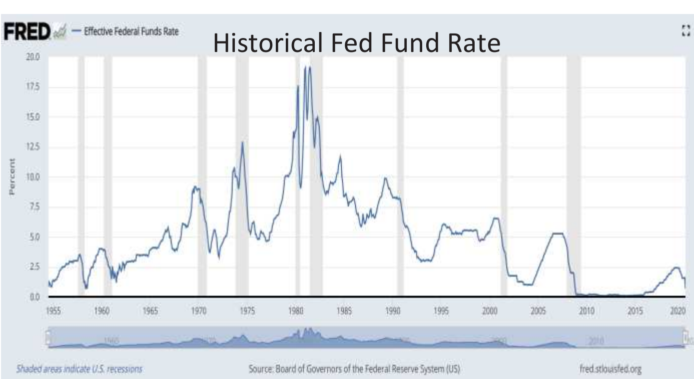
Source: Statista

Low Interest Rates

As a mechanism to stimulate the impacted and slowing economy caused by recent COVID-19 pandemic, the Fed has determined to drop the rate close to 0%. This decision has given challenges to banks particularly for their loan growth.

However, this is not the first time that JPM has to operate their business in a low rate environment. During the time, JPM has placed LIBOR floor on loans and has adapted to factoring in the lower fee credit for deposits.

On the other hand, being the largest bank in the U.S. JPM also generated the largest investment banking fees among its peers. This will potentially ease the pressure from the lower revenue resulted from the near 0% rates. In addition, having a lowered interest rate also means JPM can expect a higher number of borrowers beginning to refinance their loans, which will also help to reduce the borrower risk. Therefore, we expect a smaller impact on JPM from the low interest rate environment, compare to their peers. Overall, we expect the company to grow with the fed fund rate (0.25%) in our financial model [3].



Source: FRED

COVID-19 Impact

Employees Working from Home: Major banks on Wall Street have been forced to send most of its employees' home since March following the COVID-19 outbreak. Although JPM's most recent quarterly results outperformed the street estimates (EPS +$0.34 higher than expected, and revenue +$3 billion higher than expected) [11], the company indicates that having employees to work at home has resulted in lower productivity.

Technology expenses have increased by 1% QoQ while the travel fees decreased 1% QoQ. Overall, the expenses are maintained at the same level.

According to Bloomberg news, Jamie Dimon indicated that working from home is no substitute for organic interaction and urges workers to return back to the office. As a result, JP Morgan has announced most senior sales and trading employees would be required to return to their offices by September 21, 2020 [5]. As the largest bank in the U.S., we believe more banks on the Street will begin to follow JPM's initiative to send their employees back to the offices.

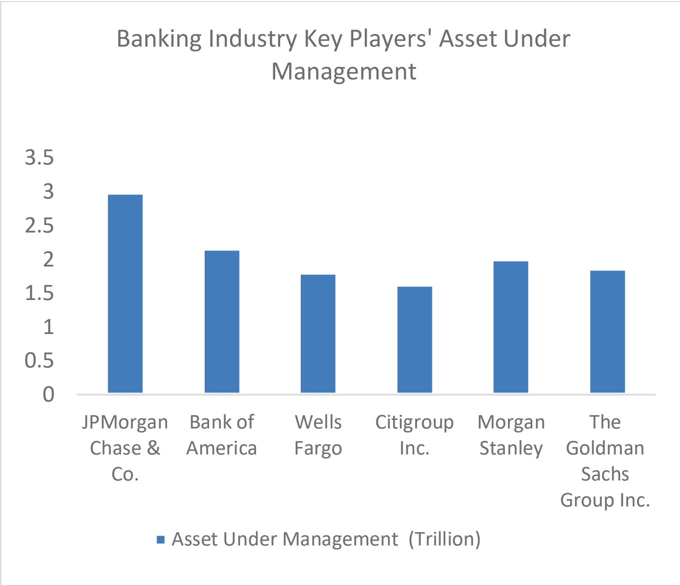
Defaults on Consumer Loans: Being known as one of the largest retail banks, JPM has a coast-to-coast network of branches that has fueled much of the lender's dominance over the past decade. However, the recent pandemic has exposed the company to billions of dollars in potential loan defaults across credit card, mortgage and auto lines [11]. In fact, retail banking posted a $176 million loss versus a $4.2 billion profit a year earlier. Commercial bank has also posted a $691 million loss versus a $1 billion profit a year ago. Therefore, we modeled 1% loan losses due to higher default risk, but we also expect JPM to set aside more money as needed if default risk remains high [3].

Higher Trading & Advising on Debt and Equity Issuance: On the other hand, current market has also brought JPM more business opportunities in trading and advising on debt and equity issuance. In 2Q 2020, firm's profit in investment banking posted a record of $5.5 billion [11], which is more than what JPM typically generated prior to coronavirus pandemic. In trading division, JPM's second quarter trading revenue in fixed income securities also exceed expectations. JPM has reached a record amount of capital for its clients. However, Daniel Pinto, the co-president, said the return will revert back to a more normal level for the rest of 2020 [11].

MARKETS AND COMPETITION

Competition in the financial services industry continues to be intense. In the following sections, we will discuss the major players in diversified banks sector and their profit metrics.

The chart below shows the major players in this industry and their asset under management, JPMorgan has the largest asset under management.

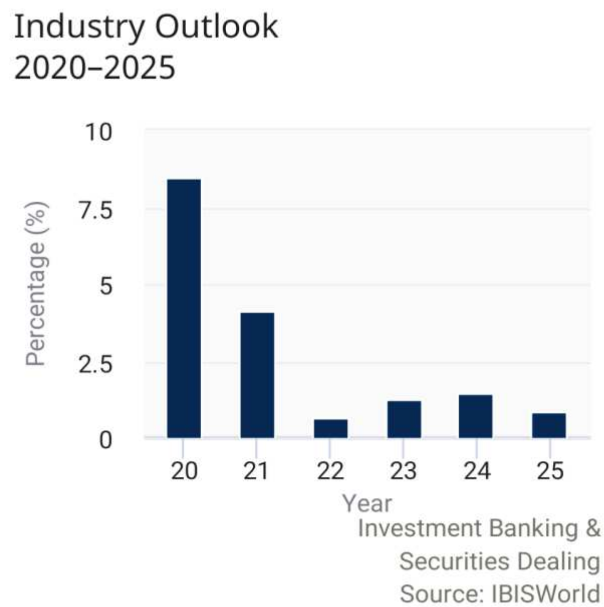


Source: FactSet, data as of 9/18/2020

Future Growth Prospects: Overall, we expect higher investment banking fees as more businesses go bankrupt and more merge & acquisitions demand, and trading volumes in this industry due to uncertainty in the financial market. However, we also expect higher losses in consumer loans, and competition due to the rise of digitalized banking.

- Increasing demand for IPOs will likely be contributed by global geopolitical concerns, economic downturn, and higher default rates in the small businesses.
- Given the uncertainty of the market, we expect the industry to benefit from the increasing trade volumes.
- Higher loan losses due to economic downturn that causes higher default rates
- Higher competition given more digitalized small banks are rising with lighter regulatory requirements, therefore we expect an average annual growth rate of 5% in technology expense which is 2% higher than its historical average growth rate in our model [3].

The following chart is the forecasted growth rate for securities and exchange industry for the next 5 years:



Source: IBIS World

Peer Comparisons

Relative Metrics: Holding the largest market share and larger customer base in the industry, JPM has positioned to outperform their peers over the years [14]. Looking across key metrics listed in the table below, JPM outperformed in Price/Book, and Dividend Yield metrics. JPM scored the second in Tier 1 Capital Ratio, ROE, and EPS metrics. It scored the third in net interest margin.

Ticker	JPM	C	MS	GS	WFC	BAC
Price/Book	**1.30x**	0.55x	1.03x	0.88x	0.67x	0.92x
Dividend Yield	**3.60%**	2.40%	2.54%	1.8%	3.57%	1.87%
Tier 1 Capital Ratio	12.4%	11.8%	**13.4%**	13.3%	11.1%	11.2%
ROE	9.5%	7.0%	**11.1%**	5.9%	3.0%	7.6%
EPS (TTM)	**7.47**	5.86	5.52	4.79	0.93	2.08
Net Interest Margin	2.0%	2.2%	0.9%	0.4%	**2.3%**	1.9%

Source: FactSet, data as of FY 2019

- **Price/Book Ratio**: JP Morgan trades at a premium compared to its peers. The price to book ratio provides a comparison of share price to assets and liabilities rather than earnings, which can more often reflects the trading activities that the banks have. As the largest bank in the U.S., the price-to-book ratio for JPM is naturally the largest with its larger trading activities and assets.

- **Dividend Yield**: JPM now has higher dividend yield than last year. Comparing to our last research report issued in November 2019, the dividend yield was at 3% compared to the current yield at 3.57%. In fact, JPM now is the largest dividend yield provider in the industry. Even under the pandemic situation, JPM was still able to provide steady and growing dividend yield this year.

  However, we expect JPM's dividend yield in fiscal year 2020 will stay at $3.40 as the Fed recently announced a restriction on banks dividend payout in which banks are now restricted to raise their dividend and repurchase starting from 3Q 2020 [23].
- **Tier 1 Capital Ratio**: Tier 1 capital ratio is the core measure of a bank's financial strength from a regulator's point of view. When calculating this ratio, the calculation is the ratio of a bank's core equity capital to its total risk-weighted assets [15]. When we look at this ratio, it also shows that if the company can provide protection against unexpected losses. In Base I agreement, Tier 1 capital ratio is a minimum of 4% of ownership equity [15]. However, generally investor require a ratio of 10% in order to provide hedge in unexpected losses.

  Looking at the peer comparison table, JPM is the largest bank in the industry, but it only scored a second in tier 1 capital ratio. Even though the tier 1 capital ratio is over the investor requirement of 10% by 2%, we see this as a potential risk as the current environment may trigger huge loan loss in the banking sector going forward. Therefore, in this metric, we see Morgan Stanley which has a 13.4% tier 1 capital ratio as the strongest.
- **Return on Equity and Earning Per Share:** JPM has the second largest ROE when compared to its peers. Morgan Stanley has 11.1% of return on equity and is the largest ROE generator. On the other hand, Goldman Sachs has the highest EPS at 13.26 while JPM only has 7.47. Therefore, on the return on equity side, we ranked neutral on how JPM is performing compared to its peers.
- **Net Interest Margin**: Net interest margin reveals the amount of money that a bank is earning in interest on loans compared to the amount it is paying in interest on deposits. We compared this metric because of the near-zero interest rate environment. Looking at the comparison table, JPM has 2% , while Wells Fargo has the highest of 2.3%.

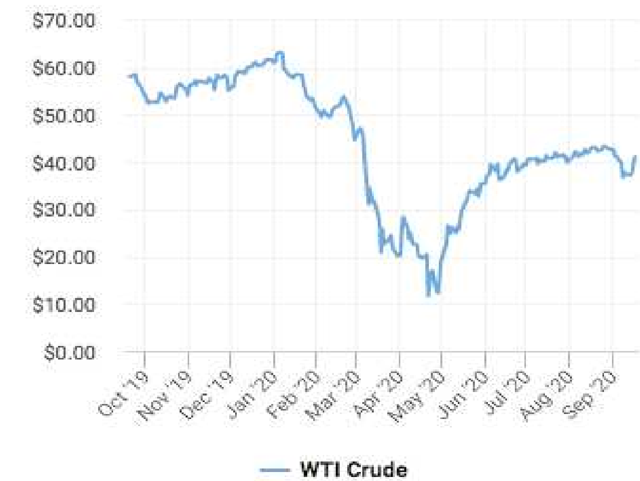
Target Market: JPMorgan not only shares a similar target customer base with its competitors, but also serves a diverse groups of customers e.g. small and medium size businesses, corporations, governments and individual consumers [11].

Industry Life Cycles: The banking industry is in the mature stage of its economic life cycle, resulting from increased regulation and extensive merger and acquisition activity [16]. The industry will continue to offer new products and services. Wealth and asset management and altered derivative-based products are expected to represent growing sources of revenue going forward [16].

Since JPM's asset management and wealth management has a well-known reputation and higher stake in their revenue generation. We believe JPM would continue to grow with the industry trend.

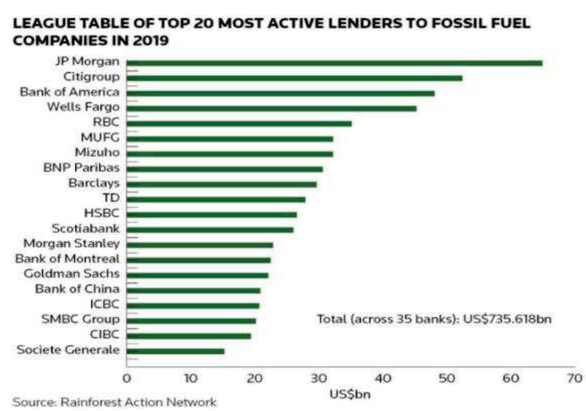
Oil and Energy Loan Exposure: We have seen the decline in oil price even before the pandemic started, but it continues to drop further with a lower demand in oil when people now mostly stay at home to avoid getting infected by the coronavirus. We also expect lower usage of oil and energy post the pandemic because of the increasing awareness of renewable energy.

One Year Oil Price



Source: Oilprice

JP Morgan is the largest company that lends and underwrites to fossil fuel companies. Given the recent oil price trend, we see higher default rate for these loans with fossil fuel companies. Therefore, if these defaults are started to pick up, we expect substantial losses to JPM.



Higher Risk in Loan Defaults: According to The Atlantic, loan defaults are already happening, and it will continue to get worse [19]. In particular, this will impact banks further as they usually invest in collateralized loan obligation in their portfolios. Although CLO can provide higher returns in this low interest rate environments, it could damage a company health when the economy is in downturn and people are having trouble to repay their debts. In addition, CLOs are under pressure. Moody's has placed 77.3% of all U.S. CLO tranches under ratings of B or lower on review for downgrade, along with about 60% of those rated Baa or Ba. As level B tranches downgraded, we can also see level A tranche portions downgraded. Therefore, this could be a potential risk to the firm as JPM holds relatively large exposure in CLO.

Ticker	JPM	C	WFC
CLO Exposure	**$35B**	**$21.4B**	**$37.4B**

Source: CNBC

Overall, in the long-term, we do see growth to continue in this industry in general and JPMorgan is positioned in delivering strong profitability and steady dividend yield. However, when considering the macro environment where interest will stay at close to 0% for a period of time, we also see risk in declining net interest margin and higher default rate in loans. In particular, we see higher risk in the loans with oil & gas companies given the low oil price and the increasing awareness of renewable energy.

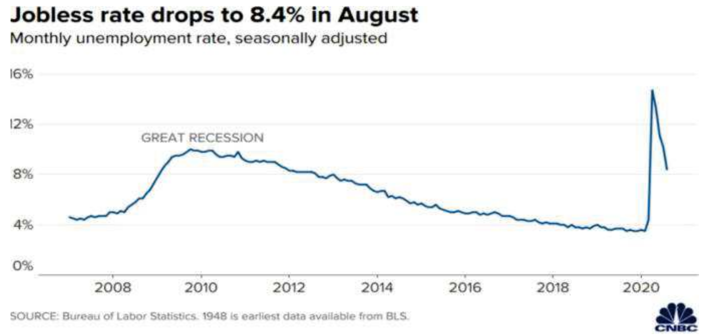
ECONOMIC OUTLOOK

90% of JPMorgan's revenue are from the consumer lending, and consumer related loans. Therefore, during this unprecedented time, it will be crucial to monitor unemployment rate, the Federal Reserve Policy, and the oil price.

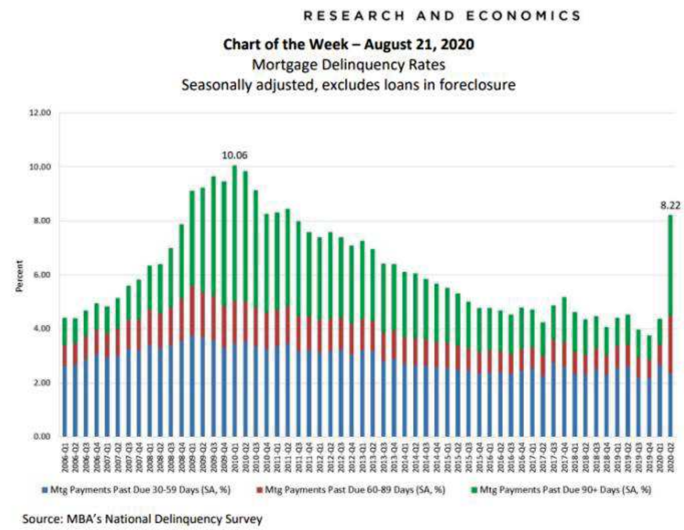
Unemployment Rate

The official unemployment rate fell to 8.4% in August as businesses continue its gradual recovery out of the broad shutdowns that were imposed following the COVID-19 pandemic. Starting from April 2020 where the economy hit the peak of unemployment rate of 14.7% [20], the unemployment rate has been high but trending downwards. Even though the unemployment number is lower than the level in April 2020, the overall unemployment rate is still relatively high compared to what we have seen during the Great Depression.

The chart below shows the current unemployment rate compared to the unemployment rate during the Great Depression era.



Source: CNBC



The housing market has already reflected the effect from high unemployment rate, as of today the mortgage delinquency rate is 8.22% which is the highest delinquency rate in nine years.

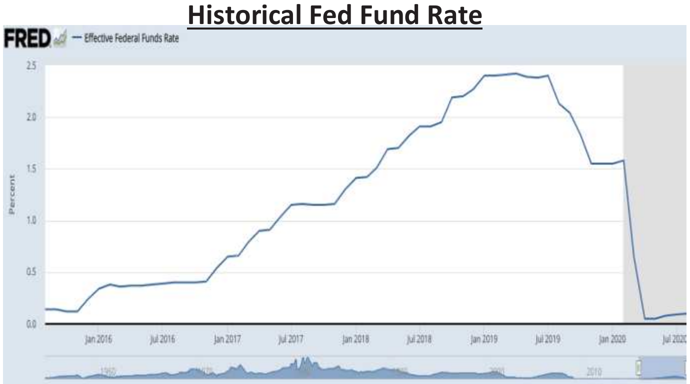
Therefore, we believe that we are now in a recession. If the unemployment rate remained elevated, we expect the firms might experience higher loss in loans. Given 90% of JPM's revenue are generated by consumer and commercial related activities, we expect the firm will be negatively impacted.

The Federal Reserve Policy

On August 28, 2020, the Federal Reserve announced it would now target inflation rate to be averaging 2% over time, instead of its usual target for the 2% rate in annual price increases. The Fed Chair Jerome Powell also indicated the Fed will let inflation run "moderately above 2% for some time" [21]. This approach will likely keep interest rates at bottom for years. On the other hand, on September 16, 2020, The Federal Reserve concluded that it will keep short-term interest rates anchored near zero (0%- 0.25%) through 2023 [22]. These decisions made by the Fed indicates that potentially more borrowers will be interested in lending. However, due to the low interest rate environment, JPM might also generate lower profit from lending service.

The Fed has also begun buying corporate bonds, municipal bonds, and asset-backed securities. This made corporate borrowing cheaper, which is a tangible subsidy for large companies. These economic stimulations from Fed will affect JPM negatively and make it more challenging for the banking industry to generate returns. However, we believe that JPM will outperform its peers, by being the largest bank of the U.S. and proactively setting aside close to $9 billion [11] for potential loan loss already.

Historical Fed Fund Rate

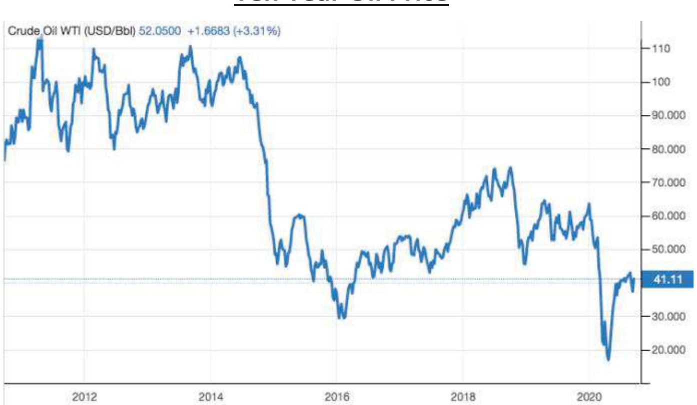


Source: FRED

Oil Price

As the largest fossil fuels lenders in the industry, JPM could experience higher loss in loans for the fossil fuels borrowers [21]. The oil price has significantly decreased since February 2020 and expected to continue going forward, with more people staying at home to quarantine and a weaker economy. This means the oil producing companies will need to store their supplies for a while which will hurt their revenues. Therefore, as the lender to these oil companies, JPM will also see potential loan loss in oil related loan. On the other hand, we also expect the market to use less oil and switch to renewable energy even after the pandemic ends as people are now more aware of the concept of sustainability. Therefore, we are closely monitoring the oil price and see the potential effect on JPM's fossil fuels loans.

Ten Year Oil Price



Source: Trading Economics

VALUATION

According to DCF and DDM models, it is estimated that the stock price target for JPMorgan & Co. is between $100-110.

According to Relative Valuation analysis, comparing with JPM's key competitors including Bank of America (Ticker: BAC), Citigroup (Ticker: C), UBS Group (Ticker: UBS), Morgan Stanley (Ticker: MS), Goldman Sachs Group (Ticker: GS), and Wells Fargo (Ticker: WFC), the conclusion is aligned with the DCF and DDM models.

Within the industry, the average company's P/E multiple for 2020 is 12.5x, and 10.3x for 2021. JPM is currently trading at 11.4x P/E of 2020, and 12.2x P/E of 2021 and undervalued than its peers [3]. Therefore, the model results indicate approximately 9% potential upside. This is led by the strong long-term revenue growth, steady dividend yield, and outperformance to its peers. However, we are closely monitoring the potential risk introduced by the economic recession, the Federal Reserve Policy, and the change in oil price going forward.

Therefore, we recommend a HOLD rating for JPMorgan Chase & Co.

Assumptions

When building the DCF model, several assumptions were made based on the key economic trends and industry outlook.

Dividend Growth Rate: With strict regulations with the FDIC and strong capital ratios, we expect a strong dividend yield over the next five years. We forecasted an average annual dividend payout ratio of 38% which aligned with the historical average dividend payout ratio. Using these forecasted dividends, our dividend discount model forecasted price is at $99.

Investment Banking Fee: We forecasted an annual average growth rate of 10% in the investment banking fees due to the increasing volume in M&A deals, IPOs, underwriting deals, and other investment banking activities as the results from the current recession. JPM, as the company generated highest investment banking fees in the industry, is expected to deliver 10% growth rate in the fee.

Noninterest Revenue Growth, and Interest Revenue Growth: We forecast noninterest revenue to grow higher than the interest revenue given the current low interest rate environment and the Fed's continued action in keeping the interest rate near zero until year 2023. We projected an annual average growth rate of 1% in noninterest revenue due to low interest rate environment which might attract more loan volumes. On the other hand, we projected a -1.5% growth rate in total interest revenue considering the potential loan losses from low interest rate environment [3].

Earnings Estimates Relative to Consensus: We forecasted a $8.9 EPS in 2020, and $8.32 EPS in 2021. In the meanwhile, the consensus's projected a $5.77 EPS in 2020, and $8.72 EPS in 2021. For the estimates in 2020, our projected EPS is higher than the consensus because we expect JPM to continue its repurchase program and only suspend the activity on a short-term basis for one quarter. As a result, along with market's expectation, we expect the repurchase program to continue in 2021, our forecasted EPS in 2021 is aligned with the consensus [3]. Our 2022 estimated EPS is $6.78 while the consensus is $10.44, this is because we expect the earning growth to be slower than consensus because of slower economy movement, so our earnings growth is an average of -10% [3]. .

Debt Maturity: JPM has total debt of $308mm of corporate debt with average maturity 10 years. Each year from 2020-2030, the average debt maturity is around $15mm [5]. With average total revenue of $115mm from 2020-2024, JPM will be able to pay off its debts.

From all of assumptions above, we estimate a target price of $99 using DCF/EP , $100 DDM model, and $112 using relative valuation multiples [3]. Particularly, we believe that DCF model shows more perspectives on JPM's fundamental metrics. While DDM, based on the operating metrics, shows more growth in JPM's dividends. Relative valuation shows peer comparison within this industry. Each model exhibits different perspectives hence it is more robust to project the target price based on three analysis conclusions collectively. To summarize, the target price for JPMorgan & Chase is between $100 to $110 with an upside of 9% potential [3].

KEYS TO MONITOR

Overall, we recommend a hold rating for JPMorgan Chase & Co. with 9% potential upside with its long-term revenue growth generated by their large asset and client base, stable dividend yield, and well-regarded senior management team.

Bull Case at $110: We project $110 target price in the case when the outperformance among peer group continues to stand. We also expect the banking sector to be negatively impacted by the economic downturn. We see JPM is in strong position compared to peers in the industry as it has large asset and client base, steady dividend yield, and strong long-term revenue. Lastly, if loan losses remain low and interest rate rises above 0-0.25%, then we expect JPM to reach the price target at $110.

Bear Case at $100: We project $100 target price in the case if the economy continues to stall due to COVID-19, interest rate remains at the Fed announced 0-0.25% level, and oil price continues to decline, then JPM stock price is likely to be around $100 level given the loan profits will be negatively impacted.

Overall, we are closely monitoring the potential negative impacts caused by the macro market environment with low interest rate, low oil demand and global economic recession.

REFERENCES

1. Yahoo! Finance
2. Net Advantage
3. HF JPM Financial Model
4. Argus Research on JP Morgan
5. Bloomberg
6. JPM's FY 2019 10K
7. FactSet
8. BEA, Consumer Spending Data
9. Trading Economics, Unemployment rate
10. Wall Street Oasis Investment Banking Fee
11. CNBC, JPM Q22020 Results
12. Statista
13. CSI Market
14. Howandwhat.net, JPM SWOT Analysis
15. Investopedia
16. IBIS World, Investment Banking and Securities Dealing in the US
17. Oil Price.com, Oil Price Charts
18. MarketWatch
19. The Atlantic, Coronavirus Banks Collapse
20. Bureau of Labor Statistics
21. Forbes, JPMorgan Chase Tops Dirty List of 35 Fossil Fuel – Funding Banks
22. JPMorgan & Chase Website
23. CNN Business

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JPMorgan Chase & Co.

Revenue Decomposition- All figures in millions of U.S. Dollar except per share items

Fiscal Years Ending Dec. 31	2017	2018	2019	2020E	2021E	2022E	2023E	2024E
Noninterest revenue	**49,527**	**53,970**	**58,382**	58,541	58,800	59,264	59,940	60,836
Investment banking fees	7,248	7,550	7,501	8,251	9,076	9,984	10,982	12,080
YOY Growth %	12%	4%	-1%	10%	10%	10%	10%	10%
Principal transactions	11,347	12,059	14,018	14,018	14,018	14,018	14,018	14,018
YOY Growth %	-2%	6%	16%	0%	0%	0%	0%	0%
Lending- and deposit-related fees	5,933	6,052	6,369	6,560	6,757	6,960	7,168	7,383
YOY Growth %	3%	2%	5%	3%	3%	3%	3%	3%
Asset management, administration and commissions	15,377	17,118	17,165	16,135	15,167	14,257	13,402	12,597
Total Asset Under Management	2,533,600	2,622,532	2,687,379	2,777,555	2,796,177	2,868,175	2,957,485	3,063,671
As % of Total Asset Under Management	0.61%	0.65%	0.64%	0.58%	0.54%	0.50%	0.45%	0.41%
Average Expense Ratio	2.06%	2.20%	2.25%	2.29%	2.40%	2.48%	2.54%	2.59%
Securities gains / losses	(66)	(395)	258	345	334	323	313	304
As % of Total securities	0%	0%	0%	0%	0%	0%	0%	0%
Mortgage fees and related income	1,616	1,254	2,036	2,056	2,077	2,098	2,119	2,140
YOY Growth %	-35%	-22%	62%	1%	1%	1%	1%	1%
Card income	4,433	4,989	5,304	4,986	4,687	4,405	4,141	3,893
YOY Growth %	-7%	13%	6%	-6%	-6%	-6%	-6%	-6%
Other income	3,639	5,343	5,731	6,189	6,685	7,219	7,797	8,421
YOY Growth %	-4%	47%	7%	8%	8%	8%	8%	8%
Total noninterest revenue	**49,527**	**53,970**	**58,382**	58,541	58,800	59,264	59,940	60,836
Total interest revenues	**50,097**	**55,059**	**57,245**	56,386	55,541	54,707	53,887	53,079
Total net revenue	**99,624**	**109,029**	**115,627**	114,927	114,341	113,972	113,827	113,915

JPMorgan Chase & Co.

Income Statement - All figures in millions of U.S. Dollar except per share items

Fiscal Years Ending Dec. 31	2017	2018	2019	2020E	2021E	2022E	2023E	2024E
Noninterest revenue:	**49,527**	**53,970**	**58,382**	58,541	58,800	59,264	59,940	60,836
Investment banking fees	7,248	7,550	7,501	8,251	9,076	9,984	10,982	12,080
Principal transactions	11,347	12,059	14,018	14,018	14,018	14,018	14,018	14,018
Lending- and deposit-related fees	5,933	6,052	6,369	6,560	6,757	6,960	7,168	7,383
Asset management, administration and commissions	15,377	17,118	17,165	16,135	15,167	14,257	13,402	12,597
Securities gains / losses	(66)	(395)	258	345	334	323	313	304
Mortgage fees and related income	1,616	1,254	2,036	2,056	2,077	2,098	2,119	2,140
Card income	4,433	4,989	5,304	4,986	4,687	4,405	4,141	3,893
Other income	3,639	5,343	5,731	6,189	6,685	7,219	7,797	8,421
Noninterest revenue	**49,527**	**53,970**	**58,382**	58,541	58,800	59,264	59,940	60,836
Net interest revenue	**50,097**	**55,059**	**57,245**	56,386	55,541	54,707	53,887	53,079
Total net revenue	**99,624**	**109,029**	**115,627**	**114,927**	**114,341**	**113,972**	**113,827**	**113,915**
Provision for credit losses	(5,290)	(4,871)	(5,585)	(6,220)	(6,928)	(7,716)	(8,593)	(9,571)
Noninterest expenses								
Compensation expense	(31,009)	(33,117)	(34,155)	(35,362)	(36,612)	(37,906)	(39,246)	(40,633)
Occupancy expense	(3,723)	(3,952)	(4,322)	(4,452)	(4,585)	(4,723)	(4,864)	(5,010)
Technology, communications and equipment expense	(7,706)	(8,802)	(9,821)	(11,022)	(12,369)	(13,882)	(15,579)	(17,484)
Professional and outside services	(6,840)	(8,502)	(8,533)	(9,013)	(9,519)	(10,055)	(10,620)	(11,217)
Marketing	(2,900)	(3,290)	(3,579)	(3,841)	(4,123)	(4,425)	(4,749)	(5,097)
Depreciation and amortization expense	(6,179)	(7,791)	(8,368)	(3,487)	(3,260)	(3,070)	(2,889)	(2,742)
Cap Ex.	1,923	1,923	1,948	1,048	1,048	543	543	60
Other expense	(6,256)	(5,731)	(5,087)	(4,901)	(4,723)	(4,550)	(4,384)	(4,225)
Total noninterest expense	**(58,434)**	**(63,394)**	**(65,497)**	**(71,030)**	**(74,144)**	**(78,067)**	**(81,789)**	**(86,348)**
Income before income tax expense	35,900	40,764	44,545	37,677	33,269	28,189	23,445	17,996
Income tax expense	(11,459)	(8,290)	(8,114)	(7,912)	(6,987)	(5,920)	(4,923)	(3,779)
Net income / loss	**24,441**	**32,474**	**36,431**	**29,765**	**26,283**	**22,269**	**18,521**	**14,217**
Net income / loss applicable to common stockholders	22,567	30,709	34,642	26,788	23,654	20,042	16,669	12,795
Basic earning per share	6.35	9.04	10.75	8.91	8.34	6.78	7.56	7.56
Basic shares outstanding	3,552	3,396	3,222	3,006	2,837	2,955	3,073	3,192
Share Repurchse	167	182	213	-	118	118	119	119
Cash Dividends Declared	2.12	2.72	3.40	3.39	3.17	2.58	2.87	2.87
Dividend Paid	7,529	9,238	10,953	10,179	8,989	7,616	8,831	9,172
Preferred Stock Dividend Paid	1,663	1,551	1,587	1,589	1,592	1,594	1,597	1,599

JPMorgan Chase & Co.

Income Statement (Quarterly) - All figures in millions of U.S. Dollar except per share items

Fiscal Years Ending Dec. 31	Q4 2019	Q1 2020	Q2 2020	Q3 2020	Q4 2020	Q1 2021	Q2 2021	Q3 2021	Q4 2021	Q1 2022	Q2 2022
Noninterest revenue:	**14,165**	**13,812**	**19,127**	14,989	14,983	15,000	15,051	15,157	15,349	15,680	16,238
Investment banking fees	1,843	1,866	2,850	2,921	2,994	3,069	3,146	3,225	3,305	3,388	3,472
Principal transactions	2,779	2,937	7,621	3,505	3,505	3,505	3,505	3,505	3,505	3,505	3,505
Lending- and deposit-related fees	1,726	1,706	1,431	1,442	1,453	1,463	1,474	1,485	1,497	1,508	1,519
Asset management, administration and commissions	4,347	4,540	4,266	4,202	4,139	4,077	4,016	3,956	3,896	3,838	3,780
Securities gains / losses	123	233	26	43	71	117	193	318	525	866	1,428
Mortgage fees and related income	474	320	917	919	922	924	926	929	931	933	936
Card income	1,381	1,054	974	959	945	931	917	903	890	876	863
Other income	1,492	1,156	1,042	997	955	914	875	838	802	768	735
Noninterest revenue	**14,165**	**13,812**	**19,127**	14,989	14,983	15,000	15,051	15,157	15,349	15,680	16,238
Net interest revenue	**14,166**	**14,439**	**13,853**	**13,645**	**13,441**	**13,239**	**13,040**	**12,845**	**12,652**	**12,462**	**12,275**
Total net revenue	**28,331**	**28,251**	**32,980**	**28,634**	**28,423**	**28,238**	**28,092**	**28,002**	**28,001**	**28,143**	**28,513**
Provision for credit losses	(1,427)	(8,285)	(10,473)	(1,555)	(1,555)	(1,732)	(1,732)	(1,732)	(1,732)	(1,929)	(1,929)
Noninterest expenses											
Compensation expense	(8,088)	(8,895)	(9,509)	(9,593)	(9,678)	(9,763)	(9,850)	(9,937)	(10,024)	(10,113)	(10,202)
Occupancy expense	(1,084)	(1,066)	(1,080)	(1,088)	(1,096)	(1,104)	(1,113)	(1,121)	(1,130)	(1,138)	(1,147)
Technology, communications and equipment expense	(2,585)	(2,578)	(2,590)	(2,669)	(2,751)	(2,835)	(2,921)	(3,011)	(3,103)	(3,198)	(3,295)
Professional and outside services	(2,226)	(2,028)	(1,999)	(2,027)	(2,056)	(2,084)	(2,114)	(2,143)	(2,174)	(2,204)	(2,235)
Marketing	(893)	(859)	(481)	(482)	(483)	(485)	(486)	(487)	(488)	(489)	(491)
Other expense	(1,463)	(1,424)	(1,283)	(1,271)	(1,260)	(1,248)	(1,237)	(1,226)	(1,214)	(1,203)	(1,192)
Total noninterest expense	**(16,339)**	**(16,850)**	**(16,942)**	**(17,131)**	**(17,324)**	**(17,520)**	**(17,720)**	**(17,925)**	**(18,133)**	**(18,346)**	**(18,562)**
Income before income tax expense	10,565	3,116	5,565	9,948	9,545	8,987	8,639	8,345	8,136	7,868	8,022
Income tax expense	(2,045)	(251)	(878)	(2,089)	(2,004)	(1,887)	(1,814)	(1,753)	(1,709)	(1,652)	(1,685)
Net income / loss	**8,520**	**2,865**	**4,687**	**7,859**	**7,540**	**7,099**	**6,825**	**6,593**	**6,428**	**6,216**	**6,337**
Net income / loss applicable to common stockholders	-	-	-	-	-	-	-	-	-	-	-
Basic earning per share	2.58	0.79	1.39	2.61	2.51	2.50	2.41	2.32	2.27	2.10	2.14
Basic shares outstanding	3,084	3,047	3,048	3,006	3,006	2,837	2,837	2,837	2,837	2,955	2,955
Dividend Paid	(3,287)	(3,188)	(3,154)	(2,545)	(2,545)	(2,247)	(2,247)	(2,247)	(2,247)	(1,904)	(1,904)

JPMorgan Chase & Co.

Balance Sheet - All figures in millions of U.S. Dollar except per share items

Fiscal Years Ending Dec. 31	2017	2018	2019	2020E	2021E	2022E	2023E	2024E
Assets								
Cash and due from banks	25,827	22,324	21,704	137,935	166,103	238,855	321,195	412,619
Deposits with banks	404,294	256,469	241,927	261,281	282,184	304,758	329,139	355,470
Federal funds sold and securities purchased under resale agreements	198,422	321,588	249,157	211,783	180,016	153,014	130,062	110,552
Securities borrowed	105,112	111,995	139,758	149,541	160,009	171,210	183,194	196,018
Trading assets included assets pledged	381,844	413,714	411,103	419,325	427,712	436,266	444,991	453,891
Securities included at fair value and assets pledged	249,958	261,828	398,239	385,779	373,709	362,017	350,691	339,719
Loans, net of allowance for loan losses	**917,093**	**971,109**	**946,646**	**942,530**	**942,618**	**942,673**	**942,695**	**942,682**
Loans	930,697	984,554	959,769	959,769	959,769	959,769	959,769	959,769
Allowance for loan losses	(13,604)	(13,445)	(13,123)	(17,239)	(17,151)	(17,096)	(17,074)	(17,087)
Accrued interest and accounts receivable	67,729	73,200	72,861	69,567	69,212	68,989	68,901	68,954
Premises and equipment	14,159	14,934	25,813	16,397	11,862	8,059	4,446	1,497
Goodwill, MSRs and other intangible assets	54,392	54,349	53,341	53,341	53,341	53,341	53,341	53,341
Other assets included at fair value and assets pledged	114,770	121,022	126,830	130,075	129,411	128,994	128,830	128,929
Total assets	**2,533,600**	**2,622,532**	**2,687,379**	**2,777,555**	**2,796,177**	**2,868,175**	**2,957,485**	**3,063,671**
Liabilities								
Deposits	1,443,982	1,470,666	1,562,431	1,609,304	1,657,583	1,707,311	1,758,530	1,811,286
Federal funds purchased and securities loaned or sold under repurchase agreements	158,916	182,320	183,675	202,043	222,247	244,471	268,919	295,810
Short-term borrowings	51,802	69,276	40,920	68,956	68,604	68,383	68,296	68,349
Trading liabilities	123,663	144,773	119,277	149,405	148,643	148,163	147,975	148,089
Accounts payable and other liabilities	189,383	196,710	210,407	211,653	210,573	209,894	209,627	209,788
Beneficial interests issued by consolidated variable interest entities	26,081	20,241	17,841	45,971	45,736	45,589	45,531	45,566
Long-term debt	284,080	282,031	291,498	416,633	419,427	430,226	443,623	459,551
Total liabilities	**2,277,907**	**2,366,017**	**2,426,049**	**2,703,964**	**2,772,813**	**2,854,037**	**2,942,500**	**3,038,439**
Stcoakholders' Equity								
Preferred stock	26,068	26,068	26,993	26,993	26,993	26,993	26,993	26,993
Common stock & Additional Paid-in Capital	94,684	93,267	92,627	93,585	93,768	93,768	93,768	93,768
Retained earnings	177,676	199,202	223,211	242,796	260,090	274,743	284,434	289,479
Accumulated other comprehensive income / loss	(119)	(1,507)	1,569	1,569	1,569	1,569	1,569	1,569
Shares held in RSU Trust, at cost	(21)	(21)	(21)	(21)	(21)	(21)	(21)	(21)
Treasury stock, at cost	(42,595)	(60,494)	(83,049)	(107,964)	(140,353)	(140,353)	(140,353)	(140,353)
Total stockholders' equity	255,693	256,515	261,330	256,959	242,046	256,699	266,390	271,435
Total liabilities and stockholders' equity	**2,533,600**	**2,622,532**	**2,687,379**	**2,777,555**	**2,796,177**	**2,868,175**	**2,957,485**	**3,063,671**

JPMorgan Chase & Co.

Historical Cash Flow Statement- All figures in millions of U.S. Dollar except per share items

Fiscal Years Ending Dec. 31	2017	2018	2019
Net income / loss	24,441	32,474	36,431
Net Change in Operating Activities:			
Provision for credit losses	5,290	4,871	5,585
Depreciation and amortization	6,179	7,791	8,368
Deferred tax expense / benefit	2,312	1,721	949
Other	2,136	2,717	1,996
Originations and purchases of loans held-for-sale	(94,628)	(102,141)	(70,980)
Proceeds from sales, securitizations and paydowns of loans held-for-sale	93,270	93,453	79,182
Net change in:			
Trading assets	5,673	(38,371)	(652)
Securities borrowed	(8,653)	(6,861)	(27,631)
Accrued interest and accounts receivable	(15,868)	(5,849)	(78)
Other assets	4,318	(8,833)	(17,949)
Trading liabilities	(26,256)	18,290	(14,516)
Accounts payable and other liabilities	(8,518)	14,630	(352)
Other operating adjustments	7,803	295	5,693
Net cash provided by / used in operating activities	**(2,501)**	**14,187**	**6,046**
Net change in Investing Activities:			
Deposits with banks	(38,532)	-	-
Federal funds sold and securities purchased under resale agreements	31,448	(123,201)	72,396
Held-to-maturity securities	**2,214**	**(6,423)**	**(10,004)**
Proceeds from paydowns and maturities	4,563	2,945	3,423
Purchases	(2,349)	(9,368)	(13,427)
Available-for-sale securities	**41,009**	**(11,623)**	**(119,768)**
Proceeds from paydowns and maturities	56,117	37,401	52,200
Proceeds from sales	90,201	46,067	70,181
Purchases	(105,309)	(95,091)	(242,149)
Proceeds from sales and securitizations of loans held-for-investment	15,791	29,826	62,095
Other changes in loans, net	(61,650)	(81,586)	(53,697)
All other investing activities, net	**(563)**	**(4,986)**	**(5,035)**
Net cash used in / provided by investing activities	**(10,283)**	**(197,993)**	**(54,013)**
Net Change in Financing Activities:			
Deposits	57,022	26,728	101,002
Federal funds purchased and securities loaned or sold under repurchase agreements	(6,739)	23,415	1,347
Short-term borrowings	-	-	(28,561)
Beneficial interests issued by consolidated variable interest entities	(1,377)	1,712	4,289
Proceeds from long-term borrowings	56,271	71,662	61,085
Payments of long-term borrowings	(83,079)	(76,313)	(69,610)
Proceeds from issuance of preferred stock	1,258	1,696	5,000
Redemption of preferred stock	(1,258)	(1,696)	(4,075)
Treasury stock purchased	(15,410)	(19,983)	(24,001)
Dividends paid	(8,993)	(10,109)	(12,343)
All other financing activities, net	**407**	**(1,430)**	**(1,146)**
Net cash provided by / used in financing activities	**14,642**	**34,158**	**32,987**
Effect of exchange rate changes on cash and due from banks	96	(2,863)	(182)
Net decrease / increase in cash and due from banks	1,954	(152,511)	(15,162)
Cash and due from banks at the beginning of the period	23,873	431,304	278,793
Cash and due from banks at the end of the period	**25,827**	**278,793**	**263,631**
Supplemental disclosure			
Cash interest paid	(14,153)	(21,152)	(29,918)
Cash income taxes paid / refunded, net	(4,325)	(3,542)	(5,624)

JPMorgan Chase & Co.

Forecasted Cash Flow Statement- All figures in millions of U.S. Dollar except per share items

Fiscal Years Ending Dec. 31	2020E	2021E	2022E	2023E	2024E
Net income / loss	29,765	26,283	22,269	18,521	14,217
Adjustments to reconcile net income to net cash provided by operating activities:					
Add: Depreciation and amortization	(3,487)	(3,260)	(3,070)	(2,889)	(2,742)
Net change in:					
Trade assets	(8,222)	(8,387)	(8,554)	(8,725)	(8,900)
Accrued interest and accounts receivable	3,294	355	223	88	(53)
Other assets	(3,245)	663	418	164	(99)
Trading liabilities	30,128	(762)	(480)	(188)	114
Accounts payable and other liabilities	1,246	(1,080)	(679)	(267)	161
Cash Flows From Operating Activities	**49,478**	**13,813**	**10,127**	**6,703**	**2,698**
Cash Flows From Investing Activities					
Net Change in:					
Deposits with banks	19,354	20,902	22,575	24,381	26,331
Federal funds sold and securities purchased under resale agreements	(37,374)	(31,768)	(27,002)	(22,952)	(19,509)
Securities borrowed	9,783	10,468	11,201	11,985	12,824
Securities included at fair value and assets pledged	(12,460)	(12,070)	(11,692)	(11,326)	(10,972)
Investment securities	12,460	12,070	11,692	11,326	10,972
Loans	4,116	(88)	(55)	(22)	13
Premises and equipment	(16,397)	(11,862)	(8,059)	(4,446)	(1,497)
Long term debt	125,135	2,793	10,800	13,396	15,928
Net cash flows from investing activities	**(20,517)**	**(12,347)**	**(1,341)**	**8,946**	**18,162**
Net cash flows from financing activities					
Net Change in:					
Deposits	46,873	48,279	49,727	51,219	52,756
Federal funds purchased and securities loaned or sold under repurchase agreements	18,368	20,204	22,225	24,447	26,892
Goodwill, MSRs, and other intangible assets	-	-	-	-	-
Short-term borrowing	28,036	(352)	(221)	(87)	53
Beneficial interests issued by consolidated VIEs	28,130	(234)	(148)	(58)	35
Treasury stock	(24,915)	(32,389)	(0)	-	-
Shares held in RSU	-	-	-	-	-
Preferred stock	-	-	-	-	-
Common stock & Additional Paid in capital	958	183	-	-	-
Common stock dividends paid	(10,179)	(8,989)	(7,616)	(8,831)	(9,172)
Net cash flows from financing activities	**87,270**	**26,702**	**63,967**	**66,691**	**70,563**
Net decrease / increase in cash and due from banks	116,231	28,168	72,752	82,340	91,424
Cash and due from banks at the beginning of the period	21,704	137,935	166,103	238,855	321,195
Cash and due from banks at the end of the period	137,935	166,103	238,855	321,195	412,619

JPMorgan Chase & Co.

Common Size Income Statement

Fiscal Years Ending Dec. 31	2017	2018	2019	2020E	2021E	2022E	2023E	2024E
Noninterest revenue:	49.71%	49.50%	50.49%	50.94%	51.43%	52.00%	52.66%	53.40%
Investment banking fees	7.28%	6.92%	6.49%	7.18%	7.94%	8.76%	9.65%	10.60%
Principal transactions	11.39%	11.06%	12.12%	12.20%	12.26%	12.30%	12.32%	12.31%
Lending- and deposit-related fees	5.96%	5.55%	5.51%	5.71%	5.91%	6.11%	6.30%	6.48%
Asset management, administration and commissions	15.44%	15.70%	14.85%	14.04%	13.26%	12.51%	11.77%	11.06%
Securities gains / losses	-0.07%	-0.36%	0.22%	0.30%	0.29%	0.28%	0.28%	0.27%
Mortgage fees and related income	1.62%	1.15%	1.76%	1.79%	1.82%	1.84%	1.86%	1.88%
Card income	4.45%	4.58%	4.59%	4.34%	4.10%	3.87%	3.64%	3.42%
Other income	3.65%	4.90%	4.96%	5.39%	5.85%	6.33%	6.85%	7.39%
Noninterest revenue	49.71%	49.50%	50.49%	50.94%	51.43%	52.00%	52.66%	53.40%
Net interest income	50.29%	50.50%	49.51%	49.06%	48.57%	48.00%	47.34%	46.60%
Total net revenue	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Provision for credit losses	-5.31%	-4.47%	-4.83%	-5.41%	-6.06%	-6.77%	-7.55%	-8.40%
Noninterest expenses								
Compensation expense	-31.13%	-30.37%	-29.54%	-30.77%	-32.02%	-33.26%	-34.48%	-35.67%
Occupancy expense	-3.74%	-3.62%	-3.74%	-3.87%	-4.01%	-4.14%	-4.27%	-4.40%
Technology, communications and equipment expense	-7.74%	-8.07%	-8.49%	-9.59%	-10.82%	-12.18%	-13.69%	-15.35%
Professional and outside services	-6.87%	-7.80%	-7.38%	-7.84%	-8.33%	-8.82%	-9.33%	-9.85%
Marketing	-2.91%	-3.02%	-3.10%	-3.34%	-3.61%	-3.88%	-4.17%	-4.47%
Depreciation and amortization expense	-6.20%	-7.15%	-7.24%	-3.03%	-2.85%	-2.69%	-2.54%	-2.41%
Cap Ex.	1.93%	1.76%	1.68%	0.91%	0.92%	0.48%	0.48%	0.05%
Other expense	-6.28%	-5.26%	-4.40%	-4.26%	-4.13%	-3.99%	-3.85%	-3.71%
Total noninterest expense	-58.65%	-58.14%	-56.65%	-61.80%	-64.84%	-68.50%	-71.85%	-75.80%
Net income / loss	24.53%	29.78%	31.51%	25.90%	22.99%	19.54%	16.27%	12.48%
Net income / loss applicable to common stockholders	22.65%	28.17%	29.96%	23.31%	20.69%	17.59%	14.64%	11.23%

JPMorgan Chase & Co.

Common Size Balance Sheet - as a % of total assets

Fiscal Years Ending Dec. 31	2017	2018	2019	2020E	2021E	2022E	2023E	2024E
Assets								
Cash and due from banks	1.02%	0.85%	0.81%	4.97%	5.94%	8.33%	10.86%	13.47%
Deposits with banks	15.96%	9.78%	9.00%	9.41%	10.09%	10.63%	11.13%	11.60%
Federal funds sold and securities purchased under resale agreements	7.83%	12.26%	9.27%	7.62%	6.44%	5.33%	4.40%	3.61%
Securities borrowed	4.15%	4.27%	5.20%	5.38%	5.72%	5.97%	6.19%	6.40%
Trading assets included assets pledged	15.07%	15.78%	15.30%	15.10%	15.30%	15.21%	15.05%	14.82%
Securities included at fair value and assets pledged	9.87%	9.98%	14.82%	13.89%	13.37%	12.62%	11.86%	11.09%
Loans, net of allowance for loan losses	36.20%	37.03%	35.23%	33.93%	33.71%	32.87%	31.87%	30.77%
Loans	36.73%	37.54%	35.71%	34.55%	34.32%	33.46%	32.45%	31.33%
Allowance for loan losses	-0.54%	-0.51%	-0.49%	-0.62%	-0.61%	-0.60%	-0.58%	-0.56%
Accrued interest and accounts receivable	2.67%	2.79%	2.71%	2.50%	2.48%	2.41%	2.33%	2.25%
Premises and equipment	0.56%	0.57%	0.96%	0.59%	0.42%	0.28%	0.15%	0.05%
Goodwill, MSRs and other intangible assets	2.15%	2.07%	1.98%	1.92%	1.91%	1.86%	1.80%	1.74%
Other assets included at fair value and assets pledged	4.53%	4.61%	4.72%	4.68%	4.63%	4.50%	4.36%	4.21%
Total assets	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Liabilities								
Deposits	56.99%	56.08%	58.14%	57.94%	59.28%	59.53%	59.46%	59.12%
Federal funds purchased and securities loaned or sold under repurchase agreements	6.27%	6.95%	6.83%	7.27%	7.95%	8.52%	9.09%	9.66%
Short-term borrowings	2.04%	2.64%	1.52%	2.48%	2.45%	2.38%	2.31%	2.23%
Trading liabilities	4.88%	5.52%	4.44%	5.38%	5.32%	5.17%	5.00%	4.83%
Accounts payable and other liabilities	7.47%	7.50%	7.83%	7.62%	7.53%	7.32%	7.09%	6.85%
Beneficial interests issued by consolidated variable interest entities	1.03%	0.77%	0.66%	1.66%	1.64%	1.59%	1.54%	1.49%
Long-term debt	11.21%	10.75%	10.85%	15.00%	15.00%	15.00%	15.00%	15.00%
Total liabilities	89.91%	90.22%	90.28%	90.75%	91.34%	91.05%	90.99%	91.14%
Stcoakholders' Equity								
Preferred stock	1.03%	0.99%	1.00%	0.97%	0.97%	0.94%	0.91%	0.88%
Common stock & Additional Paid-in Capital	3.74%	3.56%	3.45%	3.37%	3.35%	3.27%	3.17%	3.06%
Retained earnings	7.01%	7.60%	8.31%	8.74%	9.30%	9.58%	9.62%	9.45%
Accumulated other comprehensive income / loss	0.00%	-0.06%	0.06%	0.06%	0.06%	0.05%	0.05%	0.05%
Shares held in RSU Trust, at cost	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Treasury stock, at cost	-1.68%	-2.31%	-3.09%	-3.89%	-5.02%	-4.89%	-4.75%	-4.58%
Total stockholders' equity	10.09%	9.78%	9.72%	9.25%	8.66%	8.95%	9.01%	8.86%
Total liabilities and stockholders' equity	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

JPMorgan Chase & Co.

Value Driver Estimation

Fiscal Years Ending Dec. 31	2017	2018	2019	2020E	2021E	2022E	2023E	2024E
Net Income	24,441	32,474	36,431	29,765	26,283	22,269	18,521	14,217
Total Shareholders Equity	255,693	256,515	261,330	256,959	242,046	256,699	266,390	271,435
Return on Equity	9.62%	12.70%	14.20%	11.39%	10.23%	9.20%	7.22%	5.34%
FCFE								
Net Income	24,441	32,474	36,431	29,765	26,283	22,269	18,521	14,217
-Change in Total Assets	(42,628)	(88,932)	(64,847)	(90,176)	(18,622)	(71,999)	(89,309)	(106,186)
+Change in Total Liabilities	41,125	88,110	60,032	277,915	68,849	81,224	88,463	95,938
FCFE	22,938	31,652	31,616	217,504	76,510	31,494	17,675	3,969
Equity Economic Profit (EP)								
Beg. Total Shareholder Equity	254,190	255,693	256,515	261,330	256,959	242,046	256,699	266,390
* ROE -Re	2.99%	6.08%	7.58%	5.15%	5.15%	5.15%	5.15%	5.15%
Equity EP	7,611	15,545	19,447	13,458	13,233	12,465	13,220	13,719

JPMorgan Chase & Co.

Weighted Average Cost of Capital (WACC) Estimation

Cost of Equity:

Risk-Free Rate	0.75%
Beta	1.14
Equity Risk Premium	5.15%
Cost of Equity	**6.62%**

JPMorgan Chase & Co.

Discounted Cash Flow (DCF) and Economic Profit (EP) Valuation Models

Key Inputs:	
CV Growth	0.25%
CV Net Income	$ 14,217
CV ROE	5%
Cost of Equity	6.62%
Net Income	36,431
Beg. Total shareholder equity	261,330

Fiscal Years Ending Dec. 31	**2020E**	**2021E**	**2022E**	**2023E**	**2024E**
DCF Model:					
Free Cash Flow to Equity (FCFE)	217,504	76,510	31,494	17,675	3,969
Periods Discounting	1	2	3	4	4
PV of FCFE	203,997	67,303	25,984	13,677	3,071
Value of Equity:	314,032				
Less: PV (ESOP)	2,997				
PV (Equity)	311,035				
Shares Outstanding	3,222				
Intrinsic Value of Last FYE	97				
Implied Price as of Today	$ 99.10				
Equity EP Model:					
Economic Profit (EP)	13,458	13,233	12,465	13,220	13,719
Continuing Value (CV)					205,178
PV of EP	12,623	11,641	10,284	10,230	158,767
Total PV of EP	52,702				
Beg. TSE	261,330				
Value of Equity	314,032				
- ESOP	2,997				
PV Equity	**311,035**				
Shares Outstanding	3,222				
Intrinsic Value of Last FYE	$ 96.55				
Implied Price as of Today	$ 99.10				

JPMorgan Chase & Co.

Dividend Discount Model (DDM) or Fundamental P/E Valuation Model

Fiscal Years Ending Dec. 31	2020E	2021E	2022E	2023E	2024E
EPS	$ 8.91	$ 8.34	$ 6.78	$ 7.56	$ 7.56
Key Assumptions					
CV Growth	0.25%				
CV ROE	5.34%				
Cost of Equity	6.62%				
CV EPS	$ 7.56				
Future Cash Flows					
P/E Multiple (CV Year)					14.96
EPS (CV Year)					$ 7.56
Future Stock Price					113.12
Dividends Per Share	3.39	3.17	2.58	2.87	2.87
Discounted Cash Flows	3.18	2.79	2.13	2.22	87.53
Intrinsic Value as of Last FYE	$ 97.85				
Implied Price as of Today	$ 100.43				

JPMorgan Chase & Co.

Relative Valuation Models

Ticker	Company	Price	EPS 2020E	EPS 2021E	P/E 20	P/E 21
BAC	Bank of America	$25.66	$1.57	$2.14	16.34	11.99
C	Citigroup	$51.50	$3.17	$6.37	16.25	8.08
UBS	UBS Group	$11.20	$1.15	$1.14	9.74	9.82
MS	Morgan Stanley	$52.75	$5.11	$5.02	10.32	10.51
WFC	Wells Fargo	$25.66	$0.06	$2.09	427.67	12.28
GS	Goldman Sachs Group	$207.56	$15.01	$23.01	13.83	9.02
				Average	**12.53**	**10.28**
JPM	JPMorgan Chase & Co.	$101.70	8.91	8.34	11.4	12.2

Implied Relative Value:

P/E (EPS20)	**$**	**111.71**
P/E (EPS21)	**$**	**85.76**

JPMorgan Chase & Co.

Key Management Ratios

Fiscal Years Ending Dec. 31	2017	2018	2019	2020E	2021E	2022E	2023E	2024E
Liquidity Ratios:								
Current ratio (current assets/current liabilities)	92.77%	92.86%	92.18%	88.72%	85.89%	83.60%	81.78%	80.37%
Quick ratio (cash+securities+receivables)/current liabilities)	26.38%	26.94%	35.82%	41.84%	42.22%	45.22%	48.62%	52.36%
Asset-Management Ratios:								
Total asset turnover (total revenue/avg assets)	1.71%	3.51%	2.47%	3.36%	0.67%	2.57%	3.11%	3.59%
Deposit Growth (Total deposits change/ total deposit)	10.53%	-36.56%	-5.67%	8.00%	8.00%	8.00%	8.00%	8.00%
Loan Growth (net loan1-net loan 0)/net loan0)	4.10%	5.89%	-2.52%	-0.43%	0.01%	0.01%	0.00%	0.00%
Financial Leverage Ratios:								
Loan to assets Ratio (total loan/total assets)	36.20%	37.03%	35.23%	33.93%	33.71%	32.87%	31.87%	30.77%
Loans to deposits ratio (net loans & leases)/total deposits)	64.51%	67.09%	66.83%	58.57%	56.87%	55.21%	53.61%	52.04%
Profitability Ratios:								
Efficiency Ratio (Non-Interest Expense/total Income)	-58.65%	-58.14%	-56.65%	-61.80%	-64.84%	-68.50%	-71.85%	-75.80%
ROA (net income/ avg assets)	0.97%	1.26%	1.37%	1.09%	0.94%	0.79%	0.64%	0.47%
ROE (net income/ avg total equity)	9.59%	12.68%	14.07%	11.49%	10.53%	8.93%	7.08%	5.29%
Payout Policy Ratios:								
Dividend Payout Ratio (Dividend/EPS)	33.39%	30.09%	31.63%	38.00%	38.00%	38.00%	38.00%	38.00%
Retention Ratio (1-Payout Ratio)	66.61%	69.91%	68.37%	62.00%	62.00%	62.00%	62.00%	62.00%

JPMorgan Chase & Co.

Present Value of Operating Lease Obligations

Fiscal Years Ending Dec. 31		2014	2015	2016	2017	2018	2019
Year	1	1,722	1,668	1,598	1,526	1,561	1,604
Year	2	3,216	3,094	2,780	2,750	2,840	2,704
Year	3	3,216	3,094	2,780	2,750	2,840	2,704
Year	4	2,402	2,388	2,036	184	2,111	2,025
Year	5	2,402	2,388	2,036	3,757	2,110	2,025
Thereafter		5,101	4,679	3,701	3,757	4,480	105,857
Total Minimum Payments		18,059	17,311	14,931	14,724	15,942	116,919
Less: Cumulative Interest		465	440	367	366	409	19,420
PV of Minimum Payments		**17,594**	**16,871**	**14,564**	**14,358**	**15,533**	**97,499**
Implied Interest in Year 1 Payment			**114.4**	**109.7**	**94.7**	**93.3**	**101.0**
Pre-Tax Cost of Debt		0.65%	0.65%	0.65%	0.65%	0.65%	0.65%
Years Implied by Year 6 Payment		2.1	2.0	1.8	1.0	2.1	52.3
Expected Obligation in Year 6 & Beyond		2402	2388	2036	3757	2110	2025
Present Value of Lease Payments							
PV of Year 1		1710.9	1657.2	1587.7	1516.1	1550.9	1593.6
PV of Year 2		3174.6	3054.2	2744.2	2714.6	2803.4	2669.2
PV of Year 3		3154.1	3034.4	2726.5	2697.1	2785.3	2652.0
PV of Year 4		2340.5	2326.9	1983.9	179.3	2057.0	1973.2
PV of Year 5		2325.4	2311.9	1971.1	3637.2	2042.7	1960.5
PV of 6 & beyond		4888.7	4486.7	3550.5	3613.8	4293.6	86650.6
Capitalized PV of Payments		17594.3	16871.3	14563.9	14358.1	15533.0	97499.0

JPMorgan Chase & Co.

Effects of ESOP Exercise and Share Repurchases on Common Stock Account and Number of Shares Outstanding -All figures in millions

Number of Options Outstanding (shares):	55.270
Average Time to Maturity (years):	1.90
Expected Annual Number of Options Exercised:	29
Current Average Strike Price:	$ 41.36
Cost of Equity:	6.62%
Current Stock Price:	$101.70

Fiscal Years Ending Dec. 31	**2020E**	**2021E**
Increase in Shares Outstanding:	29	12
Average Strike Price:	$ 41.36	$ 41.36
Increase in Common Stock Account:	**1,203**	**481**
Change in Treasury Stock	24,915	32,389
Expected Price of Repurchased Shares:	$ 101.70	$ 108.43
Number of Shares Repurchased:	**245**	**299**
Shares Outstanding (beginning of the year)	3,222	3,006
Plus: Shares Issued Through ESOP	29	12
Less: Shares Repurchased in Treasury	245	299
Shares Outstanding (end of the year)	**3,006**	**2,719**

JPMorgan Chase & Co.

Valuation of Options Granted under ESOP - All figures in millions

Current Stock Price	$101.70	
Risk Free Rate	0.75%	
Current Dividend Yield	3.60%	
Annualized St. Dev. of Stock Returns	23.29%	Implied volatility

Range of Outstanding Options	Number of Shares	Average Exercise Price	Average Remaining Life (yrs)	B-S Option Price	Value of Options Granted
Range 1	55.27	41.36	1.90	$ 54.23	$ 2,997
Total	55.27	$ 41.36	1.90	$ 60.93	**$ 2,997**

JPMorgan Chase & Co.

Sensitivity Tables

DCF:

Beta (rows: Equity Risk Premium)

99.10	0.74	0.84	0.94	1.04	***1.14***	1.24	1.34	1.44	1.54	1.64
4.75%	100.56	100.26	99.96	99.66	99.37	99.08	98.80	98.52	98.24	97.96
4.85%	100.52	100.21	99.90	99.60	99.30	99.01	98.72	98.43	98.15	97.87
4.95%	100.47	100.15	99.84	99.54	99.23	98.93	98.64	98.35	98.06	97.77
5.05%	100.42	100.10	99.78	99.47	99.16	98.86	98.56	98.26	97.97	97.68
5.15%	100.37	100.05	99.73	99.41	**99.10**	98.79	98.48	98.18	97.88	97.59
5.25%	100.33	100.00	99.67	99.34	99.03	98.71	98.40	98.09	97.79	97.49
5.35%	100.28	99.94	99.61	99.28	98.96	98.64	98.32	98.01	97.70	97.40
5.45%	100.23	99.89	99.55	99.22	98.89	98.56	98.24	97.93	97.62	97.31
5.55%	100.19	99.84	99.49	99.15	98.82	98.49	98.17	97.85	97.53	97.22
5.65%	100.14	99.79	99.44	99.09	98.75	98.42	98.09	97.76	97.44	97.13

CV Growth (rows: Cost of Equity)

99.10	0.05%	0.10%	0.15%	0.20%	**0.25%**	0.30%	0.35%	0.40%	0.45%	0.50%
6.52%	99.16	99.16	99.16	99.16	99.16	99.16	99.16	99.16	99.16	99.16
6.62%	99.09	99.09	99.10	99.10	99.10	99.10	99.10	99.10	99.10	99.10
6.72%	99.03	99.03	99.03	99.03	99.04	99.04	99.04	99.04	99.04	99.04
6.82%	98.97	98.97	98.97	98.97	98.97	98.98	98.98	98.98	98.98	98.98
6.62%	99.09	99.09	99.09	99.09	**99.10**	99.10	99.10	99.10	99.10	99.10
6.72%	99.03	99.03	99.03	99.03	99.04	99.04	99.04	99.04	99.04	99.04
6.82%	98.97	98.97	98.97	98.97	98.97	98.98	98.98	98.98	98.98	98.98
6.92%	98.91	98.91	98.91	98.91	98.91	98.92	98.92	98.92	98.92	98.92
7.02%	98.85	98.85	98.85	98.85	98.85	98.86	98.86	98.86	98.86	98.86
7.12%	98.79	98.79	98.79	98.79	98.80	98.80	98.80	98.80	98.80	98.80

Investment banking fee grwoth for FY 20 (rows: Techonology,communications and equipment expense growth rate for FY 20)

99.10	6.00%	7.00%	8.00%	9.00%	**10.00%**	11.00%	12.00%	13.00%	14.00%	15.00%
11.73%	98.43	98.61	98.79	98.97	99.16	99.36	99.56	99.77	99.98	100.19
11.83%	98.42	98.59	98.78	98.96	99.15	99.35	99.55	99.75	99.96	100.18
11.93%	98.40	98.58	98.76	98.95	99.14	99.33	99.53	99.74	99.95	100.17
12.03%	98.39	98.57	98.75	98.93	99.12	99.32	99.52	99.72	99.93	100.15
12.13%	98.38	98.55	98.73	98.92	99.11	99.30	99.50	99.71	99.92	100.14
12.23%	98.36	98.54	98.72	98.90	**99.10**	99.29	99.49	99.70	99.91	100.12
12.33%	98.35	98.52	98.70	98.89	99.08	99.28	99.48	99.68	99.89	100.11
12.43%	98.33	98.51	98.69	98.88	99.07	99.26	99.46	99.67	99.88	100.09
12.53%	98.32	98.50	98.68	98.86	99.05	99.25	99.45	99.65	99.86	100.08
12.63%	98.31	98.48	98.66	98.85	99.04	99.23	99.43	99.64	99.85	100.07
12.64%	98.30	98.48	98.66	98.85	99.04	99.23	99.43	99.64	99.85	100.07

Cost of Equity (rows: Dividend Yield)

99.10	6.52%	6.62%	6.72%	6.82%	**6.62%**	6.72%	6.82%	6.92%	7.02%	7.12%
3.10%	99.56	99.50	99.44	99.38	99.50	99.44	99.38	99.32	99.26	99.20
3.20%	99.48	99.42	99.36	99.30	99.42	99.36	99.30	99.24	99.18	99.12
3.30%	99.40	99.34	99.28	99.22	99.34	99.28	99.22	99.16	99.10	99.04
3.40%	99.32	99.26	99.20	99.14	99.26	99.20	99.14	99.08	99.02	98.96
3.50%	99.24	99.18	99.12	99.06	99.18	99.12	99.06	99.00	98.94	98.88
3.60%	99.16	99.10	99.04	98.97	**99.10**	99.04	98.97	98.91	98.85	98.80
3.70%	99.08	99.01	98.95	98.89	99.01	98.95	98.89	98.83	98.77	98.71
3.80%	98.99	98.93	98.87	98.81	98.93	98.87	98.81	98.75	98.69	98.63
3.90%	98.91	98.85	98.79	98.73	98.85	98.79	98.73	98.67	98.61	98.55
4.00%	98.83	98.77	98.71	98.65	98.77	98.71	98.65	98.59	98.53	98.47
4.10%	98.75	98.69	98.63	98.57	98.69	98.63	98.57	98.51	98.45	98.39

DDM:

CV EPS (rows: CV ROE)

100.43	$ 7.12	$ 7.25	$ 7.35	$ 7.45	**$ 7.56**	$ 7.65	$ 7.75	$ 7.85	$ 7.95	$ 8.05
4.84%	94.76	96.30	97.48	98.66	99.97	101.02	102.21	103.39	104.57	105.75
4.94%	94.85	96.39	97.57	98.76	100.07	101.12	102.31	103.49	104.67	105.86
5.04%	94.94	96.48	97.67	98.85	100.16	101.22	102.40	103.59	104.77	105.96
5.14%	95.03	96.57	97.75	98.94	100.26	101.31	102.50	103.68	104.87	106.06
5.24%	95.11	96.65	97.84	99.03	100.34	101.40	102.59	103.77	104.96	106.15
5.34%	95.19	96.73	97.92	99.11	**100.43**	101.48	102.67	103.86	105.05	106.24
5.44%	95.26	96.81	98.00	99.19	100.51	101.57	102.76	103.95	105.14	106.32
5.54%	95.34	96.88	98.08	99.27	100.59	101.65	102.84	104.03	105.22	106.41
5.64%	95.41	96.96	98.15	99.34	100.66	101.72	102.91	104.11	105.30	106.49
5.74%	95.48	97.03	98.22	99.41	100.74	101.80	102.99	104.18	105.37	106.57
5.84%	95.54	97.09	98.29	99.48	100.81	101.87	103.06	104.25	105.45	106.64