The Henry Fund
Henry B. Tippie College of Business
Gregory Nebel [greg-nebel@uiowa.edu]

JPMorgan Chase & Co. (JPM)

October 22, 2022

Universal Banks – Financial Institutions

Stock Rating **BUY**

Investment Thesis

We recommend a buy rating for JPMorgan with a potential upside of 16%. JPMorgan is the most diversified bank on Wall Street. The bank's scale and diversification allow it to mitigate risk in an economic downturn. Additionally, the bank has a high return on equity to cost of equity spread, a good equity cushion, and low-efficiency ratio compared to its peers. Therefore, we see JPMorgan as having a defensive moat within its peer group.

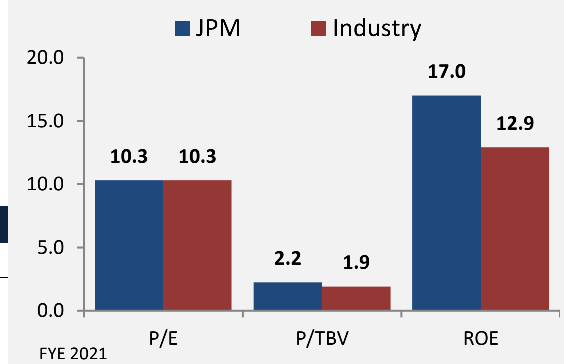
Drivers of Thesis

- JPMorgan's size and diversification have created economies of scale and scope, resulting in reduced costs and the lowest efficiency ratio of its peer group of 60.8%, and 0.6% lower than its closest peer.
- JPMorgan is the most diversified bank in the US, with strong interest and noninterest-generating assets that allow for stability in any interest rate environment, resulting in a lower beta and cost of equity than its peers.
- Rising rates will increase net interest revenues, and we expect the revenue segment to grow by 23.8% in 2022. Additionally, we forecast an 8% increase in deposit assets as more assets may be transferred to cash during a contraction.

Risks to Thesis

- We expect JPMorgan to experience a nearly 40% decline in investment banking revenues in 2022, and the bank has increased its hiring activity. The bank may be unable to afford the increase in compensation expense and let go of some of its employees.
- Much of JPMorgan's culture and reputation stems from its Chairman and CEO, Jamie Dimon. If Jamie Dimon were to retire, the bank could have issues hiring and retaining new talent.

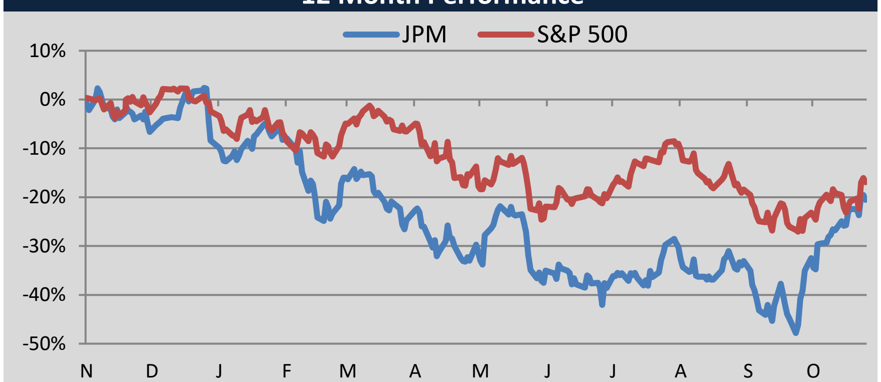
Target Price	$122-142
Henry Fund DCF	$132
Henry Fund DDM	$143
Relative Multiple	$122
Price Data	
Current Price	$122
52wk Range	$101 – 172
Consensus 1yr Target	$137
Key Statistics	
Market Cap (B)	$358.4
Shares Outstanding (M)	3,022
Institutional Ownership	69.57%
Beta	1.15
Dividend Yield	3.58%
Est. 5yr Growth	0.12%
Price/Earnings (TTM)	10.3
Price/Earnings (FY1)	9.8
Price/TBV	1.9
Price/Book	1.4
Profitability	
Net Interest Margin	90.4%
Profit Margin	39.7%
Tier 1 Capital Ratio	14.7%
RoTE (LTM)	18.0%



Earnings Estimates

Year	2019	2020	2021	2022E	2023E	2024E
EPS	$11.31	$9.45	$16.00	$11.46	$12.74	$13.61
HF est.				$12.01	$12.47	$13.52
growth	*18.3%*	*(16.4%)*	*69.3%*	*(24.9%)*	*3.9%*	*8.4%%*

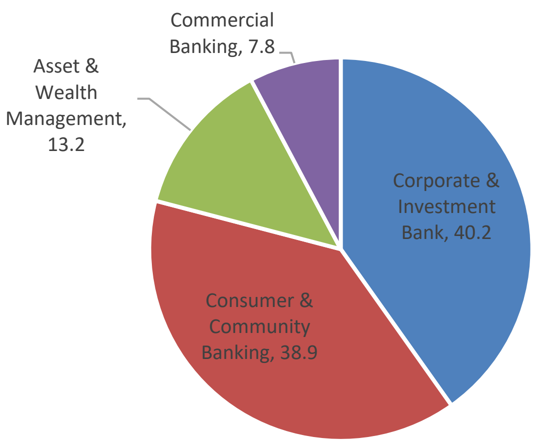
12 Month Performance



Company Description

JPMorgan is a premier financial institution; founded in 1871; it is the third oldest bank in the US. It operates through Corporate and Investment Bank, Consumer and Community Banking, Asset and Wealth Management, and Commercial Banking segments. It primarily competes with other diversified banks in the US. These include Goldman Sachs, Morgan Stanley, Citigroup, and Bank of America.

JPMorgan is a premier financial institution; founded in 1871; it is the third oldest bank in the US. It operates through four segments: Corporate and Investment Bank, Consumer and Community Banking, Asset and Wealth Management, and Commercial Banking. The pie chart below depicts these segmented revenues. The segments listed are measured in non-GAAP revenues.



Source: FactSet

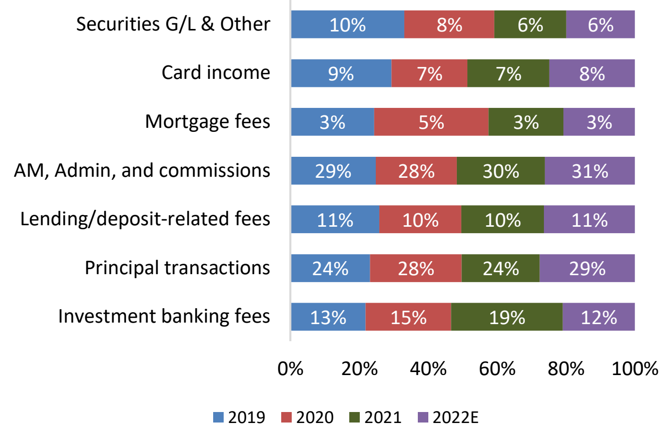
Noninterest Revenue

J.P. Morgan generates revenues through noninterest contracts that include:

- Investment Banking Fees
- Principal Transactions
- Lending and Deposit Related Fees
- Asset Management, Administration, and Commissions
- Mortgage Fees
- Card Income
- Securities Gains/Losses & Other

The following graph depicts each noninterest revenue category as a percent of the total over the 2019 to 2022E period. Noninterest revenue is expected to decline by **7.1%** in 2022, primarily due to a reduction in investment banking fees. Additionally, banks tend to have cyclical revenues and see reductions in lending and higher default probabilities in recessionary environments.

Noninterest Revenue Breakdown



Investment Banking Fees

Investment banking revenue is generated through debt and equity underwriting and advisory fees. Fee revenue for this stream hit a record year in 2021 but is expected to decline drastically due to a decline in demand for underwriting and advisory services. We expect J.P. Morgan to see a **40%** decline in investment banking revenue for FYE 2022. We foresee M&A activity picking back up in 2023 as rate increases start to slow down. We forecast revenues to grow by 7%, 5%, and 4% in 2023, 2024, and 2025, respectively.

Principal Transactions

Principal transactions involve revenue generated by the firm's market-making activities. J.P. Morgan receives revenue from the bid-ask spread of the securities for which it matches market participants. Additionally, the firm generates revenues through realized and unrealized gains/losses of trading securities. Trading securities include debt, equity, derivatives, and commodities. We expect the revenue segment to grow by **13.5%** in 2022 due to increased trading volumes and profits from increased volatility within the market. The trading gains will likely fall as we head into a recession. Therefore, we expect the revenue stream to decline in 2023.

Lending and Deposit Related Fees

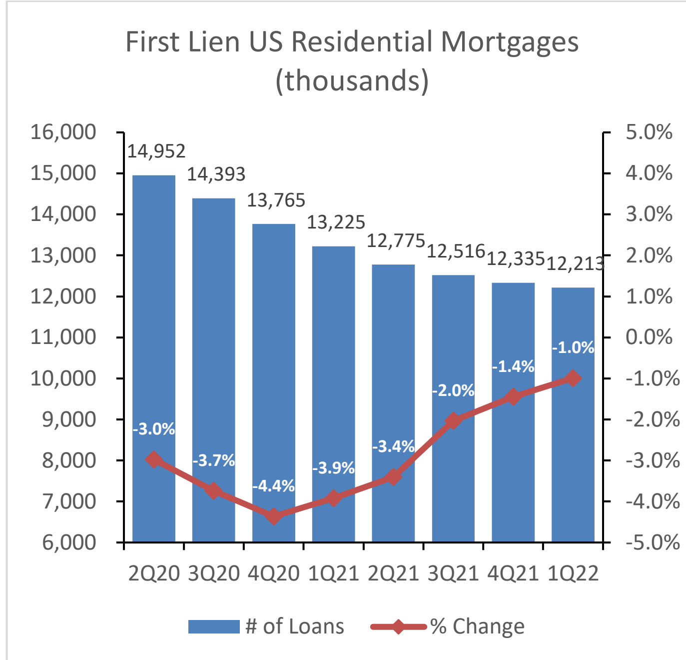
The lending and deposit-related fees revenue stream collects loan-related fees from loan commitments, standby letters of credit, financial guarantees, and other loan servicing activities. Deposit-related fees include overdraft fees, other deposit-related fees, and cash management fees. Deposit-related fees accounted for over **79%** of the category's revenue in 2021 and held a similar share in the prior two years. We expect deposits to increase in 2022 as investors exit positions and hold cash as interest rates rise and asset values fall. However, lending-related fees are expected to decline with increasing interest rates. Therefore, we see the revenue stream growing by **2%** in 2022 and then by 1% in 2023 and 2024.

Asset Management, Administration, and Commissions

J.P. Morgan manages assets on behalf of its clients, including investors in firm-sponsored funds and owners of separately managed investment accounts. The category collects fees on investment management and related services, custody, brokerage services, and other products. Revenues generated within this category will likely decline as more investors shift money out of securities and into cash. Additionally, the category collects performance-related fees, which are expected to be minimal in 2022 and 2023, declining by 5% and 3%, respectively.

Mortgage Fees and Related Income

J.P. Morgan's Consumer and Commercial Banking segment is responsible for providing and servicing mortgages throughout the United States. The revenue category collects home lending production and net servicing revenues. Production revenue includes fees from mortgage loans originating with the intent to sell. The fees also include any risk management activities associated with selling these securities. Net mortgage servicing revenue is collected from servicing third-party mortgage loans. The revenue category experienced immense growth in 2019 and 2020 of 62% and 52%, respectively, as interest rates started to decline in late 2019 and fell to zero in April 2020. Revenues for this segment are expected to decrease by 12.5% and 8% in 2022 and 2023. This is due to the steep rise in mortgage rates, causing lower lending and refinancing activity. The following chart represents the number of first-lien residential mortgages in the US from Q2 2020 to Q1 2022. As depicted, the number of residential mortgages has declined since 2020 and fell over 4% in the fourth quarter of 2020. Although lending activity has declined, home valuations have been slower to adjust due to lingering COVID-driven demand.



Source: OCC

Card Income

The card income category includes interchange and other income from credit and debit card transactions. Additionally, it includes fees collected from processing transactions for merchants. Category revenues also include fees related to card origination and annual fees. The consumer confidence index was reported at 108 in September. We expect confidence to be elevated because employment is high and wages are up. However, we expect confidence to decline as we move into a contraction and layoffs increase. Consumption tends to decrease along with consumer confidence; therefore, there will likely be less opportunity to collect from increased consumption using credit. Alternatively, consumers may have less liquidity to pay down credit card bills, and the bank stands to benefit from fees attached to missed payments. We see category revenues decline by 3% in 2022 but increase modestly after that.

Securities Gains/Losses and Other Noninterest Income

Securities gains/losses consist of realized gains/losses of available-for-sale (AFS) securities. The AFS securities are mostly treasury and various other debt securities. The category realized a loss in 2021 due to repositioning the portfolio. The category is highly volatile and has seen growth or decline of up to 500% in a single period over the last ten years. We forecast the losses to continue into

2022, decreasing by an additional 10%, then returning positive at 150% of its deficit. We expect it to grow at around its 10-year historical average after that.

Other noninterest income consists of operating lease income generated primarily from car loans. These fees can include application, origination, or late payment fees. We expect other noninterest income to decline by 3% in 2023 as car loan origination declines.

Net Interest Income

Net interest revenue is sourced from JPMorgan's interest-bearing assets. These can include deposits with banks, federal funds sold and securities purchased under resale agreements, securities borrowed, trading assets, investment securities, loans, and other. The table below contains our expectations of average rates for each of the stated asset groups.

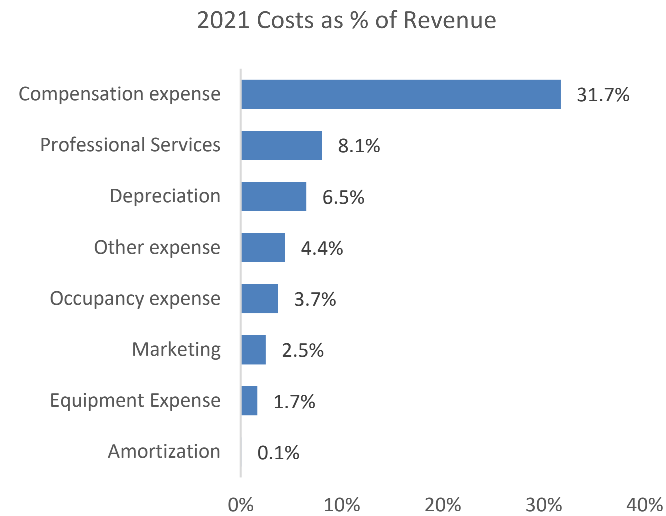
Asset Type	Rate
Repo agreements	2.50%
Securities borrowed	0.25%
Trading assets	3.00%
Investment securities, net of ACL	3.00%
Loan Rate	2.50%

Source: JPMorgan 2021 10-K

Q3 guidance indicated a potential $66,000M in NII in 2022. The street predicts $64,525M, and we anticipate that NII will fall between guidance and street at $65,988[2]. Our estimates are above the street because we likely have larger growth estimates of deposit assets. We grew deposits by an average growth rate of close to 8% over the forecast period. JPM has seen massive growth in deposit assets over the past few years. The deposit balance will likely grow with increased uncertainty in the market and the potential for disinflation. Additionally, we expect a slower recovery in noninterest income but expect to see robust growth in interest income.

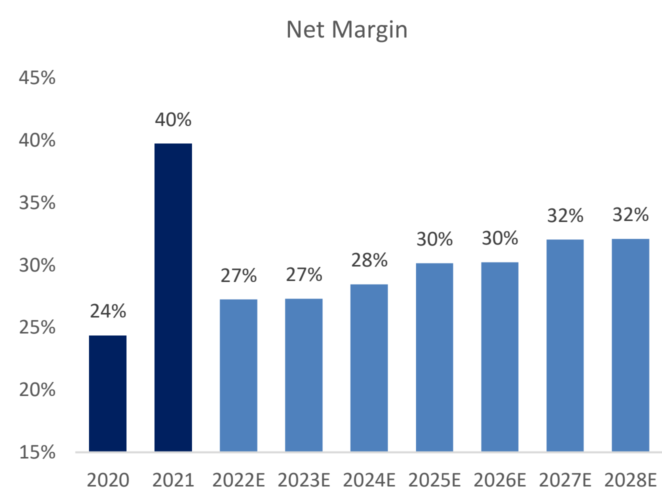
Cost Structure Analysis

The following chart contains the major cost categories as a percent of total revenue, excluding the provision for credit losses account. As depicted, compensation expense is the largest expense account. Banking is a service industry, and human capital drives revenues. Additionally, JPMorgan is a premier bank and attempts to attract and retain top talent by offering competitive compensation. Compensation is also dependent on volume and turnover. We forecast compensation expense as an average percentage of noninterest revenue of approximately 54%.



Source: FactSet

The next most significant expense is the professional and outside service expense. This expense category relates to contractual agreements with third-party services that provide distribution, research, and other services primarily incurred by the bank's asset management division.

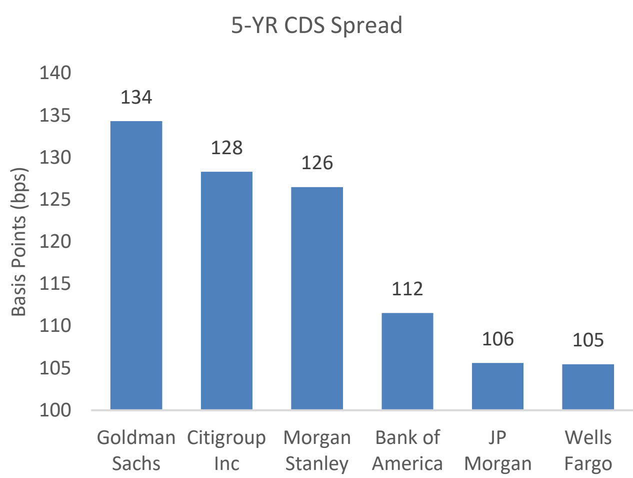


Source: Wsj.com, FactSet

The chart above represents JPMorgan's net margin percentage from 2020 to 2028E. We forecast that the net margin will drop roughly 13% in 2022 due to increased compensation and reduced investment banking fees. We expect the net margin to grow modestly over the forecast period with the firm's noninterest revenues.

Credit Analysis

The following chart depicts JPMorgan's comparable set's current 5-year credit default swap spreads. As shown, Goldman has the highest spread above the corresponding treasury security. This indicates that the market perceives Goldman's corporate debt securities as riskier than its industry counterparts. This is likely due to Goldman's lack of diversification that would otherwise reduce performance risk in poor economic conditions. Bank of America and JPMorgan are the most diversified banks in the comparable set and stand to benefit the most from rising rates. Therefore, their credit risk is priced appropriately compared to their peers.

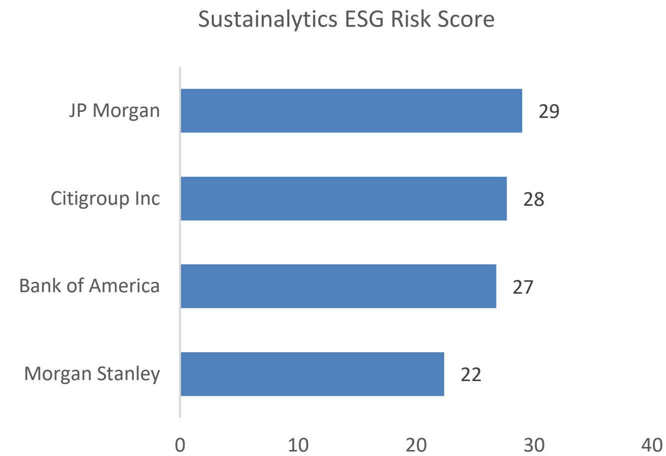


Source: Bloomberg

ESG Analysis

The chart below contains JPMorgan's and its peers' ESG risk scores, excluding Goldman Sachs, as Sustainalytics does not report its score. The risk score is calculated to measure the manageable risk that is not being managed. JPMorgan has the highest risk score among its peers; therefore, its share price is at a higher risk of experiencing adverse effects from a material ESG event.

Many of the larger banks within the industry have been steadfast in increasing diversity, equity, and inclusion programs at their firms and attempting to hire people from diverse backgrounds. Each of the banks in the comparable set has made strides in this area, but Citigroup is the only bank with more female board members than males. However, Citigroup also has a very high ratio of males to females in management positions compared to the other banks.



RECENT DEVELOPMENTS

Recent Earnings Announcement

JPM beat EPS estimates by $0.23 at $3.12 and had revenues of $32.7B, exceeding expectations by $836M. The company attributes its performance to its resilient business model, allowing it to perform well even in down markets. Additionally, the markets segment had record third-quarter revenue of $6.8B, up 8% YoY. Furthermore, JPM ranked number one in retail deposit share and stated that credit metrics were healthy among depositors as net charge-offs remained low[4]. The company also stated that its credit card delinquency rates went up, but only slightly. The delinquency rate was .69% in September, up from the prior two months, but it is still well below pre-pandemic rates, reaching 1.14% in February 2020.

The company expects 2022 net interest revenue to be around $61.5B. We forecast this to be slightly above $62.1B. The difference is attributable to our bullish growth estimates in the volume of deposit assets and trading assets. JPM expects market NII to remain stable over the fourth quarter. However, we expect trading securities to still perform well throughout Q4.

JPMorgan Hires Aaron Iovine

JPMorgan recently hired Aaron Iovine as executive director for digital assets regulatory policy. Aaron previously served as head of policy and regulatory affairs at Celsius Network. This could be seen as a controversial hire because Aaron was employed at Celsius when it filed for bankruptcy.

MARKETS AND COMPETITION

JPMorgan is a diversified global bank specializing in investment banking and market-making activities. Players within the industry compete based on reputation, rates, fees, and human capital. The banking industry is a service industry; therefore, attracting and retaining talent is very important. Compensation is generally the most significant expense for diversified global banks. Rates depend on the macro economy, and fees are also related to the macro economy capital and reputation.

The threat of new entrants is low for diversified global banks as the cost of capital is very high. Scale is necessary for market-making and trading activities and requires mass amounts of financial and human capital. Larger US-based investment banks compete for human capital through compensation and reputation. There is little to no product differentiation between investment banks and diversified global banks. Consequently, the threat of substitution is high.

With little product differentiation, human capital will migrate to where compensation is the highest. This is indicative of a moderate to high power of suppliers. It is better to look at the suppliers within the industry as employees as the suppliers of capital also tend to be the customers.

Overall, the industry is very mature and saturated. Industry operators compete for human capital. Reputation and revenue stream diversification is what differentiates banks. Additionally, scale is necessary for generating significant returns from market-making services. It seems that banks that the best positioned banks in the industry are mature and well diversified across product offerings.

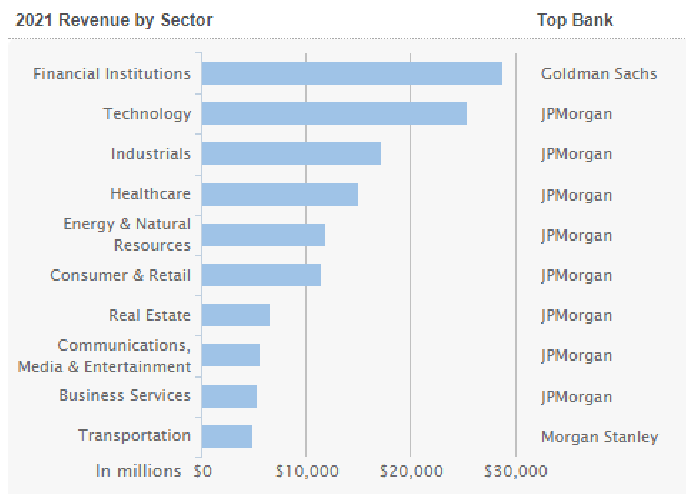
PEER ANALYSIS

JPMorgan primarily competes with large US universal banks. Banks within the industry compete through investment banking, commercial banking, retail banking, and asset management operations.

	Net Revenue(M)	MKT Cap(M)	Investment Banking Revenue % MKT Share
JPMorgan	121,649	358,448	9.3%
Goldman Sachs	59,339	111,655	8.7%
Morgan Stanley	59,755	1,336,007	6.4%
BofA Securities	89,113	280,832	6.2%
Citi	71,884	85,949	4.7%

Source: Wsj.com, FactSet

The table above compares the peer set by net revenue, market cap, and percent share of global investment banking revenue. As depicted, JPMorgan generated the most net revenue and investment banking revenue in 2021. JPM has dominated the US banking industry for years due to its revenue diversification, ability to retain top talent, and solid management team. Additionally, the bank's investment banking segment is well diversified among industry sectors and was the top performer in 8 out of 10 sectors in 2021[6]. The sectors in which JPMorgan has a significant market share are pictured below.



Source: wsj.com

The following table contains efficiency ratio, capital ratio, and return on equity to cost of equity spread data for JPMorgan and its comparative set. As depicted, JPMorgan has the highest return on equity to cost of equity spread of any of its comparable banks. Therefore, the bank is generating net positive returns to shareholders. Additionally, JPMorgan has a relatively good equity cushion with the lowest efficiency ratio of its peer set.

	Efficiency Ratio	T1 Capital Ratio	RoTE	rE	RoTE - rE
C	70.4%	7.3%	8.2%	11.0%	-2.8%
JPM	60.8%	14.1%	18.0%	9.9%	8.1%
BAC	65.6%	12.8%	15.9%	10.5%	5.4%
GS	61.4%	15.9%	12.0%	10.1%	1.9%
MS	70.5%	16.6%	14.6%	10.7%	3.9%

Source: FactSet

The following chart contains valuation metrics for JPMorgan and its comparable set. The most attractive bank from a value standpoint is Citi Group; however, the bank is going through a major restricting, and its future is quite uncertain. JPMorgan commands the second-highest

Price to tangible book value behind Morgan Stanley. Morgan Stanley is overvalued compared to JPMorgan as it has a higher efficiency ratio and is more exposed to interest rate risk. Overall, JPMorgan is trading at an attractive price relative to its peers.

	P/TBV	P/E (LTM)	Div Yld
C	0.60	6.20	4.5%
JPM	1.80	10.40	3.3%
BAC	1.70	11.20	2.5%
GS	1.20	8.90	3.0%
MS	2.00	11.70	3.9%

Source: FactSet

Goldman Sachs

Goldman Sachs is a leading global financial institution that delivers a broad range of financial services and boasts a large and diversified client base. The bank operates through four segments: Global Markets (35%), Investment Banking (25%), Asset Management (25%), and Consumer & Wealth Management (15%). Goldman differentiates itself from the peer set with its expertise as a market maker and in advisory and underwriting services. The bank generates 60% of its revenue from these two segments compared to JPMorgan, which accounts for 45%. However, only its market segment tends to benefit from economic downturns; therefore, 65% of its revenues are negatively correlated with rising rates and contractionary cycles. This is evident in the results of its Q3 2022 earnings release. The bank's YoY growth of EPS by segment is as follows: Global Markets (8.3%), Investment Banking (-80.8%), Asset Management (-83.7%), and Consumer & Wealth Management (-90.1%)[5]. Hence, the bank fails to diversify some of its economic sensitivity and relies heavily on volatile markets in economic downturns.

Citi Group

Citi Bank is a global diversified financial institution. It operates through two segments: Institutional Clients Group (60%) and Global Consumer Banking (40%). The institutional client group (ICG) generates revenues through market-making activities, investment banking services, and private banking. The global consumer banking segment provides retail banking and wealth management services. The bank generates 45% of its revenues in interest income from its interest-bearing assets. Additionally, Citi currently holds the third most deposits of all US universal banks, with over $700B in deposits. The bank will likely perform well in an economic downturn as its consumer banking segment will benefit from rising rates, and its market-making activities will likely benefit from increased volatility. Additionally, it beat EPS estimates by nearly 3.5% and beat revenue estimates by $230M in its Q3 earnings release. However, Citi is undergoing significant restructuring and plans to divest its foreign commercial banking franchises. The bank seems unstable compared to its peers and will likely underperform due to the perceived risk.

Morgan Stanley

Morgan Stanly is a leading investment bank founded by Henry Morgan, the grandson of John Pierpont Morgan Sr., and Harold Stanley in retaliation to the Glass-Steagal Act. The bank's deep roots in Investment Banking extend into its culture today. Morgan Stanley operates through three segments: Institutional Securities (50%), Wealth Management (40%), and Investment Management (10%). Morgan Stanley has a solid investment banking advisory reputation and completed over $1 trillion in advisory deals in 2021. Morgan Stanley differentiates itself through its strong wealth management arm that has historically proven to perform well under most economic conditions. Additionally, Morgan Stanley acquired E*Trade on October 2, 2020[7]. This acquisition enhances the scale and scope of Morgan Stanley's wealth management operations[7]. However, Morgan Stanley may not fare as well as its peers in an economic downturn. The bank missed EPS estimates in its latest quarterly release and does not seem to be as well positioned as its peers, as its markets segment had not performed well in the last quarter and indicated that there could be some talent or strategy issues.

Bank of America

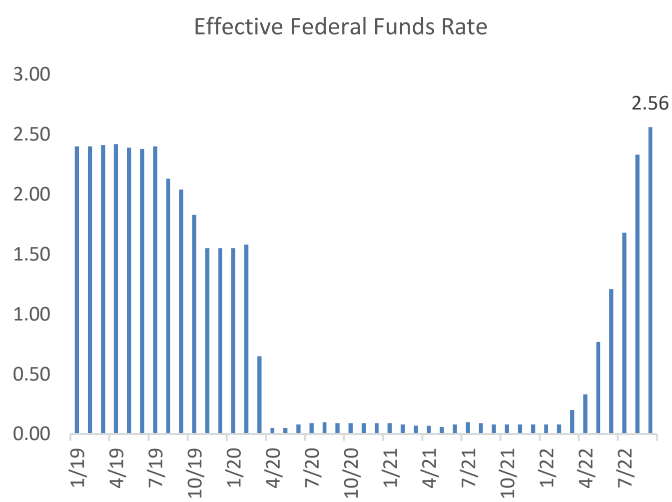
Bank of America is a leading financial institution that operates through Consumer Banking (38%), Global Banking (23%), Global Wealth & Investment Management (23%), Global Markets (22%), and Other (-6%). Bank of America is likely the most similar peer to JPMorgan, except that Bank of America is not considered a money center bank. Money center banks source their funds from domestic or international money markets, while Bank of America sources most of its funds through deposits. The bank is second to JPMorgan in total held deposits, holding nearly $1.9 trillion in deposits. Bank of America is the only traditionally funded bank in this peer set, and this is one of its main differentiating elements. The bank also has a very strong wealth management arm under Merrill Lynch, which added 5,200 net new households in Q3 2022[8]. Additionally, Bank of America has a diverse portfolio of revenue segments, similar to JPMorgan.

Peer Summary

Overall, JPMorgan has an advantage over its peers through diversification and size. The bank holds the most deposits of any bank and has historically outperformed its peers in investment banking and sales & trading revenues. The bank's reputation and leadership also allow it to generate and retain top talent.

ECONOMIC OUTLOOK

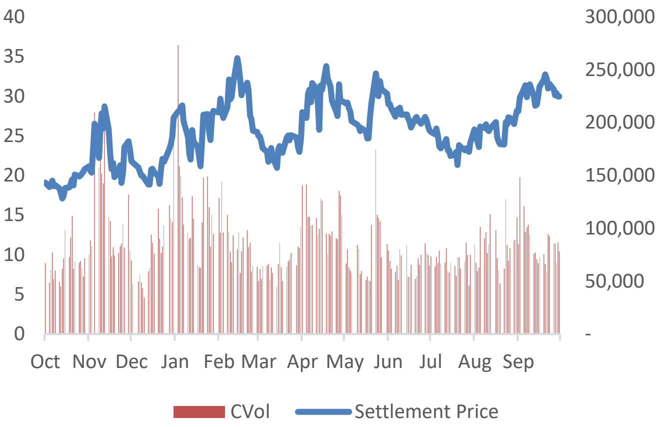
Federal Funds Rate



Source: St. Louis Federal Reserve

The chart above contains effective federal funds rate data. The effective federal funds rate is calculated as a volume-weighted median of overnight federal funds transactions[9]. As depicted, rates declined to near zero in April 2020 and remained near zero until the fed's first hike in March 2022. The two years of low-interest rates were beneficial for investment banking activity. The fed is expected to increase rates by 75 basis points in November. This will benefit banks that plan to allocate more capital to interest-bearing assets and lending. These banks tend to be large deposit holders, who must pay out deposit interest, but the spread is large enough to compensate for declines in borrowing.

The S&P Volatility Index (VIX)

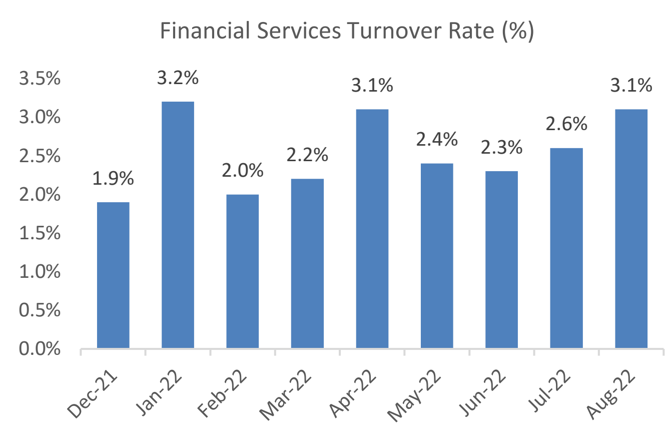


Source: FactSet

The previous graph contains historical VIX settlement prices and volume. Market volatility is beneficial to sales and trading, and market-making activity. JPMorgan and its peer set have benefitted from increased volatility since the Fed's first rate hike this year. We expect volume to decline over the next six months as investors may move some assets into cash and trading volume slows.

Employee Turnover

Banks consistently struggle with labor turnover after bonuses are handed out near the beginning of the calendar year. However, turnover is expected to be much higher in 2022 after banks hand out record year investment banking bonuses[11]. The graph below represents monthly turnover rates in the financial services industry.



Source: FactSet

From the graph, it can be inferred that the rise in turnover in January was due to bankers leaving after receiving their bonuses. Turnover has continued to increase, with spikes in April and August. Turnover is costly and is common within the financial industry as there is little product differentiation among firms; therefore, the work is very similar. We expect turnover to remain high for the industry.

VALUATION

Discount Rate Assumptions

Three main assumptions flow into the cost of equity. These include:

- Risk-Free Rate
- Beta
- Equity Risk Premium

The risk-free rate gathered for JPMorgan is the yield on the 10-year US treasury as of 10/10/2022. The 10-year was chosen as it is closest to our forecast period. The Beta of 1.15 was gathered from FactSet and was calculated as the three-year daily raw beta against the S&P 500. The market risk premium is the henry fund's expected equity risk premium. These three assumptions make up the CAPM model and provide us with JPMorgan's cost of equity of **9.81%**. The assumptions were chosen based on the current economic and geopolitical climate. As we are currently in a rising interest rate environment, it would not be realistic to forecast a risk-free rate equal to the 3-month T-bill.

Equity Discounted Cash Flow Analysis (DCF)

Our DCF model resulted in an estimated share price of **$131.69**. We are most comfortable with this model as we are confident in the growth rates we crafted and the other inputs into the model. The Equity DCF/EP models are calculated by discounting expected free cash flows to equity (FCFE) by the company's cost of equity. This calculates the present value of the company's operating assets. Dilutive equity claims are then subtracted from operating assets to determine the equity value.

Implied Price to Earnings/DDM

The DDM model discounts expected dividends by the cost of equity to arrive at a purchase price of equity per share. The resulting price per share is **$142.60**. The model is sensitive to its discount rate, which is the cost of equity as well as the CV growth rate of EPS. We are comfortable with this valuation. However, we plan to use this as a sanity check to our DCF price as we are more confident in the assumptions we crafted to arrive at its purchase price.

Relative Valuation

We calculated the relative value of JPMorgan based on the implied 2022E P/E. After averaging P/E ratios for JPMorgan peer group, it was determined that JPMorgan should be trading at **$121.52** per share. JPMorgan is currently trading at 106.20 earnings, and we believe this value to be the lower bound of what someone should pay for a share of JPMorgan. The valuation is market-based and consists of a few very close peers. Therefore, we believe it is a reliable model representing the lower bound of the target range.

Target Range

To generate our target range, we subtracted one dollar from the TEV/EBITDA implied purchase price as the lower bound. We then used the DCF purchase price as the upper bound and rounded it to $90. This results in a more conservative range for JPMorgan's purchase price as our revenue estimates were below street consensus. This gives a target range between **$122** and **$142**.

KEYS TO MONITOR

Interest Rates: Interest rates are the main driver of interest revenue, but they also drive interest expense. Rising rates negatively affect competitors that rely heavily on fee income. For example, Goldman Sachs generates a lot of its revenue from fees.

Inflation Rate: Inflation is usually what causes the federal reserve to raise the federal funds rate. Raising the federal funds rate will push up the short-end of the yield curve and increase the cost of borrowing for firms, consequently reducing investment by firms and households. A reduction in investment reduces the amount of loan origination and underwriting activity.

VIX: The VIX represents volatility in the market. Increased volatility increases market-making and trading activity.

Deposits: JPMorgan and Bank of America stand out from the rest of the banks because they have large amounts of deposits. This allows them to benefit from the spread between the rate they can lend at and the rate they pay out for interest-bearing deposits. This reduces their risk when moving toward an economic contraction.

Investment Banking Fees: Investment banking fees usually perform well when interest rates are low. Declining interest rates increase valuations and promote M&A, equity, and debt underwriting activities.

REFERENCES

1. JPM 2021 10-K
2. FactSet
3. Bloomberg
4. JPM 2022 Q3 Earnings
5. SeekingAlpha
6. WSJ.com
7. Morgan Stanley 2021 10-K
8. Bank of America 2021 10-K
9. NY Federal Reserve
10. St. Louis Federal Reserve
11. Reuters.com
12. OCC Mortgage Metrics Report

DISCLAIMER

J.P. Morgan
Revenue Decomposition
in $ millions

Fiscal Years Ending Dec. 31	2019	2020	2021	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Noninterest Revenue										
Investment banking fees	7,501	9,486	13,216	7,930	8,485	8,909	9,265	9,543	9,830	10,026
% Change	-0.6%	26.5%	39.3%	-40.0%	7.0%	5.0%	4.0%	3.0%	3.0%	2.0%
Principal transactions	14,018	18,021	16,304	18,505	17,580	18,107	18,831	20,715	21,750	22,403
% Change	16.2%	28.6%	-9.5%	13.5%	-5.0%	3.0%	4.0%	10.0%	5.0%	3.0%
Lending- and deposit-related fees	6,369	6,511	7,032	7,173	7,244	7,317	7,427	7,575	7,651	7,727
% Change	5.2%	2.2%	8.0%	2.0%	1.0%	1.0%	1.5%	2.0%	1.0%	1.0%
Asset management, administration and commissions	17,165	18,177	21,029	19,978	19,378	19,572	20,159	20,966	21,594	22,026
% Change	0.3%	5.9%	15.7%	-5.0%	-3.0%	1.0%	3.0%	4.0%	3.0%	2.0%
Securities gains / losses	258	802	(345)	(380)	190	285	356	445	556	695
% Change	-165.3%	210.9%	-143.0%	10.0%	-150.0%	50.0%	25.0%	25.0%	25.0%	25.0%
Mortgage fees and related income	2,036	3,091	2,170	1,910	1,833	1,916	1,992	2,052	2,114	2,177
% Change	62.4%	51.8%	-29.8%	-12.0%	-4.0%	4.5%	4.0%	3.0%	3.0%	3.0%
Card income	5,304	4,435	5,102	4,949	4,998	5,098	5,251	5,409	5,517	5,627
% Change	6.3%	-16.4%	15.0%	-3.0%	1.0%	2.0%	3.0%	3.0%	2.0%	2.0%
Other income	5,731	4,457	4,830	4,347	4,217	4,385	4,517	4,607	4,653	4,700
% Change	7.3%	-22.2%	8.4%	-10.0%	-3.0%	4.0%	3.0%	2.0%	1.0%	1.0%
Total Noninterest Revenue	**58,382**	**64,980**	**69,338**	**64,411**	**63,925**	**65,589**	**67,799**	**71,311**	**73,665**	**75,382**
	8.2%	11.3%	6.7%	-7.1%	-0.8%	2.6%	3.4%	5.2%	3.3%	2.3%
Net Interest Income										
Interest income	84,040	64,523	57,864	71,633	76,681	79,681	85,388	91,578	95,541	99,785
% Change	8.5%	-23.2%	-10.3%	23.8%						
Interest expense	(26,795)	(9,960)	(5,553)	(5,645)	(7,973)	(9,620)	(12,457)	(14,324)	(15,231)	(16,197)
% Change	19.7%	-62.8%	-44.2%							
Total Net Interest Revenue	**57,245**	**54,563**	**52,311**	**65,988**	**68,708**	**70,060**	**72,931**	**77,255**	**80,309**	**83,588**
% Change	4.0%	-4.7%	-4.1%	26.1%	4.1%	2.0%	4.1%	5.9%	4.0%	4.1%
Total Net Revenue	**115,627**	**119,543**	**121,649**	**130,399**	**132,633**	**135,649**	**140,730**	**148,566**	**153,974**	**158,970**
% Change	6.1%	3.4%	1.8%	7.2%	1.7%	2.3%	3.7%	5.6%	3.6%	3.2%

J.P. Morgan

Income Statement

Fiscal Years Ending Dec. 31	2019	2020	2021	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Noninterest Revenue										
Investment banking fees	7,501	9,486	13,216	7,930	8,485	8,909	9,265	9,543	9,830	10,026
Principal transactions	14,018	18,021	16,304	18,505	17,580	18,107	18,831	20,715	21,750	22,403
Lending- and deposit-related fees	6,369	6,511	7,032	7,173	7,244	7,317	7,427	7,575	7,651	7,727
Asset management, administration	17,165	18,177	21,029	19,978	19,378	19,572	20,159	20,966	21,594	22,026
Securities gains / losses	258	802	(345)	(380)	190	285	356	445	556	695
Mortgage fees and related income	2,036	3,091	2,170	1,910	1,833	1,916	1,992	2,052	2,114	2,177
Card income	5,304	4,435	5,102	4,949	4,998	5,098	5,251	5,409	5,517	5,627
Other income	5,731	4,457	4,830	4,347	4,217	4,385	4,517	4,607	4,653	4,700
Total Noninterest Revenue	**58,382**	**64,980**	**69,338**	**64,411**	**63,925**	**65,589**	**67,799**	**71,311**	**73,665**	**75,382**
Net Interest Income										
Interest income	84,040	64,523	57,864	71,633	76,681	79,681	85,388	91,578	95,541	99,785
Interest expense	(26,795)	(9,960)	(5,553)	(5,645)	(7,973)	(9,620)	(12,457)	(14,324)	(15,231)	(16,197)
Total Net Interest Revenue	**57,245**	**54,563**	**52,311**	**65,988**	**68,708**	**70,060**	**72,931**	**77,255**	**80,309**	**83,588**
Total Net Revenue	**115,627**	**119,543**	**121,649**	**130,399**	**132,633**	**135,649**	**140,730**	**148,566**	**153,974**	**158,970**
Provision for credit losses	5,585	17,480	(9,256)	14,348	15,259	12,985	10,363	11,021	7,823	8,319
Compensation expense	34,155	34,988	38,567	34,682	34,420	35,316	36,506	38,397	39,664	40,589
Occupancy expense	4,322	4,449	4,516	4,586	4,552	4,670	4,828	5,078	5,245	5,368
Technology, communications and eq	1,453	1,724	2,009	1,891	1,923	1,967	2,041	2,154	2,233	2,305
Amortization	54	82	107	97	96	94	93	92	90	89
Depreciation	8,368	8,614	7,932	7,863	7,919	7,952	7,972	7,983	7,990	7,994
Professional and outside services	8,533	8,464	9,814	9,234	9,165	9,403	9,720	10,224	10,561	10,807
Marketing	3,579	2,476	3,036	3,330	3,388	3,465	3,594	3,794	3,933	4,060
Other expense	5,033	5,859	5,362	5,938	6,040	6,177	6,409	6,766	7,012	7,239
Income / loss before income tax exp	**44,545**	**35,407**	**59,562**	**48,429**	**49,872**	**53,619**	**59,205**	**63,057**	**69,423**	**72,199**
Income tax expense / benefit	8,114	6,276	11,228	12,495	12,867	13,834	15,275	16,269	17,911	18,627
Net income / loss	**36,431**	**29,131**	**48,334**	**35,934**	**37,005**	**39,785**	**43,930**	**46,788**	**51,512**	**53,572**

J.P. Morgan

Balance Sheet

in $millions

Fiscal Years Ending Dec. 31	2019	2020	2021	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Assets										
Cash and due from banks	21,704	24,874	26,438	127,848	177,629	264,992	359,142	458,743	567,312	682,280
Deposits with banks	241,927	502,735	714,396	821,555	903,711	948,896	996,341	1,046,158	1,098,466	1,153,390
Federal funds sold and securities purchased under resale agreements	249,157	296,284	261,698	271,221	281,091	291,320	301,922	312,909	324,296	336,097
Securities borrowed	139,758	160,635	206,071	211,866	217,824	223,949	230,247	236,722	243,379	250,223
Trading assets included assets pledged	411,103	503,126	433,575	453,168	473,647	495,052	517,423	540,806	565,245	590,789
Investment securities, net of allowance for credit losses	398,239	589,999	672,232	728,566	789,621	855,792	927,508	1,005,235	1,089,475	1,180,774
Loans, net of allowance for loan losses	946,646	984,525	1,061,328	1,072,694	1,067,697	1,062,723	1,057,772	1,052,845	1,047,940	1,043,059
Accrued interest and accounts receivable	72,861	90,503	102,570	86,602	88,086	90,089	93,463	98,667	102,259	105,577
Premises and equipment	17,623	19,103	19,182	19,319	19,399	19,447	19,475	19,492	19,501	19,507
Operating right-of-use assets	8,190	8,006	7,888	7,924	7,986	8,049	8,112	8,176	8,240	8,305
Goodwill	47,823	49,248	50,315	50,697	50,697	50,697	50,697	50,697	50,697	50,697
MSRs and other intangible assets	5,518	4,180	6,376	6,279	6,183	6,088	5,995	5,904	5,814	5,725
Other assets included at fair value and assets pledged	126,830	152,853	181,498	188,554	195,884	203,499	211,410	219,628	228,166	237,036
Total Assets	2,687,379	3,386,071	3,743,567	4,046,293	4,279,455	4,520,594	4,779,508	5,055,982	5,350,791	5,663,458
Liabilites										
Deposits	1,562,431	2,144,257	2,462,303	2,618,474	2,784,741	2,961,142	3,148,944	3,348,913	3,561,071	3,786,973
Federal funds purchased and securities loaned or sold under repurchase agreements	183,675	215,209	194,340	200,656	207,177	213,911	220,863	228,041	235,452	243,104
Short-term borrowings	40,920	45,208	53,594	68,761	70,943	73,293	75,979	79,090	81,969	84,874
Trading liabilities	119,277	170,181	164,693	171,095	177,747	184,657	191,835	199,293	207,040	215,089
Accounts payable and other liabilities	210,407	232,599	262,755	289,958	303,528	314,907	327,099	340,187	353,969	368,598
Beneficial interests issued by consolidated variable interest entities	17,841	17,578	10,750	25,861	27,071	28,086	29,174	30,341	31,570	32,875
Long-term debt	291,498	281,685	301,005	358,061	374,818	388,870	403,926	420,088	437,107	455,172
Total Liabilities	2,426,049	3,106,717	3,449,440	3,732,866	3,946,025	4,164,865	4,397,819	4,645,953	4,908,177	5,186,685
Stockholder's Equity										
Preferred stock	26,993	30,063	34,838	34,838	34,838	34,838	34,838	34,838	34,838	34,838
Common stock	92,627	92,499	92,520	92,578	92,636	92,693	92,751	92,809	92,867	92,913
Retained earnings	223,211	236,990	272,268	294,632	317,577	342,818	371,721	403,002	438,530	475,642
Accumulated other comprehensive income / loss	1,569	7,986	(84)	(84)	(84)	(84)	(84)	(84)	(84)	(84)
Shares held in RSU Trust, at cost	(21)	-	-	-	-	-	-	-	-	-
Treasury stock, at cost	(83,049)	(88,184)	(105,415)	(108,537)	(111,537)	(114,537)	(117,537)	(120,537)	(123,537)	(126,537)
Total Stockholder's Equity	261,330	279,354	294,127	313,426	333,430	355,728	381,689	410,028	442,614	476,772

J.P. Morgan

Historical Cash Flow Statement

Fiscal Years Ending Dec. 31	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Operating Activities											
Funds from Operations	34,430	31,381	33,009	35,983	36,327	42,022	40,358	49,574	53,329	52,893	54,032
Extraordinaries	-	-	-	-	-	-	-	-	-	-	-
Changes in Working Capital	42,464	(23,554)	(19,366)	20,522	(38,492)	(3,221)	(38,521)	18,533	(27,202)	27,694	(4,572)
Net Operating Cash Flow	76,894	7,827	13,643	56,505	(2,165)	38,801	1,837	68,107	26,127	80,587	49,460
Investing Activities											
Net Assets from Acquisitions	-	-	(149)	-	-	-	-	-	-	-	-
Sale of Fixed Assets & Businesses	102	88	-	843	-	-	-	-	-	-	-
Purchase/Sale of Investments	(41,805)	(37,781)	153,050	8,449	123,550	(38,504)	71,691	(186,479)	(85,659)	(397,350)	(22,273)
Purchase of Investments	233,735	255,830	154,480	156,663	77,008	161,577	116,311	272,892	283,859	626,143	406,176
Sale/Maturity of Investments	191,930	218,049	307,530	165,112	200,558	123,073	188,002	86,413	198,200	228,793	383,903
Proceeds from Loans	(109,948)	(61,480)	(208,413)	(196,178)	55,358	(92,225)	(85,749)	(60,448)	16,600	(17,718)	(67,403)
Federal Home Loan Advances											
Increase (Decrease)	-	-	-	-	-	-	-	-	-	-	-
Other Funds	(63)	(3,400)	(679)	1,338	3,703	(2,825)	(563)	(4,986)	(5,035)	(7,341)	(11,044)
Other Uses	(63)	(3,400)	(679)			(2,825)	(563)	(4,986)	(5,035)	(7,341)	(11,044)
Other Sources	-			1,338	3,703						
Net Investing Cash Flow	(151,714)	(102,573)	(56,191)	(185,548)	182,611	(133,554)	(14,621)	(251,913)	(74,094)	(422,409)	(100,720)
Financing Activities											
Cash Dividends Paid	(3,895)	(5,194)	(6,056)	(6,990)	(7,873)	(8,476)	(8,993)	(10,109)	(12,343)	(12,690)	(12,858)
Change in Deposits	203,420	67,250	81,476	89,346	(88,678)	97,336	57,022	26,728	101,002	602,765	293,764
Repurchase of Common & Preferred	(8,863)	(1,653)	(6,589)	(4,760)	(5,616)	(9,082)	(16,668)	(21,679)	(28,076)	(7,947)	(20,983)
Sale of Common & Preferred Stock	-	1,234	3,873	8,847	5,893	-	1,258	1,696	5,000	4,500	7,350
Proceeds from Sale of Stock	-	1,234	3,873	8,847	5,893	-	1,258	1,696	5,000	4,500	7,350
Change in Current Debt	(55,886)	35,861	(56,083)	20,147	(97,243)	10,546	9,801	41,891	(27,214)	35,966	(13,026)
Change in Long-Term Debt	(26,069)	(9,857)	12,616	12,406	6,732	8,414	(28,185)	(2,939)	(4,236)	(25,022)	23,223
Other Funds	(1,001)	66	(913)	(768)	(726)	(467)	407	(1,430)	(1,146)	(927)	(1,477)
Net Financing Cash Flow	107,706	87,707	28,324	118,228	(187,511)	98,271	14,642	34,158	32,987	596,645	275,993
All Activities											
Exchange Rate Effect	(851)	1,160	272	(1,125)	(276)	(135)	96	(2,863)	(182)	9,155	(11,508)
Miscellaneous Funds	-	-	-	-	-	-	-	-	-	-	-
Net Change in Cash	32,035	(5,879)	(13,952)	(11,940)	(7,341)	3,383	1,954	(152,511)	(15,162)	263,978	213,225
Free Cash Flow	76,894	7,827	13,643	56,505	(2,165)	38,801	1,837	68,107	26,127	80,587	49,460
Free Cash Flow per Share	20	2	4	15	(1)	11	1	20	8	26	16
Free Cash Flow Yield (%)	59	5	6	24	(1)	12	0	20	6	21	10

J.P. Morgan

Forecasted Cash Flow Statement

Fiscal Years Ending Dec. 31	2022	2023	2024	2025	2026	2027	2028
Net Income	35,934	37,005	39,785	43,930	46,788	51,512	53,572
Depreciation	7,863	7,919	7,952	7,972	7,983	7,990	7,994
Amortization	97	96	94	93	92	90	89
Trading Assets	(19,593)	(20,479)	(21,404)	(22,372)	(23,383)	(24,439)	(25,544)
Accrued interest and accounts recei	15,968	(1,484)	(2,003)	(3,374)	(5,204)	(3,592)	(3,317)
Other assets	(7,056)	(7,330)	(7,615)	(7,911)	(8,219)	(8,538)	(8,870)
Trading liabilities	6,402	6,651	6,910	7,179	7,458	7,748	8,049
Accounts payable and other liabilitie	27,203	13,570	11,379	12,192	13,088	13,781	14,629
CF from operating activities	**66,819**	**35,949**	**35,099**	**37,709**	**38,604**	**44,552**	**46,602**
CAPEX	(8,000)	(8,000)	(8,000)	(8,000)	(8,000)	(8,000)	(8,000)
Deposits with banks	(107,159)	(82,156)	(45,186)	(47,445)	(49,817)	(52,308)	(54,923)
Federal funds sold & securities purch	(9,523)	(9,870)	(10,229)	(10,601)	(10,987)	(11,387)	(11,801)
securities borrowed	(5,795)	(5,958)	(6,125)	(6,298)	(6,475)	(6,657)	(6,844)
Investment securities, net of allowar	(56,334)	(61,055)	(66,171)	(71,716)	(77,726)	(84,240)	(91,299)
Operating Right-of-use assets	(36)	(63)	(62)	(63)	(64)	(64)	(65)
Change in Goodwill	(382)	-	-	-	-	-	-
Gross Loans	(11,366)	4,997	4,974	4,951	4,927	4,905	4,882
CF from investing activities	**(198,595)**	**(162,104)**	**(130,800)**	**(139,173)**	**(148,142)**	**(157,751)**	**(168,051)**
Deposits	156,171	166,268	176,401	187,802	199,969	212,158	225,902
Federal funds purchased and securit	6,316	6,521	6,733	6,952	7,178	7,411	7,652
Short-term borrowings	15,167	2,182	2,351	2,686	3,111	2,878	2,905
Beneficial interests issued by consoli	15,111	1,210	1,015	1,087	1,167	1,229	1,305
Long-term debt	57,056	16,757	14,052	15,056	16,162	17,018	18,065
Dividends	(11,970)	(12,459)	(12,945)	(13,427)	(13,907)	(14,384)	(14,859)
Preferred Dividends	(1,600)	(1,600)	(1,600)	(1,600)	(1,600)	(1,600)	(1,600)
New issues	58	58	58	58	58	58	46
Repurchases	(3,122)	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)	(3,000)
CF from financing activities	**233,186**	**175,936**	**183,064**	**195,614**	**209,139**	**221,769**	**236,417**
Change in cash	**101,410**	**49,781**	**87,363**	**94,150**	**99,601**	**108,570**	**114,967**

J.P. Morgan

Common Size Income Statement

Fiscal Years Ending Dec. 31	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Noninterest Revenue										
Investment banking fees	6.5%	7.9%	10.9%	6.1%	6.4%	6.6%	6.6%	6.4%	6.4%	6.3%
Principal transactions	12.1%	15.1%	13.4%	14.2%	13.3%	13.3%	13.4%	13.9%	14.1%	14.1%
Lending- and deposit-related fees	5.5%	5.4%	5.8%	5.5%	5.5%	5.4%	5.3%	5.1%	5.0%	4.9%
Asset management, administratior	14.8%	15.2%	17.3%	15.3%	14.6%	14.4%	14.3%	14.1%	14.0%	13.9%
Securities gains / losses	0.2%	0.7%	-0.3%	-0.3%	0.1%	0.2%	0.3%	0.3%	0.4%	0.4%
Mortgage fees and related income	1.8%	2.6%	1.8%	1.5%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%
Card income	4.6%	3.7%	4.2%	3.8%	3.8%	3.8%	3.7%	3.6%	3.6%	3.5%
Other income	**5.0%**	**3.7%**	**4.0%**	**3.3%**	**3.2%**	**3.2%**	**3.2%**	**3.1%**	**3.0%**	**3.0%**
Total Noninterest Revenue	**50.5%**	**54.4%**	**57.0%**	**49.4%**	**48.2%**	**48.4%**	**48.2%**	**48.0%**	**47.8%**	**47.4%**
Net Interest Income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Interest income	72.7%	54.0%	47.6%	54.9%	57.8%	58.7%	60.7%	61.6%	62.0%	62.8%
Interest expense	-23.2%	-8.3%	-4.6%	-4.3%	-6.0%	-7.1%	-8.9%	-9.6%	-9.9%	-10.2%
Total Net Interest Revenue	49.5%	45.6%	43.0%	50.6%	51.8%	51.6%	51.8%	52.0%	52.2%	52.6%
Total Net Revenue	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Provision for credit losses	4.8%	14.6%	-7.6%	11.0%	11.5%	9.6%	7.4%	7.4%	5.1%	5.2%
Compensation expense	29.5%	29.3%	31.7%	26.6%	26.0%	26.0%	25.9%	25.8%	25.8%	25.5%
Occupancy expense	**3.7%**	**3.7%**	**3.7%**	**3.5%**	**3.4%**	**3.4%**	**3.4%**	**3.4%**	**3.4%**	**3.4%**
Technology, communications and eq	1.3%	1.4%	1.7%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%	1.5%
Amortization	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%
Depreciation	7.2%	7.2%	6.5%	6.0%	6.0%	5.9%	5.7%	5.4%	5.2%	5.0%
Professional and outside services	**7.4%**	**7.1%**	**8.1%**	**7.1%**	**6.9%**	**6.9%**	**6.9%**	**6.9%**	**6.9%**	**6.8%**
Marketing	**3.1%**	**2.1%**	**2.5%**	**2.6%**	**2.6%**	**2.6%**	**2.6%**	**2.6%**	**2.6%**	**2.6%**
Other expense	4.4%	4.9%	4.4%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%	4.6%
Income / loss before income tax ex	**38.5%**	**29.6%**	**49.0%**	**37.1%**	**37.6%**	**39.5%**	**42.1%**	**42.4%**	**45.1%**	**45.4%**
Income tax expense / benefit	7.0%	5.2%	9.2%	9.6%	9.7%	10.2%	10.9%	11.0%	11.6%	11.7%
Net income / loss	31.5%	24.4%	39.7%	27.6%	27.9%	29.3%	31.2%	31.5%	33.5%	33.7%
Preferred stock dividends	1.4%	1.3%	1.3%	1.2%	1.2%	1.2%	1.1%	1.1%	1.0%	1.0%
Dividends and undistributed earning	0.2%	0.1%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.2%	0.1%
Net income / loss applicable to com	30.0%	22.9%	38.2%	26.2%	26.5%	28.0%	29.9%	30.3%	32.3%	32.5%

J.P. Morgan

Common Size Balance Sheet

Fiscal Years Ending Dec. 31	2019	2020	2021	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Assets										
Cash and due from banks	0.81%	0.73%	0.71%	3.16%	4.15%	5.86%	7.51%	9.07%	10.60%	12.05%
Deposits with banks	9.00%	14.85%	19.08%	20.30%	21.12%	20.99%	20.85%	20.69%	20.53%	20.37%
Federal funds sold and securities pur	9.27%	8.75%	6.99%	6.70%	6.57%	6.44%	6.32%	6.19%	6.06%	5.93%
Securities borrowed	5.20%	4.74%	5.50%	5.24%	5.09%	4.95%	4.82%	4.68%	4.55%	4.42%
Trading assets included assets pledg	15.30%	14.86%	11.58%	11.20%	11.07%	10.95%	10.83%	10.70%	10.56%	10.43%
Investment securities, net of allowar	14.82%	17.42%	17.96%	18.01%	18.45%	18.93%	19.41%	19.88%	20.36%	20.85%
Loans, net of allowance for loan loss	35.23%	29.08%	28.35%	26.51%	24.95%	23.51%	22.13%	20.82%	19.58%	18.42%
Accrued interest and accounts recei	2.71%	2.67%	2.74%	2.14%	2.06%	1.99%	1.96%	1.95%	1.91%	1.86%
Premises and equipment	0.66%	0.56%	0.51%	0.48%	0.45%	0.43%	0.41%	0.39%	0.36%	0.34%
Operating right-of-use assets	0.30%	0.24%	0.21%	0.20%	0.19%	0.18%	0.17%	0.16%	0.15%	0.15%
Goodwill	1.78%	1.45%	1.34%	1.25%	1.18%	1.12%	1.06%	1.00%	0.95%	0.90%
MSRs and other intangible assets	0.21%	0.12%	0.17%	0.16%	0.14%	0.13%	0.13%	0.12%	0.11%	0.10%
Other assets included at fair value ar	4.72%	4.51%	4.85%	4.66%	4.58%	4.50%	4.42%	4.34%	4.26%	4.19%
Total Assets	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Liabilites										
Deposits	58.14%	63.33%	65.77%	64.71%	65.07%	65.50%	65.88%	66.24%	66.55%	66.87%
Federal funds purchased and securit	6.83%	6.36%	5.19%	4.96%	4.84%	4.73%	4.62%	4.51%	4.40%	4.29%
Short-term borrowings	1.52%	1.34%	1.43%	1.70%	1.66%	1.62%	1.59%	1.56%	1.53%	1.50%
Trading liabilities	4.44%	5.03%	4.40%	4.23%	4.15%	4.08%	4.01%	3.94%	3.87%	3.80%
Accounts payable and other liabilitie	7.83%	6.87%	7.02%	7.17%	7.09%	6.97%	6.84%	6.73%	6.62%	6.51%
Beneficial interests issued by consoli	0.66%	0.52%	0.29%	0.64%	0.63%	0.62%	0.61%	0.60%	0.59%	0.58%
Long-term debt	10.85%	8.32%	8.04%	8.85%	8.76%	8.60%	8.45%	8.31%	8.17%	8.04%
Total Liabilities	90.28%	91.75%	92.14%	92.25%	92.21%	92.13%	92.01%	91.89%	91.73%	91.58%
Stockholder's Equity										
Preferred stock	1.00%	0.89%	0.93%	0.86%	0.81%	0.77%	0.73%	0.69%	0.65%	0.62%
Common stock	3.45%	2.73%	2.47%	2.29%	2.16%	2.05%	1.94%	1.84%	1.74%	1.64%
Retained earnings	8.31%	7.00%	7.27%	7.28%	7.42%	7.58%	7.78%	7.97%	8.20%	8.40%
Accumulated other comprehensive i	0.06%	0.24%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Shares held in RSU Trust, at cost	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Treasury stock, at cost	-3.09%	-2.60%	-2.82%	-2.68%	-2.61%	-2.53%	-2.46%	-2.38%	-2.31%	-2.23%
Total Stockholder's Equity	9.72%	8.25%	7.86%	7.75%	7.79%	7.87%	7.99%	8.11%	8.27%	8.42%

J.P. Morgan

Value Driver Estimation

Fiscal Years Ending Dec. 31	2019	2020	2021	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Free Cash Flow (FCFE):										
Net Income	36,431	29,131	48,334	35,934	37,005	39,785	43,930	46,788	51,512	53,572
Change in Total Assets	64,847	698,692	357,496	302,726	233,163	241,138	258,915	276,473	294,809	312,667
Change in Total Liabilities	60,032	680,668	342,723	283,426	213,159	218,840	232,954	248,134	262,224	278,508
FCFE	**31,616**	**11,107**	**33,561**	**16,635**	**17,002**	**17,487**	**17,969**	**18,449**	**18,926**	**19,413**
Return on Equity (ROE):										
Net Income	36,431	29,131	48,334	35,934	37,005	39,785	43,930	46,788	51,512	53,572
Beg. Total Shareholder's Equity	256,515	261,330	279,354	294,127	313,426	333,430	355,728	381,689	410,028	442,614
ROE	**14.20%**	**11.15%**	**17.30%**	**12.22%**	**11.81%**	**11.93%**	**12.35%**	**12.26%**	**12.56%**	**12.10%**
Economic Profit (EP):										
Beginning TSE	256,515	261,330	279,354	294,127	313,426	333,430	355,728	381,689	410,028	442,614
x (ROE - Cost of Equity)	4.39%	1.34%	7.49%	2.41%	2.00%	2.12%	2.54%	2.45%	2.75%	2.29%
Equity EP	**11,266.88**	**3,494.53**	**20,929.37**	**7,080.20**	**6,257.71**	**7,075.72**	**9,033.08**	**9,344.43**	**11,288.04**	**10,151.23**

J.P. Morgan

Weighted Average Cost of Capital (WACC) Estimation

Cost of Equity:

Risk-Free Rate	3.89%
Beta	1.15
Equity Risk Premium	5.15%
Cost of Equity	**9.81%**

J.P. Morgan

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

Key Inputs:

CV Growth of FCFE	3.00%	CV NI	53,572
CV Year ROE	12.10%	Beg TSE	294,127
WACC	0.00%		
Cost of Equity	9.81%		

Fiscal Years Ending Dec. 31	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
DCF Model:							
Free Cash Flow (FCF)	16,635	17,002	17,487	17,969	18,449	18,926	19,413
Continuing Value (CV)							591,677
PV of FCF	15,149	14,100	13,206	12,358	11,555	10,795	337,469
Value of Operating Assets:	414,631						
Non-Operating Adjustments							
less ESOP	(106)						
Less Preferred stock	(34,838)						
Value of Equity	379,688						
Shares Outstanding	3,022						
Intrinsic Value of Last FYE	$ 125.66						
Implied Price as of Today	$ 131.69						
EP Model:							
Economic Profit (EP)	7,080	6,258	7,076	9,033	9,344	11,288	10,151
Continuing Value (CV)							149,064
PV of EP	6,448	5,190	5,344	6,213	5,853	6,438	85,020
Total PV of EP	120,504						
Invested Capital (last FYE)	294,127						
Value of Operating Assets:	414,631						
Non-Operating Adjustments							
less ESOP	(106)						
Less Preferred stock	(34,838)						
Value of Equity	379,688						
Shares Outstanding	3,022						
Intrinsic Value of Last FYE	$ 125.66						
Implied Price as of Today	$ 131.69						

J.P. Morgan

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

Fiscal Years Ending Dec. 31	2022	2023	2024	2025	2026	2027	2028
EPS	$ 12.01	$ 12.47	$ 13.52	$ 15.05	$ 16.15	$ 17.91	$ 18.75
Key Assumptions							
CV growth of EPS	3.00%						
CV Year ROE	11.66%						
Cost of Equity	9.81%						
Future Cash Flows							
P/E Multiple (CV Year)							10.90
EPS (CV Year)							$ 18.75
Future Stock Price							$ 204.43
Dividends Per Share	4.00	4.20	4.40	4.60	4.80	5.00	
Discounted Cash Flows	3.64	3.48	3.32	3.16	3.01	2.85	116.60
Intrinsic Value as of Last FYE	$ 136.07						
Implied Price as of Today	**$ 142.60**						

J.P. Morgan

Relative Valuation Models

Ticker	Company	Price	EPS 2022E	EPS 2023E	P/E 22	P/E 23	BV Equity PS	Tangible BV Equity	P/B	Shares Out
GS	Goldman Sachs	$301.08	$34.04	$37.70	8.84	7.99	343	117,871	0.88	343.40
MS	Morgan Stanley	$78.93	$6.68	$7.76	11.82	10.17	60	102,662	1.32	1,717.00
BAC	Bank of America	$30.75	$3.17	$3.74	9.70	8.22	33	269,118	0.92	8,035.00
C	Citi Bank									
				Average	10.12	8.79			1.04	
JPM	J.P. Morgan	$105.98	12.01	12.47	8.8	8.5	97.56	286,143	1.09	2,933.00

Implied Relative Value:

P/E (EPS22)	**$ 121.52**
P/E (EPS23)	**$ 109.69**
PEG (EPS22)	**$ 116.34**
PEG (EPS23)	**$ 102.80**
P/B	**$ 101.31**

J.P. Morgan

Present Value of Operating Lease Obligations

Fiscal Years Ending Dec. 31	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Year 1	1884.0	1753.0	1788.0	1936.0	1722.0	1668.0	1598.0	1526.0	1561.0										
Year 2	1804.0	1758.0	1711.0	1845.0	1682.0	1647.0	1479.0	1450.0	1520.0										
Year 3	1674.0	1577.0	1571.0	1687.0	1534.0	1447.0	1301.0	1300.0	1320.0										
Year 4	1497.0	1438.0	1431.0	1529.0	1281.0	1263.0	1151.0	1029.0	1138.0										
Year 5	1363.0	1300.0	1318.0	1267.0	1121.0	1125.0	885.0	815.0	973.0										
Thereafter	7778.0	7188.0	6536.0	6002.0	5101.0	4679.0	3701.0	3757.0	4480.0										
Total Minimum Payments	16000.0	15014.0	14355.0	14266.0	12441.0	11829.0	10115.0	9877.0	10992.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Less: Cumulative Interest	3633.1	3369.2	3094.5	2943.6	2520.6	2338.2	1927.7	1928.0	2220.0	-8190.0	-8006.0	-7888.0	-7923.6	-7986.5	-8048.6	-8111.9	-8176.3	-8240.0	-8304.9
PV of Minimum Payments	**12366.9**	**11644.8**	**11260.5**	**11322.4**	**9920.4**	**9490.8**	**8187.3**	**7949.0**	**8772.0**	**8190.0**	**8006.0**	**7888.0**	**7923.6**	**7986.5**	**8048.6**	**8111.9**	**8176.3**	**8240.0**	**8304.9**
Implied Interest in Year 1 Payment		**618.3**	**582.2**	**563.0**	**566.1**	**496.0**	**474.5**	**409.4**	**397.5**	**438.6**	**409.5**	**400.3**	**394.4**	**396.2**	**399.3**	**402.4**	**405.6**	**408.8**	**412.0**

J.P. Morgan

Effects of ESOP Exercise and Share Repurchases on Common Stock Account and Number of Shares Outstanding

Number of Options Outstanding (shares):	3
Average Time to Maturity (years):	6.80
Expected Annual Number of Options Exercised:	0
Current Average Strike Price:	$ 116.62
Cost of Equity:	9.81%
Current Stock Price:	$106.20

Fiscal Years Ending Dec. 31	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Increase in Shares Outstanding:	0	0	0	0	0	0	0
Average Strike Price:	$ 116.62	$ 116.62	$ 116.62	$ 116.62	$ 116.62	$ 116.62	$ 116.62
Increase in Common Stock Account:	**58**	**58**	**58**	**58**	**58**	**58**	**46**
Share Repurchases ($)	3,122	3,000	3,000	3,000	3,000	3,000	3,000
Expected Price of Repurchased Shares:	$ 106.20	$ 112.82	$ 119.85	$ 127.32	$ 135.25	$ 143.68	$ 152.63
Number of Shares Repurchased:	**29**	**27**	**25**	**24**	**22**	**21**	**20**
Shares Outstanding (beginning of the year)	3,022	2,993	2,967	2,942	2,919	2,897	2,877
Plus: Shares Issued Through ESOP	0	0	0	0	0	0	0
Less: Shares Repurchased in Treasury	29	27	25	24	22	21	20
Shares Outstanding (end of the year)	**2,993**	**2,967**	**2,942**	**2,919**	**2,897**	**2,877**	**2,858**

J.P. Morgan

Valuation of Options Granted under ESOP

Current Stock Price	$106.20
Risk Free Rate	3.89%
Current Dividend Yield	3.58%
Annualized St. Dev. of Stock Returns	40.00%

Range of Outstanding Options	Number of Shares	Average Exercise Price	Average Remaining Life (yrs)	B-S Option Price	Value of Options Granted
Range 1	3	116.62	6.80	$ 31.33	$ 106
Total	3	$ 116.62	6.80	$ 46.80	**$ 106**

J.P. Morgan

Sensitivity Tables

DCF — Equity Risk Premium (rows: Risk-Free Rate)

131.69	3.65%	4.15%	4.65%	5.15%	5.65%	6.15%	6.65%
0.02	276.59	234.11	202.02	176.94	156.83	140.34	126.60
0.03	238.96	205.75	179.90	159.22	142.32	128.26	116.38
0.03	209.60	182.94	161.68	144.35	129.96	117.82	107.46
0.04	186.07	164.20	146.42	131.69	119.30	108.73	99.62
0.04	166.79	148.55	133.47	120.80	110.02	100.73	92.66
0.05	150.73	135.28	122.33	111.33	101.87	93.65	86.45
0.05	137.14	123.90	112.67	103.02	94.66	87.34	80.88

DDM — CV Growth of ROE (rows: CV Growth of EPS)

142.60	4.16%	6.66%	9.16%	11.66%	14.16%	16.66%	19.16%
2.55%	80.04	115.62	131.77	140.99	146.95	151.12	154.21
2.70%	75.61	114.07	131.53	141.50	147.95	152.46	155.80
2.85%	70.99	112.46	131.29	142.04	148.99	153.86	157.45
3.00%	66.16	110.78	131.04	142.60	150.08	155.32	159.18
3.15%	61.12	109.03	130.77	143.19	151.22	156.84	160.99
3.30%	55.84	107.19	130.49	143.80	152.41	158.43	162.88
3.45%	50.32	105.27	130.20	144.44	153.66	160.10	164.86

DCF — CV Growth of FCFE (rows: Beta)

131.69	2.25%	2.50%	2.75%	3.00%	3.25%	3.50%	3.75%
0.70	200.18	204.48	209.24	214.54	220.45	227.11	234.65
0.85	170.14	172.74	175.59	178.70	182.13	185.91	190.11
1.00	147.05	148.61	150.31	152.14	154.13	156.31	158.68
1.15	128.77	129.68	130.65	131.69	132.82	134.03	135.34
1.30	113.96	114.43	114.94	115.48	116.06	116.68	117.34
1.45	101.73	101.92	102.12	102.33	102.56	102.80	103.05
1.60	91.47	91.47	91.46	91.46	91.45	91.45	91.44

DDM — Marginal Tax Rate (rows: Dividend Growth)

142.60	19.80%	21.80%	23.80%	25.80%	27.80%	29.80%	31.80%
0.13	151.37	148.08	144.78	141.49	138.20	134.90	131.61
0.15	151.74	148.45	145.15	141.86	138.57	135.27	131.98
0.18	152.11	148.82	145.52	142.23	138.94	135.64	132.35
0.20	152.48	149.19	145.89	142.60	139.31	136.01	132.72
0.23	152.85	149.56	146.27	142.97	139.68	136.38	133.09
0.25	153.22	149.93	146.64	143.34	140.05	136.75	133.46
0.28	153.59	150.30	147.01	143.71	140.42	137.13	133.83

DCF — Branch Growth (rows: Loaned Deposit %)

131.69	-1.79%	-1.59%	-1.39%	-1.19%	-0.99%	-0.79%	-0.59%
28.77%	136.25	136.25	136.25	136.25	136.25	136.25	136.25
33.77%	134.73	134.73	134.73	134.73	134.73	134.73	134.73
38.77%	133.21	133.21	133.21	133.21	133.21	133.21	133.21
43.77%	131.69	131.69	131.69	131.69	131.69	131.69	131.69
48.77%	130.17	130.17	130.17	130.17	130.17	130.17	130.17
53.77%	128.66	128.66	128.66	128.66	128.66	128.66	128.66
58.77%	127.14	127.14	127.14	127.14	127.14	127.14	127.14

DCF — Loan Rate (rows: Repo Rate)

131.69	1.75%	2.00%	2.25%	2.50%	2.75%	3.00%	3.25%
1.75%	114.92	119.12	123.32	127.51	131.71	135.91	140.11
2.00%	116.31	120.51	124.71	128.91	133.11	137.31	141.50
2.25%	117.70	121.90	126.10	130.30	134.50	138.70	142.90
2.50%	119.09	123.29	127.49	131.69	135.89	140.09	144.29
2.75%	120.49	124.69	128.89	133.08	137.28	141.48	145.68
3.00%	121.88	126.08	130.28	134.48	138.68	142.88	147.08
3.25%	123.27	127.47	131.67	135.87	140.07	144.27	148.47

J.P. Morgan

Key Management Ratios

Fiscal Years Ending Dec. 31	2019	2020	2021E	2022E	2023E	2024E	2025E	2026E	2027E	2028E
Liquidity Ratios:										
Current Ratio (Current Assets/Current Liabilities)	0.47	0.50	0.49	0.53	0.54	0.56	0.57	0.59	0.60	0.61
Cash Ratio	0.12	0.19	0.24	0.28	0.31	0.32	0.34	0.36	0.38	0.39
Financial Leverage Ratios:										
Equity Multiplier (Total Assets/Total Equity)	10.28	12.12	12.73	12.91	12.83	12.71	12.52	12.33	12.09	11.88
Loan to asset ratio	0.35	0.29	0.28	0.27	0.25	0.24	0.22	0.21	0.20	0.18
Loan to deposit ratio	0.61	0.46	0.43	0.41	0.38	0.36	0.34	0.31	0.29	0.28
Profitability Ratios:										
Return on Equity (NI/Beg TSE)	14.20%	11.15%	17.30%	12.22%	11.81%	11.93%	12.35%	12.26%	12.56%	12.10%
Return on Assets (NI/Beg. Total Assets)	0.01	0.01	1.4%	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Profit Margin	0.32	0.24	39.7%	0.28	0.28	0.29	0.31	0.31	0.33	0.34
Payout Ratios										
Total Payout Ratio (Divs + Repurchases)/NI	(0.43)	0.16	(0.16)	0.29	0.30	0.29	0.27	0.27	0.25	0.25
Dividend Payout Ratio	0.30	0.38	0.24	0.33	0.34	0.33	0.31	0.30	0.28	0.28