Company Update — September 6, 2022

Large-Cap Banks

J.P. Morgan Chase & Co. (JPM)

JPM: Seeking Greater Tech Leadership

Our Call

Upcoming Meeting with JPM CIO: JPM appears "all in" to become the best-in-class global tech-enabled bank. JPM seeks to expand its leadership with superior customer engagement, relationships, and innovation. Yet, the jury may remain out given the risks, and we publish this note ahead of our meeting with the CIO tomorrow to give investors a chance to give us their concerns, too. Based on JPM's investor day, our takeaways are that spending at JPM is a microcosm of greater spending generally, potentially aiding tech players such as PATH, MSFT, CRM, CFLT (covered by Wells Fargo's software analyst Michael Turrin, who has previously published on these companies).

Seeking leadership in the innovation economy: JPM's tech moves may enhance its non-replicable global financial leadership long term, but leave investors wanting more evidence of success in the short term. Outstanding questions are whether its push to be the leading financial firm in the innovation economy is worth sacrificing est. 15-20% EPS annually with discretionary spend, and the degree to which JPM can effectively manage its record tech spend.

(1) All in. JPM's investor day reinforced that JPM wants to become the first and best global Digital Bank 2.0, which we define as transcending traditional banking by providing previously unavailable products, services, insights, and engagement. That's in contrast to Version 1.0, which was more about converting banking from analog to digital, than deepening relationships.

(2) Leadership. JPM is willing and able to spend what it takes to win in tech. Over the past decade, its discretionary tech spending—up >2x over the past 5 years—would be enough to capitalize the fifth-largest US bank. To meet its front-end goals, JPM is now embracing the downstream requirements to modernize the back-end.

(3) Risks. Financially, JPM continues to pursue market share but, versus the past, is doing so with negative operating leverage. Managerially, it is tough to monitor paybacks from tech investments. Operating risk gets amplified by the level of JPM's "technical debt", complexity, and franchise breadth. Execution risk increases since JPM is pursuing so many initiatives at the same time.

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Rating	Equal Weight
Ticker	**JPM**
Price Target/Prior:	**$118.00/NC**
Upside/(Downside) to Target	**3.8%**
Price (09/02/2022)	**$113.71**
52 Week Range	$106.06 - 172.96
Shares Outstanding	2,937,050,466
Market Cap (MM)	$333,972
Enterprise Value (MM)	$634,977
Average Daily Volume	12,728,661
Average Daily Value (MM)	$1,447
Dividend (NTM)	$4.00
Dividend Yield	3.5%
Net Debt (MM) - last reported	$301,005
ROIC - Current year est.	12%
3 Yr EPS CAGR from current year (unless otherwise noted)	(4)%

$ EPS	2021A	2022E Curr.	2022E Prior	2023E Curr.	2023E Prior
Q1 (Mar)	4.50 A	2.63 A	NC	2.95 E	NC
Q2 (Jun)	3.78 A	2.76 A	NC	2.94 E	NC
Q3 (Sep)	3.74 A	2.66 E	NC	3.06 E	NC
Q4 (Dec)	3.33 A	2.34 E	NC	3.04 E	NC
FY	15.36 A	10.40 E	NC	12.00 E	NC
P/E	7.4x	10.9x		9.5x	

Source: Company Data, Wells Fargo Securities estimates, and Refinitiv.
NA = Not Available, Volatility = Historical trading volatility

Summary - From Digital Banking 1.0 to Digital Banking 2.0

JPM seems excited about its pursuit to become the first dominant 2.0 Digital Bank. Yet, this also carries risks. The picture below sums up our thoughts—diving off a cliff into the water reflects that there is no turning back from a generational change in core banking systems. This is necessitated by the goal to provide Big Tech-type, front-end customer experiences and services.

Digital Banking 1.0 has been good for JPM. For most of the last decade, JPM's ability to change its banking services from analog to digital—or relatively more to bots from bankers—has aided JPM's improvement in both market share and efficiency. Tech at JPM has worked well—over the past seven years, JPM has shown strong, tech-enabled positive operating leverage, and relative stock price outperformance vs. the SPX and BKX (up 2.8x vs. 2.3x and 2.0x).

Digital Banking 2.0 is now. JPM's new phase of its corporate life cycle is that it seeks to build a better mousetrap by providing new functionality in digital form that was previously unavailable, whereby the experience transcends traditional banking functions. The impetus is both the ability to do so —new tech—and the necessity given the myriad of new competitors. We describe the difference between Digital Banking 1.0 and 2.0 as evolving from mere adoption, transactions, and replication to engagement, relationships, and innovation.

Digital Banking Evolution

Version 1.0		**Version 2.0**
Adoption	→	Engagement
Transactions	→	Relationships
Replication	→	Innovation

Source: Wells Fargo Securities, LLC.

Software analyst gives framework for analysis. Our firm's software analyst gives a framework in his previously published work—moats, automation, and data (“MAD about software”)—for discussing software firms which can apply to JPM, as follows:

1. **Moats.** JPM has made it clear that it can spend whatever it takes, and believes it has the scale as the No.1 bank to do so. JPM's tech spending in 2022 alone equals the total expenses of the eighth largest bank and ranks among the top few of all industries. JPM's goal and potential is to provide superior, homegrown differentiated products, platforms, and experiences, with seamless multichannel delivery, transitioning from “share of wallet” to “share of life” experiences. One clear example of expansion far beyond traditional banking is its acquisition of restaurant guide Zagat.
2. **Automation**. To meet JPM's customer targets, another key goal is to modernize its infrastructure and further its scalability with more bots relative to bankers. Indeed, half of JPM’s infrastructure spend is on the Cloud, and JPM targets $1.5B in automation and other productivity savings.
3. **Data.** JPM also seeks to unlock the power of its data, which includes 500 petabytes of data (for context, the Library of Congress has under 25 petabytes of data). JPM expects that its few hundred use cases with AI should lead to $1B of benefits, and it expects to soon have a few thousand use cases. An overriding objective is for cybersecurity everywhere and all the time.

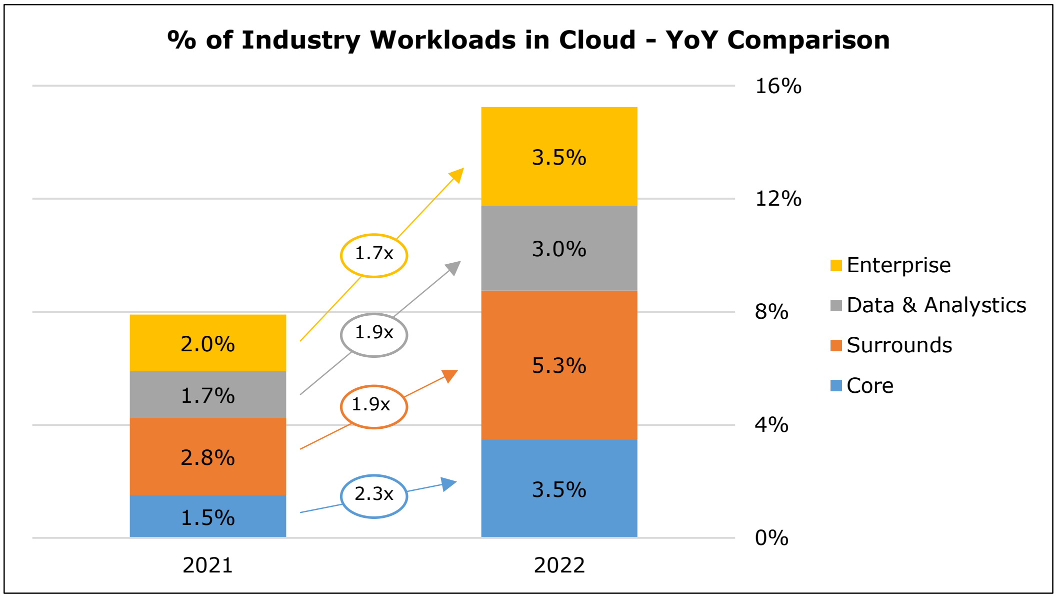
Risks with the new transformation: The key question is whether the pace of accelerating, record tech investments is faster than its ability to effectively manage, similar to the past. Several risks abound as follows:

- **Management risk:** A key question is whether JPM is pursuing **too much at the same time**. It is pursuing the expansion of 14 tech-related deals and strategic investments over the past two years, launching a consumer bank outside the US for the first time (the UK and Brazil are only a start), transitioning the core banking system to the Cloud, and even acting as a first mover to the Metaverse.
  - The decision of if and when to cut losses (as it did with FINN) or invest more (as with US consumer digital banking) can be a tough one. Indeed, in the opening remarks at JPM’s May 2022 investor day, CEO Jamie Dimon said that tech success can be “hard to measure at times”—which means it is even harder for those of us on the outside to have visibility toward progress.

    - The strategic question is whether this is an effective grand plan that pieces together historical investment and other spending, with dozens of transactions to reinforce leadership for the next decade or, as relayed to us by investors, whether this is a new type of empire building built on top of past success but only to push too much.

- **Operating risk:** First, the transition to new systems and esp. the Cloud (half of JPM's infrastructure spending) has typically come with more costs, complexity and time than initially thought. Second, acquisitions have their own items, especially expansion of digital banking in the crowded UK market. Third, the level of "technical debt" is greater than previously realized.
    - To get to Digital Banking 2.0, JPM needs to have a more modernized back office and reduce it's higher than previously known level of apps (6400) and data centers (37), which it intends and needs to do. These are necessary steps to achieve more real-time processing with greater amounts of data to better service customers. Indeed, JPM mentioned "technical debt" on its 4Q21 earnings call for the first time ever.
    - The adage "better late than never" applies since JPM has known about the strategic threat —its 2014 annual report proclaimed that "*Silicon Valley is Coming*"—and is now taking more forceful actions, given Big Tech knocking at the door and sometimes getting in.
- **Financial risk:** What's new is the degree that JPM is willing to sacrifice returns in order to gain share, given the highest increase in tech spending and total expenses in the company's history. JPM's record $14B of tech spending raises the question whether any bank can spend this amount of money wisely, esp. given a discretionary portion ($7B) that is more than 2x above the $2-3B level from 2008-2017.
    - This leads to certain, front-loading of expenses for less certain back end benefits. We forecast the worst three years of operating leverage in the firms modern history (2021-2023). Indeed, inflation has already increased the amount of discretionary investments post 2Q22 results.
    - Much depends on the effectiveness of overseers to ensure financial discipline, though there have been changes in the role of CFO for the firm and in three of the four business lines. In addition, the high level of tech spending is part necessity given JPM's level of "technical debt" and complexity that comes with its expansive business and geographic mix.
- **Cloud risk:** Having rejected the pursuit of the Cloud a few years ago, we suspect that JPM may be only middle of the pack in its pursuit to embrace the Cloud despite its more aggressive stance today. In some ways, JPM looks like others, since all large US banks have a hybrid, multiple Cloud approach (JPM uses AWS, Google, and Microsoft), with seemingly more activities on the front-end than the back-end.
    - We suspect that JPM is in the industry-trend ballpark for doubling Cloud workloads to 15% YoY. This is based on a survey by Accenture of 150 global banks. Yet, unlike some others, JPM seems unable to shoot for "zero ops" (no data systems) given its status as a systemically critical firm.
    - Embracing core banking conversion. Only 7% of banks have converted their core banking platform to the cloud (Accenture). This makes JPM's decision to do so an industry-shaking one, implying the transition of decades old code off clunky mainframes to a new platform.

Exhibit 2 - We est. that JPM is About Middle of the Pack with Transitioning its Cloud Workload



Source: Source: Accenture Research based on Banking Cloud Rotation Index 2022, Banking Cloud Rotation Index 2021, and Wells Fargo Securities, LLC estimates

Opportunities - Summary of JPM's Tech Effort using our A-G format

- **AI:** $1B of expected impact with use cases that should expand from hundreds to thousands; yet, third-party vendors can be like arms dealers which sell to JPM as well as its competitors
- **Big data:** 500 petabytes of data; however, it can take years to fully optimize, clean, and use cohesively
- **Cloud:** moving core banking system among other areas and comprises half of infrastructure investments; on the other hand, the track record is that it costs more, takes longer, and is more complex than expected
- **Digital banking:** 61 mil. active digital customers and top 1 or 2 in almost all digital banking categories; neobanks have est. 1 in 4 global consumer customers and lower cost of entry vs. the past
- **Electronic payments:** $10T of payments processed per day
- **Faster processing:** doubled compute/storage volumes with only modest growth in infrastructure costs (2% CAGR 2015-2021); yet, technical debt is reflected by 6400 apps and 33 data centers.
- **Governance:** Past success—JPM had used tech to improve share and efficiency over most of last decade; a new risk is the greater willingness to accept negative operating leverage for market share

Risks - Summary of JPM's Tech Effort Using the A-G Format

Below we summarize the risks to JPMorgan tech efforts in our A-G format:

- **AI:** Greater use of third-party vendors can be like dealing with arms dealers, which sell to JPM as well as its competitors. In other words, JPM's innovation-leading approach to tech might get diluted. Moreover, another risk is the shorter life cycle of tech, meaning the need for new investments— i.e., that is one advantage of being a "close follower." Lastly, the CIO said evidence of success is to track the firm's business results.
- **Big data:** Scrubbing data into a more useable format may take years to execute, esp. for a firm with 500 petabytes of data and legacy infrastructrure. Over 5 years, tech investment spend has about doubled ($3B in 2017 to $7B in est. 2022) and increased from 1/3 to 1/2 of the tech budget. This

pace of increase can lead to wasteful spending. Indeed, sometimes tech is the wrong tool for the job—the industry applies tech solutions for a process that is flawed est. 1/5th of the time.

- **Cloud:** JPM's core banking system conversion comprises half of infrastructure investments, and the track record is that it costs more, takes longer, and is more complex than expected (based on observations at other firms taking a similar approach). Despite the somewhat late start toward the cloud in general, JPM's hybrid approach is on the path toward public cloud optimization. Yet, moving 100% of its consumer core platform to Thought Machine (incl. 50% of its data to the public cloud by year-end 2023) comes with operational and reputational risks.
- **Digital banking:** Even though 61 mil. active digital customers (the largest) and top 1 or 2 in almost all digital banking categories, neobanks have est. 1 in 4 global consumer customers and lower cost of entry vs. the past.
- **Electronic payments:** JPM is still in the early innings (in our view) of aligning this higher P/E, lower capital-intensive activities across its LOBs.
- **Faster processing:** Doubled compute/storage volumes with only modest growth in infrastructure costs (2% CAGR 2015-2021), yet it still has significant technical debt as reflected by 6400 apps and 33 data centers. For example, State Street is a cautionary tale; its tech transformation this decade led to a worse pre-tax margin due to complexity, cost, difficulty, and time (per its board's lead director). Many JPM efforts probably have no payback, though some have an ROI of 2x, and recent investor day presentations noted five or so year payback periods (consumer, non-US consumer).
- **Governance:** First, digitization creates new risks, and JPM's cyber spend seems defensive to protect against what might be the No.1 risk to banking. While JPM and other large banks seem to have greater resilience, they are more exposed given a larger attack surface. Second, JPM had used tech to improve share and efficiency over most of last decade, but the new risk is the greater willingness to accept negative operating leverage for market share. There are 4 CIOs for JPM's 4 business lines, and then there is also the firm's CIO who oversees tech for the entire firm. While there are synergies by business line, the ability to coordinate activities across business lines does not seem easy.

Financials

Exhibit 3 - JPMorgan Chase Summary Income Statement and Key Operating Metrics

Per share information ($)	2021A	2022E	2023E	2024E	2025E	'21-'25 CAGR
EPS	15.36	10.40	12.00	13.60	14.70	(1.1)
Dividend per share	3.80	4.00	4.20	4.50	4.66	5.2
Book value	88.07	89.52	97.69	105.60	113.98	6.7
Tangible book value	71.53	72.68	80.91	88.46	96.34	7.7
Avg diluted shares O/S (MM)	3,026.9	2,971.1	2,976.8	2,941.5	2,867.3	(1.3)
EOP common shares O/S (MM)	2,944.1	2,935.6	2,944.8	2,883.4	2,801.9	(1.2)
Key operating metrics (%)	**2021A**	**2022E**	**2023E**	**2024E**	**2025E**	
Revenue growth	1.9	2.1	6.8	5.1	4.5	
Expense growth	7.0	7.5	3.7	1.8	3.5	
Core revenue growth	2.9	2.1	6.3	5.1	4.5	
Core expense growth	6.2	8.3	3.7	1.8	3.5	
Reported efficiency ratio	58.5	61.5	59.9	58.0	57.3	
Core efficiency ratio (managed)	56.9	60.0	58.2	56.4	55.8	
Net interest margin	1.64	1.83	2.07	2.18	2.21	
Net charge-off ratio	0.28	0.32	0.59	0.62	0.60	
Tier 1 common	13.0	12.3	13.0	13.2	13.3	
ROTCE	22.9	14.9	15.8	16.2	16.0	
ROA	1.30	0.82	0.91	0.98	1.00	
Income statement (US$MM)	**2021A**	**2022E**	**2023E**	**2024E**	**2025E**	**'20-'25 CAGR**
Net interest income (FTE)	52,741	62,373	70,281	73,637	76,603	9.8
Fee revenues	72,908	65,971	66,142	69,793	73,318	0.1
Non-core revenues (incl. sec gains)	(345)	(471)	176	178	180	NM
Total revenues	125,304	127,874	136,599	143,608	150,101	4.6
Operating expenses	(71,343)	(76,670)	(79,535)	(80,959)	(83,807)	4.1
Non-core expenses	-	-	-	-	-	NM
Total expenses	(71,343)	(76,670)	(79,535)	(80,959)	(83,807)	4.1
Pre-provision net revenues	53,961	51,204	57,064	62,649	66,294	5.3
Net charge-offs	(2,945)	(3,562)	(6,906)	(7,591)	(7,739)	27.3
Reserve releases & other	12,201	(4,020)	(475)	400	(300)	NM
Net provisions	9,256	(7,582)	(7,381)	(7,191)	(8,039)	NM
Pretax net income	63,217	43,622	49,683	55,459	58,255	(2.0)
Taxes	(14,883)	(10,951)	(12,182)	(13,684)	(14,331)	(0.9)
Minority interest	-	-	-	-	-	NM
Net income	48,334	32,671	37,501	41,774	43,924	(2.4)
Preferred dividends & other	(1,831)	(1,782)	(1,782)	(1,782)	(1,782)	(0.7)
Net income available for common	46,503	30,889	35,719	39,992	42,142	(2.4)

Source: Company reports, Wells Fargo Securities LLC estimates

Investment Thesis, Valuation and Risks

J.P. Morgan Chase & Co. (JPM)

Investment Thesis

JPMorgan Chase (rated Equal Weight) has excelled at both offense and defense over the past decade in which it has been gaining market share in all major business lines while optimizing its businesses, showing consistent earnings relative to other global banks, and creating a "fortress balance sheet" (as defined by its CEO). Playing defense has carried more importance over the past few years; however, greater offense is expected to play a role as JPM continues to invest long term. This issue is certain to us: front-loaded spending in the near term for less certain back-ended benefits. JPM continues to reflect our “Goliath is Winning” theme, but the cost and time frame for doing so are greater and longer than expected. Moreover, JPM is more expensive than the average bank at a time when other banks are more pure plays on our 2022 theme (“NII to the Sky”).

Target Price Valuation for JPM: $118.00 from NC

We arrive at a price target of $118, which implies 9.8x our 2023E EPS and 1.6x price-to-tangible book value, based on the simple average of six valuation techniques (PE, price-to-book, discount dividend model, PEG ratio analysis and sum of the parts for both P/E and P/B). The 20-year forward P/E for JPM has averaged 14x, and the median was 12x; PTB avg. 1.8x over the past decade.

Risks to Our Price Target and Rating for JPM

Macro downside risk factors include a slowdown in global economic activity, greater-than-expected increases in unemployment and bankruptcies (in the US and abroad), and adverse changes in US and foreign laws and regulations. Company-specific downside risks include higher-than-projected credit losses (especially in credit cards and home equity but also other consumer areas and commercial lending), market and interest-rate risks (which can affect JPMorgan's businesses and portfolios in a variety of ways, especially MSRs and investment securities), and operational risks (primarily associated with regulatory compliance across the firm's domestic consumer and global wholesale businesses). Risks to the upside include higher rates with a steeper yield (helps traditional banking revenue), with no commensurate negative impact on capital markets activities (advisory, underwriting, trading) and a stronger than expected recovery (resulting in stronger-than-expected loan growth).

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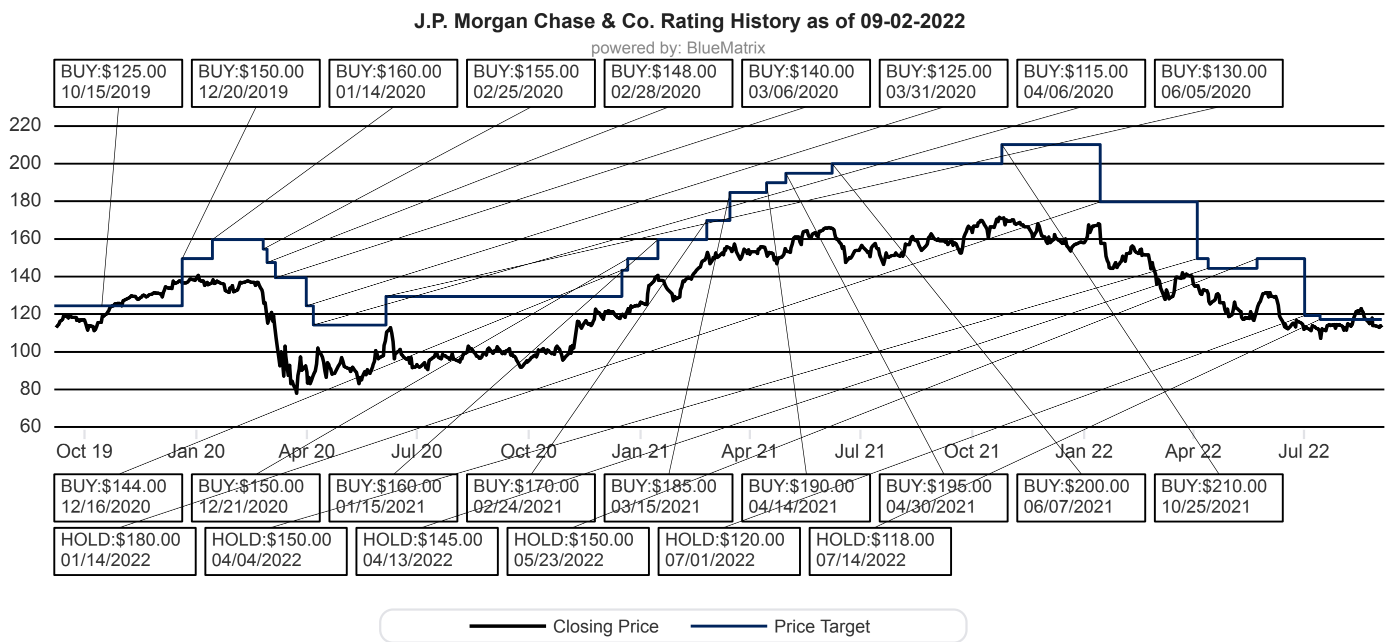

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