



Rear Window: Market update; post-mortem on the last year of Eye on the Market calls; Mamdani vs History

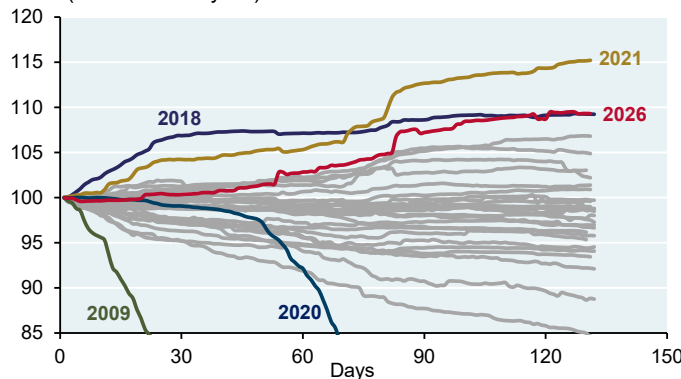
Some important US leading indicators are in positive territory (ISM new orders less inventories), and S&P 500 earnings revisions this year are at the high end of the historical range as shown on the left. The Q2 earnings season was also positive for hyperscaler annual revenue growth: AWS 37%, Microsoft Azure 43% and Google Cloud 82%. Rising revenue backlogs reinforce evidence of AI monetization: Google Cloud's backlog increased \$52 bn to \$514 bn, and the AWS backlog rose to \$496 bn, up 36% q/q. Earnings growth is also more broad-based than it was in 2024-2025 when AI was the primary driver.

The uncertainties: earnings growth appears highly contingent on continued hyperscaler capital spending and R&D which rose from \$460 bn in 2024 to \$870 bn over the last 12 months. The second chart indicates why I believe this to be the case. The share of S&P 500 companies with positive expected earnings growth is normally well-predicted by the ISM manufacturing survey. But since the AI capital spending boom began, earnings breadth has eclipsed the improvement in manufacturing surveys; this suggests a powerful trickle-down effect from hyperscalers to other sectors. Also, as shown in the third chart, an unusually high share of S&P 500 earnings is due to unrealized valuation gains on Anthropic and OpenAI.

The S&P 500 and the Nasdaq have gained ~12% this year despite the Iran War pushing up US commodity prices (see Iran War tracker), a roughly 50 basis point rise in ten year US Treasuries and growing data center delays and/or backlash...even in Texas which just imposed a temporary data center moratorium.

Evolution of S&P 500 EPS forecasts since 1996

Index (100 = start of year)



Source: FactSet, JPMAM, July 2026

S&P 500 companies with positive forward EPS growth vs ISM manufacturing PMI

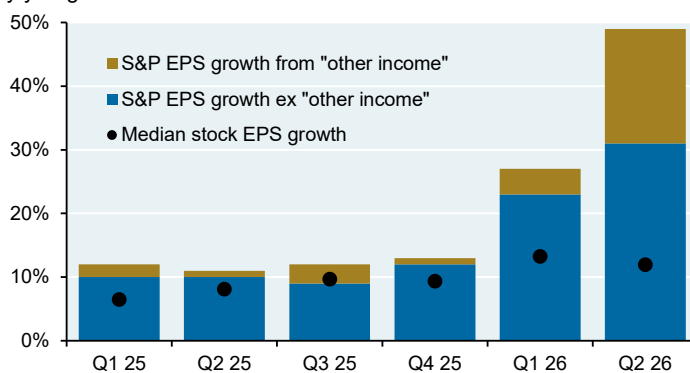
Index (50+ = increasing)



Source: Factset, Bloomberg, JPMAM, August 2026

S&P 500 EPS growth

y/y % growth



Source: Goldman Sachs Q2 2026 mid-season earnings update, Q2 2026

10-year US Treasury yield

Yield, percent



Source: Bloomberg, JPMAM, September 1, 2026

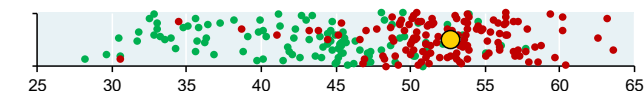


On the Treasury intervention. The Treasury has its work cut out for it in trying to cap 10 year bond yields, as it tried in an August Twist operation¹. The ten year Treasury yield is slightly above the level when the Twist operation was announced on August 19 (see chart above). This effort follows the use of the Fed's repo facility in July to lend money to Japan to support the sliding Yen, without which Japan might have sold some of its long duration UST holdings; note that the Yen has been declining again after rallying upon the July announcement.

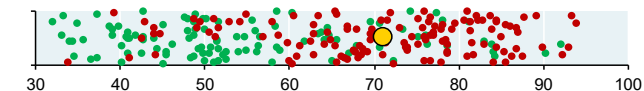
The Treasury faces three challenges in trying to constrain bond yields from rising: (i) growth appears very strong relative to today's Fed Funds rate, one proxy for which is the first chart below showing that current conditions (yellow dots) are much closer to prior Fed tightening episodes (red) than easing ones (green)...(ii) US fiscal deficits and government debt continue to worsen despite a growing economy...

Fed easing (green) vs tightening (red)

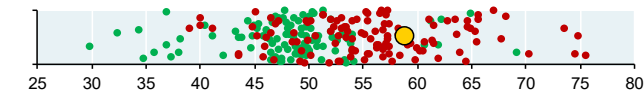
Employment index (50+ = tighter employment conditions)



Prices paid index (50+ = increasing prices)

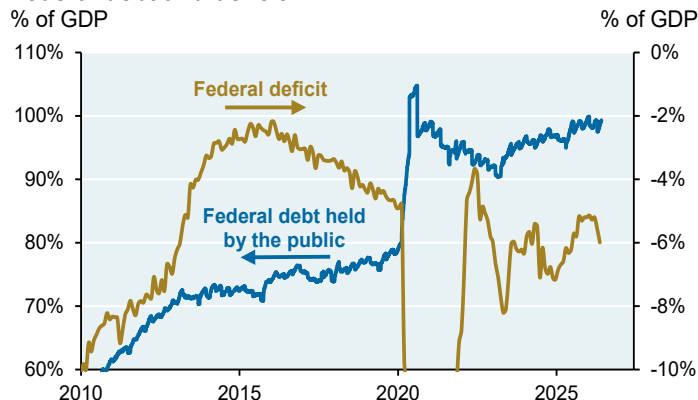


Supplier delivery index (50+ = slower deliveries, tighter supply chains)



Source: ISM, Federal Reserve, CBO, Bloomberg, JPMAM, July 2026

Federal debt and deficit

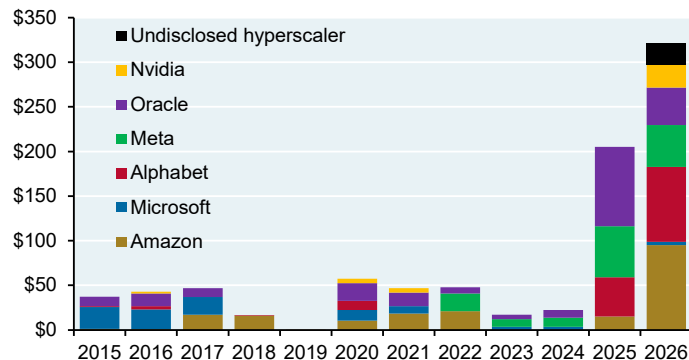


Source: Bloomberg, JPMAM, August 28, 2026

...and (iii) **hyperscalers are issuing so much debt that they may be causing a supply-demand issue at the long end of the yield curve.** In 2026 so far, debt issuance by the five hyperscalers plus NVIDIA is ~\$320 bn (including SPVs for which these companies are backstop obligors on data center leases). Looking just at the long duration component in 2026, we estimate \$310 bn in ten year equivalents. That's 50% of new Treasury long duration borrowing this year. Unfortunately for Treasury Secretary Bessent, there's not much he can do about (i) and (ii). On (iii), as in the words of FCC Chairman Carr, I suppose that hyperscalers can always be informed to do things the easy way or the hard way, if it comes to that.

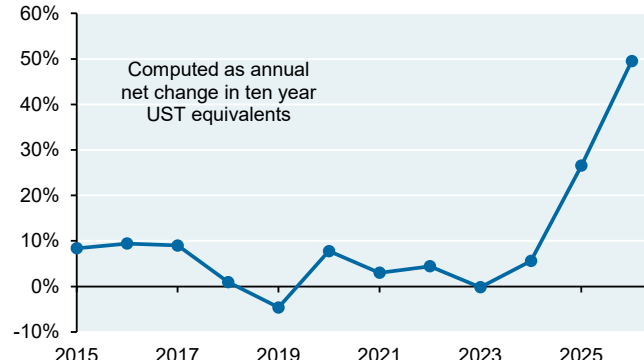
5 hyperscalers + NVDA new investment grade debt + SPVs

Billion US\$



Source: Bloomberg, JPMAM, August 31, 2026

Hyperscaler + NVIDIA 10 yr+ debt issuance (incl. SPVs) as a percent of Treasury bond issuance, Percent



Source: Bloomberg, JPMAM, September 2, 2026

¹ The Treasury announced that it will increase monthly purchases of 10 to 30 year Treasuries to at least \$11 billion from \$5 billion, financing the purchases by issuing shorter term debt or drawing on the cash in its general account. If these amounts remain, the 2026 Treasury Twist would be ~25% of the Fed's 2011-2012 Twist while the outstanding stock of Treasuries with maturities longer than 10 years has risen from \$1 trillion to \$5.8 trillion. As a result, today's operation may have a smaller impact on constraining rising rates than in the past



Rear Window

Over the last year, the Eye on the Market included views on sectors, rates and currencies. For this back-to-school piece, I prepared a rear window post-mortem on each.

What we got right: a buying opportunity in healthcare; stagnation of the hyperscalers; the bursting of the Korea/semiconductor/memory stock bubble; software stocks were oversold after the Citrini Research panic; the nuclear/SMR renaissance illusion; the US dollar will remain stable; Oracle debt and equity are overpriced; the Fed's next move will be a hike not an ease; risks to traditional entertainment stocks from alternative media.

What we got wrong and what we missed: China AI basket; Chicago/Illinois default risk; outsized gains in Korea, Taiwan and Japan; the US Small Cap recovery; Asian/EM fixed income; Western critical minerals companies.

To conclude: thoughts on what NYC Mayor Mamdani's Administration is planning with respect to residential real estate seizures and transfers to tenant groups/non-profits.

Michael Cembalest
JP Morgan Asset Management

In case you missed it: end of summer Eye on the Market publications and activities

[Patchmageddon](#): New frontier models have created a step-change in cyber risks for software and hardware

[The Year of the Trojan Fire Horse](#): on Chinese economic imbalances and unrelenting mercantilism

[PolySandra](#): Mid-year energy update, including the latest impact of the Iran War on the energy transition

Activities. One of the best personal investments I've made is a Hobie Mirage Outback fishing kayak which I keep in Trinidad after sending it there in a shipping container from Miami. In August, I landed what might be one of the largest tarpon ever caught on a kayak at 200 pounds. You can see a quick 7 second video reel [here](#), and a longer 3 minute version [here](#).

Kayak fishing for adult tarpon can only be done safely in select places due to the presence of sharks. The Gulf of Paria on the West Coast of Trinidad is a shallow and low-salinity inland sea heavily influenced by freshwater runoff from the Orinoco River, so sharks are much rarer there.

I fish with Monsta Tarpon which is highly recommended since Trinidad has one of the best tarpon fisheries in the world. The lodge is located on the island of Gaspar Grande in Western Trinidad and it's a short 10-15 minute boat ride to the fishing spots.

**Eye on the Market post-mortems, August 2025-July 2026****What we got right****Healthcare is pricing in a lot of bad news and looks like a good value play, “Sick as a Dog”, August 12, 2025**

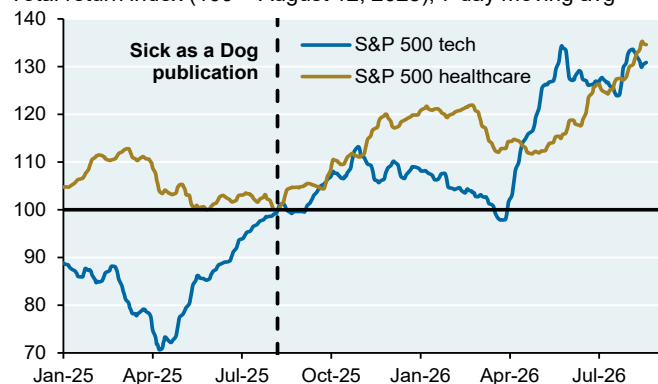
- Healthcare used to be the market’s best growth sector; it tracked the tech sector from 1989 to 2019 and with less volatility. Healthcare then imploded: from 2020 to 2025, healthcare sharply underperformed tech and other major sectors as well. In August 2025, healthcare was trading close to the lowest relative valuations in its history
- Our August 2025 piece highlighted the opportunity in healthcare for value investors. Since our publication, healthcare has tracked technology returns with even greater gains in mid cap and small cap healthcare. All subsectors of healthcare have shown improved returns with the exception of healthcare equipment

Hyperscaler outperformance coming to an end, “Smothering Heights”, January 1, 2026

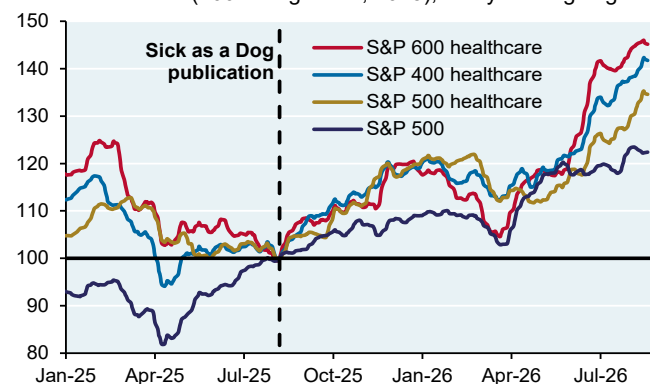
- Hyperscalers roughly tripled the return on the S&P 500 from 2022-2025. But we saw headwinds coming: the 2026 Outlook emphasized the rising risks facing hyperscalers due to sharply falling free cash flow, rising reliance on debt to fund capital spending, a decline in stock buybacks and insufficient signs of positive returns on invested capital
- Hyperscalers underperformed the tech sector, the broad market and the S&P 500 ex-tech so far in 2026

Healthcare vs Technology

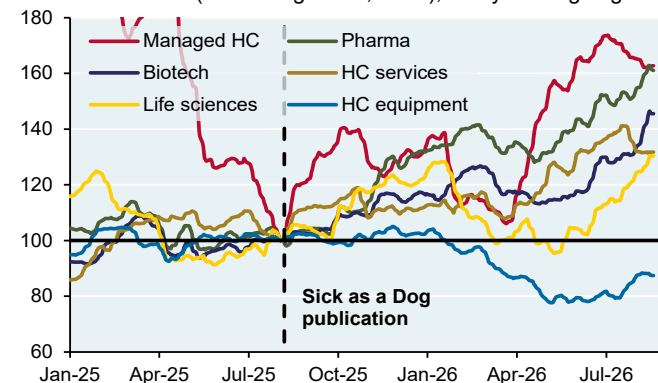
Total return index (100 = August 12, 2025), 7 day moving avg

**Healthcare vs S&P 500**

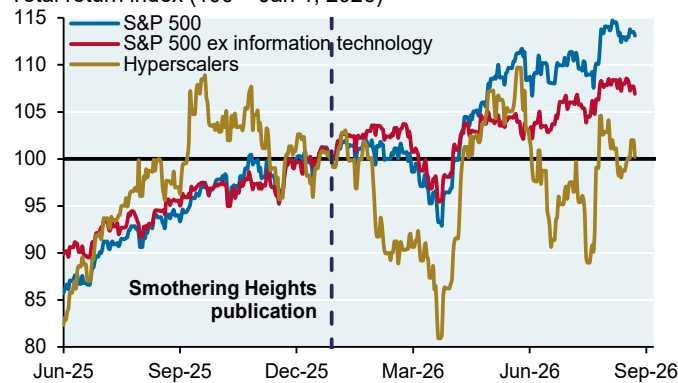
Total return index (100 = August 12, 2025), 7 day moving avg

**S&P 500 healthcare sectors**

Total return index (100 = August 12, 2025), 7 day moving avg

**S&P 500 vs Hyperscalers**

Total return index (100 = Jan 1, 2026)

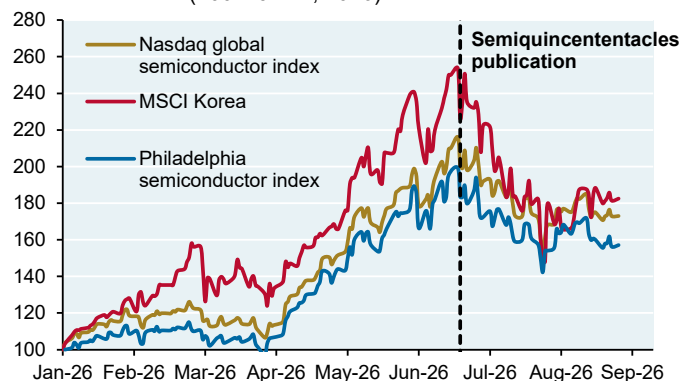


**Korean and global semiconductor stocks: look out below, “Semiquincententacles”, June 23, 2026**

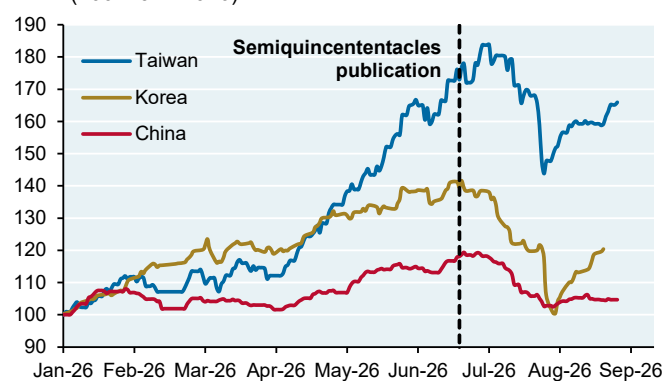
- In late June we highlighted how the technicals of soaring semiconductor stocks had breached levels not seen since the dot-com boom, and highlighted other indicators which were spiking as well: hedge fund exposure to semiconductor and hardware stocks, Korean margin debt, option premiums on semiconductors and market risk associated with leveraged semiconductor ETFs
- Almost immediately after the June 2026 Eye on the Market, Korean stocks and global semiconductors began to sell off, accompanied by unwinding leverage in Asia

MSCI Korea and semiconductors

Total return index (100 = Jan 1, 2026)

**Outstanding stock margin loans**

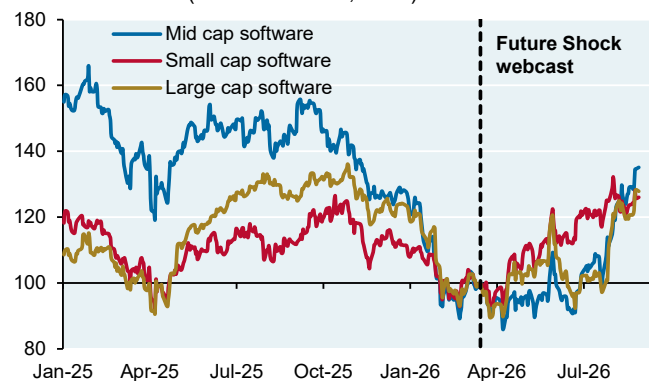
Index (100 = Jan 2026)

**US software stocks are oversold in the wake of agentic AI rollout, “Future Shock”, March 17, 2026**

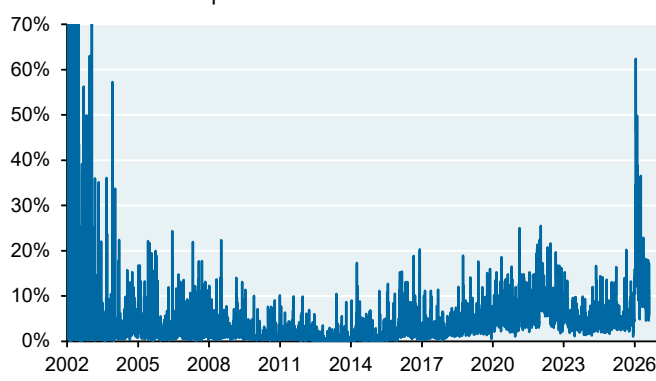
- The Citrini Research memo terrified investors regarding the future earnings potential of traditional software stocks due to the sudden rise of agentic AI programs. But software company forward earnings projections are stable, software valuations relative to the market reached the lowest levels since 1991, and panicked selling of software reached levels not seen since the dot-com unwind
- As Mark Twain reportedly said, “reports of my death are greatly exaggerated”: since our March piece, large/mid/small cap software stocks have rebounded

Software equity performance

Total return index (100 = March 17, 2026)

**Indicative software ETF daily turnover**

Percent of market cap





The nuclear/SMR renaissance is an illusion so far, “Fighting Words”, March 3, 2026

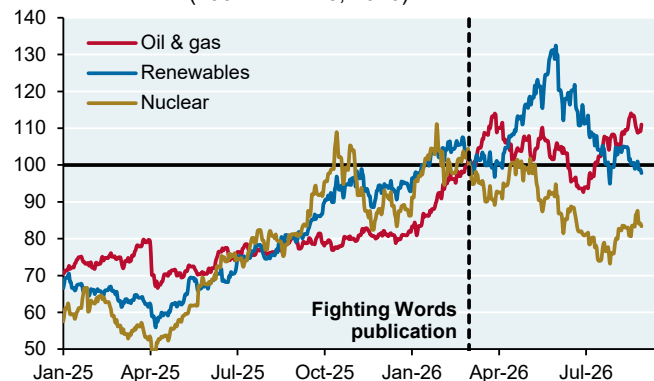
- Even with the prospect of nth-of-a-kind cost reductions, SMRs might cost 2x+ more than current grid power options. The notion that nuclear plants can be economically modularized is an unproven proposition. A handful of tech giants might finance a couple to SMRs to power data centers but as broadly adopted new forms of grid power, SMRs face very steep proof-of-concept and proof-of-cost challenges
- Since our March energy paper, a benchmark nuclear index has declined relative to renewables and oil & gas

Don’t short the US dollar, “Smothering Heights”, January 1, 2026

- A popular view among macro investors and strategists: the dollar is too high given US fiscal and structural problems. But we don’t see declines in the fundamental factors that drive the dollar’s role as world reserve currency: the dollar’s share of cross border loans, international debt securities issuance, FX transaction volumes, central bank FX reserves, trade invoicing and SWIFT payments; all of these measures are stable
- The dollar drifted up this year and is still flat even after the Treasury intervention

Energy total returns

Total return index (100 = March 3, 2026)



Source: Bloomberg, JPMAM, August 31, 2026

US dollar indices

Index (100 = Jan 1, 2024)



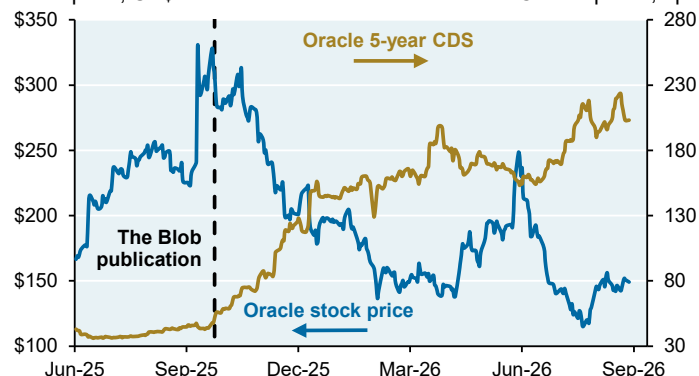
Source: Bloomberg, JPMAM, August 31, 2026

Oracle equity and credit are overpriced given its massive debt load, “The Blob”, September 24, 2025

- In September 2025, Oracle’s stock jumped by 25% after being promised \$60 billion a year from OpenAI, an amount of money OpenAI doesn’t earn yet, to provide cloud computing that Oracle hadn’t built yet, and which will require 4.5 GW of power (i.e., the same power as four 4 nuclear power plants), as well as increased borrowing by Oracle whose debt to equity ratio was already 500% compared to 50% for Amazon, 30% for Microsoft and even less at Meta and Google
- A Delphic Oracle: since our piece, Oracle’s stock and credit spreads sold off sharply

Oracle stock price vs credit spreads

Stock price, US\$



Source: Bloomberg, JPMAM, August 31, 2026





The Fed's next move will be a hike rather than an ease, "*Fair Shakes*", September 2, 2025

- With the exception of the 1989-1991 easing cycle around the S&L crisis, the Fed almost never cuts policy rates when manufacturing and service sector price surveys are rising. We believed that the next Fed move would be a hike rather than an ease, despite pressure from the White House
- Fed Funds futures prices have risen by almost 1% for the December 2026 contract since then

Fed funds futures pricing for December 2026



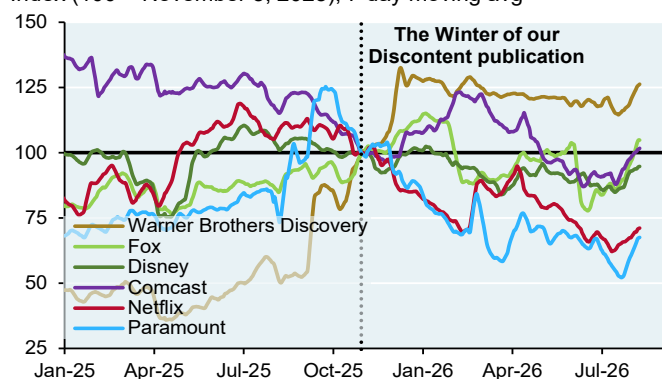
Source: Bloomberg, JPMAM, September 1, 2026

Alternative media creates risks for traditional media stocks, "*The Winter of our Discontent*", November 5, 2025

- There are multiple revenue drivers for companies like Fox, Disney and Paramount. But the challenges highlighted in our November 2025 report continue to build: streaming platforms like YouTube and Amazon Prime take viewership share from legacy broadcast and cable; streaming platforms such as Disney Plus, Paramount+ and Peacock are less profitable for their parent companies than cable/broadcast channels that don't require as much spending on content distribution and hardware; and consumers now spend more than 90 minutes a day on social networks, displacing time that used to be spent watching television
- I'm puzzled by Netflix's price decline given continued strong earnings and subscriber performance, although the company's decision to stop disclosing certain customer engagement metrics is not a confidence builder. In any case, since our report: Netflix is down, so is Paramount and Fox, and both Disney and Comcast are flat over a time period when the S&P 500 rose 14%. Only Warner Brothers is up, courtesy of an offer which continues to negatively affect Paramount's bottom line due to a lot of debt² and penalties for late closing

Select media stock price performance

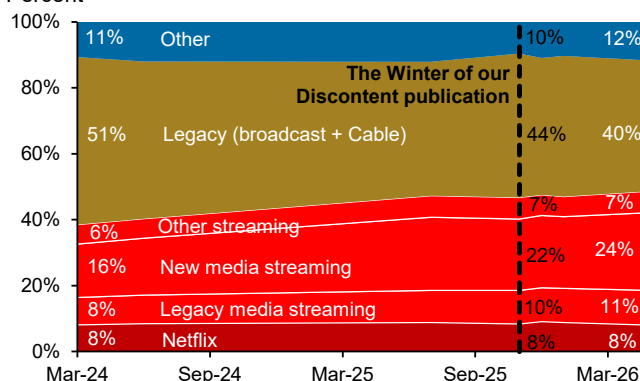
Index (100 = November 5, 2025), 7 day moving avg



Source: Bloomberg, JPMAM, August 31, 2026

Share of US TV viewing time

Percent



Source: Nielsen, May 2026

² Paramount's post-closing debt is estimated at 6.5x EBITDA, a level often associated with a single-B non-investment grade credit rating. Media companies have shown the ability to reduce debt: Warner's merger with Discovery resulted in leveraged of 5.0x which fell to 3.3x by the time of the Paramount acquisition via content cuts, layoffs and price hikes. Paramount will now presumably need to do the same. For all the hand-wringing about hyperscaler debt growth, Meta's latest debt/EBITDA is just 0.45x even when including SPV financing

**What we got wrong and what we missed****Chinese AI stocks look attractive, “Home Alone”, May 26, 2026**

- China is building home-grown alternatives to AI imports. We outlined 32 Chinese companies (software, semiconductors, power, electrical components, equipment, construction machinery, heavy transportation equipment, interactive media and online retail) that we thought would benefit
- Since this Eye on the Market, the China AI basket declined and underperformed a 42-stock US AI basket

Chicago and Illinois are flirting with long-term insolvency, “The Blob”, September 24, 2025

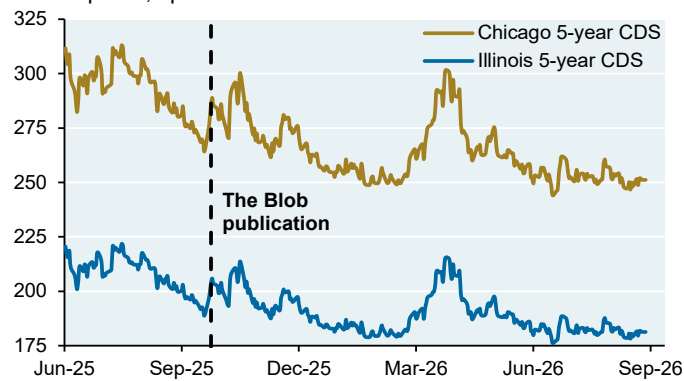
- Chicago and Illinois have among the worst financials among US municipalities, and face the added challenge that their unfunded obligations are more linked to unalterable pensions rather than retiree healthcare. Federal stimulus money has run out, and declining commercial property values in the Chicago Loop have resulted in a 16.7% Chicago residential property tax hike, the largest in 30 years
- Credit markets show no concerns at all as both spreads have tightened (!!) since then

Investing in AI

Total return index (100 = Jan 1, 2025)

**Credit default swap spreads for Illinois & Chicago**

Credit spread, bps

**Western critical mineral suppliers are attractive given Chinese export controls, “Mad Libs”, October 16, 2025**

- China introduced new critical mineral export curbs targeting the US, policies which we believed would create opportunities for investors in Western critical mineral suppliers
- We missed the gains in early 2025; since our recommendation, a Western critical minerals index is flat

Western critical minerals suppliers index

Index (100 = October 16, 2025)



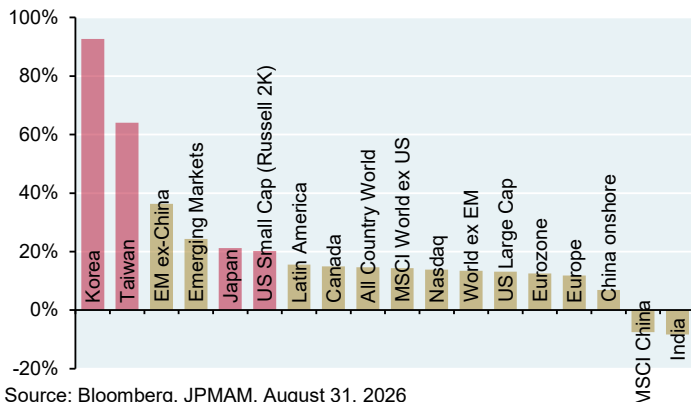


Missed opportunities: Korea, Taiwan and Japan; US small cap; Asian/EM fixed income

- While we highlighted semiconductor peaks in June as discussed earlier, we did not foresee outsized returns in Korea, Taiwan and Japan in the 2026 Outlook, even when incorporating the recent correction
- We did not highlight the possibility of a recovery in US small cap after years of underperformance
- We did not highlight the opportunity in Asian/EM fixed income which has outperformed US Treasuries and Investment Grade corporate bonds

2026 ytd total returns for major equity markets

Percent, US\$ returns



Source: Bloomberg, JPMAM, August 31, 2026

YTD total returns for major fixed income markets

Percent, US\$



Source: Bloomberg, JPMAM, Aug 31, 2026. ABS = asset-backed securities

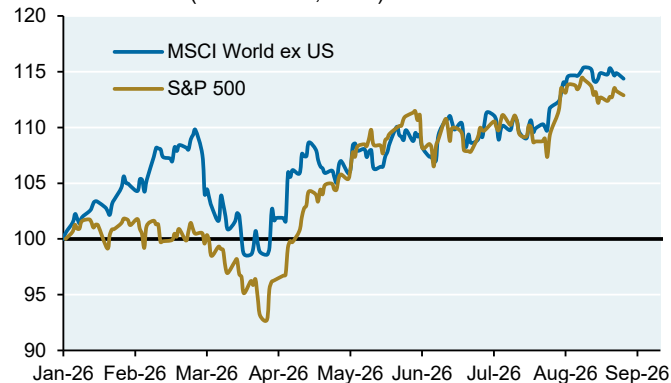
The Jury is Out

Reduce the US equity overweight vs rest of world, "Smothering Heights", January 1, 2026

- Trump policies on trade, the dollar and the deficit argue for a less US centric portfolio than in the prior decade, particularly since non-US equities still traded at a large P/E discount to the US
- US and non-US equities have traded in a dead heat so far this year after years of US outperformance

MSCI World ex US vs S&P 500

Total return index (100 = Jan 1, 2026)



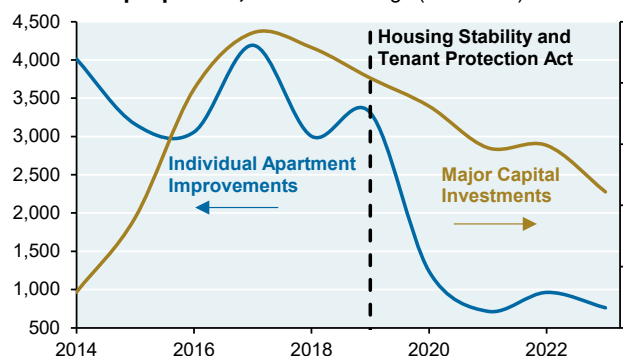
Source: Bloomberg, JPMAM, August 31, 2026



Seize and Desist: NYC prepares to seize properties and transfer them to tenant and non-profit groups

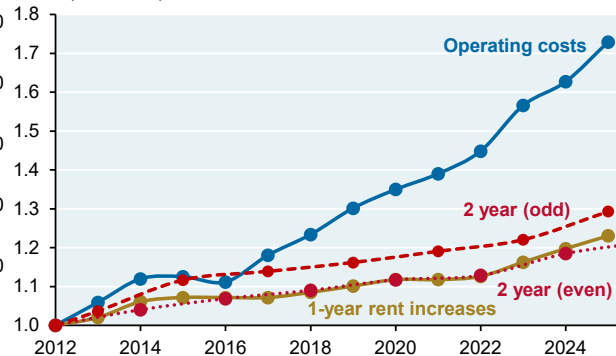
In February I wrote a piece called “[Supply and the Mam](#)” on the 1970’s debt crisis, NYC residential real estate, NYC rent control/stabilization, the housing shortage, *City of Yes* zoning regulations, NYC budget/borrowing limitations, NYC income and property tax rates and 2019 laws which now render many renovations deeply unprofitable. The 2019 law has been an earthquake for NYC apartment improvements and finances:

Apartment and building improvement filings at rent stabilized properties, Number of filings (both axes)



Source: Rent Stabilization Assoc of NYC, RE Board of NY, February 2024

Operating cost vs rent stabilized rent increases
Index (1 = 2012)



Source: Jason Barr (Rutgers), 2025

We also covered Mamdani’s plan to seize properties and transfer them to tenant groups and non-profits, a policy the Mayor more explicitly outlined in his May “Block by Block” report. The policy is simple: as landlords postpone improvements since renovation payback periods can now exceed 25 years, the city will conduct “roof to cellar” inspections and impose fines as it sees fit. Severely delinquent landlords risk being declared negligent and subject to seizure/transfer due to poor building conditions.

I have questions given the checkered history of similar policies:

- Mamdani’s plan relies on the NYC Article 7A Program, enacted in 1965 and which allows housing courts to appoint administrators to operate effectively abandoned and unsafe buildings. In the 1970s and 1980s, city-appointed administrators collected rents on ~6,000 buildings and redirected them toward repairs. But: rents often didn’t cover expenses, so as a result many buildings accumulated property tax arrears while their conditions remained generally deplorable³. The city held such properties for ~19 years and spent billions in the process. How does the Mamdani Administration plan to avoid repeating these outcomes?
- How will tenants and nonprofits renovate dilapidated properties without substantial taxpayer subsidies? How will this new system differ from badly managed and chronically underfunded NYC public housing?
- How will new rent controls, mandatory construction wage increases and property seizures incentivize development of new units? Might seizures prompt landlords to remove buildings from the market entirely given the risk of expropriation, further increasing the stock of units currently held off market?
- Jason Furman, former chairman of President Obama’s Council of Economic Advisers, stated in 2024 that “rent control has been about as disgraced as any economic policy in the tool kit”⁴. What does that imply regarding the medium-term impact of NYC’s latest round of rent controls on housing supply and costs?
- All seven judges on the New York Court of Appeals were appointed by Democratic Governors, so property owners are unlikely to get any relief there. Will they appeal to the US Supreme Court, claiming some form of unconstitutional expropriation that’s inconsistent with the 14th Amendment Due Process clause?
- Is this just the beginning of a larger battle between the private sector and an administration whose Director of the Office to Protect Tenants said that “home ownership is a weapon of white supremacy masquerading as wealth building public policy”, and that it was necessary to “impoverish the white middle class”⁵?

³ “The State is not a Good Landlord”, John Ketcham, Manhattan Institute, June 8, 2026. Currently, there are only around 30 buildings administered under the Article 7Aa program

⁴ “Mamdani’s unconstitutional housing solution digs a deeper hole: the best way to alleviate the crisis is to build homes, not seize them”, Ilya Somin, Washington Post, June 9, 2026

⁵ Yes, these are direct quotes: New York Times, January 6, 2026; ABC News, January 7, 2026

**IMPORTANT INFORMATION**

This material is for information purposes only. The views, opinions, estimates and strategies expressed herein constitutes Michael Cembalest's judgment based on current market conditions and are subject to change without notice, and may differ from those expressed by other areas of JPMorgan Chase & Co. ("JPM"). **This information in no way constitutes J.P. Morgan Research and should not be treated as such.** Any companies referenced are shown for illustrative purposes only, and are not intended as a recommendation or endorsement by J.P. Morgan in this context.

GENERAL RISKS & CONSIDERATIONS Any views, strategies or products discussed in this material may not be appropriate for all individuals and are subject to risks. Investors may get back less than they invested, and **past performance is not a reliable indicator of future results.** Asset allocation/diversification does not guarantee a profit or protect against loss. Nothing in this material should be relied upon in isolation for the purpose of making an investment decision.

NON-RELIANCE Certain information contained in this material is believed to be reliable; however, JPM does not represent or warrant its accuracy, reliability or completeness, or accept any liability for any loss or damage (whether direct or indirect) arising out of the use of all or any part of this material. No representation or warranty should be made with regard to any computations, graphs, tables, diagrams or commentary in this material, which are provided for illustration/ reference purposes only. Any projected results and risks are based solely on hypothetical examples cited, and actual results and risks will vary depending on specific circumstances. Forward-looking statements should not be considered as guarantees or predictions of future events. Nothing in this document shall be construed as giving rise to any duty of care owed to, or advisory relationship with, you or any third party. Nothing in this document shall be regarded as an offer, solicitation, recommendation or advice (whether financial, accounting, legal, tax or other) given by J.P. Morgan and/or its officers or employees. J.P. Morgan and its affiliates and employees do not provide tax, legal or accounting advice. You should consult your own tax, legal and accounting advisors before engaging in any financial transactions.

For J.P. Morgan Asset Management Clients:

J.P. Morgan Asset Management is the brand for the asset management business of JPMorgan Chase & Co. and its affiliates worldwide.

To the extent permitted by applicable law, we may record telephone calls and monitor electronic communications to comply with our legal and regulatory obligations and internal policies. Personal data will be collected, stored and processed by J.P. Morgan Asset Management in accordance with our privacy policies at <https://am.jpmorgan.com/global/privacy>.

ACCESSIBILITY

For U.S. only: If you are a person with a disability and need additional support in viewing the material, please call us at 1-800-343-1113 for assistance.

This communication is issued by the following entities: In the United States, by J.P. Morgan Investment Management Inc. or J.P. Morgan Alternative Asset Management, Inc., both regulated by the Securities and Exchange Commission; in Latin America, for intended recipients' use only, by local J.P. Morgan entities, as the case may be.; in Canada, for institutional clients' use only, by JPMorgan Asset Management (Canada) Inc., which is a registered Portfolio Manager and Exempt Market Dealer in all Canadian provinces and territories except the Yukon and is also registered as an Investment Fund Manager in British Columbia, Ontario, Quebec and Newfoundland and Labrador. In the United Kingdom, by JPMorgan Asset Management (UK) Limited, which is authorized and regulated by the Financial Conduct Authority; in other European jurisdictions, by JPMorgan Asset Management (Europe) S.à r.l. In Asia Pacific ("APAC"), by the following issuing entities and in the respective jurisdictions in which they are primarily regulated: JPMorgan Asset Management (Asia Pacific) Limited, or JPMorgan Funds (Asia) Limited, or JPMorgan Asset Management Real Assets (Asia) Limited, each of which is regulated by the Securities and Futures Commission of Hong Kong; JPMorgan Asset Management (Singapore) Limited (Co. Reg. No. 197601586K), which this advertisement or publication has not been reviewed by the Monetary Authority of Singapore; JPMorgan Asset Management (Taiwan) Limited; JPMorgan Asset Management (Japan) Limited, which is a member of the Investment Trusts Association, Japan, the Japan Investment Advisers Association, Type II Financial Instruments Firms Association and the Japan Securities Dealers Association and is regulated by the Financial Services Agency (registration number "Kanto Local Finance Bureau (Financial Instruments Firm) No. 330"); in Australia, to wholesale clients only as defined in section 761A and 761G of the Corporations Act 2001 (Commonwealth), by JPMorgan Asset Management (Australia) Limited (ABN 55143832080) (AFSL 376919). For all other markets in APAC, to intended recipients only.

For J.P. Morgan Private Bank Clients:**ACCESSIBILITY**

J.P. Morgan is committed to making our products and services accessible to meet the financial services needs of all our clients. Please direct any accessibility issues to the Private Bank Client Service Center at 1-866-265-1727

LEGAL ENTITY, BRAND & REGULATORY INFORMATION

In the **United States**, **JPMorgan Chase Bank, N.A.** and its affiliates (collectively "**JPMCB**") offer investment products, which may include bank managed investment accounts and custody, as part of its trust and fiduciary services. Other investment products and services, such as brokerage and advisory accounts, are offered through **J.P. Morgan Securities LLC ("JPMS")**, a member of [FINRA](#) and [SIPC](#). JPMCB and JPMS are affiliated companies under the common control of JPM.

In **Germany**, this material is issued by **J.P. Morgan SE**, with its registered office at Taunustor 1 (TaunusTurm), 60310 Frankfurt am Main, Germany, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB). In **Luxembourg**, this material is issued by **J.P. Morgan SE – Luxembourg Branch**, with registered office at European Bank and Business Centre, 6 route de Treves, L-2633, Senningerberg, Luxembourg, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE – Luxembourg Branch is also supervised by the Commission de Surveillance du Secteur Financier (CSSF); registered under R.C.S Luxembourg B255938. In the **United Kingdom**, this material is issued by **J.P. Morgan SE – London Branch**, registered office at 25 Bank Street, Canary Wharf, London E14 5JP, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE – London Branch is also supervised by the Financial Conduct Authority and Prudential Regulation Authority. In **Spain**, this material is distributed by **J.P. Morgan SE, Sucursal en España**, with registered office at Paseo de la Castellana, 31, 28046 Madrid, Spain, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE, Sucursal en España is also supervised by the Spanish Securities Market Commission (CNMV); registered with Bank of Spain as a branch of J.P. Morgan SE under code 1567. In **Italy**, this material is distributed by **J.P. Morgan SE – Milan Branch**, with its registered office at Via Cordusio, n.3, Milan 20123, Italy, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE – Milan Branch is also supervised by Bank of Italy and the Commissione Nazionale per le Società e la Borsa (CONSOB); registered with Bank of Italy as a branch of J.P. Morgan SE under code 8076; Milan Chamber of Commerce Registered Number: REA MI 2536325. In the **Netherlands**, this material is distributed by **J.P. Morgan SE – Amsterdam Branch**, with registered office at World Trade Centre, Tower B, Strawinskylaan



1135, 1077 XX, Amsterdam, The Netherlands, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE – Amsterdam Branch is also supervised by De Nederlandsche Bank (DNB) and the Autoriteit Financiële Markten (AFM) in the Netherlands. Registered with the Kamer van Koophandel as a branch of J.P. Morgan SE under registration number 72610220. In **Denmark**, this material is distributed by **J.P. Morgan SE – Copenhagen Branch, filial af J.P. Morgan SE, Tyskland**, with registered office at Kalvebod Brygge 39-41, 1560 København V, Denmark, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE – Copenhagen Branch, filial af J.P. Morgan SE, Tyskland is also supervised by Finanstilsynet (Danish FSA) and is registered with Finanstilsynet as a branch of J.P. Morgan SE under code 29010. In **Sweden**, this material is distributed by **J.P. Morgan SE – Stockholm Bankfilial**, with registered office at Hamngatan 15, Stockholm, 11147, Sweden, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE – Stockholm Bankfilial is also supervised by Finansinspektionen (Swedish FSA); registered with Finansinspektionen as a branch of J.P. Morgan SE. In **Belgium**, this material is distributed by **J.P. Morgan SE – Brussels Branch** with registered office at 35 Boulevard du Régent, 1000, Brussels, Belgium, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE Brussels Branch is also supervised by the National Bank of Belgium (NBB) and the Financial Services and Markets Authority (FSMA) in Belgium; registered with the NBB under registration number 0715.622.844. In **Greece**, this material is distributed by **J.P. Morgan SE – Athens Branch**, with its registered office at 3 Haritos Street, Athens, 10675, Greece, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB); J.P. Morgan SE – Athens Branch is also supervised by Bank of Greece; registered with Bank of Greece as a branch of J.P. Morgan SE under code 124; Athens Chamber of Commerce Registered Number 158683760001; VAT Number 99676577. In **France**, this material is distributed by **J.P. Morgan SE – Paris Branch**, with its registered office at 14, Place Vendôme 75001 Paris, France, authorized by the Bundesanstalt für Finanzdienstleistungsaufsicht (BaFin) and jointly supervised by the BaFin, the German Central Bank (Deutsche Bundesbank) and the European Central Bank (ECB) under code 842 422 972; J.P. Morgan SE – Paris Branch is also supervised by the French banking authorities the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and the Autorité des Marchés Financiers (AMF). In **Switzerland**, this material is distributed by **J.P. Morgan (Suisse) SA**, with registered address at rue du Rhône, 35, 1204, Geneva, Switzerland, which is authorised and supervised by the Swiss Financial Market Supervisory Authority (FINMA) as a bank and a securities dealer in Switzerland.

In **Hong Kong**, this material is distributed by **JPMCB, Hong Kong branch**. JPMCB, Hong Kong branch is regulated by the Hong Kong Monetary Authority and the Securities and Futures Commission of Hong Kong. In Hong Kong, we will cease to use your personal data for our marketing purposes without charge if you so request. In **Singapore**, this material is distributed by **JPMCB, Singapore branch**. JPMCB, Singapore branch is regulated by the Monetary Authority of Singapore. Dealing and advisory services and discretionary investment management services are provided to you by JPMCB, Hong Kong/Singapore branch (as notified to you). Banking and custody services are provided to you by JPMCB Singapore Branch. The contents of this document have not been reviewed by any regulatory authority in Hong Kong, Singapore or any other jurisdictions. You are advised to exercise caution in relation to this document. If you are in any doubt about any of the contents of this document, you should obtain independent professional advice. For materials which constitute product advertisement under the Securities and Futures Act and the Financial Advisers Act, this advertisement has not been reviewed by the Monetary Authority of Singapore. JPMorgan Chase Bank, N.A., a national banking association chartered under the laws of the United States, and as a body corporate, its shareholder's liability is limited.

With respect to countries in **Latin America**, the distribution of this material may be restricted in certain jurisdictions.

Issued in **Australia** by JPMorgan Chase Bank, N.A. (ABN 43 074 112 011/AFS Licence No: 238367) and J.P. Morgan Securities LLC (ARBN 109293610).

References to "J.P. Morgan" are to JPM, its subsidiaries and affiliates worldwide. "J.P. Morgan Private Bank" is the brand name for the private banking business conducted by JPM. This material is intended for your personal use and should not be circulated to or used by any other person, or duplicated for non-personal use, without our permission. If you have any questions or no longer wish to receive these communications, please contact your J.P. Morgan team.