"New York, Just Like I Pictured It"

A CEO client asked if I would present a forensic analysis of New York City for their September board meeting. I agreed as long as I could share it with our clients. Our report compares NYC to 21 other US cities with respect to post-COVID urban recovery, commercial real estate, mass transit, crime, outmigration, work-from-home trends, tax rates, economic pulse (population, labor force, payrolls, housing), fiscal health, unfunded pensions, energy prices, industry diversification and competitiveness. You can read the entire 100-page deck **here**.

The good news: NYC has unique advantages regarding its outright size (output, labor force, purchasing power), business sector diversification and global financial sector dominance. Some NYC measures have now reached pre-pandemic levels: total employment, airport utilization and seated restaurant diners are notable examples. NYC crime stats also compare favorably to many large other cities (which sometimes comes as a surprise), and its industrial and multifamily sectors show very high occupancy rates.

However, NYC currently faces a lot of challenges:

- Mass transit use is still 73% of 2019 levels, which is unsustainable given required capital and operating costs
- NYC office vacancy rates of 18% are the highest since the early 1990's, leased-but-underutilized space is high and ~35% of work days at are still done from home; office to residential conversions are unlikely to materially reduce the stock of underutilized office space given cost and complexity
- Given projected operating deficits, the city must enact deep budget cuts and/or tax hikes while reinvesting in infrastructure, mass transit and public housing
- NYC is still a very difficult place to do business, and its zoning restrictions are particularly burdensome at a time when flexibility is paramount in a post-COVID world
- NYC's household tax rates and municipal debt burdens are high, and its home affordability is very low. These factors may partially explain why NYC has had one of the highest net outmigration rates in recent years, and why New York State ranked next to last among all states from 2011-2021 regarding outmigration of both the number of taxpayers and their earned income (only Alaska was worse)
- NYC's asylum influx threatens to substantially impair the city's financial situation
- The city's electricity prices are high due to low regional wind and solar capacity factors, and the city is increasingly exposed to natural gas prices with the closure of Indian Point nuclear plant

My recommendation to the board: treat NYC the way an asset manager might treat a megacap stock in a diversified portfolio: avoid being "overweight" relative to some agnostic benchmark of regionally diversified assets. In other words, the risks argue against too much concentration for corporate or real estate entities.

Don't a lot of large cities face these problems? Yes, and that's why we built a multi-city comparison of current conditions, a summary of which appears below. NYC ranks above median with respect to high frequency measures of urban recovery, but is dragged down by a weak economic recovery since 2019, structural problems related to its business conditions and poor fiscal health. NYC's aggregate score ends up above only Chicago, Detroit and (of course) San Francisco. The full table with all categories by city appears in the deck linked above.

Heat map by category

	ATL	AUS	BOI	BOS	CHA	CHI	DAL	DEN	DET	HOU	LA	MIA	NYC	PHL	PHO	RAL	SLC	SANT	SF	SANJ	SEA	DC
Urban recovery: urban mobility (restaurants, retail, grocers), mass transit utilization (heavy/light rail, bus, air), real estate vacancies (office, residential, industrial), crime																						
Urban recovery	44	54	82	61	52	48	47	36	38	43	60	78	63	41	44	53	62	56	26	58	44	48
Economy/demographics since 2019: population, labor force, payrolls, housing permits, personal income, business spending, consumer spending, outmigration																						
Economy/demographics since 2019	51	79	82	45	73	23	60	62	22	51	28	37	31	41	61	79	59	64	38	34	62	32
Business conditions: Market size, economic complexity, housing affordability, zoning restrictions, youth unemployment, ease of doing business, tax rates, electricity prices																						
Business conditions	67	62	72	46	67	64	75	55	53	71	39	63	38	59	61	63	65	65	28	29	51	52
Fiscal health: tax revenue growth, government debt as a % of revenues, liquidity ratios, unfunded pensions and retiree healthcare (OPEB)																						
Fiscal health	48	58	55	70	36	19	32	34	32	43	50	53	39	47	56	53	49	41	43	50	58	60
Equal weighted composite	**52**	**63**	**73**	**55**	**57**	**38**	**53**	**47**	**36**	**52**	**44**	**58**	**43**	**47**	**56**	**62**	**59**	**56**	**34**	**43**	**54**	**48**

Source: JPMAM. 2023. See report for individual sources for each measure.

If there were an unforeseen negative change in a city, what might the catalysts be? In a city that's already a difficult place to do business, a combination of fiscal pressures, outmigration of the tax base and high tax rates lead politicians to raise taxes further, fueling a decline in investment and more outmigration. This is the story of Detroit[1], whose decline was exacerbated by high auto sector concentration of its employment and tax base. NYC is way more diversified and economically sound than Detroit in 2013, but this is a very low bar.

What might NYC do about the unfavorable trends shown above? I'm not a public policy expert and will not pretend to be. Instead, here are some recommendations from people who are.

Zoning needs an overhaul. NYC ranks second worst of 44 major US cities according to Wharton's Residential Land Use Regulation Index, and dead last in University of Arizona's survey of 83 US cities on zoning rules. There's a lot to be gained by changing that. Research from USC and the Department of Transportation analyzed "upzoning", which refers to relaxation of zoning restrictions. They found that upzoning can substantially increase output per worker, increase mean wages and decrease commuting times (particularly for people forced to live far from where the jobs are due to the cost of real estate)[2]. The authors also found that upzoning was a much more powerful tool than simply investing in more public transit or road infrastructure.

Some specifics: there are parts of NYC where new apartment buildings cannot be constructed in parking lots or where one-story retail establishments once existed; new apartments and new retail often require off-street parking which can be prohibitively expensive to provide; some areas benefit from limited development "special district" status in place since 1978; some areas have never been zoned for apartment buildings at all; and some streets preclude the development of new housing units even along streets adjacent to public transit[3].

Residential floor-area ratios (FAR) in many locations are too low to permit apartment buildings, even in places well served by public transit and where low-intensity businesses could be located on the ground floor of new multistory mixed-use buildings. A map of NYC FAR ratios shows that the vast majority of land in boroughs outside Manhattan is zoned only for one- and two-family homes.

The best way to deal with the "office apocalypse" is to encourage development of more housing stock, which would bring down real estate prices and encourage in-migration of employees and firms that would eventually fill some of the vacant space. As explained in the deck, complex and costly office-to-residential conversions are unlikely to be implemented on a broad scale.

More public/private partnerships to fill the skills gap and reduce structural unemployment. More NYC employers should develop apprenticeship programs in technology, finance and operations, including those geared towards those without a 4-year degree who can qualify with an Associate of Applied Science degree. Congress can help increase by reauthorizing legislation to streamline administrative barriers, such as allowing reciprocity registrations so that employers do not have to reregister the same programs in multiple states[4].

The Mayor's Office should foster more partnerships between employers and colleges that outline skills needed for specific positions, design curricula and provide internships. One example: LaGuardia Community College partnered with Master Card to create a training program in cybersecurity and hired all of its graduates. LaGuardia is planning a similar program with Wells Fargo and is also in discussions with healthcare providers. Other ways to get involved: the New York Jobs CEO Council and the Business Roundtable's Apprenticeship Accelerator Corporate Initiative.

[1] See "*How Different is Detroit*", Eye on the Market, Michael Cembalest, August 6, 2013

[2] "*Zoning and the Density of Urban Development*", Delventhal (Claremont), Kwon (USC) and Parkhomenko (USC), Pacific Southwest Region University Transportation Center, August 2020

[3] "*How to Solve NYC's Housing Crisis*", Eric Kober, Manhattan Institute, June 2022

[4] "*Harnessing the power of apprenticeships to build a strong workforce for the future*", Heather Higginbottom, JP Morgan Corporate Responsibility (head of policy research), October 2023, TheHill.com

Negotiate PILOT payments from tax-exempt owners of NYC real estate (tax exempt hospitals, universities and their medical centers, museums, religious institutions, etc). Many universities have technology transfer offices to privatize and profit from federally sponsored research, collecting millions in tax-exempt royalties. In NYC, Columbia University is now the city's largest landowner; its property tax savings are 50% larger than those given to Yankee Stadium, and greater than the tax incentives for Citi Field and Madison Square Garden combined[5]. The situation gets worse every time Columbia expands, since it takes over previously taxable real estate. In 2019, the NYT reported that tax-exempt Trinity Church owns a real estate portfolio worth $6 billion. There were ~12,000 NYC properties worth at least $40 billion in 2012 (almost certainly a lower bound estimate) that are exempt from property tax since they're owned by non-profit entities, even though these entities earned revenues of $134 billion in that year[6]. That should probably change.

Support "second chance" legislation and support the Second Chance Business Coalition:

- One third of the adult working age population has a "criminal record" that can impair their ability to get a job, even though most have not committed a "serious crime", and even after the rest fulfill their justice system obligations. Criminal records are retained by the Department of Justice in its Interstate Identification Index even though many people who get arrested are never charged or convicted[7]
- 64% of all unemployed males between the ages of 30 and 38 had been arrested at least once, with negative implications for marriage, education, net worth, employment and earnings[8]
- The current system of record expungement is costly, complex and time-consuming; few pursue it even though having an arrest record reduces the chances of being contacted by an employer by 50%-65%[9]. Among those eligible for expungement in Michigan, just 6.5% obtained it within five years of eligibility due to a limited understanding of laws and procedures, application fees and possible loss of wages[10]
- **Examples of second-chance policies**: Clean Slate legislation to automatically expunge certain criminal records if individuals remain arrest-free for a specified period; require private employers to postpone asking about an applicant's criminal record until after the applicant has had an opportunity to interview; prevent unpaid court debts (fines, fees, costs and restitution) from being a barrier to record clearing; and standardize record clearing timetables across states; end the practice of suspending driver's licenses for non-driving offenses and providing state-issued IDs for individuals leaving prison facilities, which helps with access to employment, housing, education and mainstream banking services

Encourage more migration to NYC by reducing state licensing requirements. Licensing requirements increase wages for those able to obtain one, but reduce job opportunities, depress wages and reduce worker mobility. Around 25% of US workers require an occupational license; a report from the Obama Administration found that in many cases, the governing entities involved are not groups of elected officials but a board of practitioners whose primary job is to provide services in the same market they regulate, resulting in higher prices without increased quality of goods or services[11]. Among the occupations that require licensing in New York: bail bondsmen, barbers, shorthand court reporters, nail cosmetologists, interior designers, horse trainers, jockeys, "creative arts therapists", notary publics, librarians, road race officials and ticket resellers.

---

5 "*The Untouchables: How Columbia and NYU Benefit From Huge Tax Breaks*", NYT, September 23, 2023

6 "*Three policy questions for non-profit property tax exemptions*", Charles Brecher (NYU and Research Co-Director of the Citizens Budget Commission) and Thad Calabrese (NYU), 2015

7 Brennan Center for Justice, Matthew Friedman, November 2015

8 "*Barred from employment: More than half of unemployed men in their 30s had a criminal history of arrest*", Bushway et al, Science Advances, 2022

9 Colorado Law & Policy Center, "*Ban the box legislation boosts employment and reduces recidivism*", Nov 2015

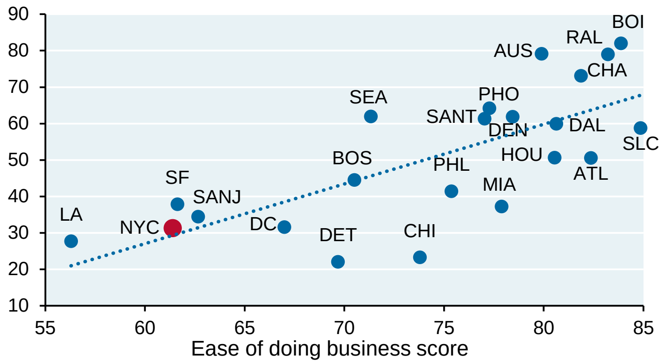
10 "*Expungement of Criminal Convictions: An Empirical Study*", Prescott and Starr, Univ. of Michigan, 2020

11 "*Occupational Licensing: a Framework for Policymakers*", Department of the Treasury, 2015

What about NYC's relationship with the business community? In the fall of 2021, Mayor Adams said: "New York will no longer be anti-business...This is going to be a place where we welcome business and not turn into the dysfunctional city that we have been for so many years"[12]. Well, his Administration has a lot of work to do. As shown below, NYC ranks next to last in the city peer group regarding "ease of doing business". Most cities that are easier places to operate have seen faster economic and demographic recoveries since 2019.

Michael Cembalest
JP Morgan Asset Management

Ease of doing business vs economic recovery
Economic/demographic growth since 2019



Source: Ariz. State University, BEA, BLS, Chase Data Science, JPMAM. 2023.

The y-axis measures changes in population, the labor force, payrolls, housing permits, personal income, business spending, consumer spending and outmigration since the end of 2019

Ease of doing business scores include the cost and time required to start a business and employ workers, the cost of energy, tax rates, the cost and complexity of transferring title on real property, zoning requirements and the efficiency and time for resolving business insolvencies

[12] New York Times, October 13, 2021

IMPORTANT INFORMATION

This report uses rigorous security protocols for selected data sourced from Chase credit and debit card transactions to ensure all information is kept confidential and secure. All selected data is highly aggregated and all unique identifiable information, including names, account numbers, addresses, dates of birth, and Social Security Numbers, is removed from the data before the report's author receives it. The data in this report is not representative of Chase's overall credit and debit cardholder population.

The views, opinions and estimates expressed herein constitute Michael Cembalest's judgment based on current market conditions and are subject to change without notice. Information herein may differ from those expressed by other areas of J.P. Morgan. This information in no way constitutes J.P. Morgan Research and should not be treated as such.

The views contained herein are not to be taken as advice or a recommendation to buy or sell any investment in any jurisdiction, nor is it a commitment from J.P. Morgan or any of its subsidiaries to participate in any of the transactions mentioned herein. Any forecasts, figures, opinions or investment techniques and strategies set out are for information purposes only, based on certain assumptions and current market conditions and are subject to change without prior notice. All information presented herein is considered to be accurate at the time of production. This material does not contain sufficient information to support an investment decision and it should not be relied upon by you in evaluating the merits of investing in any securities or products. In addition, users should make an independent assessment of the legal, regulatory, tax, credit and accounting implications and determine, together with their own professional advisers, if any investment mentioned herein is believed to be suitable to their personal goals. Investors should ensure that they obtain all available relevant information before making any investment. It should be noted that investment involves risks, the value of investments and the income from them may fluctuate in accordance with market conditions and taxation agreements and investors may not get back the full amount invested. Both past performance and yields are not reliable indicators of current and future results.

Non-affiliated entities mentioned are for informational purposes only and should not be construed as an endorsement or sponsorship of J.P. Morgan Chase & Co. or its affiliates.

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**, bank deposit accounts and related services, such as checking, savings and bank lending, are offered by **JPMorgan Chase Bank, N.A.** Member FDIC.
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. Annuities are made available through Chase Insurance Agency, Inc. (CIA), a licensed insurance agency, doing business as Chase Insurance Agency Services, Inc. in Florida. JPMCB, JPMS and CIA are affiliated companies under the common control of JPM. Products not available in all states.
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 **France**, this material is distributed by **JPMCB, Paris branch**, which is regulated by the French banking authorities Autorité de Contrôle Prudentiel et de Résolution and Autorité des Marchés Financiers. In **Switzerland**, this material is distributed by **J.P. Morgan (Suisse) SA**, with registered address at rue de la Confédération, 8, 1211, Geneva, Switzerland, which is authorised and supervised by the Swiss Financial Market Supervisory Authority (FINMA), as a bank and a securities dealer in Switzerland. Please consult the following link to obtain information regarding J.P. Morgan's EMEA data protection policy: https://www.jpmorgan.com/privacy.

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. is 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. We may offer and/or sell to you securities or other financial instruments which may not be registered under, and are not the subject of a public offering under, the securities or other financial regulatory laws of your home country. Such securities or instruments are offered and/or sold to you on a private basis only. Any communication by us to you regarding such securities or instruments, including without limitation the delivery of a prospectus, term sheet or other offering document, is not intended by us as an offer to sell or a solicitation of an offer to buy any securities or instruments in any jurisdiction in which such an offer or a solicitation is unlawful. Furthermore, such securities or instruments may be subject to certain regulatory and/or contractual restrictions on subsequent transfer by you, and you are solely responsible for ascertaining and complying with such restrictions. To the extent this content makes reference to a fund, the Fund may not be publicly offered in any Latin American country, without previous registration of such fund's securities in compliance with the laws of the corresponding jurisdiction. Public offering of any security, including the shares of the Fund, without previous registration at Brazilian Securities and Exchange Commission— CVM is completely prohibited. Some products or services contained in the materials might not be currently provided by the Brazilian and Mexican platforms.

JPMorgan Chase Bank, N.A. (JPMCBNA) (ABN 43 074 112 011/AFS Licence No: 238367) is regulated by the Australian Securities and Investment Commission and the Australian Prudential Regulation

Authority. Material provided by JPMCBNA in Australia is to "wholesale clients" only. For the purposes of this paragraph the term "wholesale client" has the meaning given in section 761G of the Corporations Act 2001 (Cth). Please inform us if you are not a Wholesale Client now or if you cease to be a Wholesale Client at any time in the future.

JPMorgan Chase Bank, N.A. (JPMCBNA) (ABN 43 074 112 011/AFS Licence No: 238367) is regulated by the Australian Securities and Investment Commission and the Australian Prudential Regulation Authority. Material provided by JPMCBNA in Australia is to "wholesale clients" only. For the purposes of this paragraph the term "wholesale client" has the meaning given in section 761G of the Corporations Act 2001 (Cth). Please inform us if you are not a Wholesale Client now or if you cease to be a Wholesale Client at any time in the future.

JPMS is a registered foreign company (overseas) (ARBN 109293610) incorporated in Delaware, U.S.A. Under Australian financial services licensing requirements, carrying on a financial services business in Australia requires a financial service provider, such as J.P. Morgan Securities LLC (JPMS), to hold an Australian Financial Services Licence (AFSL), unless an exemption applies. **JPMS is exempt from the requirement to hold an AFSL under the Corporations Act 2001 (Cth) (Act) in respect of financial services it provides to you, and is regulated by the SEC, FINRA and CFTC under U.S. laws, which differ from Australian laws.** Material provided by JPMS in Australia is to "wholesale clients" only. The information provided in this material is not intended to be, and must not be, distributed or passed on, directly or indirectly, to any other class of persons in Australia. For the purposes of this paragraph the term "wholesale client" has the meaning given in section 761G of the Act. Please inform us immediately if you are not a Wholesale Client now or if you cease to be a Wholesale Client at any time in the future.

This material has not been prepared specifically for Australian investors. It:

- May contain references to dollar amounts which are not Australian dollars;
- May contain financial information which is not prepared in accordance with Australian law or practices;
- May not address risks associated with investment in foreign currency denominated investments; and
- Does not address Australian tax issues.