

Compounding Through the Hype



INVESTMENT INSIGHT | INTERNATIONAL EQUITY TEAM | July 2023

Global equity markets flourished in the first half of 2023, with the MSCI World Index returning +15% in U.S. dollars (USD), and now up over a quarter from the third quarter 2022 trough. In a mirror image of the derating in 2022, the rise has been down to a rerating on fairly flat earnings, with the MSCI World's forward multiple expanding from 13.7x to 17.0x.¹

The sector picture has also been a reversal of 2022, as the market has been led by the growthier sectors that suffered last year: consumer discretionary, communication services and, in particular, information technology, with the outpouring of euphoria around the promise of generative artificial intelligence (AI) offering a new lease on life for tech mega-caps after a tough 2022. June saw a more general cyclical recovery, but up until the end of May, the "magnificent seven" or "MANAMAT",² around a quarter of the S&P 500 Index by weight, had effectively delivered all the U.S. index returns, with the other 493 constituents being slightly down overall.³

The ChatGPT phenomenon

It is true that AI has entered its next chapter, with algorithmic and processing power advancements, in addition to the explosion of data in recent years, ushering in a new era of generative AI. These clever large language models (LLMs), powered by advanced machine learning (ML) algorithms and trained on an enormous number of parameters, analyse and learn from the vast amounts of data they are fed to generate original, human-like content at warp speed. Since the debut of chatbot ChatGPT by OpenAI late last year, the market has been preoccupied with how to understand, implement and price the accessibility advancements offered by generative AI.

¹ Source: FactSet

² Meta, Apple, Nvidia, Amazon, Microsoft, Alphabet, Tesla

³ Source: FactSet

AUTHORS



BRUNO PAULSON
Managing Director



EMMA BRODERICK
Associate

“Since the debut of ChatGPT, the market has been preoccupied with how to understand, implement and price the accessibility advancements offered by generative AI”

What is unusual about the AI frenzy is that this isn't a eureka moment. While the use of generative AI has surged since ChatGPT's launch, narrower AI technologies like ML and natural language processing (NLP) have already been in use for a number of years. Face recognition, for example, uses ML algorithms to unlock your smartphone, and digital voice assistants such as Siri and Alexa use AI, NLP and ML to understand commands and carry out a range of tasks. AI algorithms are used in e-commerce to make personalised shopping recommendations, in clinical trials to improve drug discovery and efficiency, and elsewhere across an array of industries to automate a host of back-office tasks. The incremental improvement of models from learned behaviour, along with the arrival of big data and computer processing power advancements, have all played their part in the release of generative AI.

Nonetheless, there have been two major surprises this year. The first is the speed of consumer adoption. In 2006, it took Twitter nearly two years to reach one million users; in 2010, it took Instagram two and a half months; for ChatGPT, it took just five days, with the service reaching 100 million users in a then groundbreaking two months—at the time, the fastest adoption of any technology in history.⁴ The second, and arguably more significant, surprise is the lack of barriers to entry to run AI code. The general assumption up until now, which we shared, was that large incumbents developing AI models would dominate given their economic moats: cloud expertise, computing power and massive stores of proprietary data—not to mention they have invested enormous amounts of capital to refine their AI capabilities. However, this doesn't appear to be the case. New large-scale, open-source models based on readily available application programming interfaces (APIs) are public; anyone with a good level of coding knowledge can adapt and redistribute the data architecture to satisfy their own specifications without requiring the large computational power and storage space normally necessary to run these. While this has advantages from a consumer perspective (including access to customisable AI models at far lower cost), for corporates, the barrier to entry for trialling code has reduced to one person with a laptop. The moat seems not to be the AI technology itself, but rather other elements of the business model—for instance, access to proprietary data, customer base or the ability to provide services at scale.

The shovelers

As in previous tech cycles, the early winners of the “AI gold rush” have been the pick and shovel sellers, notably the semiconductor providers. A California-based chip designer, the clear leader in the graphic processing units (GPUs) that power AI applications, gained nearly \$200 billion of market capitalisation in one day on powerful forward guidance. The other obvious shovels are the “hyperscalers”—cloud computing service providers—who are responsible for the infrastructure necessary for generative AI deployment, notably vast amounts of storage capacity and processing power. The global technology and software company we own commented that it is expecting AI-related products to boost Azure growth by one percentage point from next quarter, with a current revenue run-rate of circa \$600 million. A further category of shovels is those offering AI services to customers; for instance, the multinational technology conglomerate we own incorporating its conversational AI tool Bard into its search engine, though this is triggering some cost concerns, or the global technology and software company we hold offering Copilot within its 365 product family, creating a first draft for users to edit within Word or enabling faster clearance of emails within Outlook.

Identifying the opportunities...

While the full impact of AI remains ambiguous, here are our early thoughts through the lens of our high quality investment approach and the stocks we own. Away from the technology-based shovelers, many of our companies already have a healthy degree of AI exposure, with further opportunities particularly in terms of cost reduction and value creation.

- PROCESS IMPROVEMENT/COST REDUCTION:** AI presents clear opportunities for cost reduction as existing processes get automated, particularly rules-based functions. Much of this is not new. A professional services company we own talks of its outsourcing business having already gone from 90% labour and 10% automation to 60:40, with plenty of progress still to be made. In payments, the financial services company we hold has launched a high performance AI platform to help make payments more predictable, transparent and faster. Broadly, the generative AI revolution should help content creation in

⁴ As of 30 June 2023. Source: <https://ai.plainenglish.io/chat-gpt-achieving-100-million-users-in-just-2-month-a-deep-analysis-a453e6f85acf>

customer operations, sales and marketing, and software development by sharply reducing the quantity of human inputs. This is not to say these functions will necessarily become obsolete: the nuance and depth that comes with human input will likely still be needed in some capacity. In its current form, generative AI may be great at finding and summarising information embedded in websites—but should probably not yet be trusted with any complex legal agreements.

- **VALUE CREATION:** As well as reducing costs, AI enables companies to improve the quality of their services and product offering. Companies with large proprietary datasets across an array of industries may be able to use AI to run more effective and efficient data analysis to deepen their moats. In the health care industry, AI presents the possibility of improved capabilities in patient diagnostics and the optimisation/automation of a number of parameters in the drug discovery process. As an example, we hold a supplier of scientific instrumentation, consumables and software services which has used AI to develop an electron microscope, helping researchers analyse the structures of molecules, proteins and cells and expediting the process by automating vital steps. Meanwhile, for consumer brands, AI can enhance the customer experience through virtual offerings and personalised advertising. We own the world leader in beauty, which has developed a system called TrendSpotter that analyses popular trends online to tailor its products in line with emerging trends and preferences. Overall, it is early days for the technology, so the most exciting developments may well turn out to be ones beyond our current imagination.

With an eye on the threats

In addition to where the opportunities lie, we are also focused on how change might adversely affect the companies we own. As ever, we worry about potential downsides more than we get excited by potential upsides.

- **CUSTOMER AUTOMATION RISK:** As mentioned above, AI should be able to help corporates cut costs by automating a range of rules-based and back-office tasks. This is a potential downside if a company's model depends on supplying services that get automated, for instance

operating call centres, or on supporting personnel that may be automation targets, such as offering a data product to junior lawyers. IT services companies such as a professional services company we hold will need to generate enough high-value expertise-based work to compensate for any losses for automation.

- **DISRUPTION RISK:** AI will likely disrupt existing business models. AI's ability to accelerate the writing of code may provide extra competition for software providers, for instance. This threat requires constant vigilance as the technology evolves, and we are closely watching our holdings' proprietary data sources in case AI generates viable alternatives.
- **LEGAL AND REGULATORY RISKS:** It is still early days for generative AI adoption, and as such regulatory and legal frameworks are very underdeveloped. The issue of patent and copyright is a central one, as models are often trained on intellectual property without any compensation to the owners. The creative computer software company we hold is hoping that its library of copyrights will be an advantage amid this uncertainty. In addition, there remains the risk of hallucinations, whereby input data is reconfigured or learned in a way that is factually inaccurate. More significantly, there is the worry about AI embedding discriminatory "black-box" algorithms into processes. Credit scorers are already using AI code to make business and operational improvements, although those we own will not be using it to apply credit scores due to bias risks. In general, regulation may choke off innovation and the ability to create value, particularly if global companies are only able to progress at the speed of regulation in the slowest geography.
- **DISAPPOINTMENT RISK:** Aside from AI hurting companies' future earnings, there is potential risk to valuations if the current excitement dissipates. Gartner's hype cycle has five phases when it comes to emerging technologies: the upward curve of the Technology Trigger and the Peak of (Inflated) Expectations, followed by the slump into the Trough of Disillusionment before the gradual recovery into the Slope of Enlightenment and the Plateau of Productivity.⁵ The risk is that as we approach the peak of expectations, a trough may not be far behind...

⁵ Source: <https://www.gartner.co.uk/en/methodologies/gartner-hype-cycle>

Compounding through the hype

At the end of 2021, we were worried about both multiples and earnings. Following the derating in 2022, our multiple anxieties faded, just leaving us worried about earnings. The last three quarters have put both concerns back on the table, with the MSCI World Index's forward earnings multiple back up to 17.0x, a level never reached between 2003 and 2019, while the multiple of the information technology sector at 27.4x is now worryingly close to its COVID-era highs.⁶

This elevated multiple is not on depressed earnings, with expected margins still close to all-time peaks, and consensus earnings expected to be flat this year before rising 10% in 2024, despite all the worries about a potential recession. It is true that the U.S. economy has proved more robust than expected, but the downside of that is that labour markets remain very tight, meaning that a continued monetary squeeze is required to get inflation down. Our view is that any resultant downturn is not in today's earnings expectations... nor in the current multiple. We maintain that the world is an asymmetric place, with earnings downsides in bad times far higher than the upsides in good times. Our bet, as ever, is that pricing power and recurring revenue, two of the key criteria for inclusion in our portfolios, will once again show their worth in any downturn, and the market will once again come to favour companies which have resilient earnings in tough times.

Ultimately, it's still early days for generative AI, and its full impact remains unclear. Which industries and companies will thrive and whose business models will be made redundant? What does employment, education, health care, finance, consumption and politics look like in an AI world? What does copyright mean in a machine-generated world? Will regulation be fast and sensible enough to put guardrails in place without hindering progress? Whose advice can we trust? Whose image is real? Does the world get smaller, faster and even more personalised? Does it become more unequal? And what becomes of the artisanal craft of the bottom-up fundamental portfolio manager?

Our team has been exploring new datasets and developing automation tools for some time, keeping an eye out for any valuable signals from sentiment or NLP analysis of earnings calls. We remain front-footed about innovation and yet steeped in a tradition of research excellence and management evaluation. We have yet to abandon deep research on the sustainability of return on operating capital, team-based debate, absolute risk management, or human judgement. We trust in our team's experience and we shall continue to create solutions and build relationships, endeavouring to do that better and better. We have no intention of replacing human intelligence with bots when managing portfolios or servicing clients any time soon—the outcomes and our clients are too important for that.

Glossary

- **CHATGPT:** AI chatbot, Chat Generative Pre-Trained Transformer, using natural language processing, a neural network machine learning model and transformer to pull from significant data to predict a text response.
- **NARROW/WEAK AI:** AI we typically experience in our day-to-day lives performing a single task or a set of closely related tasks, e.g., weather apps, digital assistants.⁷
- **GENERAL/STRONG AI:** where sentient machines emulate human intelligence, thinking strategically, abstractly and creatively, with the ability to handle complex tasks.⁸
- **GENERATIVE AI:** describes algorithms (such as ChatGPT) that can be used to create new content, i.e., code, images etc.⁹
- **LARGE LANGUAGE MODELS (LLMs):** a deep learning model trained on a vast volume of datasets that understands and performs tasks in a human-like fashion.¹⁰
- **MACHINE LEARNING (ML):** a way of developing AI through models that can “learn” from data patterns without human direction i.e., Large Language Models (LLMs).¹¹
- **NATURAL LANGUAGE PROCESSING (NLP):** a branch of AI within computer science that focuses on helping computers to understand the way that humans write and speak.¹²

⁶ Source: FactSet

⁷ Source: Accenture, <https://www.accenture.com/gb-en/insights/artificial-intelligence-summary-index>

⁸ Source: Accenture, <https://www.accenture.com/gb-en/insights/artificial-intelligence-summary-index>

⁹ Source: McKinsey, <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-generative-ai>

¹⁰ Source: <https://machinelearningmastery.com/what-are-large-language-models/>

¹¹ Source: McKinsey, <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-generative-ai>

¹² Source: IBM, <https://www.ibm.com/topics/natural-language-processing#:~:text=the%20next%20step-,What%20is%20natural%20language%20processing%3F,same%20way%20human%20beings%20can.>

Risk Considerations

There is no assurance that a portfolio will achieve its investment objective. Portfolios are subject to market risk, which is the possibility that the market value of securities owned by the portfolio will decline. Market values can change daily due to economic and other events (e.g. natural disasters, health crises, terrorism, conflicts and social unrest) that affect markets, countries, companies or governments. It is difficult to predict the timing, duration, and potential adverse effects (e.g. portfolio liquidity) of events. Accordingly, you can lose money investing in this strategy. Please be aware that this strategy may be subject to certain additional risks. Changes in the worldwide economy, consumer spending, competition, demographics and consumer preferences, government regulation and economic conditions may adversely affect global franchise companies and may negatively impact the strategy to a greater extent than if the strategy's assets were invested in a wider variety of companies. In general, **equity securities'** values also fluctuate in response to activities specific to a company. Investments in **foreign markets** entail special risks such as currency, political, economic, and market risks. **Stocks of small- and mid-capitalisation companies** carry special risks, such as limited product lines, markets and financial resources, and greater market volatility than securities of larger, more established companies. The risks of investing in **emerging market countries** are greater than risks associated with investments in foreign developed markets. Derivative instruments may disproportionately increase losses and have a significant impact on performance. They also may be subject to counterparty, liquidity, valuation, correlation and market risks. **Illiquid securities** may be more difficult to sell and value than publicly traded securities (liquidity risk). Non-diversified portfolios often invest in a more limited number of issuers. As such, changes in the financial condition or market value of a single issuer may cause greater volatility. **ESG strategies** that incorporate impact investing and/or Environmental, Social and Governance (ESG) factors could result in relative investment performance deviating from other strategies or broad market benchmarks, depending on whether such sectors or investments are in or out of favor in the market. As a result, there is no assurance ESG strategies could result in more favorable investment performance.

DEFINITIONS

Market Capitalization is the total dollar market value of all of a company's outstanding shares.

MSCI World Index is a free float adjusted market capitalization weighted index that is designed to measure the global equity market performance of developed markets. The term "free float" represents the portion of shares outstanding that are deemed to be available for purchase in the public equity markets by investors. The performance of the Index is listed in U.S. dollars and assumes reinvestment of net dividends.

Return On Operating Capital Employed (ROOCE) is a ratio indicating the efficiency and profitability of a company's trade working capital. Calculated as: earnings before interest and taxes/property, plant and equipment plus trade working capital (ex-financials and excluding goodwill).

S&P 500® Index measures the performance of the large cap segment of the U.S. equities market, covering approximately 75% of the U.S. equities market. The Index includes 500 leading companies in leading industries of the U.S. economy.

IMPORTANT INFORMATION

There is no guarantee that any investment strategy will work under all market conditions, and each investor should evaluate their ability to invest for the long-term, especially during periods of downturn in the market.

A separately managed account may not be appropriate for all investors. Separate accounts managed according to the particular Strategy may include securities that may not necessarily track the performance of a particular index. A minimum asset level is required.

For important information about the investment managers, please refer to Form ADV Part 2.

The views and opinions and/or analysis expressed are those of the author or the investment team as of the date of preparation of this material and are subject to change at any time without notice due to market or economic conditions and may not necessarily come to pass. Furthermore, the views will not be updated or otherwise revised to reflect information that subsequently becomes available or circumstances existing, or changes occurring, after the date of publication. The views expressed do not reflect the opinions of all investment personnel at Morgan Stanley Investment Management (MSIM) and its subsidiaries and affiliates (collectively "the Firm"), and may not be reflected in all the strategies and products that the Firm offers.

Forecasts and/or estimates provided herein are subject to change and may not actually come to pass. Information regarding expected market returns and market outlooks is based on the research, analysis and opinions of the authors or the investment team. These conclusions are speculative in nature, may not come to pass and are not intended to predict the future performance

of any specific strategy or product the Firm offers. Future results may differ significantly depending on factors such as changes in securities or financial markets or general economic conditions.

This material has been prepared on the basis of publicly available information, internally developed data and other third-party sources believed to be reliable. However, no assurances are provided regarding the reliability of such information and the Firm has not sought to independently verify information taken from public and third-party sources.

This material is a general communication, which is not impartial and all information provided has been prepared solely for informational and educational purposes and does not constitute an offer or a recommendation to buy or sell any particular security or to adopt any specific investment strategy. The information herein has not been based on a consideration of any individual investor circumstances and is not investment advice, nor should it be construed in any way as tax, accounting, legal or regulatory advice. To that end, investors should seek independent legal and financial advice, including advice as to tax consequences, before making any investment decision.

Charts and graphs provided herein are for illustrative purposes only. **Past performance is no guarantee of future results.**

The indexes are unmanaged and do not include any expenses, fees or sales charges. It is not possible to invest directly in an index. Any index referred to herein is the intellectual property (including registered trademarks) of the applicable licensor. Any product based on an index is in no way sponsored, endorsed, sold or promoted by the applicable licensor and it shall not have any liability with respect thereto.

This material is not a product of Morgan Stanley's Research Department and should not be regarded as a research material or a recommendation.

The Firm has not authorised financial intermediaries to use and to distribute this material, unless such use and distribution is made in accordance with applicable law and regulation. Additionally, financial intermediaries are required to satisfy themselves that the information in this material is appropriate for any person to whom they provide this material in view of that person's circumstances and purpose. The Firm shall not be liable for, and accepts no liability for, the use or misuse of this material by any such financial intermediary.

This material may be translated into other languages. Where such a translation is made this English version remains definitive. If there are any discrepancies between the English version and any version of this material in another language, the English version shall prevail.

The whole or any part of this material may not be directly or indirectly reproduced, copied, modified, used to create a derivative work, performed, displayed, published, posted, licensed, framed, distributed or transmitted or any of its contents disclosed to third parties without the Firm's express written consent. This material may not be linked to unless such hyperlink

is for personal and non-commercial use. All information contained herein is proprietary and is protected under copyright and other applicable law.

Morgan Stanley Investment Management is the asset management division of Morgan Stanley.

DISTRIBUTION

This material is only intended for and will only be distributed to persons resident in jurisdictions where such distribution or availability would not be contrary to local laws or regulations.

MSIM, the asset management division of Morgan Stanley (NYSE: MS), and its affiliates have arrangements in place to market each other's products and services. Each MSIM affiliate is regulated as appropriate in the jurisdiction it operates. MSIM's affiliates are: Eaton Vance Management (International) Limited, Eaton Vance Advisers International Ltd, Calvert Research and Management, Eaton Vance Management, Parametric Portfolio Associates LLC, and Atlanta Capital Management LLC.

This material has been issued by any one or more of the following entities:

EMEA

This material is for Professional Clients/Accredited Investors only.

In the EU, MSIM and Eaton Vance materials are issued by MSIM Fund Management (Ireland) Limited ("FMIL"). FMIL is regulated by the Central Bank of Ireland and is incorporated in Ireland as a private company limited by shares with company registration number 616661 and has its registered address at 24-26 City Quay, Dublin 2, DO2 NY19, Ireland.

Outside the EU, MSIM materials are issued by Morgan Stanley Investment Management Limited (MSIM Ltd) is authorised and regulated by the Financial Conduct Authority. Registered in England. Registered No. 1981121. Registered Office: 25 Cabot Square, Canary Wharf, London E14 4QA.

In Switzerland, MSIM materials are issued by Morgan Stanley & Co. International plc, London (Zurich Branch) Authorised and regulated by the Eidgenössische Finanzmarktaufsicht ("FINMA"). Registered Office: Beethovenstrasse 33, 8002 Zurich, Switzerland.

Outside the US and EU, Eaton Vance materials are issued by Eaton Vance Management (International) Limited ("EVM") 125 Old Broad Street, London, EC2N 1AR, UK, which is authorised and regulated in the United Kingdom by the Financial Conduct Authority.

Italy: MSIM FMIL (Milan Branch), (Sede Secondaria di Milano) Palazzo Serbelloni Corso Venezia, 16 20121 Milano, Italy. **The Netherlands:** MSIM FMIL (Amsterdam Branch), Rembrandt Tower, 11th Floor Amstelplein 1 1096HA, Netherlands. **France:** MSIM FMIL (Paris Branch), 61 rue de Monceau 75008 Paris, France. **Spain:** MSIM FMIL (Madrid Branch), Calle Serrano 55, 28006, Madrid, Spain. **Germany:** MSIM FMIL Frankfurt Branch, Große Gallusstraße 18, 60312 Frankfurt am Main, Germany (Gattung: Zweigniederlassung (FDI) gem. § 53b KWG). **Denmark:** MSIM FMIL (Copenhagen Branch), Gorrissen Federspiel, Axel Torv 2, 1609 Copenhagen V, Denmark.

MIDDLE EAST

Dubai: MSIM Ltd (Representative Office, Unit Precinct 3-7th Floor-Unit 701 and 702, Level 7, Gate Precinct Building 3, Dubai International Financial Centre, Dubai, 506501, United Arab Emirates. Telephone: +97 (0)14 709 7158).

This document is distributed in the Dubai International Financial Centre by Morgan Stanley Investment Management Limited (Representative Office), an entity regulated by the Dubai Financial Services Authority ("DFSA"). It is intended for use by professional clients and market counterparties only. This document is not intended for distribution to retail clients, and retail clients should not act upon the information contained in this document.

This document relates to a financial product which is not subject to any form of regulation or approval by the DFSA. The DFSA has no responsibility for reviewing or verifying any documents in connection with this financial product. Accordingly, the DFSA has not approved this document or any other associated documents nor taken any steps to verify the information set out in this document, and has no responsibility for it. The financial product to which this document relates may be illiquid and/or subject to restrictions on its resale or transfer. Prospective purchasers should conduct their own due diligence on the financial product. If you do not understand the contents of this document, you should consult an authorised financial adviser.

U.S.

NOT FDIC INSURED | OFFER NO BANK GUARANTEE | MAY LOSE VALUE | NOT INSURED BY ANY FEDERAL GOVERNMENT AGENCY | NOT A DEPOSIT

Latin America (Brazil, Chile Colombia, Mexico, Peru, and Uruguay)

This material is for use with an institutional investor or a qualified investor only. All information contained herein is confidential and is for the exclusive use and review of the intended addressee, and may not be passed on to any third party. This material is provided for informational purposes only and does not constitute a public offering, solicitation or recommendation to buy or sell for any product, service, security and/or strategy. A decision to invest should only be made after reading the strategy documentation and conducting in-depth and independent due diligence.

ASIA PACIFIC

Hong Kong: This material is disseminated by Morgan Stanley Asia Limited for use in Hong Kong and shall only be made available to "professional investors" as defined under the Securities and Futures Ordinance of Hong Kong (Cap 571). The contents of this material have not been reviewed nor approved by any regulatory authority including the Securities and Futures Commission in Hong Kong. Accordingly, save where an exemption is available under the relevant law, this material shall not be issued, circulated, distributed, directed at, or made available to, the public in Hong Kong. **Singapore:** This material is disseminated by Morgan Stanley Investment Management Company and should not be considered to be the subject of an invitation for subscription or purchase, whether directly or indirectly, to the public or any member of the public in Singapore other than (i) to an institutional investor under section 304 of the Securities and Futures Act, Chapter 289 of Singapore ("SFA"); (ii) to a "relevant person" (which includes an accredited investor) pursuant to section 305 of the SFA, and such distribution is in accordance with the conditions specified in section 305 of the SFA; or (iii) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA. This publication has not been reviewed by the Monetary Authority of Singapore. **Australia:** This material is provided by Morgan Stanley Investment Management (Australia) Pty Ltd ABN 22122040037, AFSL No. 314182 and its affiliates and does not constitute an offer of interests. Morgan Stanley Investment Management (Australia) Pty Limited arranges for MSIM affiliates to provide financial services to Australian wholesale clients. Interests will only be offered in circumstances under which no disclosure is required under the Corporations Act 2001 (Cth) (the "Corporations Act"). Any offer of interests will not purport to be an offer of interests in circumstances under which disclosure is required under the Corporations Act and will only be made to persons who qualify as a "wholesale client" (as defined in the Corporations Act). This material will not be lodged with the Australian Securities and Investments Commission.

Japan

For professional investors, this material is circulated or distributed for informational purposes only. For those who are not professional investors, this material is provided in relation to Morgan Stanley Investment Management (Japan) Co., Ltd. ("MSIMJ")'s business with respect to discretionary investment management agreements ("IMA") and investment advisory agreements ("IAA"). This is not for the purpose of a recommendation or solicitation of transactions or offers any particular financial instruments. Under an IMA, with respect to management of assets of a client, the client prescribes basic management policies in advance and commissions MSIMJ to make all investment decisions based on an analysis of the value, etc. of the securities, and MSIMJ accepts such commission. The client shall delegate to MSIMJ the authorities necessary for making investment. MSIMJ exercises the delegated authorities based on investment decisions of MSIMJ, and the client shall not make individual instructions. All investment profits and losses belong to the clients; principal is not guaranteed. Please consider the investment objectives and nature of risks before investing. As an investment advisory fee for an IAA or an IMA, the amount of assets subject to the contract multiplied by a certain rate (the upper limit is 2.20% per annum (including tax)) shall be incurred in proportion to the contract period. For some strategies, a contingency fee may be incurred in addition to the fee mentioned above. Indirect charges also may be incurred, such as brokerage commissions for incorporated securities. Since these charges and expenses are different depending on a contract and other factors, MSIMJ cannot present the rates, upper limits, etc. in advance. All clients should read the Documents Provided Prior to the Conclusion of a Contract carefully before executing an agreement. This material is disseminated in Japan by MSIMJ, Registered No. 410 (Director of Kanto Local Finance Bureau (Financial Instruments Firms)), Membership: the Japan Securities Dealers Association, The Investment Trusts Association, Japan, the Japan Investment Advisers Association and the Type II Financial Instruments Firms Association.