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AlphaCurrents

Earthshots, Obesity in the Social Media Era, Multi-Earners and Global Growth

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Amid 2022's market volatility, investors were frequently focused on short-term moves and conflicting economic data. For the year, the S&P 500 Index recorded 122 days of price movements greater than 1% in either direction—13 more than in 2020 amid the onset of COVID and the third most in history. In times like this, it can be easy to lose sight of long-term shifts occurring in financial markets. With that in mind, in this month's *AlphaCurrents*, we take the opportunity to detail four key long-term thematic ideas highlighted by our colleague Edward Stanley of Morgan Stanley & Co. Research.

Earthshots and Moonshots

"Earthshots," defined as radical technological decarbonization accelerants or warming mitigants, will become increasingly necessary due to the global political impasse on emissions reduction. There is a mismatch between investor expectations concerning decarbonization technology being adopted and the actual rate of adoption. McKinsey & Co. estimates that spending on physical assets to facilitate energy transition could top $275 trillion by 2050, or roughly $9.2 trillion annually. The United Nations estimates that $125 trillion of investment could be needed by 2050 to reach climate goals. Regardless of what the correct number is, these estimates stand out for their size. From an investment standpoint, the rates of change and return on investment are more important than these absolute dollar estimates. While adoption of these technologies tends to be slow, four areas that could impact the growth rate stand out: 1) pace of adoption across different segments; 2) pace of capital turnover; 3) regulation; and 4) supply and demand mismatches.

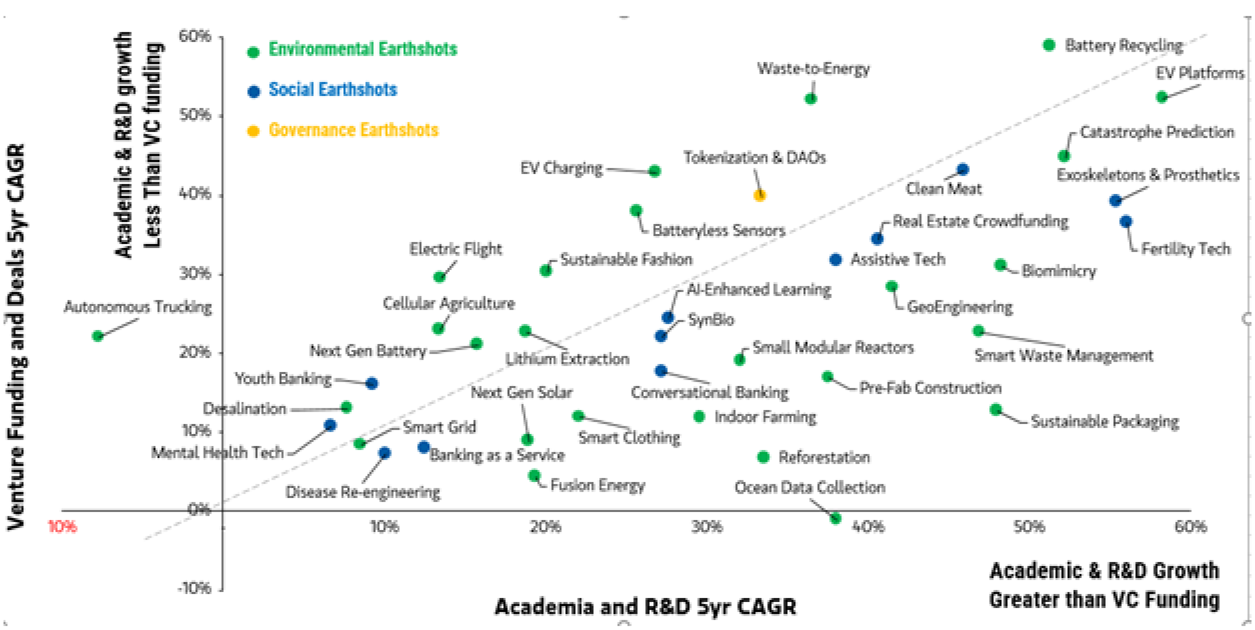
The pace of adoption across technology segments varies due to the different uses and complexities of the underlying tools and technologies. For example, filament lightbulbs are easy and inexpensive to transition to LED, but replacing a coal-fired power plant with renewables is more difficult.

Beyond variation in the pace of adoption, when it comes to replacing longer-lived assets such as automobiles and power plants, operators would not only need to replace the existing assets but might require financial incentives related to return on the new investments. To help facilitate this aspect of technology adoption, companies would likely require a push from a public policy standpoint. An example of this was seen last year following passage of the Inflation Reduction Act, which has materially pulled forward adoption of these technologies, especially those related to battery storage.

Along with demand and public policy, supply of many renewable technology inputs—specifically lithium and other rare metals—is also a serous issue. As a result, supply chain innovation is needed. On top of this, the unprofitability of clean tech can lead to even lengthier adoption times. Skills shortages for clean-tech labor and a dearth of permitting issuance from regulatory authorities are additional headwinds.

The first part of the framework for identifying earthshots is tracking academic publications, which tend to be important components of the earliest-stage portion of the development curve. These take the form of original research papers and subsequent citations. The next part is patent quality and quantity, which constitutes the beginning of the commercial stage of new technology. This is followed by venture capital funding and, eventually, public market investment (see Exhibit 1).

Exhibit 1: Battery and EV-Related Tech Are Leading Earthshot Industries



Source: WIPO, Google Scholar, PitchBook, Morgan Stanley & Co. Research, Morgan Stanley Wealth Management Global Investment Office as of Nov. 30, 2022

Exhibit 2: MS & Co. Overweight- and Equal-weight-Rated Companies With Embedded Earthshot Potential

Company	Technology
Aker Carbon Capture	Carbon Capture
Alcoa	Greenhouse Gas-Free Aluminum
Alphabet	Fusion Reactors
Baker Hughes	Direct Air Capture Technology
Corteva	AgTech
CRISPR Therapeutics	Disease Vector Re-Engineering
Deere	AgTech
Dow	Chemicals
Eastman Chemicals	Chemicals
Exxon Mobil	Oil and Gas
FREYR Battery	Clean Battery
Ginkgo Bioworks	Synthetic Biology
Illumina	Disease Vector Re-Engineering
Occidental Petroleum	Carbon Capture
Plug Power	Hydrogen and Smart Grids
QuantumScape	Solid State Battery Tech
Sunrun	Smart Grids
Tesla	EV Tech

Source: Morgan Stanley & Co. Research, Morgan Stanley Wealth Management Global Investment Office as of Nov. 30, 2022

Employing this framework, our colleagues at Morgan Stanley & Co. Research have identified the leading technologies from an investment perspective, along with companies with related potential, as displayed in Exhibit 2.

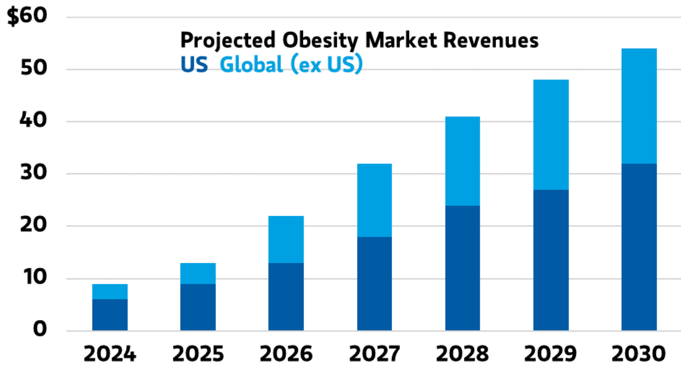
For more information on earthshots, refer to Edward Stanley et al.'s Nov. 30, 2022, report, "Earthshots." Taking the topic a step further, Stanley et al. note that since 2000, 1% of companies have generated almost 40% of shareholder returns. With this is mind, they have posited a "moonshots" framework for identifying potential winners in the next decade. While these moonshots offer high return potential, much of the investment is being done on the private side given the early stage of many of these technologies. For more information, refer to Morgan Stanley & Co. Research's Sept. 14, 2022, report, "Moonshots."

Obesity in the Age of Social Media

Three key areas could impact the speed of adoption for obesity as a disease: patient activation, physician engagement and payer recognition. Morgan Stanley & Co. Research estimates that only 7% of obese individuals are engaging with physicians about their condition, with 55% of them receiving new anti-obesity medicine. This compares to physician engagement of almost 80% for individuals impacted by high blood pressure and diabetes. As patients and physicians increasingly start treating obesity as a disease, one of the biggest hurdles to broader adoption—insurance companies focusing on these treatments—should eventually be overcome. Ultimately, if obesity can be treated as a disease instead of a symptom, health care costs could decline. Obesity and type-2 diabetes are interconnected, with abnormal accumulation of fat the primary underlying driver of obesity, type-2 diabetes, cardiovascular complications and over 200 other chronic conditions.

One of the most powerful sources of support for obesity treatments could be social media. While the availability of additional obesity treatment medications is an exciting notion on its own, given the speed at which knowledge spreads over social media, demand for weight loss and obesity treatment could be increased by an even greater extent. If calorie-counting applications help drive linear growth for obesity management, a social media focus combined with medical treatments could potentially drive exponential growth of adoption.

Exhibit 3: Obesity Market Revenues Could Reach $54 Billion by 2030



Source: Morgan Stanley & Co. Research, Morgan Stanley Wealth Management Global Investment Office as of July 14, 2022

Obesity treatments could grow to represent a $54 billion market (see Exhibit 3), and with this exciting potential in mind, two companies stand out for investment consideration: Eli Lilly (LLY) and Novo Nordisk (NVO), both of which have obesity treatments. For more information on the opportunity in obesity markets, refer to Morgan Stanley & Co. Research's July 2022 report, "Unlocking the Obesity Challenge: a >$50bn Market."

The Multi-Earner Era

Amid the depths of the pandemic, many were forced to take multiple jobs for multiple earnings streams, as unprecedented lockdowns resulted in major disruptions to different jobs and industries across the world. Even among those not holding multiple positions out of necessity, many sought additional income streams out of boredom.

As Morgan Stanley Wealth Management Chief Investment Officer Lisa Shalett wrote about in her Jan. 4 report, "The Next American Productivity Renaissance," the pandemic catalyzed a productivity shift in the US. This shift is helping to power forward the need for investment in digital infrastructure and automation technologies, such as ChatGPT, which we discussed in our December 2022 *AlphaCurrents*, "Revisiting 'Automation by Necessity' in Light of Recent Developments in Artificial Intelligence." The digital economy that has emerged over the past twenty years and the coming of age of Gen-Z—the first generation to grow up with a high-tech lifestyle—are set to push this trend forward. New technologies such as generative artificial intelligence (AI) will permanently change the future of work, resulting in greater flexibility for workers and even more time for them to engage in multi-earning activity.

Morgan Stanley & Co. Research has identified four multi-earner streams: create-to-earn, sell-to-earn, trade-to-earn and deliver-to-earn, with the first three seen as increasingly stable. In the US, many Gen Zers are consistently earning more than $700 a month from multi-earning streams. The long-term impact of this could make Gen-Z more financially flexible and ultimately create secular inflationary headwinds, with higher earnings streams enhancing bargaining power and potentially contributing to ongoing wage inflation.

Given the secular opportunities as members of Gen-Z progress toward their high-earning years and beyond, Morgan Stanley & Co. Research has identified an investable universe for the multi-earner ecosystem (see Exhibit 4). These companies could benefit as more of the US population engages in multi-earning activities (see Exhibit 5), with the potential to unlock nearly $2 billion in income per month. For more information on multi-earning opportunities, refer to MS & Co. Research's May 3, 2022, report, "The Multi-Earner Era."

Exhibit 4: The Multi-Earner Ecosystem Facilitators

Most Mature						Least Mature
Create-to-Earn	Sell-to-Earn (Marketplace)	Sell-to-Earn (Bespoke)	Deliver-to-Earn	Rent-to-Earn	Traditional Invest-to-Earn	Gig-to-Earn
Meta	The RealReal	Wix	DoorDash	Air-BNB	Robinhood	Uber
Spotify	Etsy	Shopify	Uber (Uber Eats)	Booking.com	Charles Schwab	
Snap	eBay	GoDaddy				
Alphabet	Poshmark					
Pinterest	Amazon					
Roblox						
Etsy						

Source: Morgan Stanley & Co. Research, Morgan Stanley Wealth Management Global Investment Office as of May 3, 2022

Exhibit 5: The Multi-Earner Total Addressable Market by Adoption Rates ($ Billion)

		Portion of the Population Engaged in Multi-Earning (Adoption Rate)												
		1%	2%	3%	5%	7%	10%	12%	15%	20%	25%	30%	40%	50%
Earnings Generated by Multi-Earners Monthly	$100	$4	$8	$12	$20	$28	$39	$47	$59	$79	$99	$118	$158	$197
	$200	$8	$16	$24	$39	$55	$79	$95	$118	$158	$197	$237	$316	$395
	$300	$12	$24	$36	$59	$83	$118	$142	$178	$237	$296	$355	$474	$592
	$400	$16	$32	$47	$79	$111	$158	$190	$237	$316	$395	$474	$632	$790
	$500	$20	$39	$59	$99	$138	$197	$237	$296	$395	$494	$592	$790	$987
	$600	$24	$47	$71	$118	$166	$237	$284	$355	$474	$592	$711	$948	$1,184
	$700	$28	$55	$83	$138	$193	$276	$332	$415	$533	$691	$829	$1,105	$1,382
	$800	$32	$63	$95	$158	$221	$316	$379	$474	$632	$790	$948	$1,263	$1,579
	$900	$36	$71	$107	$178	$249	$355	$426	$533	$711	$888	$1,066	$1,421	$1,777
	$1,000	$39	$79	$118	$197	$276	$395	$474	$592	$790	$987	$1,184	$1,579	$1,974

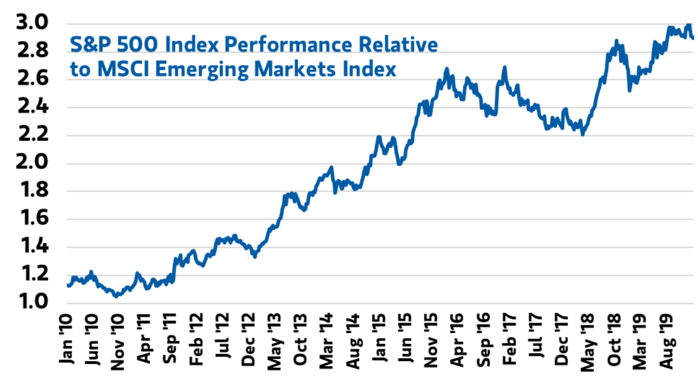
Source: AlphaWise, Morgan Stanley & Co. Research, Morgan Stanley Wealth Management Global Investment Office as of May 3, 2022

Global Growth

As the global economy repaired itself following the Great Financial Crisis, a clear trend emerged, with US equities outperforming both foreign developed and emerging markets (see Exhibit 6). While the next cycle is expected to be one of higher US interest rates, inflation and nominal gross domestic product (GDP) expansion, global markets are also poised to behave much differently than during the prior cycle. Two countries that stand out for potential outperformance of US equities are India and China.

The investment case for these countries is based on two country-specific drivers: for India, a combination of demographics and global secular shifts; and for China, a COVID reopening similar to the US in 2021. Viewed as a transformation story, India's anticipated economic boom is tied to three main developments: 1) offshoring/outsourcing of global jobs; 2) digital transformation; and 3) energy transition. This "new" Indian economy could drive a fifth of global growth by the end of the decade, with India becoming the third-largest economy and stock market by that time. China, on the other hand, is viewed more tactically, as a reopening story, post-COVID.

Exhibit 6: S&P 500 Index Outperformed Emerging Markets for the 2010 Decade



Source: Bloomberg, Morgan Stanley Wealth Management Global Investment Office as of Jan. 19, 2023

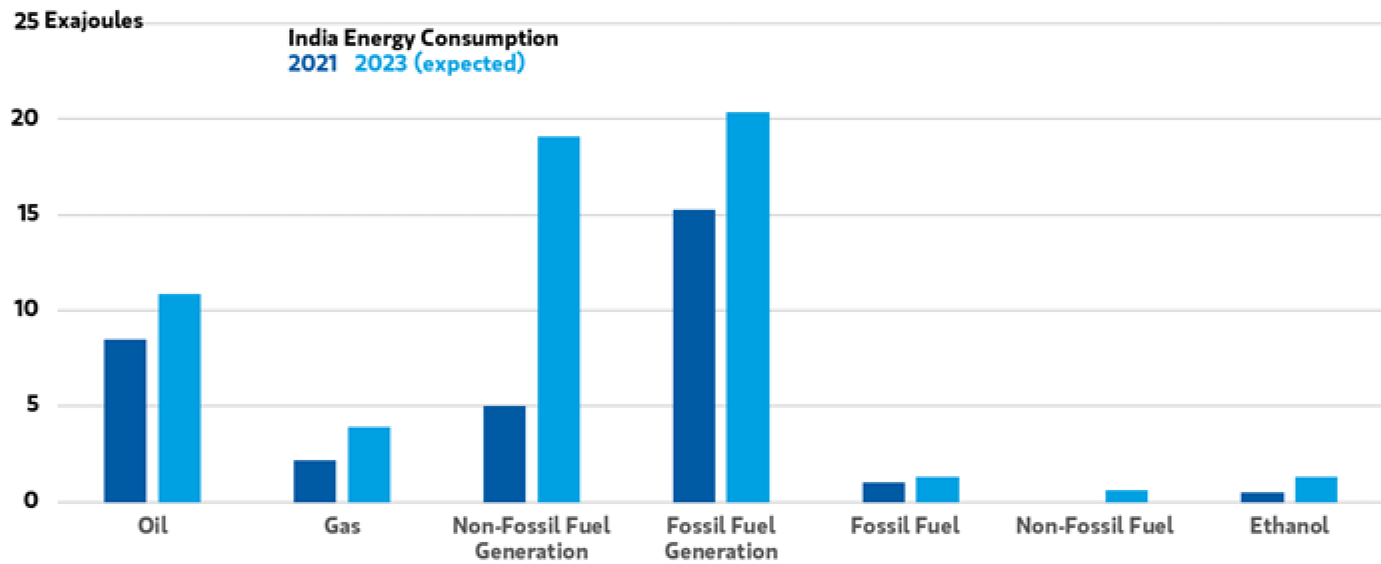
The first proposed pillar of Indian growth is related to COVID. Prior to the pandemic, companies would often outsource certain business operations to India given its skilled workforce and lower costs. Post-pandemic, as more companies realize the necessity of having distributed digital operations, the shift toward operations in India—sometimes referred to as the office of the world—is advancing. Since the onset of COVID, India's employment in in-house captive centers (offshore centers for performance of operations for global businesses) has risen from 4.3 million to 5.1 million and is expected to more than double by 2031, to 12.2 million. These centers are good gauges of how much employment is being outsourced to India.

The second pillar, digital transformation, is important as India becomes a high-income country and the economy shifts from a production-based economy to one of higher consumer spending. Unlike the advertising-driven US internet model, the firewall-oriented Chinese model or the regulation-driven European one, India's internet model is transaction-oriented and inclusive—a type that cryptocurrency enthusiasts would refer to as Web3. Ultimately, India's internet is set up to be used like a utility. Unlike other private models, India's internet —referred to as the IndiaStack—provides interoperability, democratizes data and is decentralized. The IndiaStack has three primary layers: 1) eKYC, a biometric-based know-your-customer layer; 2) digilocker, a cloud-based digital-storage layer; and 3) eSign, which facilitates digital signatures.

Building on these three layers, the IndiaStack also incorporates an open credit enablement network (OCEN), which could disrupt traditional banks. Importantly, given that Indian transactions are done in cash, increasing the opportunity for Indian consumers to use credit could be a huge boost for consumer spending. Another IndiaStack feature, open network digital commerce (ONDC), will act as a platform to onboard businesses that will grow sales while reducing costs for consumers. Finally, a digital health ID, which will be operable across different health insurance providers, is being introduced. This will allow for customizable health care solutions and greater health care access for the broader population.

The third pillar, energy transition, is key to economic prosperity. India's daily per capita energy consumption is currently around 800 watts. This compares to 9,000 watts per capita per day in the US. Over the past few years, upgrades to India's electric transmission and distribution capability have resulted in every one of India's more than 600,000 villages having access to electricity, compared to around 500,000 two decades ago. By the end of 2023, India's daily per capita electricity consumption could increase to 1,300 watts. With the coming shift, we expect renewables to capture much of the growth opportunity. Fossil fuels accounted for 87% of India's electricity consumption in 2021; that number that may fall to 67% by the end of 2023 (see Exhibit 7).

Exhibit 7: Consumption of Energy Generated by Fossil Fuels Could Fall as Renewables Grow in India



Note: One exajoule of energy is equivalent to the energy produced by 174 million barrels of oil.
Source: Morgan Stanley & Co. Research, Morgan Stanley Wealth Management Global Investment Office as of Oct. 31, 2022

Given these three pillars, and as India potentially transforms into the world's third-largest economy with the third-largest stock market, investments levered to the consumer, digital infrastructure and energy transition could benefit. A broad India exchange-traded fund (ETF) with exposure to these themes is iShares MSCI India ETF (INDA). For more targeted exposure relating to energy transition, WisdomTree India Earnings Fund (EPI) invests approximately 25% in materials and 17% in energy.

Another Asian nation poised for further growth is China—currently the second-largest economy in the world. While China has been a secular growth story since its inclusion in the World Trade Organization in 2001, strict COVID prevention measures have constrained its expansion in the past few years. In 2020, amid the start of the pandemic, China was the only large economy not to enter a recession, given strict lockdowns that helped prevent a mass spread of COVID. Many other countries lowered interest rates and launched stimulus programs, which boosted consumer demand, especially in the US, and increased exports from China. In contrast to the more relaxed COVID measures and significant treatment adoption of many other nations, China consistently maintained a zero-COVID policy until very recently.

Morgan Stanley & Co. Research expects China to have a V-shaped recovery, much like the US, upon its initial reopening from post-COVID lockdowns. Some argue that the market has already priced in a COVID recovery given the recent strength seen in cyclicals, but we expect continued momentum. While the rally in Chinese equities that started in November was largely driven by a rerating in earnings estimates, these estimates are still trending down. 2023 could be characterized by earnings recovery, and the market has not priced this in for Chinese equities. Beyond that, a Federal Reserve policy pivot and continued softening in the US dollar would ultimately favor earnings growth for Chinese equities.

Looking back further, Jonathan Garner, Morgan Stanley & Co. Research's chief Asia and emerging market equity strategist, believes investors are the most underinvested in China since the 2008-2009 Great Financial Crisis. While the dollar continues to fall from the high it made in fall 2022, this could provide a tailwind for Chinese equities. Finally, a rising tide lifts all boats, and as investors position for global growth, even if they avoid taking active risk in Chinese equities, flows to global indexes could to a large extent result in flows to Chinese equities. In Exhibit 8 below, we offer thematic investment ideas to participate in China's reopening. For more information on the outlook for Chinese equities, refer to the Jan. 9 report, "China Macro Strategy: Even More Bullish."

Exhibit 8: Themes and Rationales for Investing in China's Reopening

China Theme	Implications and Rationale
Internet	Faster than expected reopening to benefit online travel agencies and local services segments. This could revive corporate spending, recruitment and advertising. Leaner cost structures from 2022 will likely support margin expansion upon top-line recovery, while an easing regulatory environment could provide another pillar of support.
Consumption	Continued segment rotation in 1Q23. In the near term, we see a tactical opportunity for reopening plays given continued support from mobility recovery during Chinese New Year, such as restaurants. More bullish on sustained consumption growth in 2H23 driven by income growth amid the economic up-cycle. Prefer non-necessity cycle and growth segments including sportswear, liquor, home appliances and duty-free.
Transportation	Expect domestic air travel to recover to pre-COVID levels in 4Q23 to 1Q24, and nondomestic air travel demand to recover to pre-COVID levels in 2H24. Market caps of Chinese airlines are on average 25% above pre-COVID levels after their recent rally. Earnings recovery to pre-COVID levels may not arrive before 2H24.
Outbound Travel	Strong Chinese outbound travel already occurring. Expect a 2023 recovery for Macau gaming, and Hong Kong property could surprise to the upside. Macau mass revenue in 2024 could be higher than 2019. Higher probability of Hong Kong retail sales moving to the bull case where Chinese tourist spending recovers faster and reaches 75% of 2018's level by 2023 year-end.
Commodities	Improving demand amid better property completions and carryover of existing infrastructure construction. Prefer materials related to property completions, such as copper, aluminum, gypsum board and plastic pipes. Do not expect early cycle building materials like steel and cement to improve in 2023.
China Oil and Commodities	5.5% rise in China oil demand in 2023, which should increase demand for downstream sectors such as chemicals. Margins for oil producers and refineries should be supported as well.

Source: Morgan Stanley & Co. Research as of Jan. 9, 2023

For more information on the themes discussed in this report, please contact your Morgan Stanley Financial Advisor. For further reading, please see the following reports from Morgan Stanley & Co. Research:

"Earthshots" *(Nov. 30, 2022)*

"Moonshots" *(Dec. 14, 2022)*

"Why This is India's Decade" *(Oct. 31, 2022)*

"The Multi-Earner Era" *(May 3, 2022)*

"Unlocking the Obesity Challenge: a >$50bn Market" *(July 14, 2022)*

"China Macro & Strategy: Even More Bullish" *(Jan. 9, 2023)*

Securities Mentioned in Report

Airbnb (ABNB; $101.75; MS & Co. Rating: Underweight/In-Line)

Aker Carbon Capture (ACCA.OL; 13.65 NOK; MS & Co. Rating: Equal-weight/In-Line)

Alcoa (AA; $54.44; MS & Co. Rating: Equal-weight/In-Line)

Alphabet (GOOGL; $91.14; MS & Co. Rating: Overweight/In-Line)

Amazon.com (AMZN; $96.88; MS & Co. Rating: Overweight/In-Line)

Baker Hughes (BKR; $31.59; MS & Co. Rating: Overweight/In-Line)

Booking Holdings (BKNG; $2326.94; MS & Co. Rating: Equal-weight/In-Line)

Charles Schwab (SCHW; $84.23; MS & Co. Rating: Overweight/In-Line)

Corteva (CTVA; $62.92; MS & Co. Rating: Overweight/Attractive)

CRISPR Therapeutics (CRSP; $51.06; MS & Co. Rating: Underweight/Attractive)

Deere (DE; $439.99; MS & Co. Rating: Overweight/Attractive)

DoorDash (DASH; $54.37; MS & Co. Rating: Equal-weight/In-Line)

Dow (DOW; $57.52; MS & Co. Rating: Equal-weight/Attractive)

Eastman Chemical (EMN; $90.03; MS & Co. Rating: Overweight/Attractive)

eBay (EBAY; $46.95; MS & Co. Rating: Underweight/In-Line)

Eli Lilly & Co (LLY; $359.61; MS & Co. Rating: Overweight/In-Line)

Etsy (ETSY; $134.97; MS & Co. Rating: Equal-weight/In-Line)

Exxon Mobil (XOM; $112.865; MS & Co. Rating: Overweight/Attractive)

Freyr Battery (FREY; $10.735; MS & Co. Rating: Overweight/In-Line)

Ginkgo Bioworks (DNA; $1.96; MS & Co. Rating: Equal-weight/In-Line)

GoDaddy (GDDY; $75.865; MS & Co. Rating: Equal-weight/Attractive)

Illumina (ILMN; $202.28; MS & Co. Rating: Equal-weight/In-Line)

iShares MSCI India ETF* (INDA; $42.49; MS & Co. Rating: Not Covered/Not Covered)

Meta Platforms (META; $135.22; MS & Co. Rating: Equal-weight/In-Line)

Naver Corp. (035420.KS; KRW197,000; MS & Co. Rating: Equal-weight/In-Line)

Novo Nordisk (NVO; $953.60; MS & Co. Rating: Overweight/In-Line)

Occidental Petroleum (OXY; $64.73; MS & Co. Rating: Equal-weight/Attractive)

Pinterest (PINS; $26.56; MS & Co. Rating: Equal-weight/In-Line)

Plug Power (PLUG; $16.98; MS & Co. Rating: Overweight/Attractive)

QuantumScape (QS; $7.6401; MS & Co. Rating: Underweight/In-Line)

Robinhood Markets (HOOD; $9.445; MS & Co. Rating: Equal-weight/In-Line)

Roblox (RBLX; $37.56; MS & Co. Rating: Underweight/In-Line)

Shopify (SHOP; $39.58; MS & Co. Rating: Equal-weight/Attractive)

Snap (SNAP; $9.40; MS & Co. Rating: Underweight/In-Line)

Spotify Technology (SPOT; $92.48; MS & Co. Rating: Overweight/In-Line)

Sunrun (RUN; $28.51; MS & Co. Rating: Overweight/Attractive)

Tesla (TSLA; $130.56; MS & Co. Rating: Overweight/In-Line)

The RealReal (REAL; $1.6101; MS & Co. Rating: Equal-weight/In-Line)

Uber Technologies (UBER; $29.185; MS & Co. Rating: Overweight/In-Line)

WisdomTree India Earnings ETF* (EPI; $33.4; MS & Co. Rating: Not Covered/Not Covered)

Wix.com (WIX; $83.69; MS & Co. Rating: Equal-weight/Attractive)

**Covered by Michael Suchanick of Morgan Stanley Wealth Management. Morgan Stanley Wealth Management and its affiliates do not provide fundamental research ratings on exchange-traded funds (ETFs).*

Note: Prices as of market close on Jan. 19, 2022.

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(as of date **December 31, 2022**)

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	CEF Coverage Universe		Investment Banking Clients (IBC)		
Closed-End Fund (CEF) Rating Category	Count	% of Total	Count	% of Total IBC	% of Rating Category
Overweight/Buy	28	36.4%	11	42.3%	39.3%
Equal-weight/Hold	35	45.4%	10	38.5%	28.6%
Underweight/Sell	14	18.2%	5	19.2%	35.7%
Total	77	100.0%	26	100.0%	

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