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5. ASEAN: Economic snapshot
6. ASEAN: Monetary and fiscal policy
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10. China: Monetary policy and credit growth
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17. Global inflation
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73. The benefits of diversification and long-term investing
EM Asia ex-China* manufacturing PMI and real GDP growth

Index

Year-over-year change

EM Asia ex-China* investment and exports

Year-over-year change, 3-month moving average


PMI = Purchasing Managers’ Index. Manufacturing PMIs are relative to 50, which indicates contraction (below 50) or expansion (above 50) of the manufacturing sector. *Emerging Market (EM) Asia ex-China includes Hong Kong, India, Indonesia, Korea, Malaysia, Philippines, Singapore, Taiwan and Thailand.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
ASEAN: Economic snapshot

Exports
Year-over-year change, 6-month moving average

Consumption growth
Year-over-year change

Current account balance
Share of GDP


Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
ASEAN: Monetary and fiscal policy

Central bank policy rates*

Per annum

- Thailand
- Philippines
- Indonesia
- Vietnam

Government deficit or surplus

Share of GDP

- Singapore
- Thailand
- Indonesia
- Malaysia
- Vietnam


*The central banks’ policy rates used are: Bank Indonesia 7-day reverse repo rate (Indonesia), overnight policy rate (Malaysia), Bangko Sentral ng Pilipinas overnight reverse repurchase facility (Philippines), one-day repurchase rate (Thailand) and Vietnam Base Rate (Vietnam). Singapore is not included as the Monetary Authority of Singapore manages the exchange rate of the Singapore dollar, rather than interest rates, in its monetary policy.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
China: Economic snapshot

Contribution to real GDP growth
Year-over-year change

- Gross capital formation (investment)
- Consumption
- Net exports
- GDP

Caixin/Markit Purchasing Managers’ Indices
Level

Electricity consumption
Year-to-date, year-over-year change

Source: J.P. Morgan Asset Management; (Left) CEIC, National Bureau of Statistics of China; (Top right) Caixin/Markit, J.P. Morgan Economic Research; (Bottom right) CEIC, China Electricity Council. PMIs are relative to 50, which indicates deceleration (below 50) or acceleration (above 50) of the sector.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
China: Cyclical indicators

Retail and online sales
Year-over-year change, 3-month moving average

Fixed asset investment
Year-to-date, year-over-year change

Property prices and land sales
Year-to-date, year-over-year change

CPI and PPI inflation
Year-over-year change

CPI = Consumer Price Index; PPI = Producer Price Index.
*Land area sold is cut off in 2011 to maintain a more reasonable scale, as growth in land area sold exceeded 90% year-over-year.
Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
China: Fiscal policy

Fiscal revenue and expenditure*
Year-over-year change, 3-month moving average

-20% -10% 0% 10% 20% 30%
'14 '15 '16 '17 '18 '19 '20

Infrastructure investment
Year-over-year change, year-to-date
-40% -30% -20% -10% 0% 10% 20% 30% 40%
'14 '15 '16 '17 '18 '19 '20

Local government bond issuance**
RMB billions

*Fiscal revenue includes taxes, government funds, which are mostly derived from local government land sales, and other government revenues. Fiscal expenditure includes government spending of funds raised from taxes, government funds and general bond issuance. **Local government general bonds are issued to raise funds and offset fiscal deficits so as to maintain the ordinary operation of local governments. They are backed by the future fiscal revenue of the local governments. Local government special bonds are issued to support specific infrastructure and public projects. They are backed by the future revenue generated from the projects.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
China: Monetary policy and credit growth

**Total social financing**

<table>
<thead>
<tr>
<th>RMB billions</th>
<th>Year-over-year change, 3-month moving average</th>
<th>Per annum</th>
</tr>
</thead>
<tbody>
<tr>
<td>200%</td>
<td>Total social financing</td>
<td>7.5%</td>
</tr>
<tr>
<td>150%</td>
<td>Bank loans + direct financing</td>
<td>6.0%</td>
</tr>
<tr>
<td>100%</td>
<td>Off-balance sheet financing</td>
<td>4.5%</td>
</tr>
<tr>
<td>50%</td>
<td>Medium-term lending facility (1-year)</td>
<td>3.0%</td>
</tr>
<tr>
<td>0%</td>
<td>Interbank repo (7-day)</td>
<td>1.5%</td>
</tr>
<tr>
<td>-50%</td>
<td>Deposit rate (1-year)</td>
<td>0.0%</td>
</tr>
</tbody>
</table>

**Key policy rates**

- **Lending rate (1-year)**: 7.5%
- **Medium-term lending facility (1-year)**: 6.0%
- **Interbank repo (7-day)**: 4.5%
- **Deposit rate (1-year)**: 3.0%
- **Loan prime rate (1-year)**: 4.0%

**Difference between credit* growth and nominal GDP growth**

Percentage points, 3-month moving average

- **Rapid rebound in CPI & PPI**
- **Loosening**: 216bps rate cuts, 4tn stimulus
- **Tightening**: 125bps rate hikes, BASEL III adoption
- **Loosening**: 56bps rate cuts, trust boom
- **Interbank liquidity crunch**
- **Loosening**: 165bps rate cuts, LGFV debt swap****
- **Tightening**: shadow banking tightening
- **A-share market crash**
- **Rate cut**
- **Tightening**
- **COVID-19 virus outbreak**
- **Loosening**: RRR cuts

**Off-balance sheet financing**

Source: CEIC, People’s Bank of China, J.P. Morgan Asset Management; (Top) China Central Depository & Clearing Co. Ltd.; (Bottom right) National Interbank Funding Center.

*Year-over-year growth rates of rolling 12-month nominal GDP and stock of aggregate financing (for corporate sector and government) are used for calculation. **CPI stands for consumer price index and PPI stands for producer price index. ***Wenzhou SME crisis refers to the credit problems faced by a large number of SMEs in Wenzhou region in 2011. ****LGFV refers to local government financing vehicle. *****In August 2019, the PBoC started to release 1-year and 5-year loan prime rates (LPR) on a monthly basis, which is based on quotes from 18 large banks. LPR has become the benchmark for commercial loans and floating rate loan contracts.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Chinese yuan exchange rate: CFETS CNY* vs. USD

Index, Jan. 2016 = 100

USD / CNY

CFETS CNY index

USD / CNY (inverted)

Change in monthly FX reserves (USD billions)


*CFETS RMB index is the China Foreign Exchange Trade System basket of 24 currencies traded against the Chinese renminbi. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Global growth

Real GDP growth
Quarter-over-quarter change

- Eurozone
- U.S.
- China

Real GDP levels
Indexed to 1Q 2006 = 100

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Global Purchasing Managers’ Index (PMI)


PMIs are relative to 50, which indicates deceleration (below 50) or acceleration (above 50) of the sector. Heatmap colors are based on PMI relative to the 50 level, with green (red) corresponding to acceleration (deceleration).

*Developed market includes Australia, Canada, Denmark, euro area, Japan, New Zealand, Norway, Sweden, Switzerland, UK and the U.S.

**Emerging market includes Brazil, Chile, China, Colombia, Croatia, Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Israel, Korea, Malaysia, Mexico, Philippines, Poland, Romania, Russia, Saudi Arabia, Singapore, South Africa, Taiwan, Thailand, Turkey and Vietnam.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Global supply chains

Foreign value added in domestic exports
Source of foreign value add in exports as a % of total goods exports*, 2015

Supplier delivery times
Manufacturing PMI subindex, G4** average

Manufacturing as share of global total

Source: J.P. Morgan Asset Management; (Left) OECD Trade in Value Add; (Top right) J.P. Morgan Economics Research, Markit; (Bottom right) United Nations Industrial Development Organization.

*Origin country of value-added to goods exported from each country to the world, divided by gross exports from each country. 2015 is the latest year for which country by country data are available.

**G4 is defined as the four largest economies: China, euro area, Japan and the U.S.

ASEAN is the Association of Southeast Asian Nations, ROW is rest of the world.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Global trade activity
Year-over-year change, 3MMA

Exports as a percentage of GDP – 2019
Goods share of GDP

Source: FactSet, J.P. Morgan Asset Management; (Left) Markit, Netherlands Bureau of Policy Research; (Right) International Monetary Fund.

*Series shown is the Global Manufacturing Purchasing Managers’ Index Sub-Index for new export orders.

**EU exports as a percentage of GDP exclude intra-EU trade as the European Union is considered one regional economy.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
**Barriers to trade**

### China & U.S. tariffs

- **Weighted average tariff rate on imports from others***
  - U.S. solar panel & washing machine tariffs
  - U.S. steel & aluminum tariffs
  - First round of Sec. 301 tariffs & retaliation (U.S. on USD 200B of imports; China USD 60B)
  - Second round of Sec. 301 tariffs & retaliation (USD 34B)
  - Third round of Sec. 301 tariffs & retaliation (U.S. on USD 200B of imports; China USD 60B)

- **China tariffs on imports from U.S.**
- **U.S. & China increase Sec. 301 tariff rates**
- **U.S. & China decrease Sec. 301 tariff rates**
- **Tariffs placed on remainder of imports**

### Non-tariff barriers to trade**

- **Number of measures in effect, 2017**
  - Health and safety regulations
  - Technical barriers
  - Anti-dumping duties
  - Countervailing duties

### Effective weighted average tariff rate***

- **2017**
  - Retaliation for new U.S. tariffs
  - U.S. steel & aluminum tariffs
  - U.S. tariffs on China in place
  - U.S. threatened tariffs on China

Source: J.P. Morgan Asset Management; (Top) Chad Bown, China Ministry of Finance, International Trade Center, Peterson Institute for International Economics; (Top and bottom right) Office of the U.S. Trade Representative, U.S. International Trade Commission; (Bottom left) United Nations. *Trade-weighted average tariffs computed from product-level tariff and trade data, weighted by U.S. exports to the world and China's exports to the world in 2017. **Barriers can take the form of health and safety regulations—sanitary production requirements or health and invasive species restrictions; technical barriers—minimum standards or certifications for products sold in a certain country; anti-dumping duties—taxes on imports to prevent other countries offloading excess supply at artificially cheap prices; countervailing duties—taxes on imports to offset subsidies received elsewhere. ***Value of imports-weighted average tariff for 2017, plus additional tariffs from trade actions in 2018 or 2019 related to U.S. trade disputes calculated as the additional tariffs collected as a result of each new action as a percent of total imports for that year.

*Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.*
Global inflation

Headline consumer prices
Year-over-year change, quarterly

Legend

Below trend
Inflation running
Above trend

U.S.
UK
Eurozone
Japan
Australia
China
India
Korea
Taiwan
Indonesia
Malaysia
Thailand
Brazil
Mexico
Russia
Turkey
South Africa


Apr May

0.4% 0.2%
0.8% 0.5%
0.3% 0.1%
0.1% 0.0%
1.2% 0.1%
3.3% 2.4%
- -
0.1% -0.3%
-0.8% -1.0%
2.6% 1.9%
-2.9% -2.9%
-3.0% -3.4%
2.4% 1.9%
2.1% 2.8%
-2.4% -2.0%
10.9% 11.4%
3.0% -

Source: Department of Statistics Malaysia, DGBAS, Eurostat, FactSet, Goskomstat of Russia, IBGE, India Ministry of Statistics & Programme Implementation, INEGI, J.P. Morgan Economics Research, Korean National Statistical Office, Melbourne Institute, Ministry of Commerce Thailand, Ministry of Internal Affairs & Communications Japan, National Bureau of Statistics China, Office for National Statistics UK, Statistics Indonesia, Statistics Institute Turkey, Statistics South Africa, U.S. Department of Labor, J.P. Morgan Asset Management. Quarterly averages, with the exception of the two most recent figures, which are single month readings, are shown. Colors are based on z-score of year-over-year inflation rate relative to each country’s own 10-year history where red (blue) indicates inflation above (below) long-run trend. EM represents emerging markets.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
G4 are the Bank of England, the Bank of Japan (BoJ), the European Central Bank and the U.S. Federal Reserve. *Key deposit rates that central banks charge commercial banks on their excess reserves. **The BoJ has adopted a three-tier system in which a negative interest rate of -0.1% will be applied to the policy rate balance of the aggregate amount of all financial institutions that hold current accounts at the BoJ. ***Count covers the 38 central banks included in the Bank for International Settlements’ central bank policy monitor. Year-to-date data reflect most recently available as of 24/06/20. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
### Central Bank Bond Purchases

12-month rolling flow of bond purchases by G4 central banks*, USD billions

<table>
<thead>
<tr>
<th>Year</th>
<th>U.S.</th>
<th>Eurozone</th>
<th>UK</th>
<th>Japan</th>
<th>Net</th>
</tr>
</thead>
<tbody>
<tr>
<td>'08</td>
<td>500</td>
<td>600</td>
<td>700</td>
<td>800</td>
<td>200</td>
</tr>
<tr>
<td>'09</td>
<td>1000</td>
<td>1200</td>
<td>1300</td>
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<td>300</td>
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<td>2200</td>
<td>2300</td>
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<td>500</td>
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<td>'12</td>
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<td>2700</td>
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<td>600</td>
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<td>'13</td>
<td>3000</td>
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<td>3700</td>
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<td>800</td>
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<td>4300</td>
<td>4400</td>
<td>900</td>
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<td>'16</td>
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<td>4800</td>
<td>4900</td>
<td>1000</td>
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<tr>
<td>'17</td>
<td>5000</td>
<td>5200</td>
<td>5300</td>
<td>5400</td>
<td>1100</td>
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<td>'18</td>
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<td>5700</td>
<td>5800</td>
<td>5900</td>
<td>1200</td>
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<td>'19</td>
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<td>6300</td>
<td>6400</td>
<td>1300</td>
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<td>'20</td>
<td>6500</td>
<td>6700</td>
<td>6800</td>
<td>6900</td>
<td>1400</td>
</tr>
</tbody>
</table>


*New purchases of bonds are based on period to period changes in average holdings during the quarter across various asset purchase programs as reported by each respective G4 central bank (the Bank of England, the Bank of Japan, the European Central Bank and the U.S. Federal Reserve), announced purchase plans of these central banks and J.P. Morgan Asset Management projections, converted to common currency by average monthly exchange rates.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Global monetary policy

**U.S.**
- Asset purchase program: Treasury and Agency mortgage-backed securities, Agency commercial mortgage-backed securities
- Primary and Secondary Corporate Credit Facility and Term Asset-Backed Securities Loan Facility
- Significantly enhanced U.S. dollar liquidity swap arrangements with a wide range of central banks to ensure there is sufficient U.S. dollar funding available
- Paycheck Protection Program Liquidity Facility and Main Street Lending Program to support funding to small businesses
- Municipal Liquidity Facility to be established to purchase short-term notes directly from U.S. states

**UK**
- Quantitative Easing program of GBP 745 billion
- Launched a COVID Corporate Financing Facility (CCFF) to purchase commercial paper
- Launched a Term Funding Scheme for small and medium-sized enterprises (SME)
- Cut the countercyclical capital buffer from 1% to 0%
- Temporary direct financing of government spending needs, reviving the “Ways and Means Facility” that was used in 2008

**Eurozone**
- Pandemic Emergency Purchase Program EUR 1.4 trillion by mid-2021
- Expanded Asset Purchase Program by EUR 120 billion
- Expanded eligibility of non-financial commercial paper for the Corporate Sector Purchase Program
- Targeted Longer-Term Refinancing Operations
- Pandemic Emergency Longer-Term Refinancing Operations
- Bonds downgraded to junk since April 7 viewed as eligible collateral to access European Central Bank lending

**Japan**
- Purchases of commercial paper and corporate bonds: up to ~ JPY 20 trillion
- Special Funds-Supplying Operations to Facilitate Financing in Response to COVID-19 and a new measure to further support financing mainly of SME: about JPY 90 trillion
- Doubling of annual purchase limits of equity Exchange Trade Funds and Real Estate Investment Trusts

**Brazil**
- Reduction of reserve requirements
- Creation of credit lines to finance payrolls
- Foreign exchange spot intervention
- Temporary prohibition of dividend payments
- Central bank allowed to buy securities in secondary market during period of public calamity

**Australia**
- Yield curve control: 0.25% target on 3-year yield
- Term funding facility for banks and financial institutions
- Interest on excess reserves raised from 0.0% to 0.1%


*Guide to the Markets – Asia*. Data reflect most recently available as of 30/06/20.
Estimated fiscal support in response to the COVID-19 pandemic

% of GDP

Source: IMF Fiscal Monitor, J.P. Morgan Asset Management. Percent of GDP are based on June 2020 World Economic Outlook Update for 2020. Additional spending and foregone revenue refer to increases in government expenditure and reductions in tax revenue. Loans, equity and guarantees refer to additional liquidity support offered to firms and banks. Data represent key fiscal measures governments have announced in response to the COVID-19 pandemic as of 12/06/20.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
### Developed markets political timeline

- **17-20 August U.S.**
  - U.S. Democratic candidate is selected

- **3 November U.S.**
  - U.S. general election

- **31 December UK**
  - Brexit transition period ends

- **20 January U.S.**
  - Presidential inauguration

- **21-22 November Global**
  - G20 summit

### Emerging markets political timeline

- **6 September Hong Kong**
  - Legislative Council election

- **11-15 November ASEAN**
  - ASEAN Summit

- **October/November China**
  - Fifth Plenum of the 19th CPC Central Committee

- **March China**
  - National People’s Congress

- **April/May ASEAN**
  - ASEAN Summit

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*Guide to the Markets – Asia.* Data reflect most recently available as of 30/06/20.
Votes or seats in the Electoral College, Senate and the House of Representatives

<table>
<thead>
<tr>
<th>Last election result</th>
<th>Number of votes / elected representatives needed for majority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electoral College</td>
<td>270 vs. 304*</td>
</tr>
<tr>
<td>Senate</td>
<td>47 vs. 53</td>
</tr>
<tr>
<td>House of Representatives</td>
<td>238 vs. 197</td>
</tr>
</tbody>
</table>

Global economy

Source: 270 to Win, Real Clear Politics, The Cook Political Report, J.P. Morgan Asset Management. *In 2016 Trump earned 306 pledged electors, Clinton 232. They lost, respectively, two and five votes to faithless electors in the official tally. **51 seats are needed for a simple majority if the dominant party in the Senate is not represented in the White House. If the president and majority party are the same, only 50 seats are needed for a majority because the vice president casts the tie-breaking vote. 2016 numbers include two independents that vote with the Democrats. Senate polls shown are based on averages of polling data taken over different time periods. Polls shown do not add up to 100% as options other than the democratic or republican candidate, such as “No Opinion” or “Wouldn’t Vote”, are omitted from the chart.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
United States: Economic growth and the composition of GDP

**Real GDP**

Year-over-year change

- **Real GDP**: 1Q20
- Year-over-year change: 0.3%
- Quarter-over-quarter SAAR* change: -5.0%

Average: 2.7%

Average post-Global Financial Crisis: 2.2%

Source: Bureau of Economic Analysis, FactSet, J.P. Morgan Asset Management.

*SAAR stands for seasonally adjusted annualized rate.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.

Indicators are:

- **Consumer Confidence**: Monthly survey index of how consumers perceive their own financial status and the general economy;
- **Wage Growth**: Average hourly earnings of production and non-supervisory workers;
- **Nonfarm Payrolls**: Monthly change in U.S. nonfarm employment (three-month moving average);
- **Housing Starts**: Number of private housing units that construction has started within a specified timeframe;
- **Light Vehicle Sales**: Cars and passenger trucks sold in a given month;
- **Business Confidence**: Monthly survey of Chief Executive Officers about their outlook for the economy;
- **Capex**: Monthly new orders of non-defense capital goods (excluding aircraft);
- **Durable Orders**: Monthly new orders of durable goods in the manufacturing sector, seasonally adjusted;
- **Industrial Production**: Monthly output of the industrial sector;
- **Leading Economic Index**: An index aggregating values of 10 key variables intended to forecast future U.S. economic activity;
- **Credit Conditions**: Leading Credit Index that aggregates performance of six financial market instruments to track credit conditions in the U.S. economy.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
United States: Employment and wages

Unemployment rate and average hourly earnings*
Percent of labor force, year-over-year change, seasonally adjusted

*Average hourly earnings are calculated from the wages of production and non-supervisory workers.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Source: Bureau of Economic Analysis, Bureau of Labor Statistics, FactSet, S&P 500, J.P. Morgan Asset Management. Consumer spending (2019 annual) includes: membership clubs, sports, amusement parks, campgrounds, movies, theaters, museums, libraries, casino gambling, purchased meals and beverages, packaged tours, air and water transportation, hotels and motels and select retail goods and services. Employment (January 2020) includes: air and water transportation, transit and ground passenger transportation, support activities for air and water transportation, arts, entertainment, recreation, accommodation, food services and drinking places and retail ex-food and beverage stores. Earnings (2019 operating) includes: hotels, restaurants and leisure; airlines; select entertainment and travel booking companies; multiline and specialty retail; and textiles apparel and luxury goods.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Headline and core consumer price index (CPI)
Year-over-year change, seasonally adjusted

<table>
<thead>
<tr>
<th>Year</th>
<th>Headline CPI</th>
<th>Core CPI</th>
<th>Food CPI</th>
<th>Energy CPI</th>
<th>Headline PCE deflator</th>
<th>Core PCE deflator</th>
</tr>
</thead>
<tbody>
<tr>
<td>'75</td>
<td>3.9%</td>
<td>3.8%</td>
<td>3.9%</td>
<td>4.0%</td>
<td>3.4%</td>
<td>3.3%</td>
</tr>
<tr>
<td>'80</td>
<td>0.2%</td>
<td>1.2%</td>
<td>4.0%</td>
<td>-18.3%</td>
<td>0.5%</td>
<td>1.0%</td>
</tr>
</tbody>
</table>

Core CPI is defined as CPI excluding food and energy prices. The Personal Consumption Expenditure (PCE) deflator employs an evolving chain-weighted basket of consumer expenditures instead of the fixed-weight basket used in CPI calculations. Latest inflation numbers are May 2020 for CPI & sub-indexes and for PCE deflators.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
United States: Monetary policy

Federal funds rate expectations
Market expectations for the fed funds rate

FOMC June 2020 forecast
Percent

<table>
<thead>
<tr>
<th></th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>Long run</th>
</tr>
</thead>
<tbody>
<tr>
<td>Change in real GDP, 4Q to 4Q</td>
<td>-6.5</td>
<td>5.0</td>
<td>3.5</td>
<td>1.8</td>
</tr>
<tr>
<td>Unemployment rate, 4Q</td>
<td>9.3</td>
<td>6.5</td>
<td>5.5</td>
<td>4.1</td>
</tr>
<tr>
<td>PCE inflation, 4Q to 4Q</td>
<td>0.8</td>
<td>1.6</td>
<td>1.7</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Market expectations are the federal funds rates priced into the Fed Fund futures market as of 30/06/20. Federal Reserve projections shown are the median estimates of Federal Open Market Committee (FOMC) participants.
Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Eurozone: Economic snapshot

Eurozone activity
Year-over-year change

Eurozone CPI inflation
Year-over-year change

Consumer confidence* and retail sales
Year-over-year change, 3-month moving average

Source: Eurostat, FactSet, J.P. Morgan Asset Management; (Bottom right) European Commission.
Core CPI is defined as CPI excluding food and energy prices.
*Eurozone consumer confidence as reported by the European Commission, which measures the level of optimism that consumers have about the economy in relation to prior months and is typically below zero.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
### Global and Asia equity market returns

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</thead>
<tbody>
<tr>
<td>ASEAN</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Ann. Ret.</td>
</tr>
<tr>
<td>Korea</td>
<td>27.2%</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Ann. Vol.</td>
</tr>
<tr>
<td>India</td>
<td>20.9%</td>
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<tr>
<td>APAC ex-JP</td>
<td>18.4%</td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>Japan</td>
<td>15.6%</td>
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</tr>
<tr>
<td>U.S.</td>
<td>15.1%</td>
<td>-18.2%</td>
<td></td>
<td>-2.6%</td>
<td>-3.7%</td>
<td>-7.6%</td>
<td>-4.5%</td>
<td>-10.7%</td>
<td>-15.2%</td>
<td>-27.6%</td>
<td>-37.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td>4.8%</td>
<td>-20.2%</td>
<td></td>
<td>-2.6%</td>
<td>-3.7%</td>
<td>-7.6%</td>
<td>-4.5%</td>
<td>-10.7%</td>
<td>-15.2%</td>
<td>-27.6%</td>
<td>-37.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Europe</td>
<td>4.5%</td>
<td>-20.5%</td>
<td></td>
<td>-3.8%</td>
<td>-5.7%</td>
<td>-11.0%</td>
<td>-1.4%</td>
<td>-14.0%</td>
<td>-20.5%</td>
<td>-25.6%</td>
<td>-32.9%</td>
<td></td>
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</tr>
<tr>
<td>China A</td>
<td>-8.4%</td>
<td></td>
<td></td>
<td>-4.5%</td>
<td>-10.7%</td>
<td>-18.4%</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Source: FactSet, MSCI, Standard & Poor’s, J.P. Morgan Asset Management.

Returns are total returns based on MSCI indices, except the U.S., which is the S&P 500, and China A, which is the CSI 300 index in U.S. dollar terms. China return is based on the MSCI China index. 10-yr total (gross) return data is used to calculate annualized returns (Ann. Ret.) and annualized volatility (Ann. Vol.) and reflect the period 30/06/10 – 30/06/20. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Global equities: Return composition

Sources of global equity returns*

Total return, USD

2019 2020 YTD

- Total return
- Currency return
- Multiple expansion**
- Dividend yield
- EPS growth outlook***

U.S. Europe Japan Asia Pacific ex-Japan EM

-3.1% -12.4% -6.9% -6.0% -9.7%

31.5% 24.6% 20.1% 19.5% 18.9%

Source: FactSet, MSCI, Standard & Poor’s, J.P. Morgan Asset Management. *All return values are MSCI Gross Index (official) data, except the U.S., which is the S&P 500. **Multiple expansion is based on the forward price-to-earnings ratio. ***Earnings per share (EPS) growth outlook is based on next 12 month aggregate (NTMA) earnings estimates. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Global equities: Earnings expectations

**Earnings growth**
Earnings per share, year-over-year change, consensus estimates

- **U.S.**
  - 2018: -22%
  - 2019: 24%
  - 2020: 1%
  - 2021: 8%
- **EM**
  - 2018: -4%
  - 2019: 23%
  - 2020: 5%
  - 2021: 5%
- **Asia Pacific ex-Japan**
  - 2018: -22%
  - 2019: 21%
  - 2020: -3%
  - 2021: 6%
- **Europe**
  - 2018: -3%
  - 2019: -2%
  - 2020: -2%
  - 2021: 0%

**Earnings revisions ratios**
Net earnings revisions to consensus estimates, 13-week moving average

Source: IBES, MSCI, Standard & Poor’s, Thomson Reuters Datastream, J.P. Morgan Asset Management. Asia Pacific ex-Japan, emerging markets (EM), Europe and U.S. equity indices used are the MSCI Asia Pacific ex-Japan, MSCI Emerging Markets, MSCI Europe and S&P 500, respectively. Consensus estimates used are calendar year estimates from IBES. Revisions are based on the current unreported year. Net earnings revisions is (number of companies with upward earnings revisions – number of companies with downward earnings revisions) / number of total companies. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Global equities: Valuations

**Equity market valuations – Price-to-earnings**

Forward P/E ratios

<table>
<thead>
<tr>
<th>Region</th>
<th>15-yr. average</th>
<th>15-yr. range</th>
<th>Latest</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P 500</td>
<td></td>
<td></td>
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<tr>
<td>Europe ex-UK</td>
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<tr>
<td>Asia Pac ex-Japan</td>
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<tr>
<td>Emerging markets</td>
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<tr>
<td>ASEAN</td>
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<td></td>
<td></td>
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<tr>
<td>China A (CSI 300)</td>
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<td>China</td>
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<td>Russia</td>
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</tbody>
</table>

**Equity market valuations – Price-to-book**

Trailing P/B ratios

<table>
<thead>
<tr>
<th>Region</th>
<th>15-yr. average</th>
<th>15-yr. range</th>
<th>Latest</th>
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</thead>
<tbody>
<tr>
<td>S&amp;P 500</td>
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<tr>
<td>Europe ex-UK</td>
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<td>Asia Pac ex-Japan</td>
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<td>Emerging markets</td>
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<tr>
<td>ASEAN</td>
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<tr>
<td>China A (CSI 300)</td>
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<tr>
<td>Russia</td>
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</tr>
</tbody>
</table>

Source: Bloomberg Finance L.P., China Securities Index, FactSet, MSCI, Standard & Poor’s, J.P. Morgan Asset Management.

Price-to-earnings (P/E) and price-to-book (P/B) ratios are in local currency terms. China A valuations based on the CSI 300 Index and use 10 years of data due to availability. China valuation is based on the MSCI China. 15-year range for P/E and P/B ratios are cut off to maintain a more reasonable scale for some indices.

Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
MSCI AC Asia Pacific ex-Japan: Performance comparison*

USD index, Jan. 2000 = 100

Source: FactSet, MSCI, J.P. Morgan Asset Management.

*Total returns based on MSCI indices in U.S. dollar terms. **Annualized return and volatility based on total monthly return data (USD) over the latest 15 years. Risk-adjusted return is calculated as annualized return / annualized volatility.

Positive yield does not imply positive return. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.

Risk and return profile**

<table>
<thead>
<tr>
<th>Constituent</th>
<th>Annualized return</th>
<th>Annualized volatility</th>
<th>Risk-adjusted return</th>
</tr>
</thead>
<tbody>
<tr>
<td>MSCI World (DM)</td>
<td>7.1%</td>
<td>15.5%</td>
<td>0.46</td>
</tr>
<tr>
<td>MSCI World (DM) High Dividend</td>
<td>7.7%</td>
<td>12.8%</td>
<td>0.60</td>
</tr>
<tr>
<td>MSCI AC Asia Pacific ex-Japan</td>
<td>7.6%</td>
<td>20.5%</td>
<td>0.37</td>
</tr>
<tr>
<td>MSCI AC APAC ex-JP High Div</td>
<td>10.1%</td>
<td>13.9%</td>
<td>0.73</td>
</tr>
</tbody>
</table>

Number of companies yielding greater than 3% by region

Constituents of MSCI AC World Index

- Asia Pac. ex-Japan: 352
- U.S.: 169
- EM ex-Asia: 137
- Europe: 129
- Japan: 108
Global equities: Growth versus value

Growth vs. value valuations*
MSCI World growth / value fwd. P/E ratio, # of std. dev. over / under average

Growth vs. value relative performance
MSCI World value / growth performance

Growth expensive relative to value
Growth cheap relative to value

Growth underperforming value
Growth outperforming value

Recession

Source: FactSet, MSCI, J.P. Morgan Asset Management.
*Growth is the MSCI World Growth index and value is the MSCI World Value index.
Past performance is not a reliable indicator of current and future results.
Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Asia ex-Japan equities: Performance drivers

AxJ vs. DM growth and equity performance
% next 12 months’ growth estimates

AxJ price-to-book and subsequent returns
% next 12 months’ price return in USD

Relative AxJ / DM equity performance and USD REER
Relative index level, Dec. 1997 = 100

Source: FactSet, MSCI, J.P. Morgan Asset Management; (Left) J.P. Morgan Economic Research; (Top right) MSCI; (Bottom right) U.S. Federal Reserve.
AxJ = Asia ex-Japan; DM = Developed markets.

*REER is the real effective exchange rate. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
**Domestic vs. exports-oriented Asian companies**

MSCI AC Asia Pacific ex-Japan, earnings per share, Jan. 2009 = 100

- Less than 70% of revenue derived domestically
- More than 95% of revenue derived domestically
- Between 70% and 95% of revenue derived domestically

**Growth in nominal exports and earnings per share**

USD, year-over-year change

- MSCI AC Asia Pacific ex-Japan EPS
- EM Asia ex-China exports

Source: FactSet, MSCI, J.P. Morgan Asset Management; (Right) CEIC, national statistics agencies. Earnings per share (EPS) used is next 12 months’ aggregate estimate. *Universe of stocks within the MSCI AC Asia Pacific ex-Japan index are split into three buckets depending on their revenue exposure to their domestic market. Over the time period examined (01/01/09 – 30/06/20), monthly adjustments are made to the buckets to reflect changes in a company’s operations over time. Subsequently, earnings-per-share (EPS) for each bucket is calculated by summing the market-value weighted EPS for each company on a monthly basis over the examined period. Each EPS series is then indexed to 100 on 01/01/09. **EM Asia ex-China includes Hong Kong, Korea, Malaysia, Singapore, Taiwan, Thailand and Vietnam. Overall exports aggregate is gross domestic product (GDP)-weighted. Past performance is not a reliable indicator of current and future results. For illustrative purposes only.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Korea and Taiwan: Earnings

Semiconductor equipment billings and earnings growth
% change, year-over-year

Korea earnings estimates by sector
% change, year-over-year

Taiwan earnings estimates by sector
% change, year-over-year


Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
China: Equities snapshot

Corporate earnings
Next 12-month consensus earnings per share, USD, Jan. 2013 = 100

MSCI A-share inclusion
China’s % share in selected emerging market indicators

Foreign investors’ holdings of onshore Chinese equities
RMB trillions

Stock Connect monthly net flows
HKD billions

MSCI China

text

Source: J.P. Morgan Asset Management; (Top and bottom left) FactSet, MSCI; (Bottom left) Bloomberg Finance L.P.; (Top right) Bloomberg, MSCI, World Bank (Bottom right) CEIC, Hong Kong Exchanges and Clearing Limited. The CSI 300 represents onshore Chinese A-share large cap equities. MSCI China represents primarily offshore listed Chinese equities and the onshore equities included in MSCI benchmarks.*Share of EM GDP is for 2018 and is calculated as Chinese nominal GDP in U.S. dollars as a percentage of all emerging markets within the MSCI EM index.**Share of EM market cap is for 2018 and is calculated as China’s market capitalization of listed domestic companies as a percentage of all emerging markets’ capitalization of listed domestic companies within the MSCI EM index.

***Currently, an index inclusion factor (IIF) of 20% is applied to China A Large Cap, ChiNext Large Cap and China A Mid Cap (including eligible ChiNext shares). 100% A-share inclusion is shown for illustrative purposes only. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
United States: Sector earnings and valuations

S&P 500 earnings growth estimates

Year-over-year change

-150%  -100%  -50%  0%  50%  100%  150%


2020  2021

S&P 500 price-to-earnings

Forward price-to-earnings ratio

60x  50x  40x  30x  20x  10x  0x

United States: Sector earnings and valuations

Source: FactSet, Standard & Poor’s, J.P. Morgan Asset Management; (Left) Compustat. *Energy sector earnings are expected to increase by 1,035% in 2021. **The forward price-to-earnings ratio in the energy sector at 30 June 2020 was -141x. The energy sector reached a historic maximum of 1,529x and a historic minimum of -949x.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
### Characteristics of bull and bear markets

<table>
<thead>
<tr>
<th>Market corrections</th>
<th>Bear markets</th>
<th>Macro environment</th>
<th>Bull markets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mkt. Peak</td>
<td>Bear return (%)</td>
<td>Duration (mths)</td>
</tr>
<tr>
<td>1 Crash of 1929</td>
<td>Sep 1929</td>
<td>-86</td>
<td>32</td>
</tr>
<tr>
<td>2 1937 Fed tightening</td>
<td>Mar 1937</td>
<td>-60</td>
<td>61</td>
</tr>
<tr>
<td>3 Post WWII crash</td>
<td>May 1946</td>
<td>-30</td>
<td>36</td>
</tr>
<tr>
<td>6 Stagflation, OPEC oil embargo</td>
<td>Jan 1973</td>
<td>-48</td>
<td>20</td>
</tr>
<tr>
<td>8 1987 crash</td>
<td>Aug 1987</td>
<td>-34</td>
<td>3</td>
</tr>
<tr>
<td>9 Tech bubble</td>
<td>Mar 2000</td>
<td>-49</td>
<td>30</td>
</tr>
<tr>
<td>10 Global financial crisis</td>
<td>Oct 2007</td>
<td>-57</td>
<td>17</td>
</tr>
<tr>
<td>11 Coronavirus pandemic</td>
<td>Feb 2020</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Averages

-45 25 169 57

<table>
<thead>
<tr>
<th>S&amp;P 500 Composite declines from all-time highs</th>
</tr>
</thead>
<tbody>
<tr>
<td>-100%</td>
</tr>
</tbody>
</table>

**Source:** FactSet, NBER, Robert Shiller, Standard & Poor’s, J.P. Morgan Asset Management. *A bear market represents a 20% or more decline from the previous market high using a monthly frequency. Periods of recession are defined using the NBER’s business cycle dates. Commodity spike is defined by a significant upward movement in oil prices. Periods of extreme valuation are defined as periods where the forward P/E multiple on the S&P 500 were approximately two standard deviations above the long-run average. Aggressive Fed tightening is defined as Federal Reserve monetary tightening that was unexpected and/or significant in magnitude. Peak and trough price-to-earnings ratios quoted are next 12 months forward P/Es. Past performance is not a reliable indicator of current and future results.*

*Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.*
Global fixed income: Yields and returns

### Global bond opportunities

<table>
<thead>
<tr>
<th>Sector</th>
<th>YTM</th>
<th>Duration* (years)</th>
<th>Correl. to MSCI AC World**</th>
<th>Correl. to 10-year UST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia HY</td>
<td>7.9%</td>
<td>4.3</td>
<td>0.70</td>
<td>-0.08</td>
</tr>
<tr>
<td>U.S. HY</td>
<td>7.0%</td>
<td>3.9</td>
<td>0.83</td>
<td>-0.24</td>
</tr>
<tr>
<td>USD EMD</td>
<td>5.1%</td>
<td>7.9</td>
<td>0.62</td>
<td>0.11</td>
</tr>
<tr>
<td>Europe HY</td>
<td>5.0%</td>
<td>3.7</td>
<td>0.82</td>
<td>-0.32</td>
</tr>
<tr>
<td>Local EMD</td>
<td>4.7%</td>
<td>5.1</td>
<td>0.67</td>
<td>-0.09</td>
</tr>
<tr>
<td>USD Asian</td>
<td>4.1%</td>
<td>5.6</td>
<td>0.56</td>
<td>0.24</td>
</tr>
<tr>
<td>U.S. IG</td>
<td>2.2%</td>
<td>8.5</td>
<td>0.38</td>
<td>0.47</td>
</tr>
<tr>
<td>DM Gov’t</td>
<td>0.6%</td>
<td>8.8</td>
<td>0.14</td>
<td>0.58</td>
</tr>
<tr>
<td>U.S. Treasury</td>
<td>0.5%</td>
<td>7.2</td>
<td>-0.43</td>
<td>0.98</td>
</tr>
<tr>
<td>Cash</td>
<td>0.1%</td>
<td>0.2</td>
<td>-0.12</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Source: Barclays, Bloomberg Finance L.P., FactSet, J.P. Morgan Economic Research, J.P. Morgan Asset Management. Based on Bloomberg Barclays U.S. Aggregate Credit – Corporate High Yield Index (U.S. HY), Bloomberg Barclays U.S. Aggregate Credit – Corporate Investment Grade Index (U.S. IG), J.P. Morgan Government Bond Index – EM Global (GBI-EM) (Local EMD), J.P. Morgan Emerging Market Bond Index Global (EMBIG) (USD EMD), J.P. Morgan Asia Credit Index (JACI) (USD Asian Bond), Bloomberg Barclays Pan European High Yield (Europe HY), J.P. Morgan Government Bond Index – Global Traded (DM Government Bond), J.P. Morgan Asia Credit High Yield Index (Asia HY), Bloomberg Barclays Global U.S. Treasury – Bills (3-5 years) (U.S. Treasury) and Bloomberg Barclays U.S. Treasury – Bills (1-3 months) (Cash). 5-year data is used to calculate annualized returns (Ann. Ret.). Returns are in U.S. dollars and reflect the period from 30/06/15 – 30/06/20. *Duration is a measure of the sensitivity of the price (the value of the principal) of a fixed income investment to a change in interest rates and is expressed as number of years. Rising interest rates mean falling bond prices, while declining interest rates mean rising bond prices. **Correlation to the MSCI AC World Index is a measure of over 10 years of data. Positive yield does not imply positive return. Past performance is not a reliable indicator of current and future results.

### Fixed income sector returns

<table>
<thead>
<tr>
<th>Sector</th>
<th>YTM</th>
<th>Duration* (years)</th>
<th>Correl. to MSCI AC World**</th>
<th>Correl. to 10-year UST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia HY</td>
<td>7.9%</td>
<td>4.3</td>
<td>0.70</td>
<td>-0.08</td>
</tr>
<tr>
<td>U.S. HY</td>
<td>7.0%</td>
<td>3.9</td>
<td>0.83</td>
<td>-0.24</td>
</tr>
<tr>
<td>USD EMD</td>
<td>5.1%</td>
<td>7.9</td>
<td>0.62</td>
<td>0.11</td>
</tr>
<tr>
<td>Europe HY</td>
<td>5.0%</td>
<td>3.7</td>
<td>0.82</td>
<td>-0.32</td>
</tr>
<tr>
<td>Local EMD</td>
<td>4.7%</td>
<td>5.1</td>
<td>0.67</td>
<td>-0.09</td>
</tr>
<tr>
<td>USD Asian</td>
<td>4.1%</td>
<td>5.6</td>
<td>0.56</td>
<td>0.24</td>
</tr>
<tr>
<td>U.S. IG</td>
<td>2.2%</td>
<td>8.5</td>
<td>0.38</td>
<td>0.47</td>
</tr>
<tr>
<td>DM Gov’t</td>
<td>0.6%</td>
<td>8.8</td>
<td>0.14</td>
<td>0.58</td>
</tr>
<tr>
<td>U.S. Treasury</td>
<td>0.5%</td>
<td>7.2</td>
<td>-0.43</td>
<td>0.98</td>
</tr>
<tr>
<td>Cash</td>
<td>0.1%</td>
<td>0.2</td>
<td>-0.12</td>
<td>0.13</td>
</tr>
</tbody>
</table>

Source: Barclays, Bloomberg Finance L.P., FactSet, J.P. Morgan Economic Research, J.P. Morgan Asset Management. Based on Bloomberg Barclays U.S. Aggregate Credit – Corporate High Yield Index (U.S. HY), Bloomberg Barclays U.S. Aggregate Credit – Corporate Investment Grade Index (U.S. IG), J.P. Morgan Government Bond Index – EM Global (GBI-EM) (Local EMD), J.P. Morgan Emerging Market Bond Index Global (EMBIG) (USD EMD), J.P. Morgan Asia Credit Index (JACI) (USD Asian Bond), Bloomberg Barclays Pan European High Yield (Europe HY), J.P. Morgan Government Bond Index – Global Traded (DM Government Bond), J.P. Morgan Asia Credit High Yield Index (Asia HY), Bloomberg Barclays Global U.S. Treasury – Bills (3-5 years) (U.S. Treasury) and Bloomberg Barclays U.S. Treasury – Bills (1-3 months) (Cash). 5-year data is used to calculate annualized returns (Ann. Ret.). Returns are in U.S. dollars and reflect the period from 30/06/15 – 30/06/20. *Duration is a measure of the sensitivity of the price (the value of the principal) of a fixed income investment to a change in interest rates and is expressed as number of years. Rising interest rates mean falling bond prices, while declining interest rates mean rising bond prices. **Correlation to the MSCI AC World Index is a measure of over 10 years of data. Positive yield does not imply positive return. Past performance is not a reliable indicator of current and future results.
Global fixed income: Return composition

Debt return composition
Last 12 months

-15%  -12%  -9%  -6%  -3%  0%  3%  6%  9%  12%

USD China offshore credit  USD Asia corporates  Local DM sovereigns  USD EMD corporates  USD Asia high yield  USD EMD  USD DM high yield  U.S. high yield  Local EMD

Based on J.P. Morgan Asia Credit High Yield Index (USD Asia high yield), J.P. Morgan CEMBI (USD EMD corporates), J.P. Morgan EMBI Global (USD EMD), J.P. Morgan Asia Credit Corporates Index (USD Asia corporates), J.P. Morgan Asia Credit China Index (USD China offshore credit), J.P. Morgan Developed Market HY Index (USD DM high yield), J.P. Morgan Domestic High Yield Index (U.S. high yield), J.P. Morgan GBI-EM Global (Local EMD), J.P. Morgan GBI-DM (Local DM sovereigns). Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
**Global fixed income: Valuations**

Spread to worst across fixed income sub-sectors

Basis points, last 10 years


Based on J.P. Morgan Domestic High Yield Index (U.S. high yield), J.P. Morgan U.S. Liquid Index (JULI) (U.S. investment grade), J.P. Morgan Euro High Yield Index (Euro high yield), iBoxx EUR corporates (Euro investment grade), J.P. Morgan Asia Credit Index (JACI) (USD Asia credit), J.P. Morgan Asia Credit China Index (USD China offshore credit), J.P. Morgan Asia Credit High Yield Index (USD Asia high yield), J.P. Morgan EMBI Global (EMD USD), J.P. Morgan Corporate Emerging Markets Bond Index – GEMBI (USD EMD corporates), J.P. Morgan GBI-EM Global (Local EMD). Positive yield does not imply positive return. Past performance is not a reliable indicator of current and future results.

*Guide to the Markets – Asia.* Data reflect most recently available as of 30/06/20.
Global fixed income: Bond yields

10-year government bond yields

<table>
<thead>
<tr>
<th>Average since 1970*</th>
<th>Latest</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>6.3%</td>
</tr>
<tr>
<td>Germany</td>
<td>5.4%</td>
</tr>
<tr>
<td>Japan</td>
<td>2.3%</td>
</tr>
</tbody>
</table>

Source: FactSet, J.P. Morgan Asset Management; (Left) Tullet Prebon; (Right) Bloomberg Finance L.P.

*Data begins, and averages calculated from, 01/01/70 for U.S. Treasuries, 02/10/72 for German Bunds and 03/02/86 for Japanese Government Bonds.

Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Global fixed income: Negative-yielding debt and bond market size

Global bond market
USD trillions

<table>
<thead>
<tr>
<th>Share of global market*</th>
<th>31/12/89</th>
<th>31/12/19</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S.</td>
<td>57.6%</td>
<td>36.1%</td>
</tr>
<tr>
<td>Dev. ex-U.S.</td>
<td>41.3%</td>
<td>41.1%</td>
</tr>
<tr>
<td>EM</td>
<td>1.2%</td>
<td>22.8%</td>
</tr>
</tbody>
</table>

*Sum may not add up to 100% due to rounding.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.

Size of negative-yielding debt market
Share of ICE BofAML Global Broad Market Index

<table>
<thead>
<tr>
<th>Market value of negative-yielding debt (USD trillions)</th>
<th>30/06/20</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government Debt – Japan</td>
<td>4.77</td>
</tr>
<tr>
<td>Government Debt – Europe</td>
<td>6.58</td>
</tr>
<tr>
<td>Government Debt – Rest of the World</td>
<td>0.05</td>
</tr>
<tr>
<td>Corporate Debt – Total</td>
<td>1.56</td>
</tr>
</tbody>
</table>
Global fixed income: Yields and risks

Yields and correlations of fixed income returns to equities
Yield, 10-year correlation between monthly total returns

Based on Bloomberg Barclays U.S. Treasury (UST) Bellwether 2y & 10y (2y & 10y UST), Bloomberg Barclays Treasury Inflation-Protected Securities (TIPS), ICE BofAML Country Government (1-10y) (France, Germany, Japan & UK (1-10y)), Bloomberg Barclays U.S. Aggregate, Credit – Investment Grade & High Yield (U.S. Aggregate, IG & HY), Bloomberg Barclays U.S. Floating Rate (U.S. Floating Rate), Bloomberg Barclays U.S. Aggregate Securitized – Mortgage-Backed Securities (U.S. MBS), Bloomberg Barclays Pan-European High Yield (Europe HY), J.P. Morgan GBI-EM Global (Local EMD), J.P. Morgan EMBI Global (USD EMD), J.P. Morgan Asia Credit (JACI) (USD Asia Credit), J.P. Morgan Asia Credit (JACI) – High Yield (USD Asia HY), J.P. Morgan Asia Credit China Index (USD China offshore credit), J.P. Morgan CEMBI (USD EMD corporates), J.P. Morgan Asia Diversified (JADE) (Local Asia). *Correlations are based on 10-years of monthly returns.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
## Global fixed income: Interest rate sensitivity

**Yield / Yield to worst**

<table>
<thead>
<tr>
<th>U.S. Treasuries</th>
<th>30/06/20</th>
<th>31/12/19</th>
<th>Duration* (years)</th>
<th>Correlation** to 10-year UST</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Year</td>
<td>0.16%</td>
<td>1.58%</td>
<td>1.99</td>
<td>0.73</td>
</tr>
<tr>
<td>5-Year</td>
<td>0.29%</td>
<td>1.69%</td>
<td>4.97</td>
<td>0.93</td>
</tr>
<tr>
<td>TIPS</td>
<td>-0.68%</td>
<td>0.15%</td>
<td>4.35</td>
<td>0.66</td>
</tr>
<tr>
<td>10-Year</td>
<td>0.66%</td>
<td>1.92%</td>
<td>9.64</td>
<td>1.00</td>
</tr>
<tr>
<td>30-Year</td>
<td>1.41%</td>
<td>2.39%</td>
<td>25.85</td>
<td>0.93</td>
</tr>
</tbody>
</table>

**Sector**

| U.S. Floating Rate   | 0.94%    | 2.30%    | 0.12              | -0.29                      |
| U.S. MBS             | 1.36%    | 2.54%    | 2.07              | 0.81                       |
| U.S. Investment Grade| 2.15%    | 2.84%    | 8.54              | 0.47                       |
| U.S. High Yield       | 6.87%    | 5.19%    | 3.9               | -0.24                      |
| USD EMD               | 5.13%    | 4.78%    | 7.94              | 0.11                       |
| USD Asia Credit       | 3.58%    | 3.73%    | 5.63              | 0.24                       |
| Local EMD             | 4.66%    | 5.91%    | 5.08              | -0.09                      |

**Illustrative impact of a 100bps fall in interest rates**

Assumes a parallel shift in the yield curve and steady spreads

- **30y UST**: 31.0% Total return, 29.6% Price return
- **10y UST**: 10.8% Total return, 10.1% Price return
- **5y UST**: 5.4% Total return, 5.1% Price return
- **TIPS**: 5.3% Total return, 4.5% Price return
- **2y UST**: 2.2% Total return, 2.0% Price return
- **USD EMD**: 8.7% Total return, 13.9% Price return
- **U.S. IG**: 3.8% Total return, 11.4% Price return
- **U.S. HY**: 3.8% Total return, 10.7% Price return
- **Local EMD**: 5.3% Total return, 10.0% Price return
- **USD Asia Credit**: 5.2% Total return, 8.8% Price return
- **U.S. MBS**: 2.7% Total return, 1.3% Price return
- **U.S. Floating Rate**: 1.0% Total return, 0.1% Price return

*Duration is a measure of the sensitivity of the price (the value of the principal) of a fixed income investment to a change in interest rates and is expressed as number of years. **Correlation measured over past 10 years of monthly total returns. Rising interest rates mean falling bond prices, while declining interest rates mean rising bond prices. Change in bond price is calculated using both duration and convexity, assuming a 1% fall in relevant local interest rate. Past performance is not a reliable indicator of current and future results.

Real 10-year and 2-year U.S. Treasury yields

Source: FactSet, Federal Reserve, J.P. Morgan Asset Management.
Real 10-year and 2-year Treasury yields are calculated as the daily Treasury yields less year-over-year core consumer price index inflation for that month except for June 2020, where real yields are calculated by subtracting May 2020 year-over-year core inflation. Yield is not guaranteed. Positive yield does not imply positive return. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
U.S. investment grade bonds

Corporate bond spread
Spread over comparable government bond, basis points*

<table>
<thead>
<tr>
<th>Year</th>
<th>Average</th>
<th>Latest</th>
</tr>
</thead>
<tbody>
<tr>
<td>1989</td>
<td>132bps</td>
<td>150bps</td>
</tr>
</tbody>
</table>

Recessions

Investment grade leverage
EBITDA** / interest expense
Debt / EBITDA

Credit rating and duration
Average Latest
Duration (years)
Share of BBB in index

Source: J.P. Morgan Asset Management; (Left and bottom right) Barclays, Bloomberg Finance L.P., FactSet; (Left and top right) J.P. Morgan Economics Research.

*Investment grade is Bloomberg Barclays U.S. Aggregate Credit – Corporate Investment Grade Index. **EBITDA is earnings before interest, tax, depreciation and amortisation. Spreads indicated are benchmark yield-to-worst less comparable maturity Treasury yields.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
U.S. securitized assets

Securitized assets* outstanding
Share of total amount outstanding (USD 12.1 trillion)

- **ABS**: 15%
- **CMBS**: 5%
- **RMBS**: 9%
- **Agency MBS**: 71%

Source: FactSet, J.P. Morgan Asset Management; (Top left) Securities Industry and Financial Markets Association (SIFMA).

*Securitized assets as represented by the total market value from SIFMA research. MBS are mortgage-backed securities, CMBS are commercial mortgage-backed securities, RMBS are residential mortgage-backed securities, ABS are asset-backed securities.

**Delinquency rate is defined as loans at least 90 days late or more with payments.

***Sectors not shown but included in the total figure are Revolving Home Equity and Others. Latest data are as of 1Q20.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.

Consumer sector delinquency**

<table>
<thead>
<tr>
<th></th>
<th>Total debt balance (USD trillion)***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student</td>
<td>1.54</td>
</tr>
<tr>
<td>Credit Card</td>
<td>0.89</td>
</tr>
<tr>
<td>Auto</td>
<td>1.35</td>
</tr>
<tr>
<td>Mortgage</td>
<td>9.71</td>
</tr>
<tr>
<td>Total</td>
<td>14.30</td>
</tr>
</tbody>
</table>

Source: J.P. Morgan Asset Management

Spreads
Option-adjusted spreads, bps

- **ABS**: 350 bps
- **CMBS**: 250 bps
- **MBS**: 150 bps

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
High yield spread and default rate*

<table>
<thead>
<tr>
<th>Sector</th>
<th>Default rate</th>
<th>Spread to worst (basis points)</th>
</tr>
</thead>
<tbody>
<tr>
<td>U.S. high yield bonds</td>
<td></td>
<td>10-yr average</td>
</tr>
<tr>
<td>HY spread to worst</td>
<td>2.0%</td>
<td>543bps</td>
</tr>
<tr>
<td>HY energy spread to worst</td>
<td>3.0%**</td>
<td>658bps</td>
</tr>
<tr>
<td>HY default rate</td>
<td>6.2%</td>
<td></td>
</tr>
<tr>
<td>HY ex-energy default rate</td>
<td>3.9%</td>
<td></td>
</tr>
</tbody>
</table>

Last 12 months sector default rates

Sectors with highest index weights


*Default rate is defined as the percentage of the total market trading at or below 50% of par value and includes any Chapter 11 filing, pre-packaged filing or missed interest payments. Spreads indicated are benchmark yield-to-worst less comparable maturity Treasury yields. **Data reflects 20-year average and is as of 30/06/20. U.S. corporate high yield is represented by the J.P. Morgan Domestic High Yield Index.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
**Emerging market debt**

**Spread between local rates and U.S. Treasuries**
3-5 year local currency government bond index*, basis points

<table>
<thead>
<tr>
<th>Country</th>
<th>Spread</th>
<th>5-year average</th>
<th>Current</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poland</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thailand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Malaysia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Colombia</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Mexico</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Russia</td>
<td></td>
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<td></td>
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<tr>
<td>India</td>
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<tr>
<td>S. Africa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brazil</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Indonesia</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

**EM debt spreads to U.S. Treasuries and returns**
12-month forward total return, spread in basis points**

<table>
<thead>
<tr>
<th>S&amp;P</th>
<th>Moody's</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>A2</td>
</tr>
<tr>
<td>A-</td>
<td>Baa1</td>
</tr>
<tr>
<td>A</td>
<td>A3</td>
</tr>
<tr>
<td>A+</td>
<td>A1</td>
</tr>
<tr>
<td>BBB</td>
<td>Baa2</td>
</tr>
<tr>
<td>BBB+</td>
<td>Baa1</td>
</tr>
<tr>
<td>BBB</td>
<td>Baa3</td>
</tr>
<tr>
<td>BBB-</td>
<td>Baa3</td>
</tr>
<tr>
<td>BB</td>
<td>Ba1</td>
</tr>
<tr>
<td>BB-</td>
<td>Ba2</td>
</tr>
<tr>
<td>BBB</td>
<td>Baa2</td>
</tr>
</tbody>
</table>

*J.P. Morgan GBI-EM Broad Diversified Index sub-component used for each country. Spread is the difference between the yield on each country's local 3-5 year government bond, except for South Africa, which uses 1-5 year, and the yield on the Bloomberg Barclays U.S. Aggregate Government - Treasury (3-5 Year). S&P and Moody’s are respective country’s local currency long-term debt ratings. **EM debt is represented by the J.P. Morgan Emerging Market Equal Weight Blended Index, which is an equal-weighted composite index of the J.P. Morgan GBI-EM Global Diversified, J.P. Morgan EMBI Global Diversified and J.P. Morgan CEMBI Broad Diversified indices. Spreads are the difference between the yield on EM debt securities and an equivalent maturity U.S. Treasury bond in basis points. Returns are calculated using monthly data from 31/01/03 – 30/06/20.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
China bonds

Bond yields*

% per annum

USD China offshore credit
CNH China offshore credit
3-year China Government Bond Index

Onshore bond market outstanding** by issuer sector

USD billions

Eligible for benchmark inclusion

Central Gov. Policy & Development Banks Local Gov. Banks Other***Industrials Other Financials Real Estate

Risk-adjusted return and correlation****

China onshore
Benchmark Index Developed Market Emerging Market

Thailand
S&P 500
Global Agg
Australia
France
Germany
Italy
Japan
Mexico
Indonesia
South Africa

Source: J.P. Morgan Asset Management; (Top left) FTSE Russell, J.P. Morgan Economics Research, National Interbank Funding Center; (Right and bottom left) Bloomberg Finance L.P.

*Credit indices shown are yield-to-worst, government bond index shown displays yield-to-maturity. FTSE Dim Sum Bond Index (CNH China offshore credit), J.P. Morgan Asia Credit China Index (USD China offshore credit).

**Bond market outstanding refers to the total U.S. dollar value of bonds (corporate and government) in the market and does not reflect mandatory prepayment. ***Other includes: Communications, Consumer Discretionary, Consumer Staples, Energy, Health Care, Materials, Technology, Utilities. ****Risk-adjusted return is annualized returns from 31/12/2004 to 30/06/2020, correlation data uses returns over the same period.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
The "Diversified" portfolio assumes the following weights: 20% in the MSCI World Index (DM Equities), 20% in the MSCI AC Asia Pacific ex-Japan (APAC ex-JP), 5% in the average of the MSCI EM Latin America and MSCI EM EMEA Indices (EM ex-Asia), 10% in the J.P. Morgan EMBIG Index (EMD), 10% in the Bloomberg Barclays Global Aggregate (Global Bonds), 10% in the Bloomberg Barclays Global Corporate High Yield Index (Global Corporate High Yield), 15% in J.P. Morgan Asia Credit Index (Asian Bonds), 5% in Bloomberg Barclays U.S. Aggregate Credit – Corporate Investment Grade Index (U.S. IG) and 5% in Bloomberg Barclays U.S. Treasury – Bills (1-3 months) (Cash). Diversified portfolio assumes annual rebalancing. All data represent total return in U.S. dollar terms for the stated period. 10-year total return data is used to calculate annualized returns (Ann. Ret.) and 10-year price return data is used to calculate annualized volatility (Ann. Vol.) and reflects the period 30/06/10 – 30/06/20. Please see disclosure page at end for index definitions. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.

### Asset class returns

<table>
<thead>
<tr>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>18.4%</td>
<td>8.5%</td>
<td>22.6%</td>
<td>27.4%</td>
<td>8.3%</td>
<td>2.8%</td>
<td>27.1%</td>
<td>37.3%</td>
<td>1.8%</td>
<td>28.4%</td>
<td>19.5%</td>
<td>5.0%</td>
<td>10.6%</td>
<td>23.1%</td>
<td>6.4%</td>
<td>17.0%</td>
<td>6.3%</td>
<td>13.8%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>16.6%</td>
<td>U.S. IG</td>
<td>8.1%</td>
<td>18.9%</td>
<td>8.4%</td>
<td>U.S. IG</td>
<td>1.2%</td>
<td>14.0%</td>
<td>DM Equities</td>
<td>Asian Bonds</td>
<td>APAC ex-JP</td>
<td>19.5%</td>
<td>Global Bonds</td>
<td>3.0%</td>
<td>APAC ex-JP</td>
<td>Global Corp HY</td>
<td>6.4%</td>
<td>APAC ex-JP</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2012</td>
<td>13.8%</td>
<td>Global Bonds</td>
<td>5.6%</td>
<td>18.5%</td>
<td>Diversified</td>
<td>5.4%</td>
<td>EMD</td>
<td>5.5%</td>
<td>Cash</td>
<td>Diversified</td>
<td>Asian Bonds</td>
<td>10.2%</td>
<td>12.1%</td>
<td>23.1%</td>
<td>19.5%</td>
<td>28.4%</td>
<td>14.0%</td>
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</tr>
<tr>
<td>2013</td>
<td>12.3%</td>
<td>Asian Bonds</td>
<td>1.1%</td>
<td>17.0%</td>
<td>EM ex-JP</td>
<td>3.7%</td>
<td>DM Equities</td>
<td>5.5%</td>
<td>DM Equities</td>
<td>0.3%</td>
<td>Diversified</td>
<td>17.0%</td>
<td>Diversified</td>
<td>12.4%</td>
<td>Cash</td>
<td>12.2%</td>
<td>13.1%</td>
<td>16.5%</td>
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</tr>
<tr>
<td>2014</td>
<td>12.2%</td>
<td>Diversified</td>
<td>2.6%</td>
<td>DM Equities</td>
<td>16.5%</td>
<td>Cash</td>
<td>0.0%</td>
<td>Diversified</td>
<td>3.0%</td>
<td>Diversified</td>
<td>7.1%</td>
<td>EMD</td>
<td>4.1%</td>
<td>17.0%</td>
<td>Diversified</td>
<td>12.1%</td>
<td>7.9%</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2015</td>
<td>10.6%</td>
<td>EM Diversified</td>
<td>15.5%</td>
<td>1.4%</td>
<td>Asian Bonds</td>
<td>1.1%</td>
<td>Global Bonds</td>
<td>0.6%</td>
<td>EMD</td>
<td>9.3%</td>
<td>3.0%</td>
<td>4.6%</td>
<td>14.4%</td>
<td>5.7%</td>
<td>7.8%</td>
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</tr>
<tr>
<td>2016</td>
<td>9.0%</td>
<td>Diversified</td>
<td>1.2%</td>
<td>DM Equities</td>
<td>14.3%</td>
<td>U.S. IG</td>
<td>0.6%</td>
<td>Diversified</td>
<td>3.2%</td>
<td>U.S. IG</td>
<td>6.1%</td>
<td>6.1%</td>
<td>5.5%</td>
<td>17.0%</td>
<td>Global Corp HY</td>
<td>13.4%</td>
<td>7.9%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2017</td>
<td>9.0%</td>
<td>Global Bonds</td>
<td>-5.0%</td>
<td>U.S. IG</td>
<td>9.8%</td>
<td>Global Corp HY</td>
<td>2.6%</td>
<td>Global Corp HY</td>
<td>0.2%</td>
<td>Asian Bonds</td>
<td>10.6%</td>
<td>5.8%</td>
<td>6.4%</td>
<td>14.3%</td>
<td>U.S. IG</td>
<td>11.3%</td>
<td>4.7%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2018</td>
<td>5.5%</td>
<td>EM EMD</td>
<td>-15.4%</td>
<td>Global Bonds</td>
<td>4.3%</td>
<td>Cash</td>
<td>-6.6%</td>
<td>Cash</td>
<td>0.0%</td>
<td>APAC ex-JP</td>
<td>9.1%</td>
<td>Global Bonds</td>
<td>3.3%</td>
<td>APAC ex-JP</td>
<td>Cash</td>
<td>0.6%</td>
<td>Asian Bonds</td>
<td>4.7%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2019</td>
<td>5.5%</td>
<td>Cash</td>
<td>-21.2%</td>
<td>Cash</td>
<td>0.1%</td>
<td>EM ex-Asia</td>
<td>-8.5%</td>
<td>EM ex-Asia</td>
<td>-20.2%</td>
<td>Cash</td>
<td>-13.7%</td>
<td>Cash</td>
<td>2.2%</td>
<td>0.0%</td>
<td>27.5%</td>
<td>Cash</td>
<td>-2.0%</td>
<td>0.2%</td>
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</tr>
</tbody>
</table>

### VIX index*

<table>
<thead>
<tr>
<th>VIX breaks 35 in six months**</th>
<th>Related event</th>
<th>S&amp;P 500 Performance</th>
<th>VIX returns to long-term average*** (days)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>On the day</td>
<td>After 1 month</td>
</tr>
<tr>
<td>1 6-Aug-90</td>
<td>Recession – oil price shock and rate hikes</td>
<td>-3.0%</td>
<td>-4.2%</td>
</tr>
<tr>
<td>2 30-Oct-97</td>
<td>Asian crisis</td>
<td>-1.7%</td>
<td>7.5%</td>
</tr>
<tr>
<td>3 27-Aug-98</td>
<td>Long-Term Capital Management</td>
<td>-3.8%</td>
<td>0.6%</td>
</tr>
<tr>
<td>4 17-Sep-01</td>
<td>Recession – collapse of dot-com bubble</td>
<td>-4.9%</td>
<td>2.9%</td>
</tr>
<tr>
<td>5 15-Jul-02</td>
<td>Enron accounting scandal</td>
<td>-0.4%</td>
<td>1.3%</td>
</tr>
<tr>
<td>6 17-Sep-08</td>
<td>Recession – global financial crisis</td>
<td>-4.7%</td>
<td>-14.8%</td>
</tr>
<tr>
<td>7 7-May-10</td>
<td>Greece bailout package, austerity imposed</td>
<td>-1.5%</td>
<td>-5.0%</td>
</tr>
<tr>
<td>8 8-Aug-11</td>
<td>European debt crisis, U.S. credit downgrade</td>
<td>-6.7%</td>
<td>5.9%</td>
</tr>
<tr>
<td>9 24-Aug-15</td>
<td>Chinese yuan devaluation</td>
<td>-3.9%</td>
<td>2.1%</td>
</tr>
<tr>
<td>10 5-Feb-18</td>
<td>Bond market re-pricing growth and rate hikes</td>
<td>-4.1%</td>
<td>3.4%</td>
</tr>
<tr>
<td>11 24-Dec-18</td>
<td>Global growth and market liquidity fears</td>
<td>-2.7%</td>
<td>12.4%</td>
</tr>
<tr>
<td>12 27-Feb-20</td>
<td>Recession – Coronavirus pandemic****</td>
<td>-4.4%</td>
<td>-14.7%</td>
</tr>
<tr>
<td>Median</td>
<td></td>
<td>-3.9%</td>
<td>1.7%</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>-3.5%</td>
<td>-0.1%</td>
</tr>
</tbody>
</table>

Source: FactSet, J.P. Morgan Asset Management.

*The VIX-CBOE Volatility Index measures market expectations of near-term volatility conveyed by S&P 500 Index (SPX) option prices. **First day when VIX breaks 35; subsequent spikes above 35 within the next six months are not included. ***Number of days for VIX to return to its long-term average after initial VIX spikes above 35. ****Event is ongoing.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Asset class performance during S&P 500 peak to trough periods*

Total returns in U.S. dollars

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<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1990</td>
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<td></td>
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<tr>
<td>2000</td>
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<tr>
<td>2007</td>
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<td></td>
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<tr>
<td>2020</td>
<td></td>
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</tr>
</tbody>
</table>


Asset class performance in the past three U.S. equity bear markets**

Number of months at ranking

<table>
<thead>
<tr>
<th>Period</th>
<th>Average Total Return</th>
<th>S&amp;P 500</th>
<th>U.S. Aggregate</th>
<th>Cash</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dot Com Bust (31 months)</td>
<td>-44%</td>
<td>29%</td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>Financial Crisis (18 months)</td>
<td>-47%</td>
<td>8%</td>
<td>2%</td>
<td></td>
</tr>
<tr>
<td>COVID-19 Pandemic (1 month)</td>
<td>-12%</td>
<td>1%</td>
<td>0%</td>
<td></td>
</tr>
</tbody>
</table>

*Peak to trough periods are 16/07/90 – 11/10/90, 24/03/00 – 09/10/02, 09/10/07 – 09/03/09.

**Returns are monthly price returns based on S&P 500, Bloomberg Barclays U.S. Aggregate Index and Bloomberg Barclays U.S. Treasury Bills (1-3 Months) Index. Past three U.S. equity bear markets were the Dot Com Bust (11/03/00 – 09/10/02), Financial Crisis (09/10/07 – 09/03/09) and COVID-19 outbreak (19/02/20 – 23/03/20). Past performance is not a reliable indicator of current and future results.

*The real broad trade-weighted exchange rate index is the weighted average of a market’s currency relative to a basket of trading partners’ currencies adjusted for the effects of inflation. The weights are determined by comparing the relative trade balances, in terms of one market’s currency, with other markets within the basket.

**The U.S. dollar index shown here is a nominal trade-weighted index of major trading partners’ currencies. Major currencies are: British pound, Canadian dollar, euro, Japanese yen, Swedish kroner and Swiss franc. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
The real trade-weighted exchange rate index is the weighted average of a market’s currency relative to a basket of other major currencies adjusted for the effects of inflation. The weights are determined by comparing the relative trade balances, in terms of one market’s currency, with other markets within the basket.

Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Emerging market external positions

Current account positions, currency movements and reserve adequacy

Source: FactSet, International Monetary Fund, J.P. Morgan Asset Management.

*Adequate reserves are stocks of a country’s foreign exchange reserves that can cover 3 months of imports (the amount of times available reserves can cover 3 months’ worth of imports) and cover short-term debt due in the next year (the amount of times available reserves can pay off debt maturing in the next 12 months and any payments on longer-term debt due in the next 12 months). The larger the bubble, the larger the amount of reserve coverage.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Commodities

**Commodity prices**
Commodity price z-scores for the past five years, USD per unit

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Commodity Index</td>
<td>-7.3%</td>
<td>62.9%</td>
<td>37.5%</td>
<td>-0.9%</td>
<td>51.1%</td>
<td>54.7%</td>
<td>17.5%</td>
<td>37.1%</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>-19.9%</td>
<td>57.8%</td>
<td>20.3%</td>
<td>-3.5%</td>
<td>17.1%</td>
<td>28.8%</td>
<td>7.1%</td>
<td>29.0%</td>
</tr>
<tr>
<td>Agriculture</td>
<td>-13.7%</td>
<td>45.5%</td>
<td>14.7%</td>
<td>-3.7%</td>
<td>16.5%</td>
<td>18.6%</td>
<td>5.7%</td>
<td>22.7%</td>
</tr>
<tr>
<td>Oil</td>
<td>-16.1%</td>
<td>32.4%</td>
<td>9.9%</td>
<td>-4.1%</td>
<td>14.0%</td>
<td>18.3%</td>
<td>3.9%</td>
<td>14.3%</td>
</tr>
<tr>
<td>Industrial Metals</td>
<td>-20.6%</td>
<td>29.2%</td>
<td>9.4%</td>
<td>-8.9%</td>
<td>13.8%</td>
<td>16.4%</td>
<td>2.5%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Precious Metals</td>
<td>-23.7%</td>
<td>21.9%</td>
<td>9.1%</td>
<td>-11.2%</td>
<td>13.4%</td>
<td>13.9%</td>
<td>2.0%</td>
<td>12.8%</td>
</tr>
<tr>
<td>Gold</td>
<td>-24.7%</td>
<td>15.7%</td>
<td>9.0%</td>
<td>-11.4%</td>
<td>9.5%</td>
<td>8.4%</td>
<td>0.9%</td>
<td>11.0%</td>
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<tr>
<td>Example</td>
<td>Low</td>
<td>Current</td>
<td>High</td>
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**Returns**

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</thead>
<tbody>
<tr>
<td>Energy (E)</td>
<td>-26.3%</td>
<td>11.8%</td>
<td>-13.0%</td>
<td>7.7%</td>
<td>8.3%</td>
<td>5.2%</td>
<td>5.1%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Gold (E)</td>
<td>-40.1%</td>
<td>11.1%</td>
<td>-17.8%</td>
<td>5.2%</td>
<td>5.1%</td>
<td>5.1%</td>
<td>-7.7%</td>
<td>8.6%</td>
</tr>
</tbody>
</table>

Source: Bloomberg Finance L.P., FactSet, J.P. Morgan Asset Management; (Left) CME; (Right) Barclays, J.P. Morgan Economic Research, MSCI. Commodities are represented by the appropriate Bloomberg Commodity sub-index priced in U.S. dollars. Crude oil shown is West Texas Intermediate (WTI) crude. Other commodity prices are represented by futures contracts. Z-scores are calculated using daily prices over the past five years. Based on Bloomberg Commodity Index (Comdty.); MSCI ACW1 Select – Energy Producers (Energy (E)), Metals & Mining Producers ex Gold & Silver (M&M (E)), Gold Miners (Gold (E)), Agriculture Producers (Agri. (E)); Bloomberg Barclays Global Aggregate Credit – Corporate Energy Index (Energy (FI)); Bloomberg Barclays U.S. Aggregate Credit – Corporate High Yield Metals & Mining Index (U.S. M&M (FI)); Bloomberg Barclays Euro Aggregate Credit – Corporate Metals & Mining Index (Euro M&M (FI)); J.P. Morgan Emerging Market Corporate Credit – Corporate Metals & Mining Index (EM M&M (FI)).

5-year total return data is used to calculate annualized returns (Ann. Ret.) and 5-year price return data is used to calculate annualized volatility (Ann. Vol.) and reflects the period 30/06/15 – 30/06/20. Past performance is not a reliable indicator of current and future results.

*Guide to the Markets – Asia.* Data reflect most recently available as of 30/06/20.
**Global oil supply and demand**

**Cost of oil production by country**

USD / bbl, 2015*

**Price of oil**

Brent crude, USD / bbl

---

Source: FactSet, J.P. Morgan Asset Management; (Left) Federal Reserve Bank of Dallas; (Top right) U.S. Energy Information Administration.

*Oil costs are 2015 data, except for the U.S. which is as of June 2020.

*Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.*
Alternative sources of income

<table>
<thead>
<tr>
<th>Asset class yields</th>
<th>Equity</th>
<th>Fixed income</th>
<th>Alternatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global transport</td>
<td>9.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asia HY bonds</td>
<td>7.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infrastructure assets</td>
<td>7.5%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EM high div. equity</td>
<td>6.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global HY bonds</td>
<td>5.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USD EMD</td>
<td>5.1%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Global REITs</td>
<td>5.0%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local currency EMD</td>
<td>4.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. REITs</td>
<td>4.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DM high div. equity</td>
<td>4.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private real estate</td>
<td>3.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EM equity</td>
<td>2.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Eur. equity</td>
<td>2.8%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Convertibles</td>
<td>2.7%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. equity</td>
<td>1.9%</td>
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<tr>
<td>U.S. 10-year</td>
<td>0.7%</td>
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</table>

**Source:** Alerian, Bank of America, Bloomberg Finance L.P., Clarkson, Drewry Maritime Consultants, FactSet, Federal Reserve, FTSE, MSCI, NCREIF, Standard & Poor’s, J.P. Morgan Asset Management.

**Global transport:** Leveled yields for transport assets are calculated as the difference between charter rates (rental income), operating expenses, debt amortization and interest expenses, as a percentage of equity value. Yields for each of the sub-vessel types above are calculated and respective weightings are applied to each of the sub-sectors to arrive at the current levered yields for Global Transportation; asset classes are based on NCREIF ODCE (Private real estate), FTSE NAREIT Global/USA REITs (Global/U.S. REITs), MSCI Global Infrastructure Asset Index (Infrastructure assets), Bloomberg Barclays U.S Convertibles Composite (Convertibles), Bloomberg Barclays Global High Yield Index (Global HY bonds), J.P. Morgan Government Bond Index EM Global (GBI-EM) (Local currency EMD), J.P. Morgan Emerging Market Bond Index Global (EMBIG) (USD EMD), J.P. Morgan Asia Credit Index Non-investment Grade (Asia HY bonds), MSCI Emerging Markets (EM equity), MSCI Emerging Markets High Dividend Yield Index (EM high div. equity), MSCI World High Dividend Yield Index (DM high div. equity), MSCI Europe (Eur. equity), MSCI USA (U.S. equity). Transport yield is as of 31/03/20, Infrastructure 31/12/19, EM high div. equity and DM high div. equity 31/05/20. Past performance is not a reliable indicator of current and future results. *Guide to the Markets – Asia.* Data reflect most recently available as of 30/06/20.
Understanding alternatives

Alternatives and portfolio risk/return*
Annualized volatility and returns, 4Q94 – 4Q19

Public and private market correlations
Quarterly returns

Source: Barclays, Bloomberg, Cambridge Associates, FactSet, HFRI, NCREIF, J.P. Morgan Asset Management; (Left) Standard & Poor’s; (Right) Cliffwater MSCI.
**Hedge funds and volatility**

Average monthly hedge fund returns by VIX level, 1990 – present

**Macro hedge fund relative performance & volatility**

VIX index level y/y change in relative performance of HFRI Macro index

Source: CBOE, FactSet, Hedge Fund Research Inc. (HFRI), MSCI, J.P. Morgan Asset Management.

Historical beta is based on regression analysis, where the HFRI index is the dependent variable and the MSCI AC World Index is the independent variable. Monthly VIX reading is an average. Numbers may not sum to 100% due to rounding.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Real return on cash and yields

Average annual real deposit rate*
Based on respective market’s deposit rate less year-over-year inflation

Real and nominal yields***

Source: FactSet, various central banks, J.P. Morgan Asset Management; (Top) International Monetary Fund.

*Average annual real deposit rates cover data up to 31/05/20, except for Japan, which covers up to 30/04/20 due to data availability. **Post crisis time period defined as 2008-2014. Post 1st Fed rate hike defined as 2015-2019. ***Real yield is calculated based on the last 12-month average Consumer Price Index for each respective market covering data 28/06/19 – 29/05/20, except for Australia and India, which use average 30/04/19 – 31/03/20 CPI due to data availability. Nominal yields are the 10-year government bond yield for each respective market. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
MSCI AC Asia Pacific ex-Japan intra-year declines vs. calendar year returns

Despite average intra-year drops of -20% (median: -18%), annual returns are positive in 20 of 33 years (61%).

Source: FactSet, MSCI, J.P. Morgan Asset Management.

Returns are price returns based on MSCI AC Asia Pacific ex-Japan Index in U.S. dollar terms. Intra-year decline is the largest peak to trough decline during the respective year. Returns shown are calendar year returns from 1988 to 2019. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Despite average intra-year drops of -3% (median: -2%), annual returns are positive in 15 of 17 years (88%).

Source: Bloomberg Barclays, FactSet, J.P. Morgan Asset Management.

Returns are total returns based on Bloomberg Barclays Global Aggregate USD Index. Intra-year decline is the largest peak to trough decline during the respective year.

Returns shown are calendar year returns from 2003 to 2019. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
MSCI World Index: Performance under different scenarios

Index, 1970 = 100

Annualized return

Total return (dividends received and reinvested back into equities) 9.4%
Total return (dividends received and reinvested in cash)* 8.6%
Total return (dividends received but not reinvested) 7.1%
Price return 6.3%

Total return**: Dividends vs. capital appreciation

Average annualized returns over 10 years

Source: FactSet, MSCI, J.P. Morgan Asset Management.

*Reinvestment in cash based on the same month U.S. three-month Treasury bill (secondary market) yield.

**Returns are total (gross) returns based on MSCI indices in U.S. dollar terms. Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
Portfolio construction, asset class returns and volatility

Annualized returns and volatility

Total returns in USD*

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Conservative</th>
<th>Balanced</th>
<th>Aggressive</th>
<th>High yielding</th>
</tr>
</thead>
<tbody>
<tr>
<td>DM equities</td>
<td>10%</td>
<td>30%</td>
<td>20%</td>
<td>25%</td>
</tr>
<tr>
<td>EM equities</td>
<td>5%</td>
<td>10%</td>
<td>40%</td>
<td>10%</td>
</tr>
<tr>
<td>U.S. HY</td>
<td>10%</td>
<td>15%</td>
<td>10%</td>
<td>10%</td>
</tr>
<tr>
<td>U.S. bonds</td>
<td>25%</td>
<td>10%</td>
<td>5%</td>
<td>20%</td>
</tr>
<tr>
<td>Cash</td>
<td>35%</td>
<td>10%</td>
<td>0%</td>
<td>15%</td>
</tr>
<tr>
<td>EMD</td>
<td>10%</td>
<td>15%</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>REITs</td>
<td>5%</td>
<td>10%</td>
<td>20%</td>
<td>5%</td>
</tr>
</tbody>
</table>

*Monthly total returns between 30/06/05 and 30/06/20 are used for all asset classes.

Hypothetical portfolios were created to illustrate different risk/return profiles and are not meant to represent actual asset allocation.

U.S. dollar total return calculations are based on MSCI Total Return, Bloomberg Barclays and J.P. Morgan indices. AxJ stands for MSCI AC Asia ex-Japan and APxJ stands for MSCI AC Asia Pacific ex-Japan. *Monthly total returns between 30/06/05 and 30/06/20 are used for all asset classes.

Past performance is not a reliable indicator of current and future results.

Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.
The benefits of diversification and long-term investing

**Correlations between stocks and sovereign bonds**
Weekly rolling six-month correlation of equities and sovereign bond prices*

<table>
<thead>
<tr>
<th>Stocks and bonds moving in the same direction</th>
<th>Stocks and bonds moving in the opposite direction</th>
</tr>
</thead>
</table>

**MSCI AC World / Global government bonds***

-1.0
-0.8
-0.6
-0.4
-0.2
0.0
0.2
0.4
0.6
0.8
1.0

'01 '03 '05 '07 '09 '11 '13 '15 '17 '19

**Portfolio returns: Global equities, global bonds vs. equity and fixed income blend**
Total returns, 2006 = 100

<table>
<thead>
<tr>
<th>Portfolio returns since 2006</th>
<th>Annualized return</th>
<th>Annualized volatility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global equities</td>
<td>6.4%</td>
<td>16.1%</td>
</tr>
<tr>
<td>Global bonds</td>
<td>3.8%</td>
<td>5.4%</td>
</tr>
<tr>
<td>50/50 equity &amp; bond mix</td>
<td>5.2%</td>
<td>9.3%</td>
</tr>
</tbody>
</table>

Source: Bloomberg Finance L.P., FactSet, MSCI, J.P. Morgan Asset Management; (Top) Standard & Poor’s.
Global equities represented by MSCI AC World Index, global bonds represented by Bloomberg Barclays Aggregate Global Bond Index.
Past performance is not a reliable indicator of current and future results.

*Guide to the Markets – Asia. Data reflect most recently available as of 30/06/20.*
J.P. Morgan Asset Management: Index Definitions

All indexes are unmanaged and an individual cannot invest directly in an index. Index returns do not include fees or expenses. The S&P 500 Index is widely regarded as the best single gauge of the U.S. equities market. This world-renowned index includes a representative sample of 500 leading companies in leading industries of the U.S. economy. Although the S&P 500 Index focuses on the large-cap segment of the market, with approximately 75% coverage of U.S. equities, it is also an ideal proxy for the total market. An investor cannot invest directly in an index.

The Tokyo Stock Price Index (TOPINDEX) is a composite index of all common stocks listed on the First Section of Tokyo Stock Exchange (TSE). The index is basically a measure of the changes in aggregate market value of TSE common stocks. The base for the index is the aggregate market value of its component stocks as of the close on January 4, 1968. The aggregate market value is calculated by multiplying the number of listed shares of each component stock by its price and totaling the products derived there from.

The Bombay Exchange Sensitive Index (SENSEX), first compiled in 1986, was calculated on a “Market Capitalization-Weighted” methodology of 30 component stocks representing large, well-established and financially sound companies across key sectors. The base year of SENSEX was taken as 1978-79. SENSEX today is widely reported in both domestic and international markets through print as well as electronic media. It is scientifically designed and is based on globally accepted construction and review methodology. Since September 1, 2003, SENSEX is being calculated on a free-float market capitalization methodology.

The Korea Composite Stock Price Index (KOSPI) is market capitalization based index on all common stocks listed on the Stock Market Division of the Korea Exchange (KRX) and excludes preferred stocks. The stock price index is calculated by using the actual price traded on the market and not the “base price” used for market management such as establishment of price change limits. When no market price is available for issues that are not being traded or have halted trading, the latest closing price is used. KOSPI was assigned a base index of 100 set to January 4, 1980.

The China Shenzhen Composite Index is an actual market-cap weighted index that tracks the stock performance of all the A-share and B-share lists on Shenzhen Stock Exchange. The index was developed on April 3, 1991 with a base price of 100.

The Euro Stoxx 500 Index represents large, mid and small capitalization companies across 18 European countries.

The MSCI® EAFE (Europe, Australia, Far East) Net Index is recognized as the pre-eminent benchmark in the United States to measure international equity performance. It comprises 21 MSCI country indexes, representing the developed markets outside of North America.

The MSCI Emerging Markets Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the global emerging markets. As of June 2007, the MSCI Emerging Markets Index consisted of the following 25 emerging market country indices: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, Morocco, Pakistan, Peru, Philippines, Poland, Russia, South Africa, Taiwan, Thailand, and Turkey.

The MSCI ACWI (All Country World Index) is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of developed and emerging markets. As of June 2009 the MSCI ACWI consisted of 45 country indices comprising 23 developed and 22 emerging market country indices. The following MSCI Total Return Indices are calculated with gross dividends:

This series approximates the maximum possible dividend reinvestment. The amount reinvested is the dividend or expenses.

The MSCI Europe Index is a free float-adjusted market capitalization index that is designed to measure developed market equity performance in Europe. As of June 2007, the MSCI Europe Index consisted of the following 16 developed market country indices: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

The MSCI Pacific Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the Pacific region. As of June 2007, the MSCI Pacific Index consisted of the following 5 Developed Market countries: Australia, Hong Kong, Japan, New Zealand, and Singapore.

The MSCI Europe ex UK Index is a free float-adjusted market capitalization weighted index that is designed to measure the equity market performance of the developed markets in Europe, excluding the United Kingdom. The MSCI Europe ex UK Index consists of the following 15 developed market country indices: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, and Switzerland.

The MSCI Pacific ex Japan Index is a free float-adjusted market capitalization index that is designed to measure equity market performance in the Pacific region, excluding Japan. As of June 2007, the MSCI Pacific Index consisted of the following 4 Developed Market countries: Australia, Hong Kong, New Zealand, and Singapore.

The MSCI USA Index is designed to measure the performance of the large and mid cap segments of the U.S. market. With 586 constituents, the index covers approximately 84% of the free float-adjusted market capitalization in the U.S.. The MSCI USA Index was launched on Decemember 31, 1969.

The MSCI China Index captures large and mid cap representation across China H shares, B shares, Red chips and P chips. With 148 constituents, the index covers about 84% of this China equity universe. The MSCI China Index was launched on December 31, 1992.

The MSCI Indonesia Index is designed to measure the performance of the large and mid cap segments of the Indonesian market. With 25 constituents, the index covers about 84% of the Indonesian equity universe. The MSCI Indonesia Index was launched on December 31, 1990.

The MSCI Korea Index is designed to measure the performance of the large and mid cap segments of the South Korean market. With 195 constituents, the index covers about 84% of the Korean equity universe. The MSCI Korea Index was launched on December 31, 1989.

The MSCI India Index is designed to measure the performance of the large and mid cap segments of the Indian market. With 71 constituents, the index covers about 84% of the Indian equity universe. The MSCI India Index was launched on December 31, 1993.

The MSCI Japan Index is designed to measure the performance of the large and mid cap segments of the Japan market. With 315 constituents, the index covers approximately 84% of the free float-adjusted market capitalization in Japan. The MSCI Japan Index was launched on December 31, 1969.

The MSCI Hong Kong Index is designed to measure the performance of the large and mid cap segments of the Hong Kong market. With 42 constituents, the index covers approximately 84% of the free float-adjusted market capitalization of the Hong Kong equity universe. The MSCI Hong Kong Index was launched on December 31, 1972.

The MSCI Taiwan Index is designed to measure the performance of the large and mid cap segments of the Taiwan market. With 113 constituents, the index covers approximately 84% of the free float-adjusted market capitalization in Taiwan. The MSCI Taiwan Index was launched on December 31, 1989.

The MSCI Environmental, Social and Governance (ESG) Universal Indices are designed to address the needs of asset owners who may look to enhance their exposure to ESG while maintaining a broad and diversified universe to invest in. By re-weighting free-float market cap weights based upon certain ESG metrics tilting away from free-float market cap weights, the indices enhance exposure to those companies that demonstrate both a higher MSCI ESG Rating and a positive ESG trend, while maintaining a broad and diversified investment universe.
The Bloomberg Commodity Index is calculated on an excess return basis and reflects commodity futures price movements. The index rebalances annually weighted 2/3 by trading volume and 1/3 by world production and weight-caps are applied at the commodity, sector and group level for diversification. Roll period typically occurs from 6th-10th business day based on the roll schedule.

The Bloomberg Commodity Subindexes represent commodity groups and sectors, as well as single commodities, that make up the Bloomberg Commodity Index. The subindexes track exchange-traded futures of physical commodities, and the commodity groups and sectors, like in the case of the broad index, are weighted to account for economic significance and market liquidity. The various subindexes include Agriculture, Energy, Livestock, Grains, Industrial Metals, Precious Metals and Softs.

The Bloomberg Barclays High Yield Index covers the universe of fixed rate, non-investment grade debt. Pay-in-kind (PIK) bonds, Eurobonds, and debt issues from countries designated as emerging markets (e.g., Argentina, Brazil, Venezuela, etc.) are excluded, but Canadian and global bonds (SEC registered) of issuers in non-EMG countries are included. Original issue zeros, step-up coupon structures, and 144-As are also included.

The Bloomberg Barclays Corporate Bond Index is the Corporate component of the U.S. Credit index.

The Bloomberg Barclays Corporate Bond Index is the Corporate component of the U.S. Credit index.

The Bloomberg Barclays TIPS Index consists of Inflation-Protection securities issued by the U.S. Treasury.

The J.P. Morgan EMBI Global Index includes U.S. dollar denominated Brady bonds, Eurobonds, traded loans and local market debt instruments issued by sovereign and quasi-sovereign entities.

The J.P. Morgan GBI-EM Global Diversified consists of regularly traded, liquid fixed-rate, domestic currency government bonds to which international investors can gain exposure. The weightings among the countries are more evenly distributed within this index.


The J.P. Morgan Domestic High Yield Index is designed to mirror the investable universe of the U.S. dollar domestic high yield corporate debt market.

The VIX-CBOE Volatility Index measures market expectations of near-term volatility conveyed by S&P 500 Index (SPX) option prices.

The MOVE-Merrill Lynch Option Volatility Index is a blended implied normal volatility for constant one-month at-the-money options on U.S. Treasuries.

Price to forward earnings is a measure of the price-to-earnings ratio (P/E) using forecasted earnings. Price to book value compares a stock's market value to its book value. Price to cash flow is a measure of the market's expectations of a firm's future financial health. Price to dividends is the ratio of the price of a share on a stock exchange to the dividends per share paid in the previous year, used as a measure of a company's potential as an investment.

Bonds are subject to interest rate risks. Bond prices generally fall when interest rates rise. The price of equity securities may rise, or fall because of changes in the broad market or changes in a company’s financial condition, sometimes rapidly or unpredictably. These price movements may result from factors affecting individual companies, sectors or industries, or the securities market as a whole, such as changes in economic or political conditions. Equity securities are subject to stock market risk meaning that stock prices in general may decline over short or extended periods of time.

Small-cap investing typically carries more risk than investing in well-established “blue-chip” companies since smaller companies generally have a higher risk of failure. Historically, smaller companies’ stock has experienced a greater degree of market volatility than the average stock.

Mid-capitalization investing typically carries more risk than investing in well-established “blue-chip” companies. Historically, mid-cap companies’ stock has experienced a greater degree of market volatility than the average stock.

Real estate investments may be subject to a higher degree of market risk because of concentration in a specific industry, sector or geographical sector. Real estate investments may be subject to risks including, but not limited to, declines in the value of real estate, risks related to general and economic conditions, changes in the value of the underlying property owned by the trust and defaults by borrower.

International investing involves a greater degree of risk and increased volatility. Changes in currency exchange rates and differences in accounting and taxation policies can raise or lower returns. Also, some markets may not be as politically and economically stable as other nations. Investments in emerging markets can be more volatile. The normal risks of international investing are heightened when investing in emerging markets. In addition, the small size of securities markets and the low trading volume may lead to a lack of liquidity, which leads to increased volatility. Also, emerging markets may not provide adequate legal protection for private or foreign investment or private property.

Investments in commodities may have greater volatility than investments in traditional securities, particularly if the instruments involve leverage. The value of commodity-linked derivative instruments may be affected by changes in overall market movements, commodity index volatility, changes in interest rates, or factors affecting a particular industry or commodity, such as drought, floods, weather, livestock disease, embargoes, tariffs and international economic, political and regulatory developments. Use of leveraged commodity-linked derivatives creates an opportunity for increased return but, at the same time, creates the possibility for greater loss.

Derivatives may be riskier than other types of investments because they may be more sensitive to changes in economic or market conditions than other types of investments and could result in losses that significantly exceed the original investment. The use of derivatives may not be successful, resulting in investment losses, and the cost of such strategies may reduce investment returns.

There is no guarantee that the use of long and short positions will succeed in limiting an investor's exposure to domestic stock market movements, capitalization, sector swings or other risk factors. Investing using long and short selling strategies may have higher portfolio turnover rates. Short selling involves certain risks, including additional costs associated with covering short positions and a possibility of unlimited loss on certain short sale positions.
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Prepared by: David Kelly, Tai Hui, Yoshinori Shigemi, Kerry Craig, Jasslyn Yeo, Marcella Chow, Ian Hui, Agnes Lin, Shogo Maekawa and Chaoping Zhu.

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