

## Why the S&P 500<sup>®</sup> Matters to China

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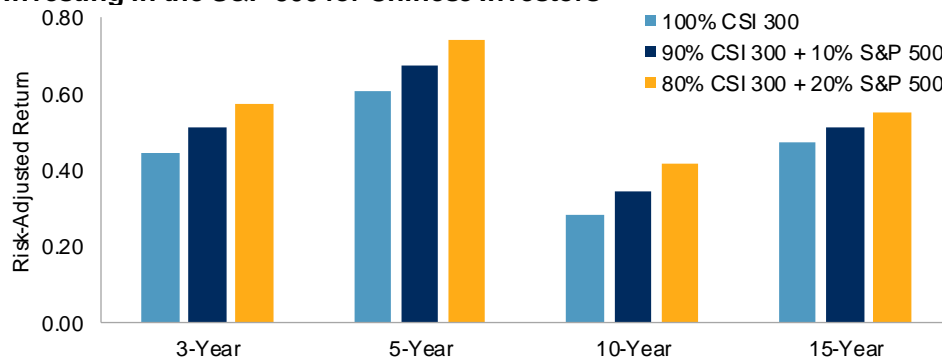
### EXECUTIVE SUMMARY

Chinese investors tend to have high exposure to domestic equities and low exposure to international equities.<sup>1</sup> This home-country bias is common among investors globally. U.S. equities represented 45% of the global equity market, as of Dec. 31, 2020. Underallocation to international equities, including U.S. equities, means Chinese investors may be foregoing potential diversification benefits.

In this paper, we:

- Discuss the global investment opportunities for Chinese investors and the potential results of investing globally;
- Introduce the [S&P 500](#) and explain how it is constructed;
- Highlight how the S&P 500 could affect Chinese investors' ability to diversify domestic sector biases, gain exposure to U.S. economic growth, and improve historical risk-adjusted returns; and
- List different channels where Chinese investors may access global markets and review the Qualified Domestic Institutional Investor (QDII) program.

### Exhibit 1: Potential Changes to Risk-Adjusted Return from Hypothetical Investing in the S&P 500 for Chinese Investors



Source: S&P Dow Jones Indices LLC and FactSet. Data from March 31, 2006, to March 31, 2021. The 90(80)% CSI 300 + 10(20)% S&P 500 is hypothetical portfolio consisting of a 90(80)% allocation to the CSI 300 and a 10(20)% allocation to the S&P 500, rebalanced monthly. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosure at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

<sup>1</sup> ["2019 China Private Wealth Report."](#) China Merchant Bank, Bain & Company.

*The U.S. and China represent the two largest economies.*

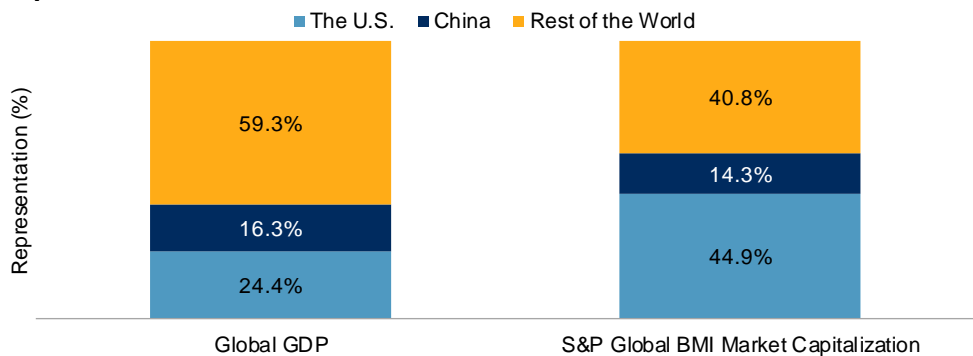
## A WORLD OF INVESTMENT OPPORTUNITIES

The U.S. and China represent the two largest economies, accounting for about 24% and 16%, respectively, of global economic output at the end of 2019.<sup>2</sup>

Looking at listed equity markets size, U.S.-listed companies represented 44.9%—or USD 43 trillion—of the global equity market capitalization, as represented by current members in the [S&P Global BMI](#). China-listed companies accounted for 14.3%—USD 14 trillion—of the global market capitalization at the end of 2020.

*U.S.-listed and Mainland China-listed companies represented 44.9% and 14.3% of the global market capitalization at the end of 2020, respectively.*

**Exhibit 2: The U.S. and China’s Global GDP and Equity Market Representations**

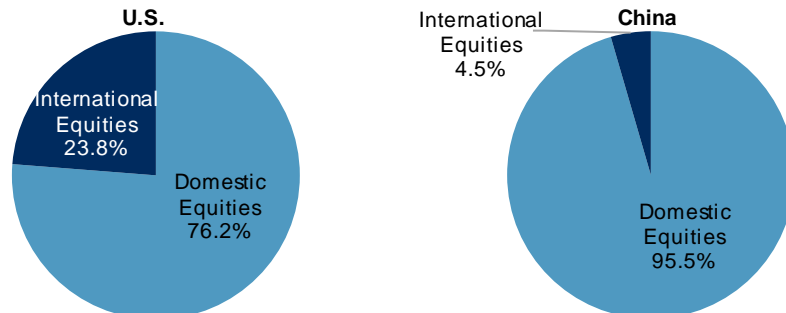


Source: S&P Dow Jones Indices LLC and World Bank. Market capitalization based on total market capitalizations in the S&P Global BMI as of Dec. 31, 2020. Global GDP based on World Bank figures as of Dec. 31, 2019. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

*However, only 4.5% of AUM of equity ETFs listed in China were international equity ETFs, much lower than the 23.8% of the international equity ETFs listed in the U.S.*

However, only 4.5% of AUM of equity ETFs listed in China were international equity ETFs, much lower than the 23.8% of the international equity ETFs listed in the U.S. (see Exhibit 3). This shows that Chinese investors have historically underweighted global investment opportunities compared with U.S. investors.

**Exhibit 3: Domestic and International Equities ETF AUM Breakdown in the U.S. and China**



Source: Investment Company Institute (ICI). Data as of Dec. 31, 2020. Charts are provided for illustrative purposes.

<sup>2</sup> The World Bank, <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD>.

## GLOBAL INVESTING

*For Chinese investors, the main potential benefits of global investing are diversification and improved risk-adjusted return.*

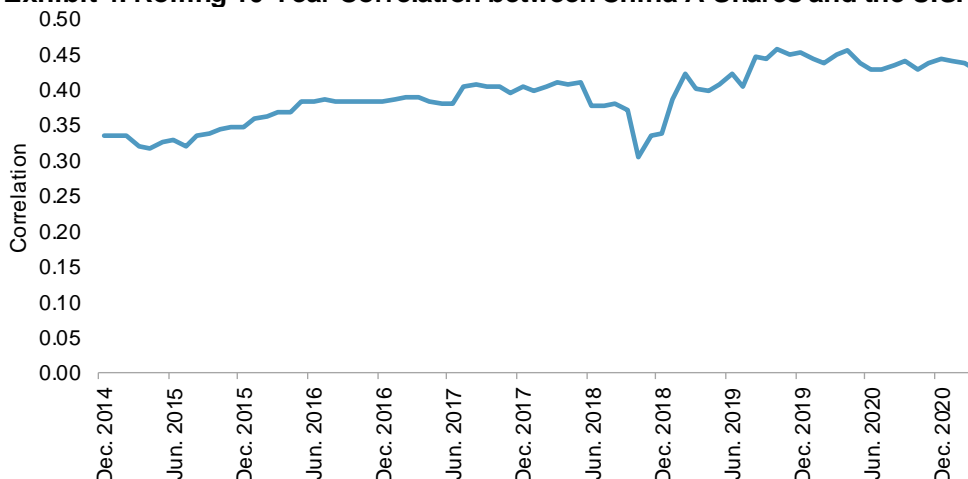
For Chinese investors, global investing may diversify and improve risk-adjusted return.

### Diversification

As long as two assets are not perfectly correlated, combining them may reduce a portfolio's overall standard deviation, a common measure of risk.

Despite rising in recent years, the historical correlation of returns between China A-shares and U.S. equity markets has generally been below 0.5 (see Exhibit 4). The low correlation suggests a potential reduction in portfolio volatility when adding U.S. equities to China A-shares-only portfolio.

**Exhibit 4: Rolling 10-Year Correlation between China A-Shares and the U.S.**



*Despite rising in recent years, the historical correlation of returns between China A-shares and U.S. equities markets has been below 0.5...*

Source: S&P Dow Jones Indices LLC and FactSet. Data from Dec. 31, 2004, to March 31, 2021. China A-shares return is represented by the CSI 300. The U.S. market return is represented by the S&P 500. Index performance based on total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

### Risk-Adjusted Return

On a rolling 10-year basis from Dec. 31, 1994 to March 31, 2021, the U.S. market had higher risk-adjusted return than the China A-shares market during most periods.

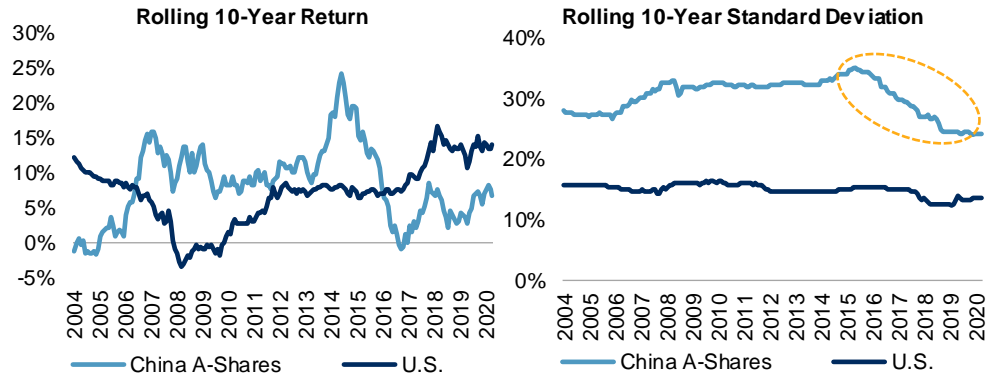
*...suggesting a potential reduction in volatility when combining China A-shares with U.S. equities.*

This is driven primarily by different volatility levels observed in the two markets. The China A-shares market was significantly more volatile than the U.S. market, despite a meaningful downward trend in volatility over the past five years.

Looking at absolute return, the U.S. and A-shares markets showed distinct cycles. The average rolling 10-year return for the China A-shares was 8.42%, versus 6.98% for U.S. market.

**Exhibit 5: Rolling 10-Year Return, Volatility, and Risk-Adjusted Return of China A-Shares and the U.S.**

*The average rolling 10-year return for the U.S. equities market was 6.98%, versus 8.42% for China A-shares.*



*While the standard deviation of the U.S. market has been stable at about 15%, it ranged between 25% to 35% for China A-shares.*



Source: S&P Dow Jones Indices LLC and FactSet. Data from Dec. 31, 1994, to March 31, 2021. China A-shares return is represented by the CSI 300 and is simulated between Dec. 31, 1994, and Dec 31, 2004 using data from FactSet. The U.S. market return is represented by the S&P 500. Index performance based on total return in USD. Past performance is no guarantee of future results. Charts are provided for illustrative purposes.

**INTRODUCING THE S&P 500**

*The U.S. equities market had higher risk-adjusted return than the China A-shares market during most periods.*

The S&P 500 is widely regarded as the best single gauge of large-cap U.S. equity performance: the 500 companies in the index account for about 80% of the entire U.S. equity market capitalization and over USD 11.2 trillion is indexed or benchmarked to the index.<sup>3</sup>

The S&P 500 is not simply the largest 500 U.S.-domiciled companies: new index additions must meet various criteria before they can be added to the index. For example, companies must have a history of positive earnings and they must meet certain liquidity and market capitalization thresholds. Exhibit 6 offers an overview of the eligibility requirements for S&P 500 membership.

<sup>3</sup> “[Survey of Indexed Assets](#).” S&P Dow Jones Indices. Dec. 31, 2019.

*We look at the S&P 500 as a proxy for the U.S. equity market.*

*One important characteristic of the S&P 500 is that it reflects the sector composition of the large-cap component of the U.S. equity market.*

*This is relevant to international investors because the large-cap U.S. equity segment has distinct sector exposures.*

**Exhibit 6: The S&P 500 Uses a Number of Index Addition Criteria**

CRITERIA	DESCRIPTION
Reconstitution of Stocks	Throughout the year, as corporate actions arise
Earnings	The sum of the most recent four consecutive quarters' as-reported earnings should be positive, as should the most recent quarter's.*
Liquidity	The ratio of annual U.S. dollar value traded to float-adjusted market capitalization should be 1.00 or greater, and the stock should trade a minimum of 250,000 shares in each of the six months leading up to the evaluation date.
Market Capitalization	Unadjusted company market capitalizations of USD 11.8 billion or more. These ranges are reviewed from time to time to assure consistency with market conditions.
Public Float	At least 10% of shares publicly floated**
IPO Seasoning	12 months required
Domicile of Constituents	U.S. companies, based on multiple criteria such as fixed assets, revenues, listing, etc.
Sector Classification	Global Industry Classification Standard (GICS®)

\*Prior to 2014, the S&P DJI earnings criterion required four consecutive quarters of positive earnings, instead of the sum of the last four quarters being positive.

\*\*A company meeting the unadjusted company market capitalization criteria is also required to have a security-level float-adjusted market capitalization that is at least 50% of the respective index's unadjusted company level minimum market capitalization threshold.

Source: S&P Dow Jones Indices LLC. Table is provided for illustrative purposes.

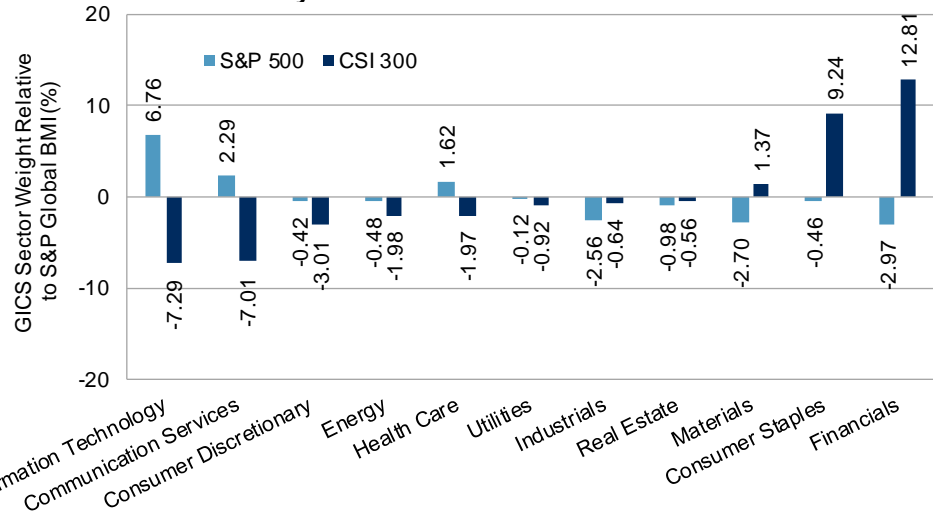
## S&P 500 SECTOR EXPOSURES

One important characteristic of the S&P 500 is that it reflects the sector composition of the large-cap component of the U.S. equity market. This is relevant to international investors, including those based in China, because the large-cap U.S. equity segment has distinct sector exposures.

Exhibit 7 compares the GICS sector weights of the S&P 500 and the China A-shares market, as measured by the CSI 300. Each bar shows the sector weight in each index compared with its weight in the global equity market, as represented by the S&P Global BMI.

Compared with the global average, the China A-shares market tilts heavily toward Financials and Consumer Staples and tilts away from Information Technology and Communication Services. The S&P 500 has the opposite sector exposure. As a result, incorporating the large-cap U.S. equity benchmark may help Chinese investors bring their sector weights more in line with the global average.

**Exhibit 7: The S&P 500 May Alleviate Domestic Sector Biases**



The China A-shares market tends to tilt heavily toward Financials and Consumer Staples...

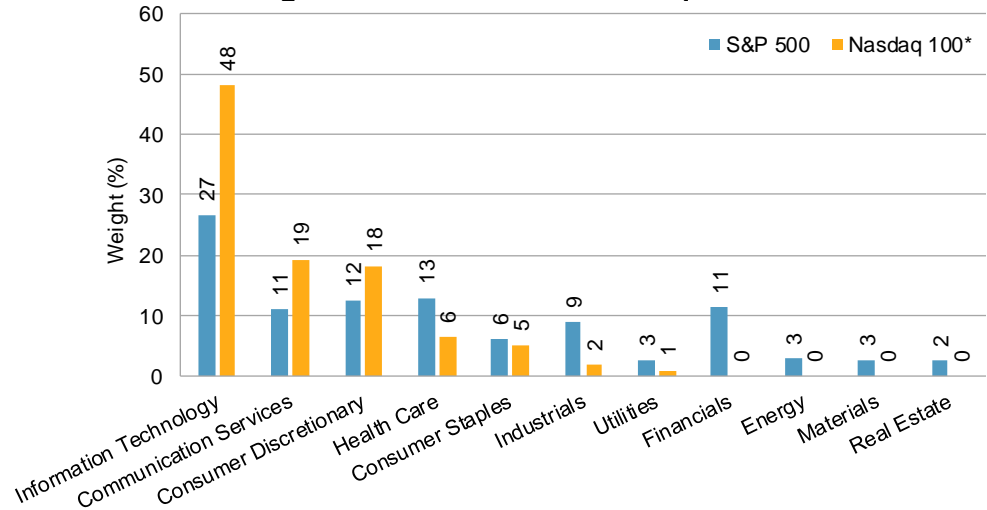
Source: S&P Dow Jones Indices LLC, China Securities Index Co, and FactSet. Data as of March 31, 2021. Weights based on free-float market capitalizations relative to the S&P Global BMI. Chart is provided for illustrative purposes.

**S&P 500 REVENUE EXPOSURE**

...and away from Information Technology and Communication Services, which is the opposite sector exposure of the U.S. equity market.

Another common index in the U.S. is the Nasdaq 100.<sup>4</sup> Exhibit 8 shows that the Nasdaq 100 tilts more heavily toward the Information Technology and Communication Services sectors compared with the S&P 500. Unlike the S&P 500, it has no exposure to the Financials, Materials, Energy, and Real Estate sectors.

**Exhibit 8: Sector Weights of the S&P 500 and Nasdaq 100**



\* Invesco QQQ Trust constituents are used as a proxy for Nasdaq 100 index constituents. Source: S&P Dow Jones Indices LLC, FactSet, and Nasdaq. Data as of March 31, 2021. Chart is provided for illustrative purposes.

<sup>4</sup> The constituent information with respect to the Nasdaq 100 Index included in these materials is based on the Invesco QQQ Trust portfolio holdings for the relevant time periods set out below. The Invesco QQQ Trust is an ETF that is based on the performance of the Nasdaq 100 Index so the holdings of the Invesco QQQ Trust are used as a proxy for Nasdaq 100 index constituents.

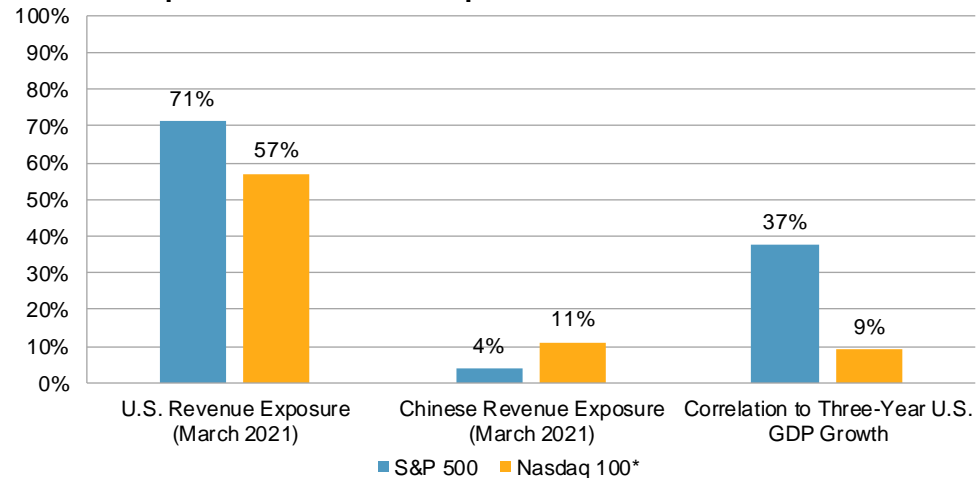
Owing in part to its broader sector representation, the S&P 500 tends to have greater exposure to the U.S. economy—and less exposure to the Chinese economy—than the Nasdaq 100. In order to show this, we look at U.S. and Chinese revenue exposures for each index, based on data from the FactSet Geographic Revenue Exposure (GeoRev™) dataset. This dataset gives a geographic breakdown of revenues for all companies with available data.

*The S&P 500 tends to have greater exposure to the U.S. economy—and less exposure to the Chinese economy—than the Nasdaq 100.*

Exhibit 9 shows the S&P 500 had higher sales-weighted average U.S. revenue exposure and, in aggregate, S&P 500 companies derived a lower proportion of their revenues from China (as of March 2021). These results may help to explain why the S&P 500's returns were more correlated to changes in U.S. GDP, historically.

Indeed, Exhibit 9 also shows that the correlation between three-year U.S. GDP growth and three-year S&P 500 total returns was 0.37, based on quarterly data between Q2 1999 and Q4 2020. The correlation between the Nasdaq 100's total returns and changes in U.S. GDP over the same period was 0.09.

**Exhibit 9: The S&P 500 Had Higher U.S. Revenue Exposure and Lower China Revenue Exposure than the Nasdaq 100**



*The S&P 500 had higher sales-weighted average U.S. revenue exposure...*

\*Invesco QQQ Trust constituents are used as a proxy for the Nasdaq 100 index constituents. Source: S&P Dow Jones Indices LLC, FactSet GeoRev database, Nasdaq, and U.S. Bureau of Economic Analysis. Data from June 30, 1999, and March 31, 2021. Correlations based on three-year changes in quarterly, seasonally adjusted U.S. GDP data between Q2 1999 and Q4 2020 and index performance based on total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

*...and the correlation between three-year U.S. GDP growth and S&P 500 total returns was higher than the U.S. GDP growth's correlation with the Nasdaq 100.*

Consequently, the S&P 500 may be more relevant for diversification of Chinese sector exposures while gaining greater exposure and sensitivity to the U.S. economy.

### Passive Investing in Large-Cap U.S. Equities

*A consideration for investors looking to make allocations to the U.S. equity market is whether to take a passive or active approach.*

A consideration for investors looking to make allocations to the U.S. equity market is whether to take a passive, index-based approach or an active approach.

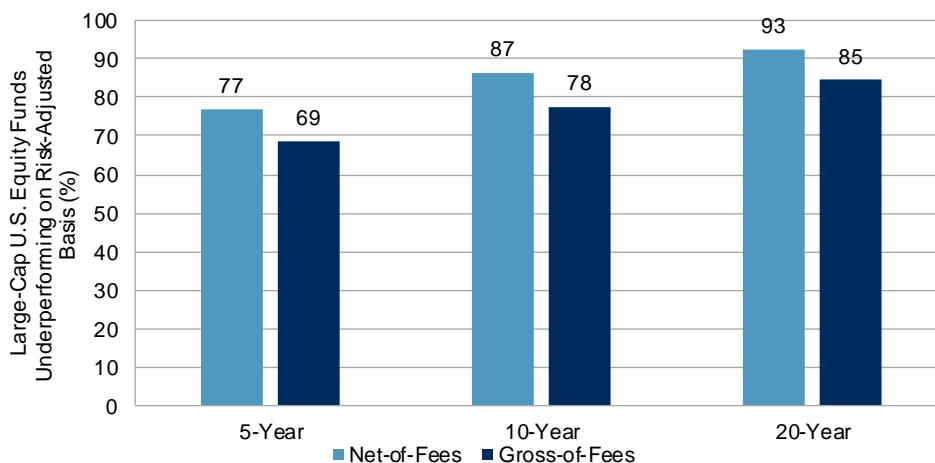
To help inform the active versus passive debate, S&P Dow Jones Indices produces semiannual SPIVA® scorecards, which compare the performance of actively managed mutual funds against their comparable benchmarks over various time frames.<sup>5</sup> These scorecards have typically shown how difficult large-cap U.S. active managers have found it to outperform the S&P 500.

For example, the SPIVA U.S. Year-End 2020 Scorecard<sup>6</sup> showed that 60% of large-cap U.S. active managers underperformed the S&P 500 during the 2020 calendar-year period. Underperformance was also prevalent over longer horizons; 75%, 82%, and 94% of funds failed to outperform the benchmark over 5-, 10-, and 20-year periods, respectively.

Moreover, the majority of large-cap U.S. equity funds also underperformed the S&P 500 on a risk-adjusted basis, either net-of-fees or gross-of-fees, over the 5-, 10-, and 20-year horizons ending Dec. 31, 2020.<sup>7</sup>

*The SPIVA U.S. Year-End 2020 Scorecard showed that 60% of large-cap U.S. active managers underperformed the S&P 500 over the past one-year period.*

#### Exhibit 10: Most Active Managers Underperformed the S&P 500 on a Risk-Adjusted Basis



*Underperformance was even more prevalent over longer time horizons.*

Source: S&P Dow Jones Indices LLC and CRSP. Data as of Dec. 31, 2020. Index performance based on total return in USD. Past performance is no guarantee of future results. Chart is provided for illustrative purposes.

<sup>5</sup> For more details on S&P Dow Jones Indices' SPIVA Scorecards, see "[SPIVA Scorecards: An Overview](#)." S&P Dow Jones Indices January 2020.

<sup>6</sup> Liu, Berlinda and Gaurav Sinha. "[SPIVA U.S. Year-End 2020 Scorecard](#)." S&P Dow Jones Indices. March 2021.

<sup>7</sup> Liu, Berlinda and Gaurav Sinha. "[Risk Adjusted SPIVA Year-End 2020 Scorecard](#)." S&P Dow Jones Indices. March 2021.



## BLENDING THE CSI 300 AND S&P 500

*From 2005 to 2020, increasing the allocation from China A-shares portfolios to U.S. equities improved risk-adjusted returns...*

Exhibits 11a and 11b show the historical risk/return profiles of hypothetical blended indices created from combinations of the CSI 300 and S&P 500 ranging in 10%-20% increments, assuming a monthly fixed-weight rebalance. In the past 3, 5, and 10 years, a hypothetical blended index weighting to the S&P 500 not only reduced the blended index's standard deviation but also increased the annualized compounded performance.

Between 2005 and 2020, increasing weights to the S&P 500 improved risk-adjusted returns for the blended index; the reduction in standard deviations more than offset the impact of lower performance. The in-sample optimal allocation of 77% U.S. and 23% China A-shares in the blended index generated a risk-adjusted return of 0.75, higher than both the stand-alone S&P 500 (0.67) and CSI 300 Index (0.47).

*...with the in-sample optimal allocation being 77% to the U.S. and 23% to China A-shares...*

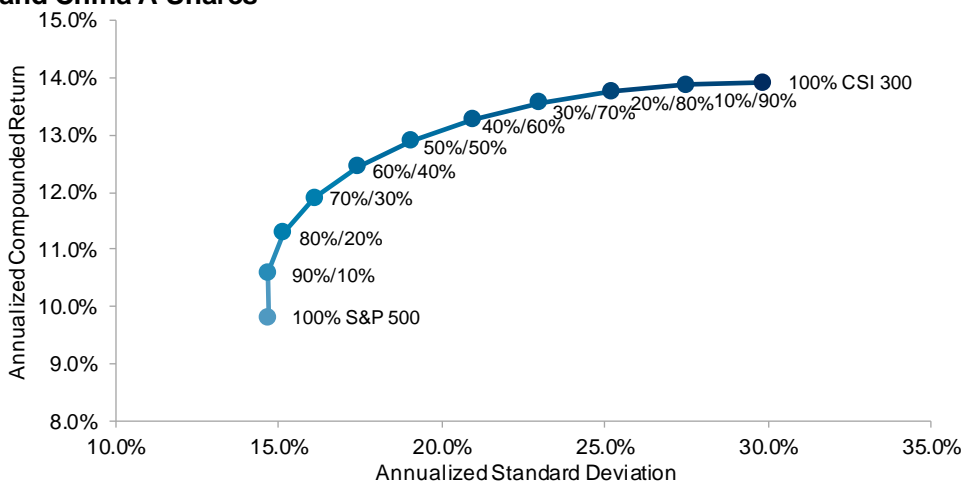
<b>Exhibit 11a: Risk/Return Characteristics for Portfolios Combining the S&amp;P 500 and CSI 300 Index Constituents</b>						
<b>CHARACTERISTIC</b>	<b>CSI 300/S&amp;P 500 HYPOTHETICAL INDEX</b>					
	<b>100%/0%</b>	<b>80%/20%</b>	<b>60%/40%</b>	<b>40%/60%</b>	<b>20%/80%</b>	<b>0%/100%</b>
<b>3-YEAR</b>						
Annualized Compound Return (%)	9.9	11.5	13.0	14.4	15.7	16.8
Annualized Standard Deviation (%)	22.1	20.1	18.6	17.8	17.7	18.4
Risk-Adjusted Return	0.45	0.57	0.70	0.81	0.89	0.91
Maximum Drawdown (%)	27.7	23.2	18.6	16.4	18.0	19.6
<b>5-YEAR</b>						
Annualized Compound Return (%)	11.5	12.7	13.7	14.7	15.5	16.3
Annualized Standard Deviation (%)	19.0	17.1	15.6	14.7	14.4	14.9
Risk-Adjusted Return	0.61	0.74	0.88	1.00	1.08	1.09
Maximum Drawdown (%)	34.0	29.6	24.9	20.0	18.0	19.6
<b>10-YEAR</b>						
Annualized Compound Return (%)	6.8	8.6	10.2	11.6	12.9	13.9
Annualized Standard Deviation (%)	24.2	20.6	17.5	15.1	13.6	13.6
Risk-Adjusted Return	0.28	0.42	0.58	0.77	0.94	1.02
Maximum Drawdown (%)	43.0	36.7	29.9	22.7	18.0	19.6
<b>SINCE JANUARY 2005</b>						
Annualized Compound Return (%)	13.9	13.8	13.3	12.4	11.3	9.8
Annualized Standard Deviation (%)	29.9	25.2	21.0	17.4	15.1	14.7
Risk-Adjusted Return	0.47	0.55	0.63	0.71	0.75	0.67
Maximum Drawdown (%)	67.8	62.6	56.8	52.7	51.6	50.9

Source: S&P Dow Jones Indices LLC and FactSet. Data from Dec. 31, 2004, to March 31, 2021. The China A-shares market return is represented by the CSI 300. The U.S. market return is represented by the S&P 500. Index performance based on total return in USD. Table is provided for illustrative purposes.

*...which generated a risk-adjusted return of 0.75, higher than both the stand-alone U.S. portfolio and China A-shares portfolio.*

**Exhibit 11b: Risk/Return Characteristics for Portfolios Combining the U.S. and China A-Shares**

*There are a number of limitations for Chinese retail investors who want to access the global markets.*



Source: S&P Dow Jones Indices LLC and FactSet. Data from Dec. 31, 2004, to March 31, 2021. The China A-shares market return is represented by the CSI 300. The U.S. market return is represented by the S&P 500. Index performance based on total return in USD. Chart is provided for illustrative purposes.

**ACCESSING GLOBAL MARKETS**

*The biggest hurdle is China's foreign exchange controls, which prevent Chinese residents from converting RMB to USD in large quantities for offshore investments.*

There are a number of limitations for Chinese retail investors who want to access the global markets. The biggest hurdle is China's foreign exchange controls. Individual Chinese resident generally cannot convert Chinese renminbi to U.S. dollars in large quantities for offshore investments. The current limit on cross-border remittances is USD 50,000 per person per year.<sup>8</sup>

Over the past 15 years, China has gradually opened its doors, so that new investment channels are now available to domestic investors looking for outbound investment. Exhibit 12 provides a summary of these channels. There are three options, but some channels are targeted more toward institutional and high-net-worth individuals.

<sup>8</sup> <http://www.safe.gov.cn/safe/2007/0105/5320.html>

**Exhibit 12: China's Outbound Investment Channels**

CHARACTERISTIC	QUALIFIED DOMESTIC INSTITUTIONAL INVESTOR (QDII)	QUALIFIED DOMESTIC LIMITED PARTNER (QDLP)	QUALIFIED DOMESTIC INVESTMENT ENTERPRISE (QDIE)
Eligible Entities	Select Chinese commercial banks, investment managers, brokers, and insurance companies	Qualified fund management companies: requires formation of an onshore fund in one of the pilot cities in the form of a company, limited partnership, or contractual fund	
Investment Scope	Varies by entity type, and includes money market instruments, fixed income instruments, listed equity securities, public funds, and listed financial derivatives	Overseas equity and bond funds, hedge funds, property, etc.	Foreign private companies, hedge funds, real estate, etc.
Minimum Fund Size	<b>Fund:</b> RMB 200 million <b>Collective Investment Plan:</b> RMB 100 million	RMB 30 million	RMB 30 million
Minimum Subscription Per Qualified Investor	Mutual funds or collectively investment plans typically have low or no minimum investment requirement.	<b>Institutional Investor:</b> Net assets of RMB 10 million; <b>Individual Investor:</b> Financial assets of RMB 3 million	<b>Institutional Investor:</b> Net assets of RMB 100 million; <b>Individual Investor:</b> Financial assets of RMB 5 million
Year of Launch	2006	2012	2012
Quota	USD 125.72 billion	USD 5 billion	USD 5 billion

Source: S&P Dow Jones Indices LLC, State Administration of Foreign Exchange (SAFE), China Securities Regulatory Commission (CSRC), China Banking Regulatory Commission (CBRC), China Insurance Regulatory Commission (CIRC), and Municipal Financial Regulatory Bureau of Shenzhen, Shanghai, Qingdao, and Beijing. Data as of Jan. 13, 2021. Table is provided for illustrative purposes.

*Over the past 15 years, China has gradually opened its doors, so that new investment channels are now available to domestic investors looking for outbound investment.*

*The QDII program is the most popular channel for Chinese retail investors to access international markets.*

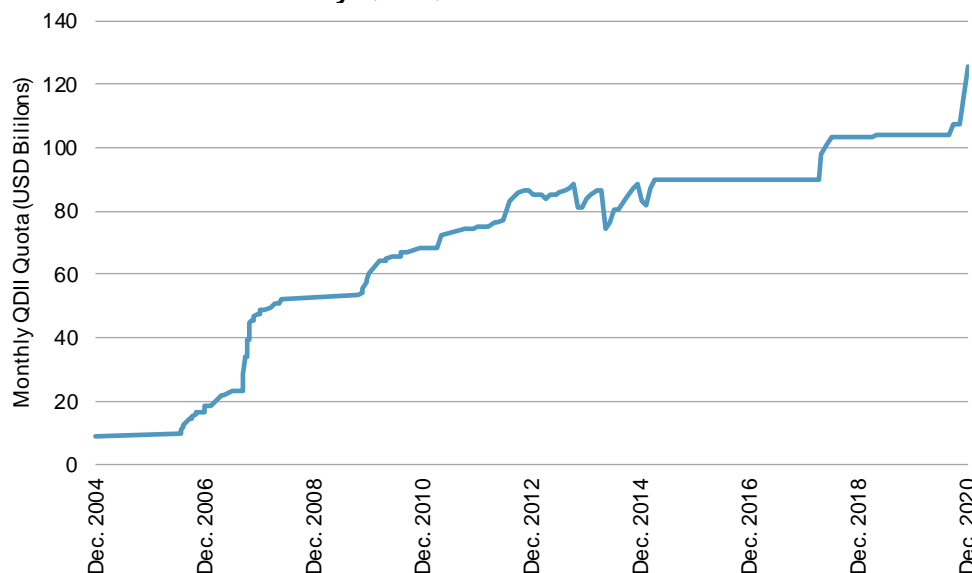
### The Qualified Domestic Institutional Investor Program

The Qualified Domestic Institutional Investor (QDII) program is the most popular channel for Chinese retail investors to access international markets. Launched in 2006, QDII serves as a means by which select Chinese commercial banks, investment managers, brokers, and insurance companies may invest client assets in overseas markets notwithstanding the otherwise stringent foreign exchange regulations.

The approved quotas of the QDII program totaled USD 134.57 billion as of March 31, 2021, according to the State Administration of Foreign Exchange (SAFE). It represents less than 1% of China's USD 16 trillion asset management industry.<sup>9</sup>

<sup>9</sup> Source: Oliver Wyman Report: China Asset Management at An Inflection Point. July 2020. <https://www.oliverwyman.com/our-expertise/insights/2020/jul/china-asset-management-at-an-inflection-point.html>

**Exhibit 13: SAFE's Monthly QDII Quota**



Source: SAFE. Data as of March 31, 2021. Chart is provided for illustrative purposes.

*The approved quotas of the QDII program totaled USD 134.57 billion as of Mar. 31, 2021, representing less than 1% of China's USD 16 trillion asset management industry.*

*The home-country bias is a commonly observed phenomenon around the world, and China is no exception.*

Under the QDII program, various regulators set limitations on investment scopes for each type of QDII entity. As CSRC regulations do not impose a minimum investment or “sophisticated investor” standard, QDII products sponsored by fund management companies and securities companies may have access to a potentially large number of domestic investors.

**CONCLUSION**

The home-country bias is a commonly observed phenomenon around the world; investors typically allocate a greater proportion to their domestic market than would be expected from its representation in global markets. Chinese investors’ allocation to global equities, including U.S. equities, has been low, historically.

*By allocating to U.S. equities, which represent about one-half of global equities, Chinese investors could access potential diversification and improved risk-adjusted return benefits.*

However, by underallocating to U.S. equities, which represent about one-half of the global equity market, Chinese investors have less diversification. Increasing exposure to the U.S. equity market may result in improved risk-adjusted returns.

The S&P 500 is widely regarded as the best single gauge of large-cap U.S. equity performance, and its sector exposures could theoretically bring Chinese investors’ sector weights more in line with the global average. The S&P 500 may also be relevant for exposure and sensitivity to the U.S. economy.

## PERFORMANCE DISCLOSURE/BACK-TESTED DATA

All information presented prior to an index's Launch Date is hypothetical (back-tested), not actual performance. The back-test calculations are based on the same methodology that was in effect on the index Launch Date. However, when creating back-tested history for periods of market anomalies or other periods that do not reflect the general current market environment, index methodology rules may be relaxed to capture a large enough universe of securities to simulate the target market the index is designed to measure or strategy the index is designed to capture. For example, market capitalization and liquidity thresholds may be reduced. Complete index methodology details are available at [www.spglobal.com/spdji](http://www.spglobal.com/spdji). Past performance of the Index is not an indication of future results. Back-tested performance reflects application of an index methodology and selection of index constituents with the benefit of hindsight and knowledge of factors that may have positively affected its performance, cannot account for all financial risk that may affect results and may be considered to reflect survivor/look ahead bias. Actual returns may differ significantly from, and be lower than, back-tested returns. Past performance is not an indication or guarantee of future results. Please refer to the methodology for the Index for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations. Back-tested performance is for use with institutions only; not for use with retail investors.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the index is set to a fixed value for calculation purposes. The Launch Date designates the date when the values of an index are first considered live: index values provided for any date or time period prior to the index's Launch Date are considered back-tested. S&P Dow Jones Indices defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company's public website or its data feed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed "Date of introduction") is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index's public release date.

Typically, when S&P DJI creates back-tested index data, S&P DJI uses actual historical constituent-level data (e.g., historical price, market capitalization, and corporate action data) in its calculations. As ESG investing is still in early stages of development, certain datapoints used to calculate S&P DJI's ESG indices may not be available for the entire desired period of back-tested history. The same data availability issue could be true for other indices as well. In cases when actual data is not available for all relevant historical periods, S&P DJI may employ a process of using "Backward Data Assumption" (or pulling back) of ESG data for the calculation of back-tested historical performance. "Backward Data Assumption" is a process that applies the earliest actual live data point available for an index constituent company to all prior historical instances in the index performance. For example, Backward Data Assumption inherently assumes that companies currently not involved in a specific business activity (also known as "product involvement") were never involved historically and similarly also assumes that companies currently involved in a specific business activity were involved historically too. The Backward Data Assumption allows the hypothetical back-test to be extended over more historical years than would be feasible using only actual data. For more information on "Backward Data Assumption" please refer to the [FAQ](#). The methodology and factsheets of any index that employs backward assumption in the back-tested history will explicitly state so. The methodology will include an Appendix with a table setting forth the specific data points and relevant time period for which backward projected data was used.

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