

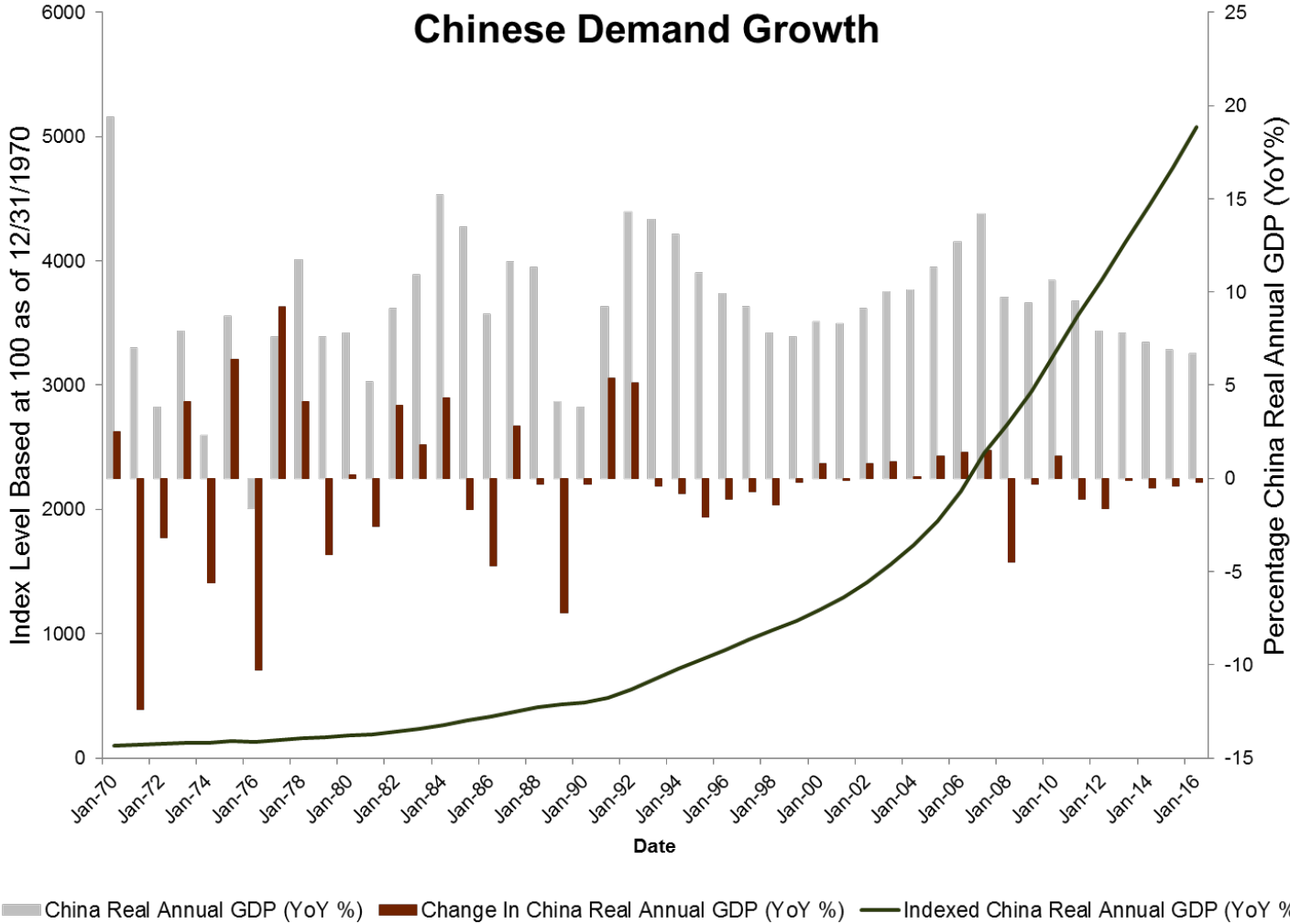
# Chinese Demand Growth Matters More For Some Commodities

August 10, 2017



Copyright © 2017 by S&P Global. All rights reserved.

# Chinese Demand Growth Has Been Slowing Since 2011



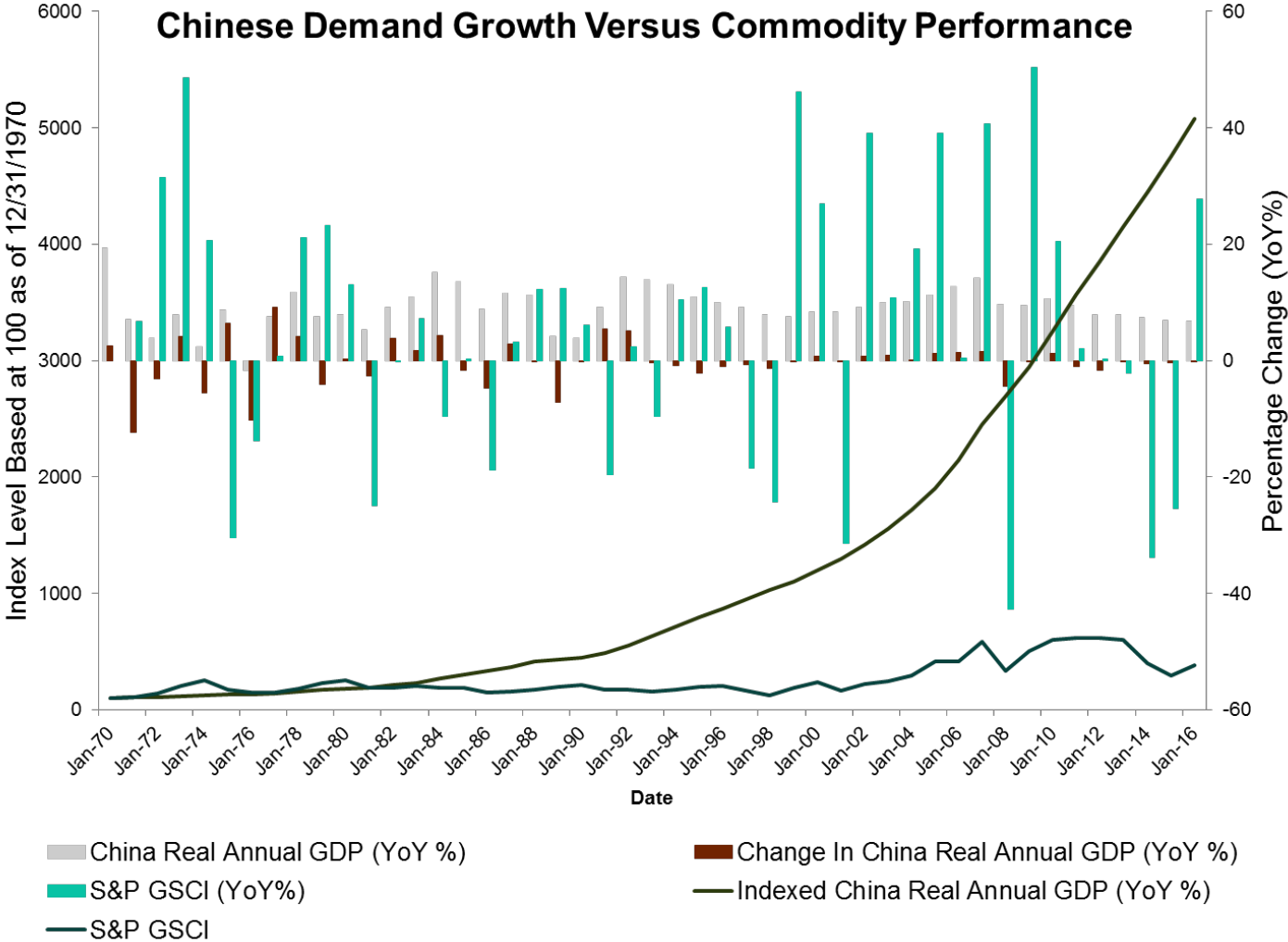
Source: Bloomberg and S&P Dow Jones Indices.

**S&P Dow Jones Indices**

A Division of S&P Global

Private & Confidential

# Historical Commodity Index Returns Are Not Clearly Driven By Chinese Demand Growth or Changes in Growth



Source: Bloomberg and S&P Dow Jones Indices.

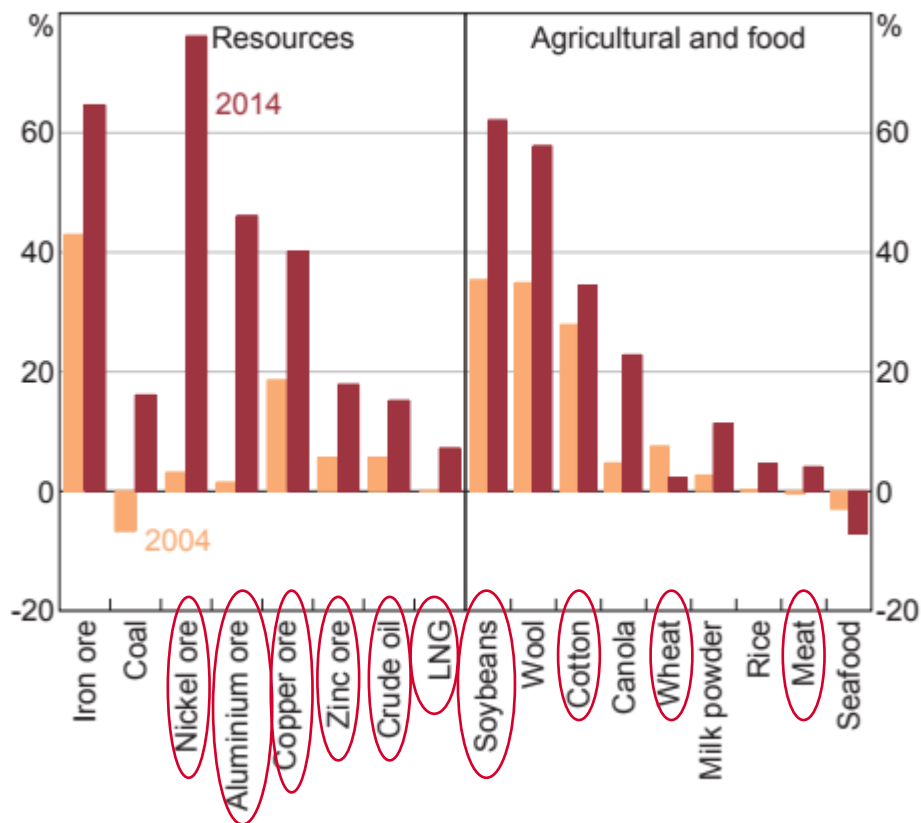
**S&P Dow Jones Indices**

A Division of S&P Global

Private & Confidential

# There Is Imperfect Overlap Between Commodities Impacted By China's GDP Growth and Commodities Included In the S&P GSCI

**Figure 3: China's Share of Global Commodity Trade**  
Net import value as a share of world trade



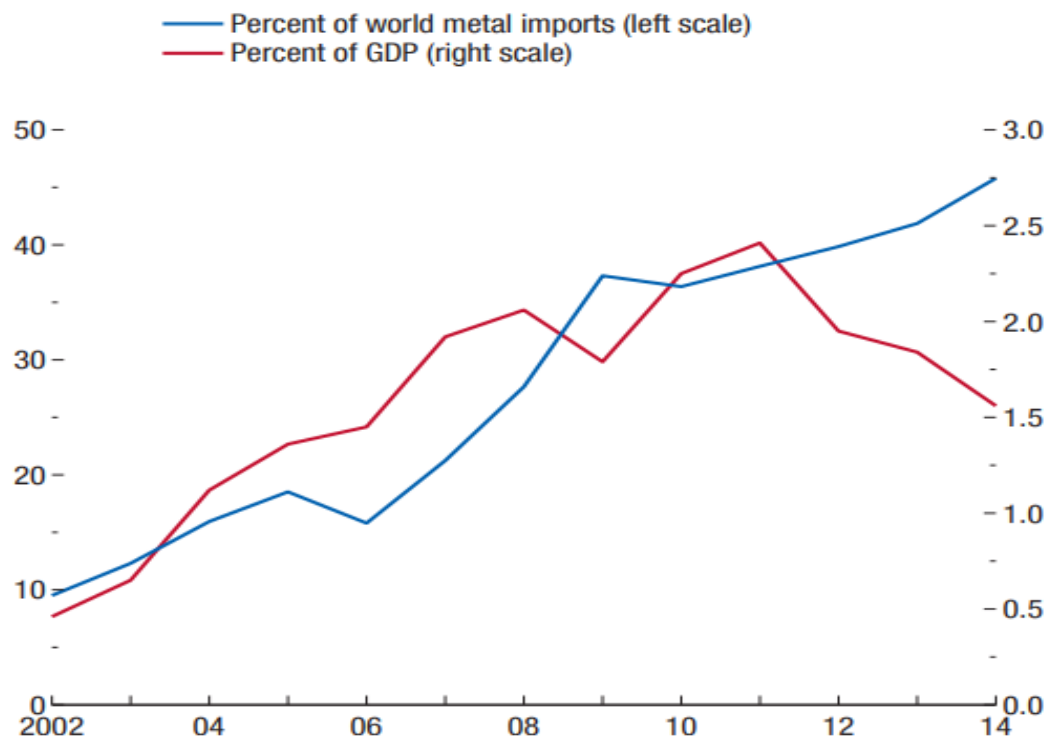
Sources: Authors' calculations; United Nations COMTRADE database

Source: IVAN ROBERTS, TRENT SAUNDERS, GARETH SPENCE AND NATASHA CASSIDY. China's Evolving Demand for Commodities. The authors are from Economic Group (Roberts, Saunders and Cassidy) and Risk Management Department (Spence) of the Reserve Bank of Australia. <https://www.rba.gov.au/publications/conf/2016/pdf/rba-conference-volume-2016-roberts-saunders-spence-cassidy.pdf>

# Commodities May Represent China's GDP Growth Differently From The World Production Weight of The S&P GSCI

- "Notwithstanding the dramatic increase in Chinese imports of metals, these represent less than 2 percent of China's GDP" – World Economic Outlook, October 2015

**Figure 1.SF.7. China: Metal Imports**

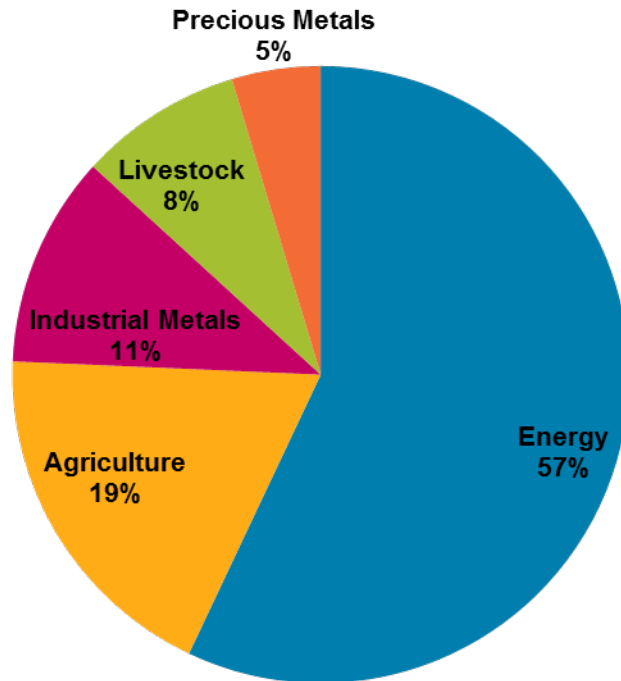


Sources: UN Comtrade; and IMF staff calculations.

Source: Commodity Special Feature from WORLD ECONOMIC OUTLOOK October 2015. International Monetary Fund. <https://www.imf.org/external/np/res/commod/pdf/WEOSpecialOCT15.pdf>

# World Production Weight of The S&P GSCI As of June 30, 2017

## S&P GSCI Sector Weights As of June 30, 2017



	Weight as of June 30, 2017	
	S&P GSCI	As a % of Sector
WTI Crude Oil	22.8%	40.0%
Brent Crude Oil	16.6%	29.1%
Gasoil	4.9%	8.6%
Unleaded Reg Gas, RBOB	4.7%	8.2%
No 2 Heating Oil, NY	4.1%	7.3%
Natural Gas	3.9%	6.8%
Corn	5.2%	28.1%
Chicago Wheat	4.0%	21.7%
Soybeans	3.5%	18.7%
Sugar #11	1.9%	10.4%
Cotton #2	1.5%	8.2%
Kansas Wheat	1.2%	6.2%
Coffee "C"	0.9%	5.0%
Cocoa	0.3%	1.8%
Copper - Grade A	4.6%	41.3%
High Grade Primary Aluminum	3.7%	33.0%
Special High Grade Zinc	1.4%	12.3%
Standard Lead	0.9%	8.0%
Primary Nickel	0.6%	5.5%
Live Cattle	4.3%	50.5%
Lean Hogs	2.9%	34.3%
Feeder Cattle	1.3%	15.2%
Gold	4.1%	89.0%
Silver	0.5%	11.0%

Source: S&P Dow Jones Indices

**S&P Dow Jones  
Indices**

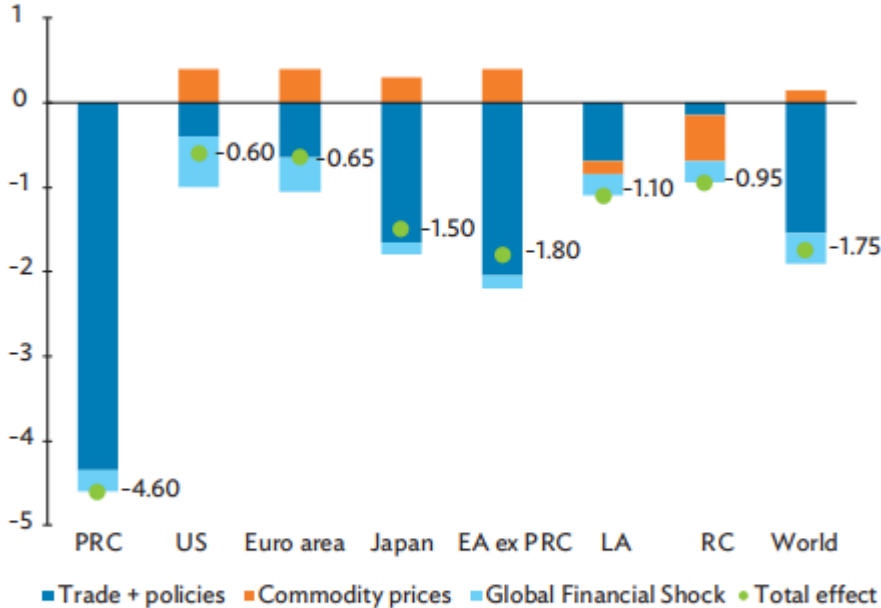
A Division of S&P Global

Private & Confidential

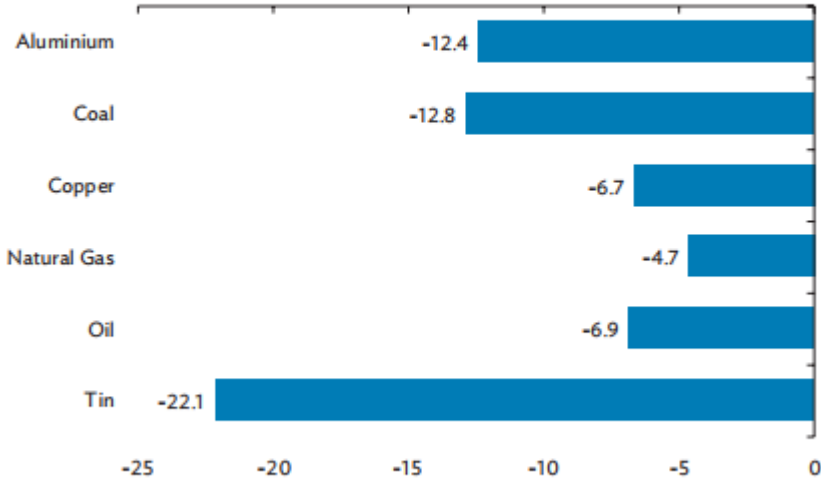
# Changes in China's Growth Impacts Vary Across Commodities

- Falling growth hurts prices of coal and metals much more than oil and natural gas.

**Figure 4:** Effects of a Sharp Growth Decline in the PRC (Deviation of GDP growth from baseline, first 2 years)



**Figure 5:** Impact on Commodity Prices of a 1 Percentage Point Negative Shock to PRC Growth



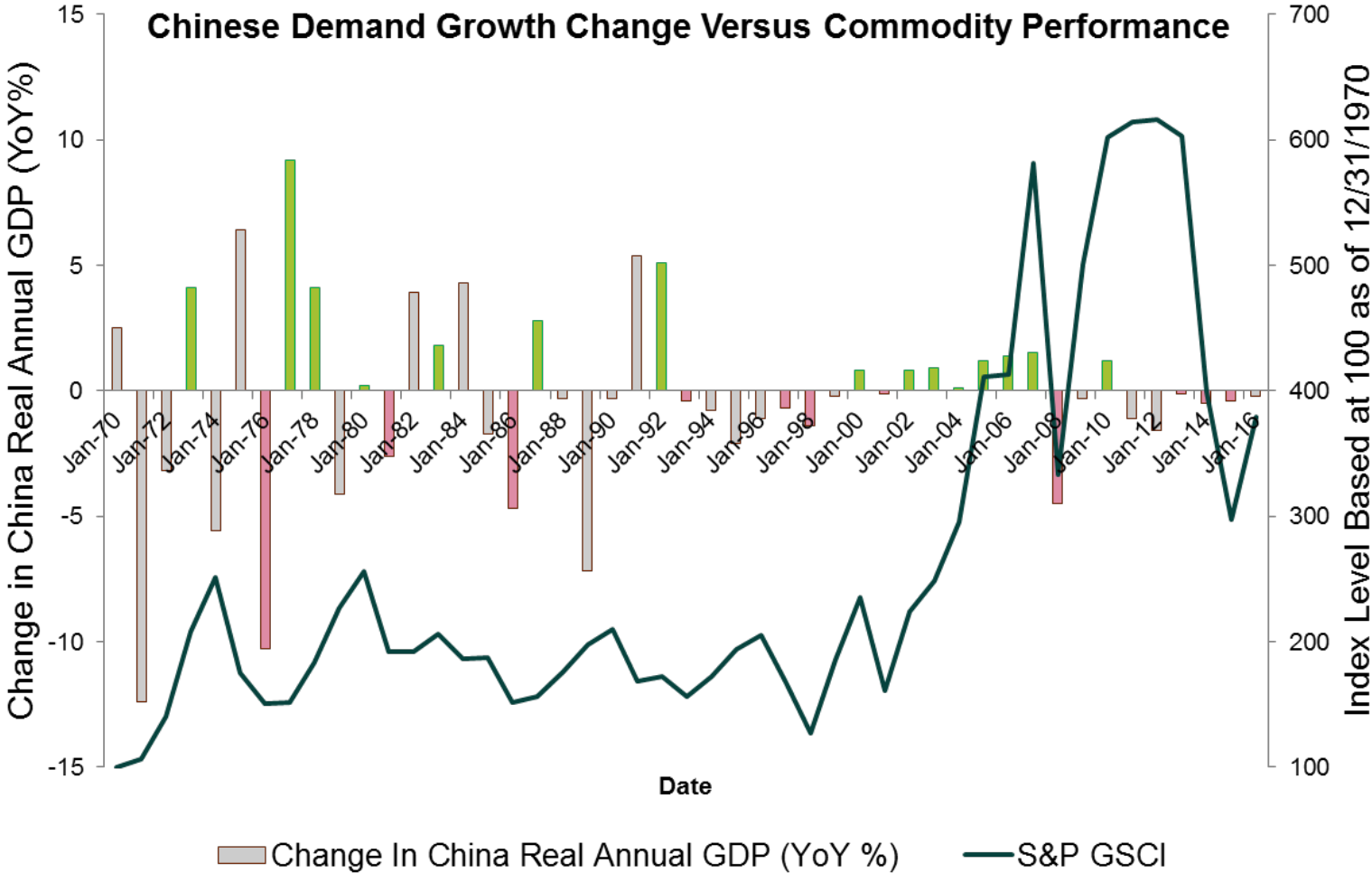
Source: ADB estimates.

PRC=People's Republic of China, LA=Latin America, EA=Emerging Asia, RC= remaining countries

Source: ADB estimates.

Source: Abiad, Lee, Pundit, Ramayandi. Asian Development Bank. MODERATING GROWTH AND STRUCTURAL CHANGE IN THE PEOPLE'S REPUBLIC OF CHINA:IMPLICATIONS FOR DEVELOPING ASIA AND BEYOND. Volume NO. 53, MARCH 2016.

# Positive Chinese Demand Growth Changes Are More Impactful on Commodity Index Returns



Source: Bloomberg and S&P Dow Jones Indices.

**S&P Dow Jones Indices**

A Division of S&P Global

Private & Confidential



# Correlation Between Commodities and Chinese Demand Growth Changes Are Mostly Weak

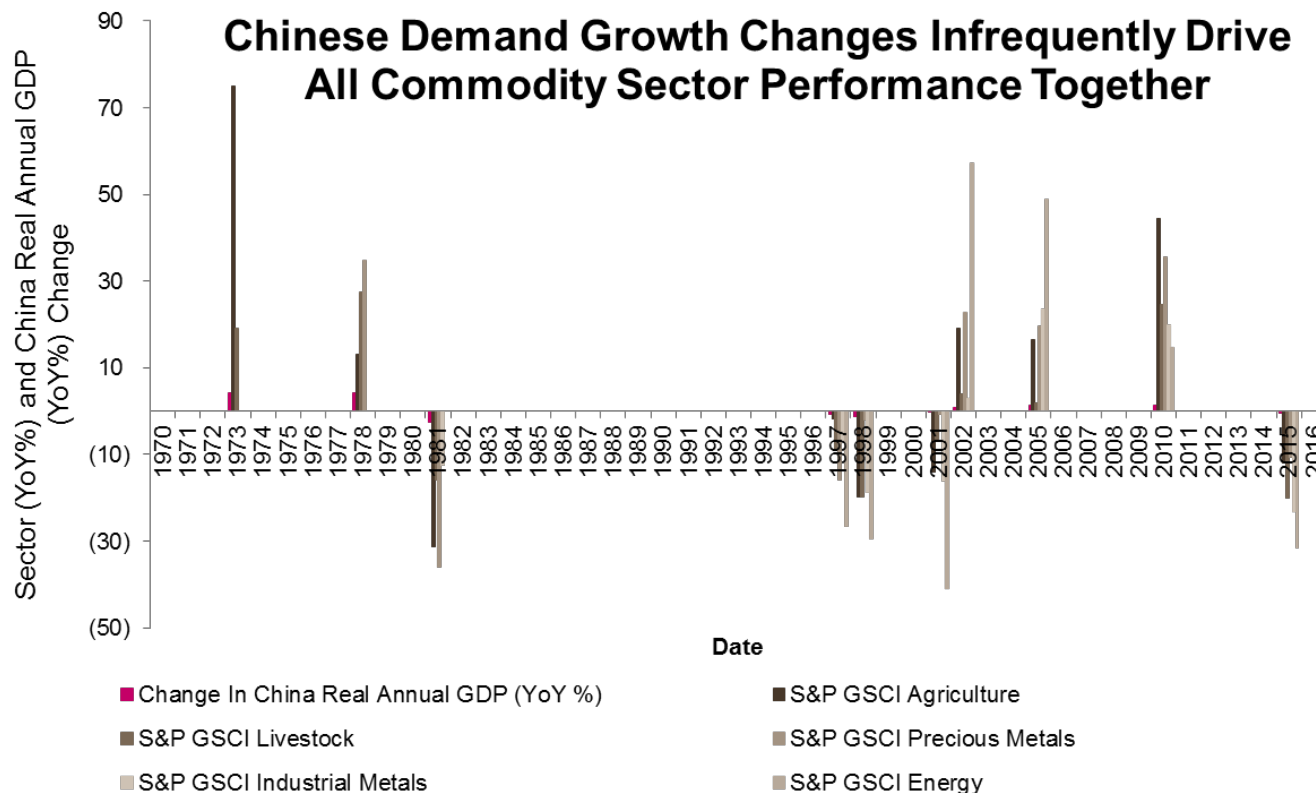
- Zinc with a one year lag becomes significantly more correlated at 0.59
- Coffee correlation doubles to 0.35 when compared with China Real Annual GDP (YoY %)
- Industrial metal correlation increases very slightly when lagged and compared with China Real Annual GDP (YoY %)

S&P GSCI Correlation to Chinese GDP Growth (YoY%) Changes					
Kansas Wheat	0.64	Livestock	0.20	S&P GSCI	0.06
Gasoil	0.55	Live Cattle	0.19	Energy	0.06
Brent Crude	0.53	Copper	0.18	Unleaded Gasoline	0.06
Lead	0.47	Coffee	0.17	Crude Oil	0.05
Nickel	0.44	Industrial Metals	0.16	Heating Oil	0.04
Aluminum	0.29	Cotton	0.15	Soybeans	- 0.07
Natural Gas	0.25	Corn	0.12	Silver	- 0.11
Wheat	0.23	Lean Hogs	0.11	Precious Metals	- 0.15
Feeder Cattle	0.23	Cocoa	0.09	Gold	- 0.20
Zinc	0.22	Agriculture	0.08	Sugar	- 0.23

Source: Bloomberg and S&P Dow Jones Indices. Correlations are based on annual data from 1970 through 2016.

# Commodity Sectors Move Differently from Chinese Demand Growth Changes, But Are More Influenced With Increasing Growth

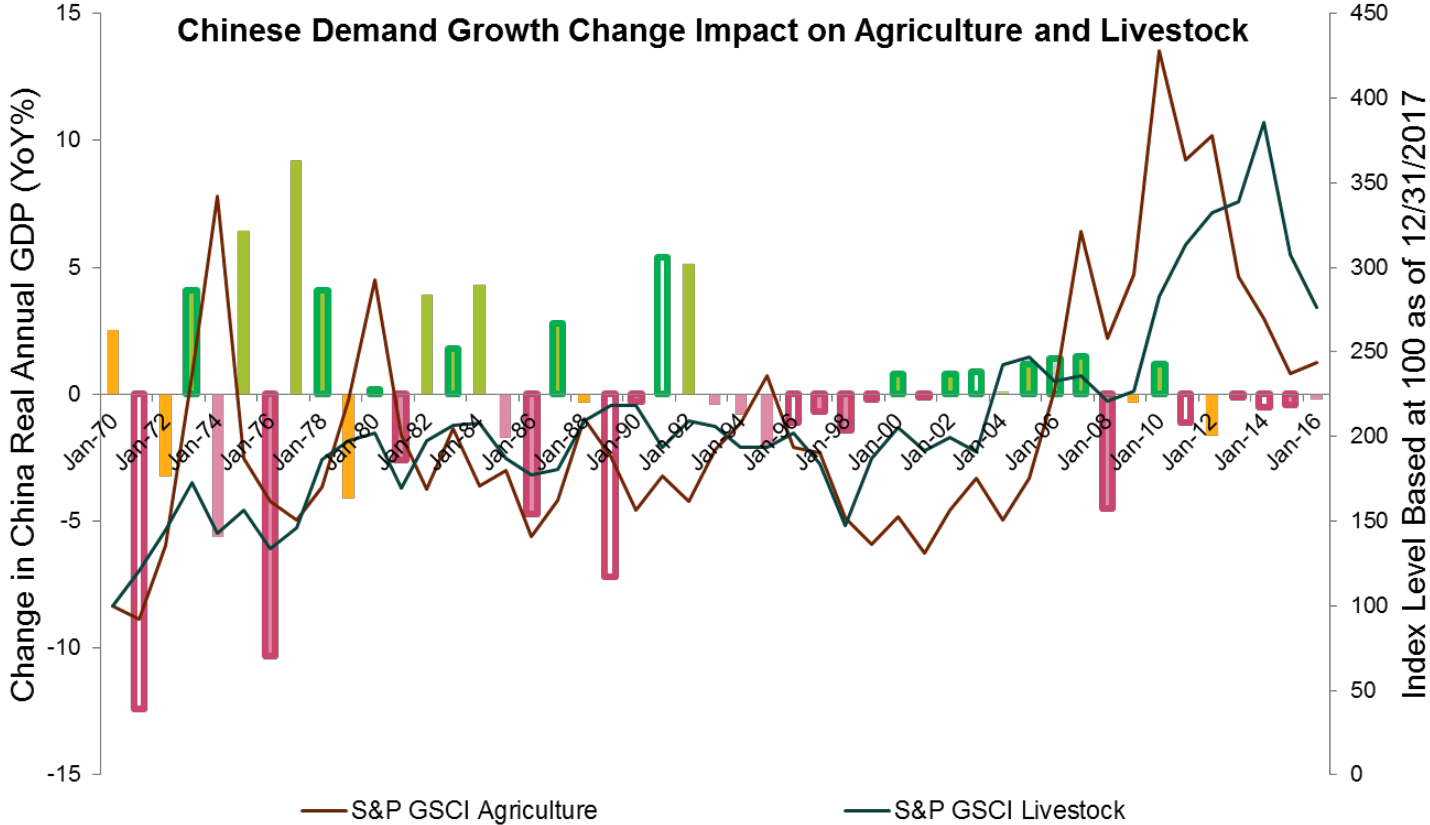
- All sectors moved with demand growth in 21.7%, or in 10 of 46 years
- All sectors gained in 26.3%, or in 5 of 19, rising demand growth years
- All sectors lost in 18.5%, or in 5 of 26, slowing demand growth years
- **Diversification protects** the index from slowing growth and **helps** with rising growth



Source: Bloomberg and S&P Dow Jones Indices.

# Agriculture and Livestock Are the Two Most Sensitive Sectors To Chinese Demand Growth Changes

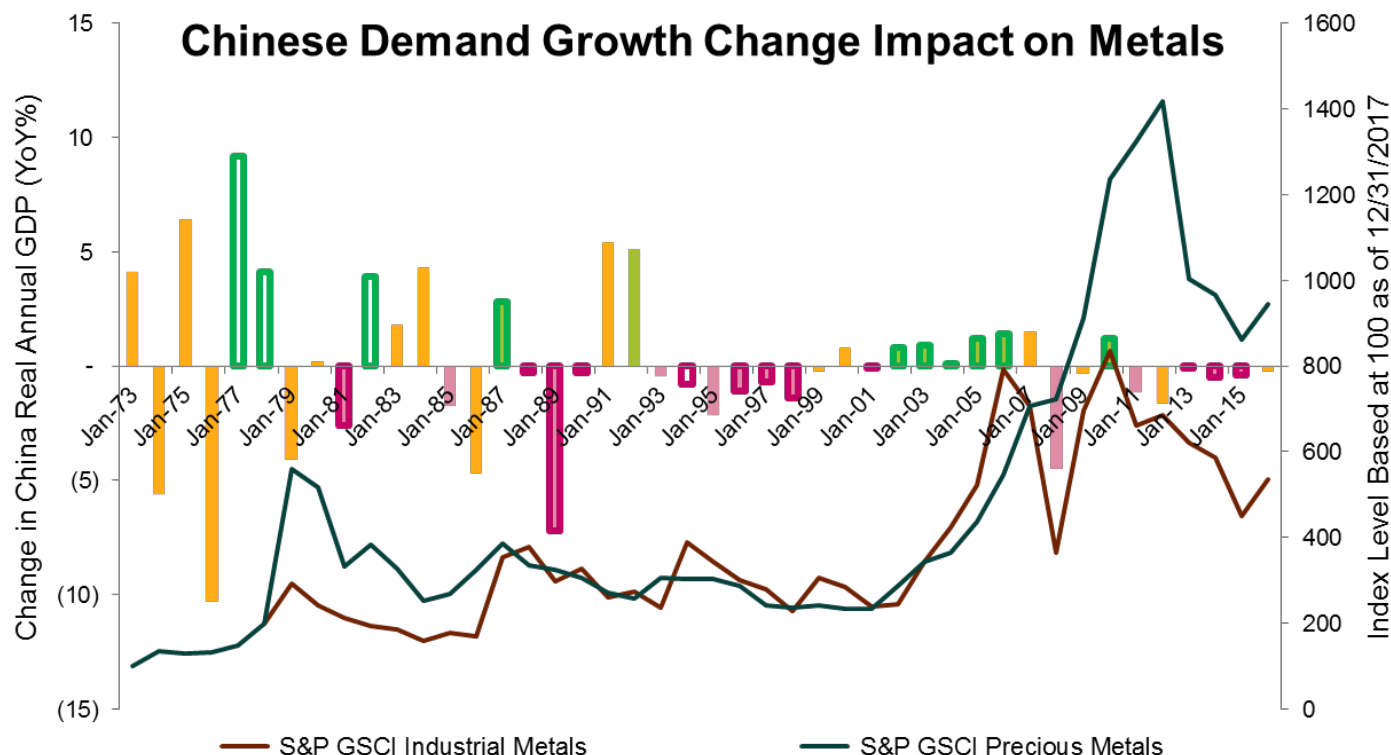
- Demand growth changes drove agriculture and livestock in 63.0% and 67.4% of years, respectively.
- **Livestock was the most affected sector**, especially rising with demand growth in 84.2%, or in 16 of 19 years.
- **Agriculture was the 2<sup>nd</sup> most affected sector**, rising in 68.4% and falling in 59.3% of years with demand growth changes.



Source: Bloomberg and S&P Dow Jones Indices. Yellow bars show years China Real Annual GDP (YoY%) Change moved oppositely both the S&P GSCI Agriculture and S&P GSCI Livestock. Green (Pink) filled bars show years China Real Annual GDP (YoY%) Change moved together up (down) with S&P GSCI Livestock. Dark green (dark pink) outlined bars show years China Real Annual GDP (YoY%) Change moved together up (down) with S&P GSCI Agriculture.

# Metals Lost Most With Rising Chinese Demand Growth, But Diverged With Falling Chinese Demand Growth

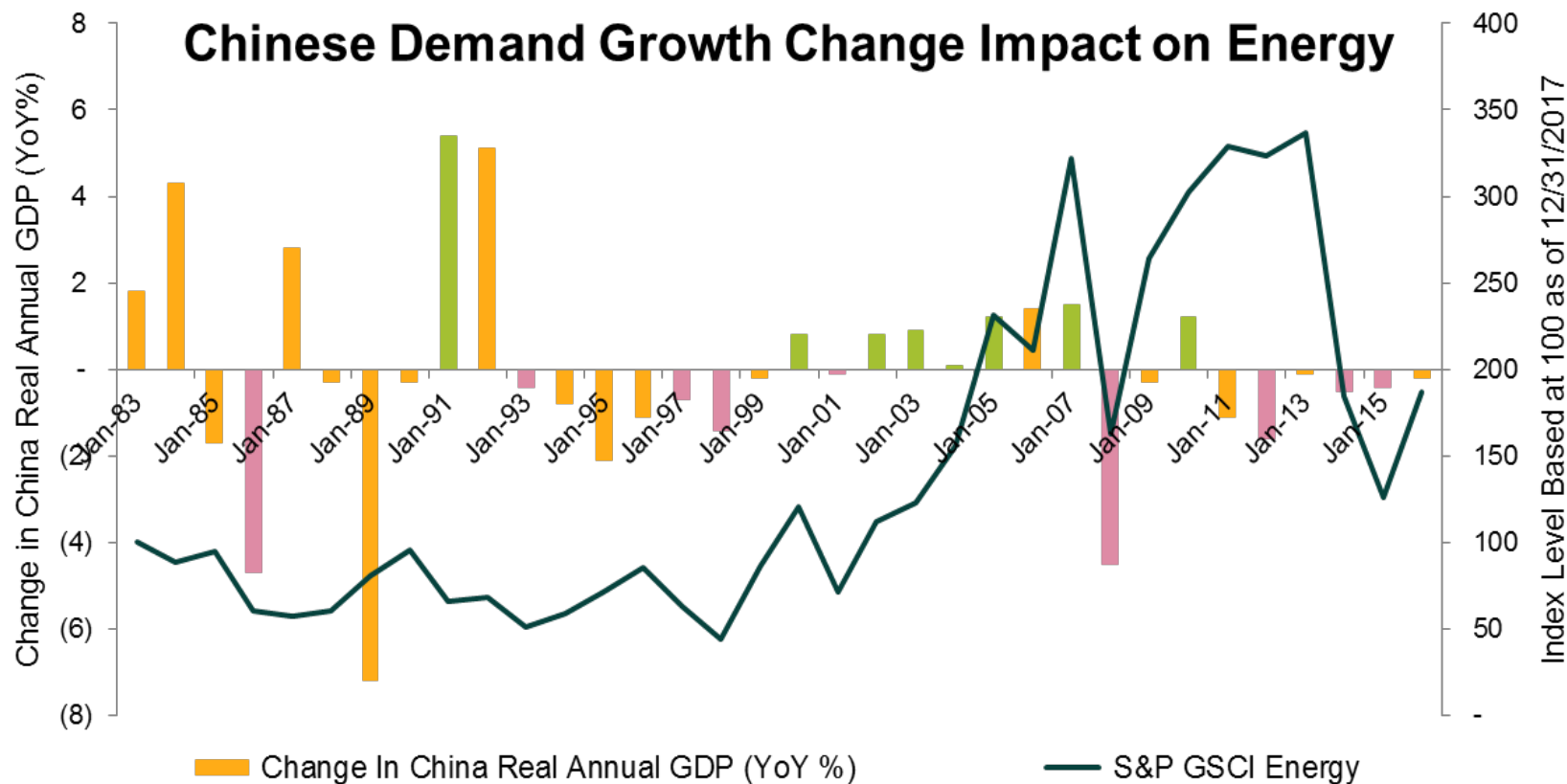
- Demand growth changes drove industrial and precious metals in 57.9% and 53.5% of years, respectively.
- **Industrial metals gained least** with rising demand growth years, rising in 53.3% of years, and also **lost most** with falling demand growth, losing in 60.9% of years.
- **Precious metals gained 2<sup>nd</sup> least** often of any sector, up in 61.1% of years, with rising demand growth, but **held up 2<sup>nd</sup> best**, losing in only 48% of falling demand growth years.



Source: Bloomberg and S&P Dow Jones Indices. Yellow bars show years China Real Annual GDP (YoY%) Change moved oppositely both the S&P GSCI Industrial Metals and S&P GSCI Precious Metals. Green (Pink) filled bars show years China Real Annual GDP (YoY%) Change moved together up (down) with S&P GSCI Industrial Metals. Dark green (dark pink) outlined bars show years China Real Annual GDP (YoY%) Change moved together up (down) with S&P GSCI Precious Metals.

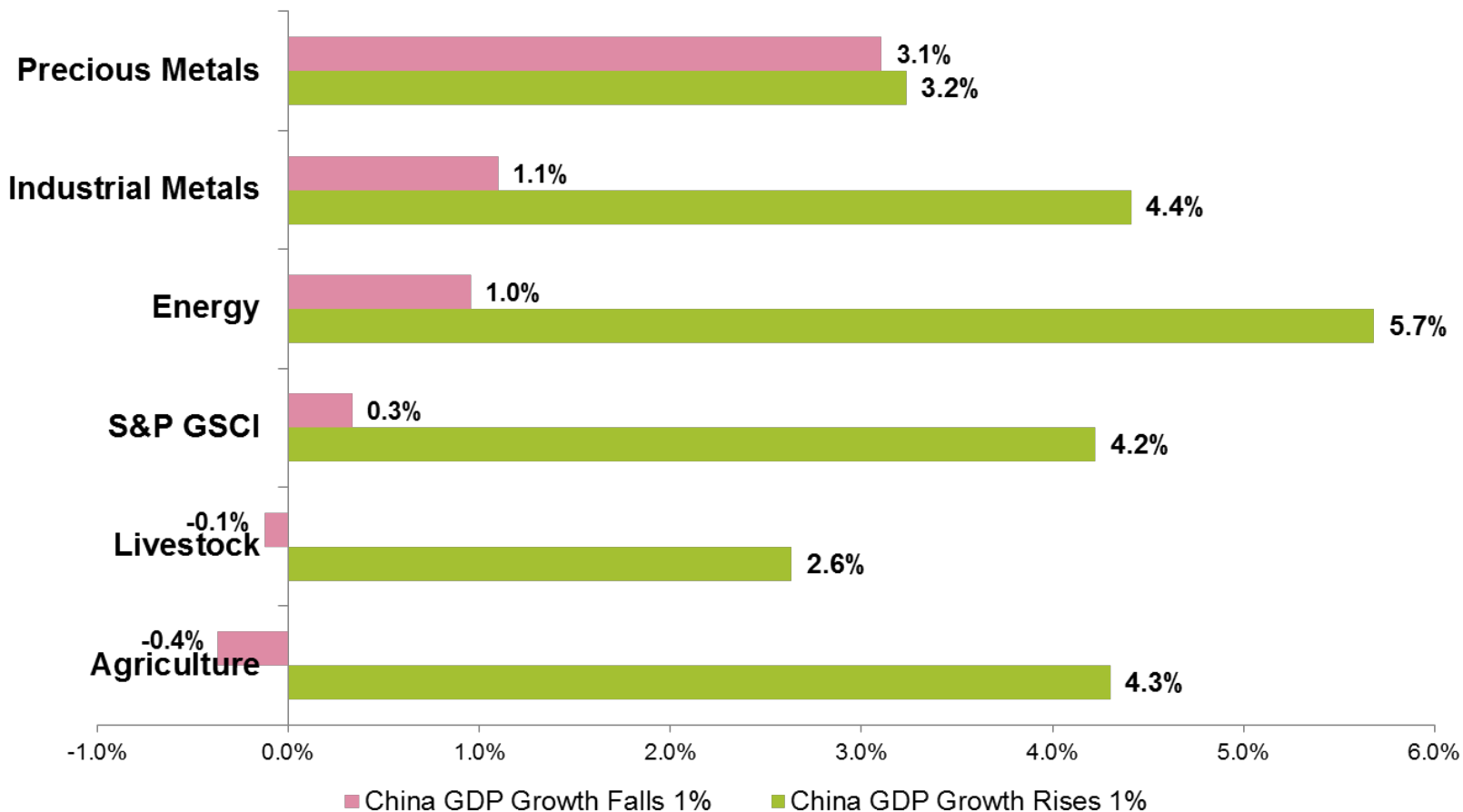
# Energy Protects Best With Falling Chinese Demand Growth And Is Up In 2/3 of Rising Chinese Demand Growth Years

- Energy was the least influenced sector by demand growth changes, moving together in 51.5% of years.
- Energy lost the least with falling demand growth years, losing in just 42.9% of years.
- Energy gained 3<sup>rd</sup> most often (in the middle) of the sectors, up in 66.7% of years, with rising demand growth.



Source: Bloomberg and S&P Dow Jones Indices. Yellow bars show years China Real Annual GDP (YoY%) Change moved oppositely the S&P GSCI Energy. Green (Pink) filled bars show years China Real Annual GDP (YoY%) Change moved together up (down) with S&P GSCI Industrial Metals.

# All Sectors Rise With Rising Chinese Demand Growth But Only Agriculture and Livestock Fall With Slowing Chinese Demand Growth



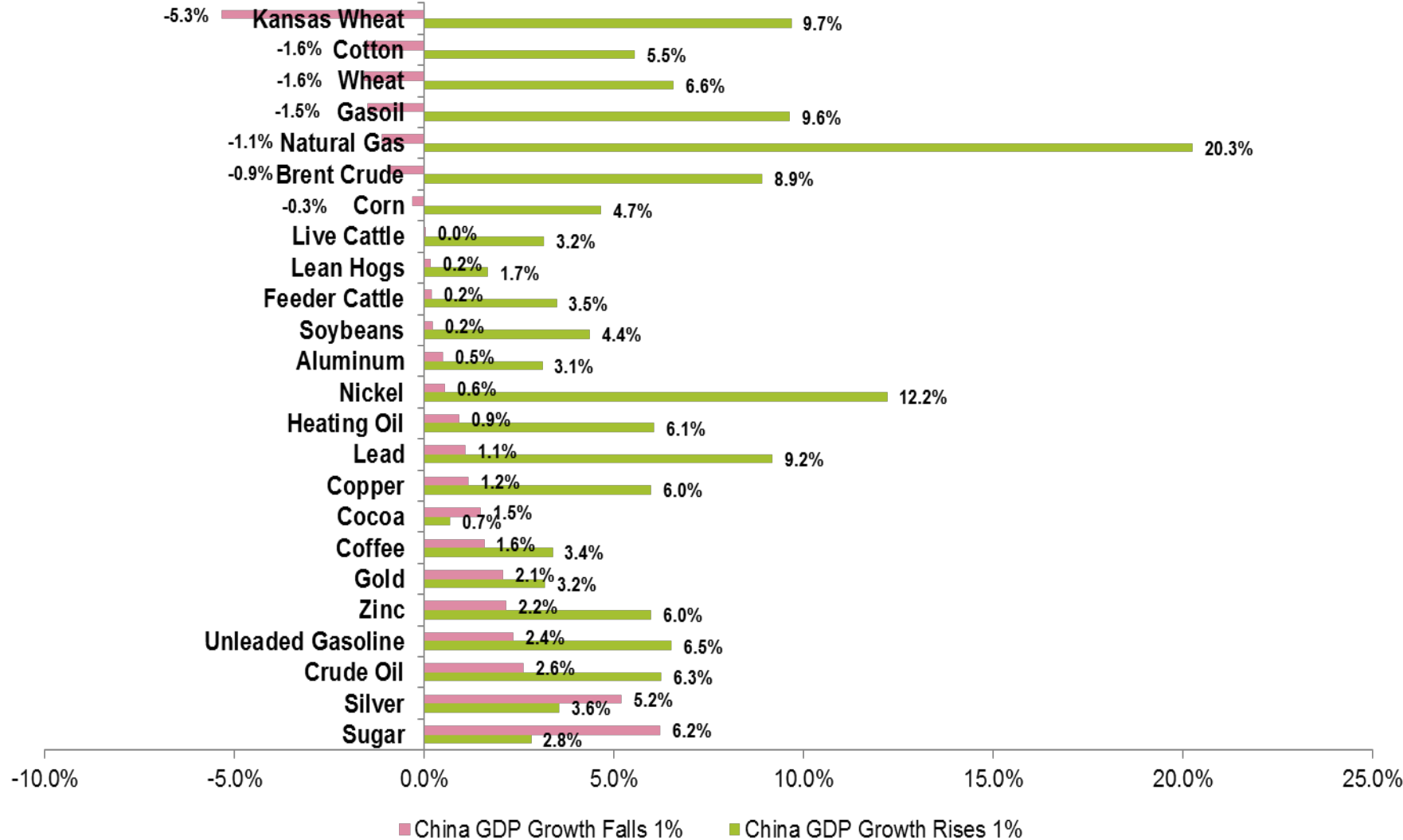
Source: Bloomberg and S&P Dow Jones Indices.

**S&P Dow Jones  
Indices**

A Division of S&P Global

Private & Confidential

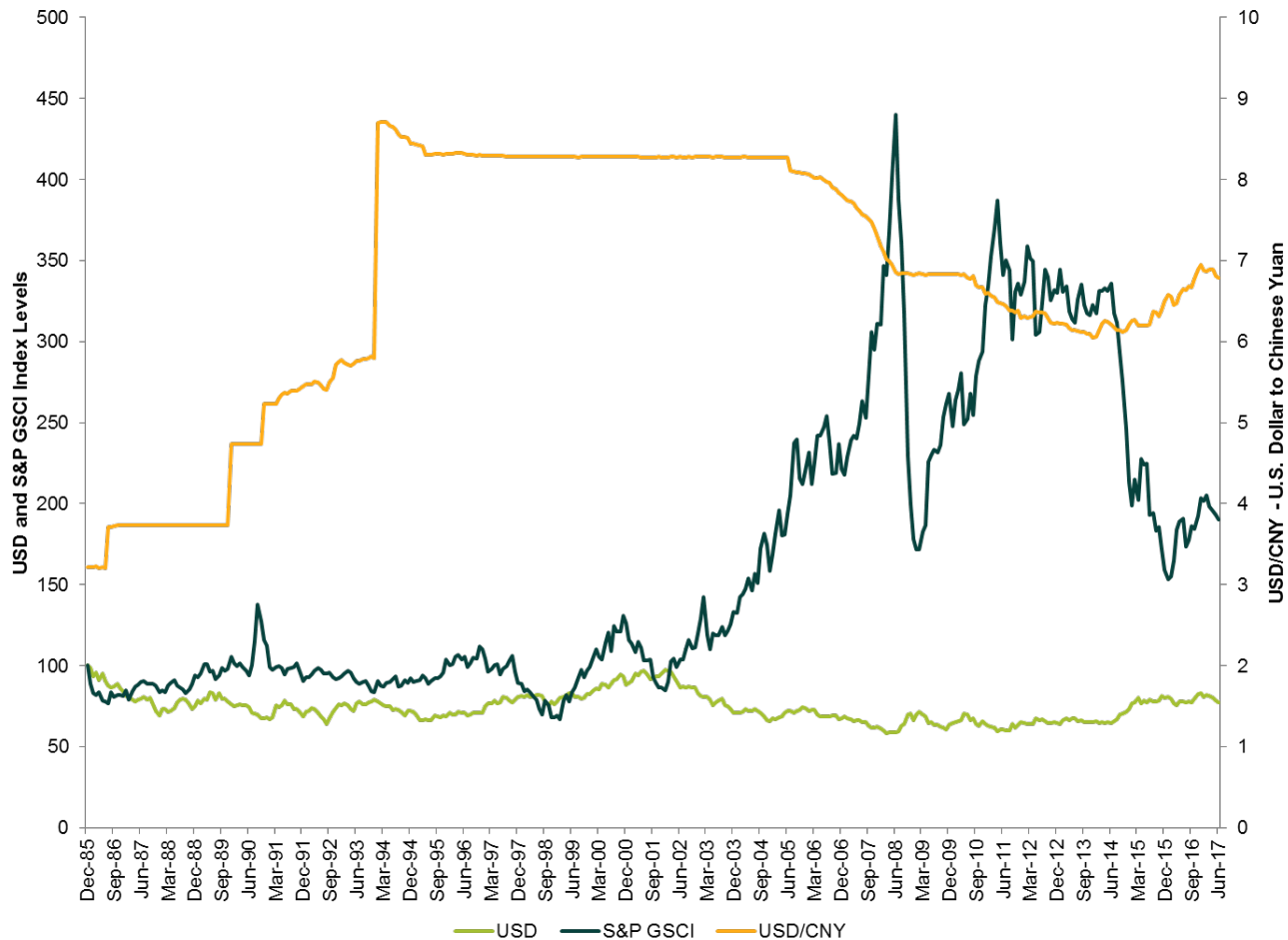
# Most Commodities Rise More With Rising Chinese Demand Growth



Source: Bloomberg and S&P Dow Jones Indices.

# The S&P GSCI, U.S. Dollar and Chinese Yuan Rate History

Correlation of commodities using monthly yoy% return data from Jan. 1986 – Jun. 2017 is only moderately negatively correlated -0.4 to the USD, and -0.1 to CNY.



Source: S&P Dow Jones Indices, Bloomberg and Investing.com <https://www.investing.com/currencies/usd-cny-historical-data>

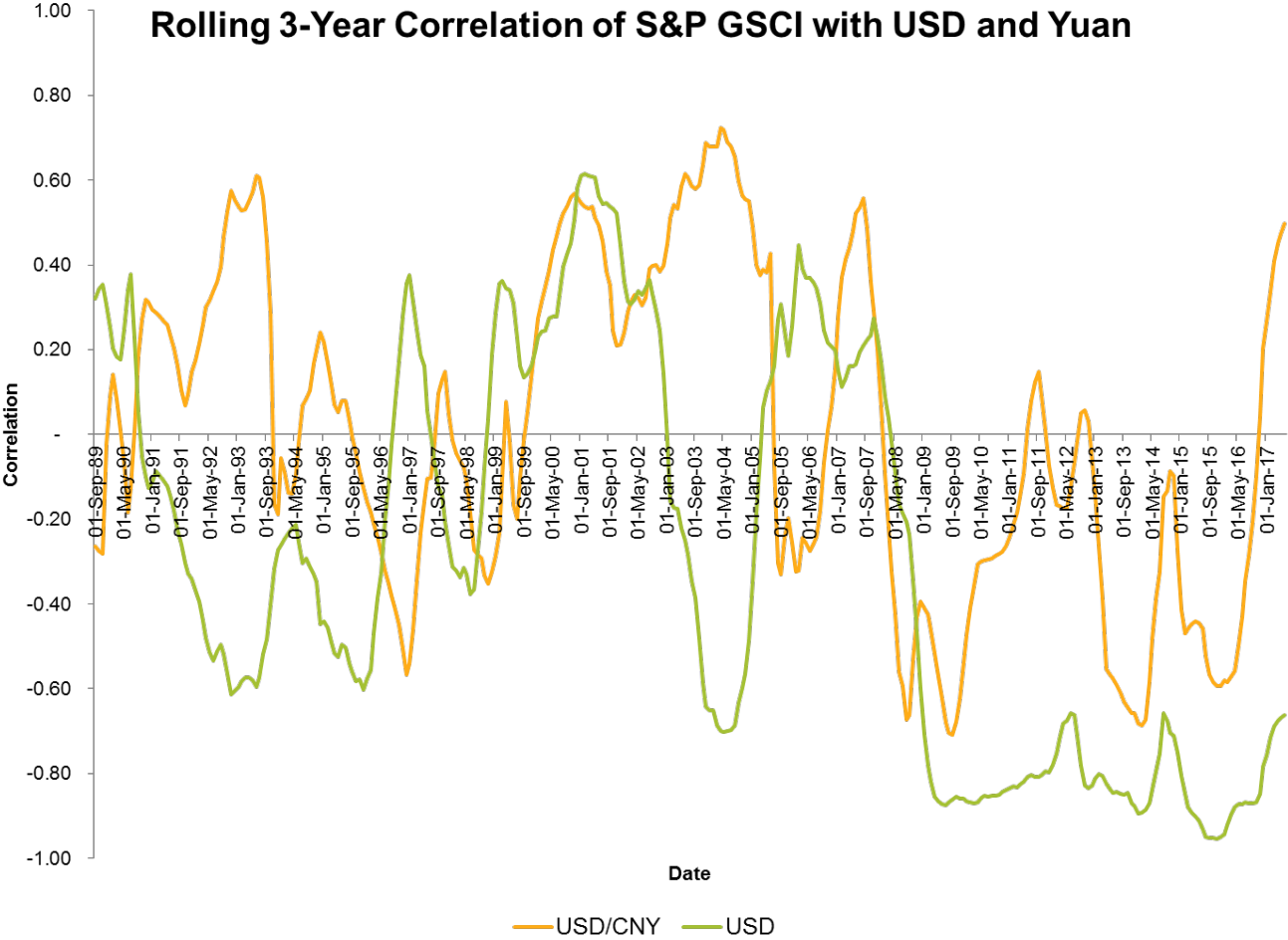
**S&P Dow Jones  
Indices**

A Division of S&P Global

Private & Confidential

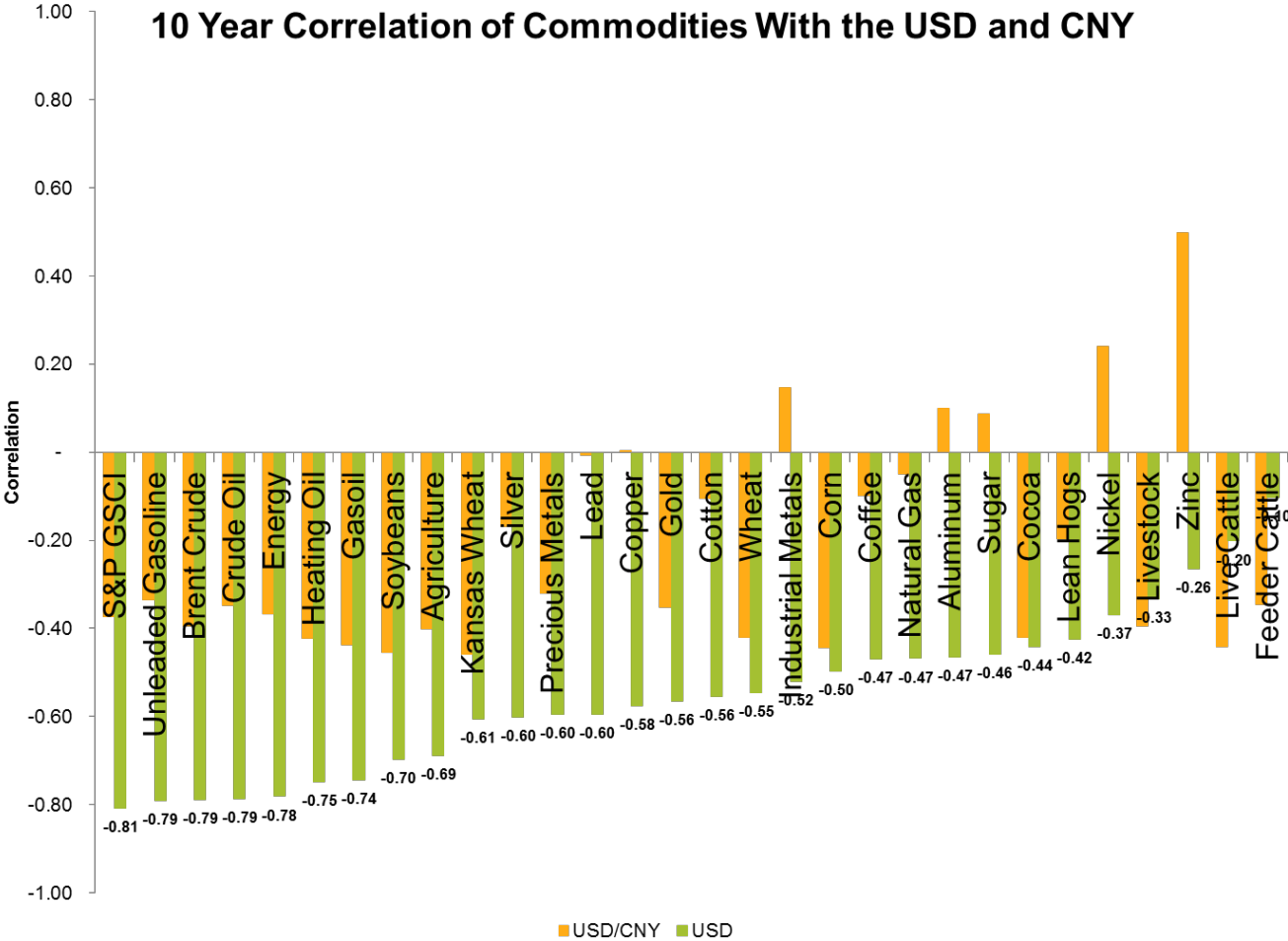


# Commodities Became Almost Perfectly Negatively Correlated With the USD, But Now Is Least Negatively Correlated, -0.66, Since Aug. 2014



Source: S&P Dow Jones Indices, Bloomberg and Investing.com <https://www.investing.com/currencies/usd-cny-historical-data>

# Commodities Have Varied 10-Year Correlation -0.8 to -0.1 With the Highest USD Sensitivity to Energy and Lowest to Livestock



Source: S&P Dow Jones Indices, Bloomberg and Investing.com <https://www.investing.com/currencies/usd-cny-historical-data>

# Every Commodity Rises With A Falling Dollar, And Is More Beneficial Than The Rising Dollar Hurts, Except Nickel

	Up 1%			Down 1%	
	USD	USD/CNY		USD	USD/CNY
Nickel	-2.02%	0.86%	Lead	6.24%	2.70%
Brent Crude	-1.84%	-2.37%	Silver	5.43%	3.55%
Crude Oil	-1.83%	-1.86%	Cotton	5.09%	3.46%
<b>Energy</b>	<b>-1.81%</b>	<b>-2.17%</b>	Brent Crude	4.95%	2.74%
Unleaded Gasoline	-1.71%	-1.76%	Crude Oil	4.93%	2.50%
Gasoil	-1.71%	-2.78%	Gasoil	4.84%	3.07%
<b>S&amp;P GSCI</b>	<b>-1.64%</b>	<b>-1.95%</b>	Heating Oil	4.71%	3.03%
Heating Oil	-1.60%	-2.54%	Soybeans	4.57%	3.73%
Kansas Wheat	-1.47%	-3.55%	Sugar	4.51%	2.10%
Copper	-1.42%	0.43%	<b>Energy</b>	<b>4.51%</b>	<b>2.25%</b>
<b>Industrial Metals</b>	<b>-1.32%</b>	<b>1.12%</b>	Coffee	4.39%	1.47%
Wheat	-1.25%	-3.23%	Unleaded Gasoline	4.38%	2.11%
Lead	-1.19%	3.16%	Kansas Wheat	4.29%	3.31%
Aluminum	-1.14%	0.96%	<b>Agriculture</b>	<b>3.99%</b>	<b>2.63%</b>
Natural Gas	-1.13%	0.19%	Wheat	3.98%	3.26%
<b>Agriculture</b>	<b>-1.13%</b>	<b>-1.37%</b>	Corn	3.93%	3.57%
Silver	-0.95%	0.54%	<b>S&amp;P GSCI</b>	<b>3.88%</b>	<b>1.83%</b>
Soybeans	-0.86%	-1.40%	Copper	3.47%	0.69%
Corn	-0.86%	-2.42%	Cocoa	3.37%	2.12%
Cotton	-0.69%	1.01%	<b>Precious Metals</b>	<b>3.34%</b>	<b>3.20%</b>
Coffee	-0.56%	4.23%	Gold	3.11%	3.25%
Cocoa	-0.54%	0.70%	<b>Industrial Metals</b>	<b>2.31%</b>	<b>-0.63%</b>
Zinc	-0.50%	5.65%	Zinc	1.78%	-1.76%
Lean Hogs	-0.42%	-0.97%	Aluminum	1.53%	-1.02%
Sugar	-0.13%	4.89%	Natural Gas	1.49%	-0.68%
<b>Livestock</b>	<b>-0.11%</b>	<b>-1.11%</b>	Nickel	1.42%	-2.74%
<b>Precious Metals</b>	<b>0.02%</b>	<b>0.59%</b>	Lean Hogs	1.38%	1.09%
Live Cattle	0.12%	-1.04%	<b>Livestock</b>	<b>1.13%</b>	<b>1.48%</b>
Gold	0.19%	0.64%	Feeder Cattle	1.11%	2.06%
Feeder Cattle	0.30%	-0.78%	Live Cattle	1.03%	1.77%

Source: S&P Dow Jones Indices, Bloomberg and Investing.com <https://www.investing.com/currencies/usd-cny-historical-data>

# Asia's Commodity Market is Growing Quickly

## 25+ Pending Listed Products on Commodities

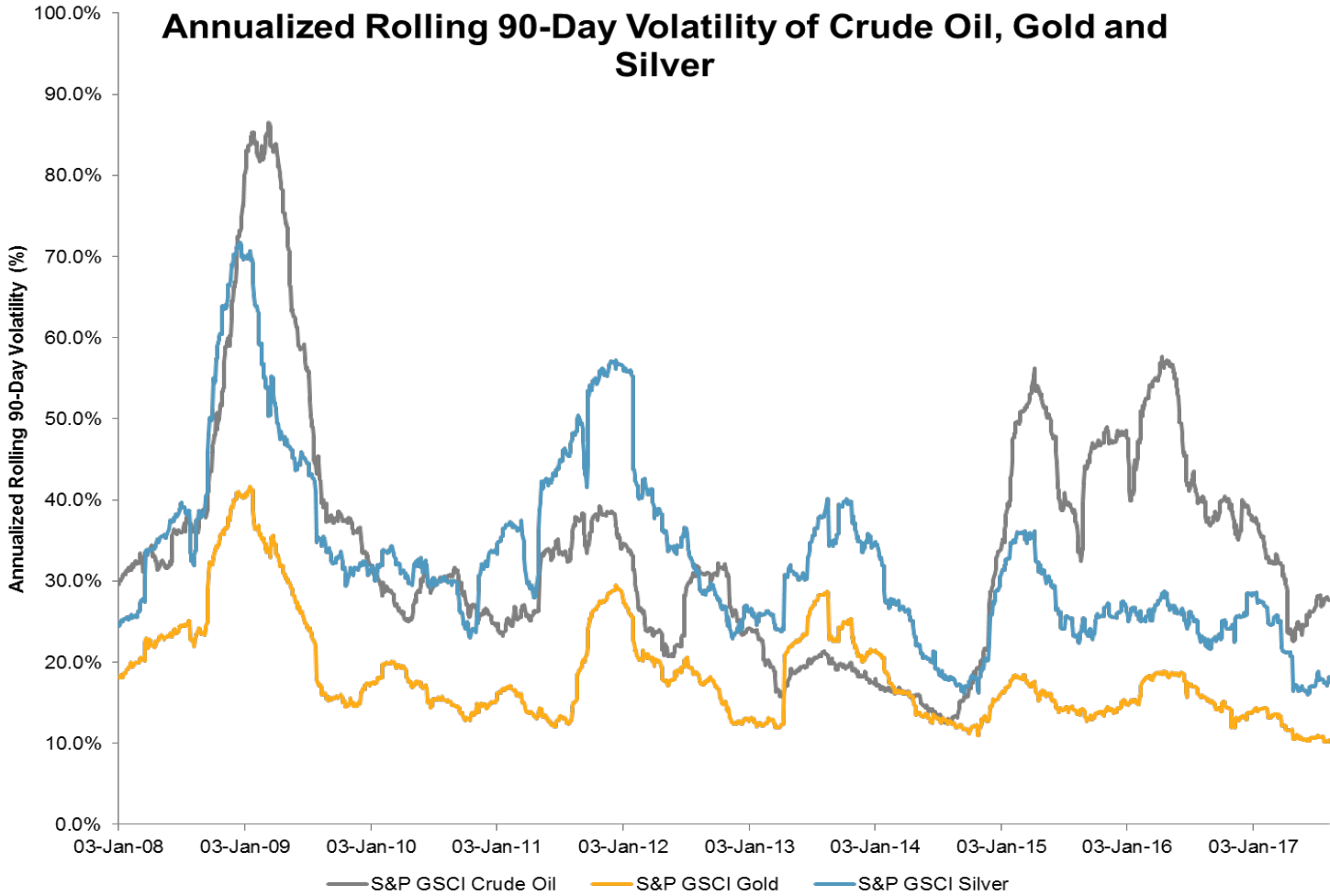
- Oil (9), Gold (8) and Silver (7) are most popular
- 2x Leveraged (10) and Inverse (10) are in high demand
- Primarily seeking trading opportunities, hedging, diversification and inflation protection

### Notable Recent First Launches

- April 2016 - Listed 1<sup>st</sup> commodity futures ETF in Hong Kong with Samsung on S&P GSCI Crude Oil Excess Return.
- April 2015 – Listed 1<sup>st</sup> commodity futures ETF in Taiwan (and all of Greater China) with Yuanta on S&P GSCI Gold Excess Return.
- July 2015 – Listed 1<sup>st</sup> leveraged commodity ETF in Korea with Korea Investment Management on S&P WCI Gold 2x Leverage

# Gold Has Reached New Low Volatility

## Oil and Silver Have Lowest Volatility Since 2014



Source: S&P Dow Jones Indices

# General Disclaimer

Copyright © 2017 by S&P Dow Jones Indices LLC, a part of S&P Global. All rights reserved. Standard & Poor's®, S&P 500® and S&P® are registered trademarks of Standard & Poor's Financial Services LLC ("S&P"), a subsidiary of S&P Global. Dow Jones® is a registered trademark of Dow Jones Trademark Holdings LLC ("Dow Jones"). Trademarks have been licensed to S&P Dow Jones Indices LLC. Redistribution, reproduction and/or photocopying in whole or in part are prohibited without written permission. This document does not constitute an offer of services in jurisdictions where S&P Dow Jones Indices LLC, Dow Jones, S&P or their respective affiliates (collectively "S&P Dow Jones Indices") do not have the necessary licenses. All information provided by S&P Dow Jones Indices is impersonal and not tailored to the needs of any person, entity or group of persons. S&P Dow Jones Indices receives compensation in connection with licensing its indices to third parties. Past performance of an index is not a guarantee of future results.

It is not possible to invest directly in an index. Exposure to an asset class represented by an index is available through investable instruments based on that index. S&P Dow Jones Indices does not sponsor, endorse, sell, promote or manage any investment fund or other investment vehicle that is offered by third parties and that seeks to provide an investment return based on the performance of any index. S&P Dow Jones Indices makes no assurance that investment products based on the index will accurately track index performance or provide positive investment returns. S&P Dow Jones Indices LLC is not an investment advisor, and S&P Dow Jones Indices makes no representation regarding the advisability of investing in any such investment fund or other investment vehicle. A decision to invest in any such investment fund or other investment vehicle should not be made in reliance on any of the statements set forth in this document. Prospective investors are advised to make an investment in any such fund or other vehicle only after carefully considering the risks associated with investing in such funds, as detailed in an offering memorandum or similar document that is prepared by or on behalf of the issuer of the investment fund or other vehicle. Inclusion of a security within an index is not a recommendation by S&P Dow Jones Indices to buy, sell, or hold such security, nor is it considered to be investment advice.

These materials have been prepared solely for informational purposes based upon information generally available to the public and from sources believed to be reliable. No content contained in these materials (including index data, ratings, credit-related analyses and data, research, valuations, model, software or other application or output therefrom) or any part thereof (Content) may be modified, reverse-engineered, reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of S&P Dow Jones Indices. The Content shall not be used for any unlawful or unauthorized purposes. S&P Dow Jones Indices and its third-party data providers and licensors (collectively "S&P Dow Jones Indices Parties") do not guarantee the accuracy, completeness, timeliness or availability of the Content. S&P Dow Jones Indices Parties are not responsible for any errors or omissions, regardless of the cause, for the results obtained from the use of the Content. THE CONTENT IS PROVIDED ON AN "AS IS" BASIS. S&P DOW JONES INDICES PARTIES DISCLAIM ANY AND ALL EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, FREEDOM FROM BUGS, SOFTWARE ERRORS OR DEFECTS, THAT THE CONTENT'S FUNCTIONING WILL BE UNINTERRUPTED OR THAT THE CONTENT WILL OPERATE WITH ANY SOFTWARE OR HARDWARE CONFIGURATION. In no event shall S&P Dow Jones Indices Parties be liable to any party for any direct, indirect, incidental, exemplary, compensatory, punitive, special or consequential damages, costs, expenses, legal fees, or losses (including, without limitation, lost income or lost profits and opportunity costs) in connection with any use of the Content even if advised of the possibility of such damages.

S&P Dow Jones Indices keeps certain activities of its business units separate from each other in order to preserve the independence and objectivity of their respective activities. As a result, certain business units of S&P Dow Jones Indices may have information that is not available to other business units. S&P Dow Jones Indices has established policies and procedures to maintain the confidentiality of certain non-public information received in connection with each analytical process.

In addition, S&P Dow Jones Indices provides a wide range of services to, or relating to, many organizations, including issuers of securities, investment advisers, broker-dealers, investment banks, other financial institutions and financial intermediaries, and accordingly may receive fees or other economic benefits from those organizations, including organizations whose securities or services they may recommend, rate, include in model portfolios, evaluate or otherwise address.

# Performance Disclosure

The [Insert relevant index] was launched on [Insert launch date]. 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. Complete index methodology details are available at [www.spdji.com](http://www.spdji.com).

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 at a fixed value for calculation purposes. The Launch Date designates the date upon which 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 datafeed 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.

Past performance of the Index is not an indication of future results. Prospective application of the methodology used to construct the Index may not result in performance commensurate with the back-test returns shown. The back-test period does not necessarily correspond to the entire available history of the Index. Please refer to the methodology paper for the Index, available at [www.spdji.com](http://www.spdji.com) 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.

Another limitation of using back-tested information is that the back-tested calculation is generally prepared with the benefit of hindsight. Back-tested information reflects the application of the index methodology and selection of index constituents in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. For example, there are numerous factors related to the equities, fixed income, or commodities markets in general which cannot be, and have not been accounted for in the preparation of the index information set forth, all of which can affect actual performance.

The Index returns shown do not represent the results of actual trading of investable assets/securities. S&P Dow Jones Indices LLC maintains the Index and calculates the Index levels and performance shown or discussed, but does not manage actual assets. Index returns do not reflect payment of any sales charges or fees an investor may pay to purchase the securities underlying the Index or investment funds that are intended to track the performance of the Index. The imposition of these fees and charges would cause actual and back-tested performance of the securities/fund to be lower than the Index performance shown. As a simple example, if an index returned 10% on a US \$100,000 investment for a 12-month period (or US \$10,000) and an actual asset-based fee of 1.5% was imposed at the end of the period on the investment plus accrued interest (or US \$1,650), the net return would be 8.35% (or US \$8,350) for the year. Over a three year period, an annual 1.5% fee taken at year end with an assumed 10% return per year would result in a cumulative gross return of 33.10%, a total fee of US \$5,375, and a cumulative net return of 27.2% (or US \$27,200).