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CAMBRIDGE ASSOCIATES LLC

GLOBAL MARKET COMMENTARY

COMMODITIES: IS THE INVESTMENT WELL RUNNING DRY?

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C O N T E N T S

Introduction

In the seventh year of a boom that shows little sign of exhaustion, commodities are now the subject of daily headlines, G8 statements, United Nations' warnings, and political debate. Sharp price increases have caused social unrest around the globe, spurring government measures that are in fact likely to exacerbate rather than alleviate real and potential shortages, thereby keeping prices high. Attention in the United States has begun to focus on whether untoward speculation by investors in commodities is driving price hikes—and whether such "non-commercial" investment should be curbed.

These issues and their resolution may have a significant impact on the increasing number of investors with dedicated allocations to commodities. Accordingly, we examine recent developments in the commodity sector, the forces driving valuations, and the potential risks associated with both the commodity boom and government efforts to address it. We conclude that while economic fundamentals support a continuation of the boom, risks are high; that investors should remain mindful of the primary purposes commodities serve in an investment portfolio; and that they should be careful to avoid excessive exposure to energy-centric commodity indices, monitor their total exposure to commodities, and rebalance accordingly.

Drilling Down into Commodity Prices

Although it remains well below its high in real terms (Table A), the S&P GSCI™ Index has increased 316.0% since the start of 2002, including 37.1% this year alone. Over the past several years, just as one commodity has retreated from multi-year or record highs, another has seemingly emerged to take its place. Soybean highs preceded record copper prices, followed by $1,000-plus gold and then $140 oil, to give just a few prominent examples (Table B). A number of commodities have reached record nominal highs in the last four months, including oil, tin, corn, wheat, rubber, rice, sunflower oil, barley, bananas, oranges, and poultry.

Performance has varied among the major commodity sub-sectors: energy, agriculture, industrial metals, precious metals, and livestock. For example, while the price of crude oil has hit a real high that is more than three times its post-1969 mean, gold currently trades at just 1.2 standard deviations above its post-1969 mean (Table C). Industrial metals prices have skyrocketed during the boom but, even before their retreat, remained below real highs reached in the late 1970s. In contrast, livestock prices remain near 39-year lows (Table D).[1]

Other than oil, agricultural commodity prices have received the most attention of late. Food and feed prices have risen dramatically since the start of 2002, although much more in US$ terms than in yen, sterling, or, especially, euro terms (Table E). In real terms, however, prices are only at 1990 levels in the United States (and have only recently returned to their post-1969 mean) and remain (in Europe, Japan, the United Kingdom, and the United States) roughly 40% to 50% below those in 1980 (Tables E and F).

[1] We do not discuss livestock further in this Global Market Commentary as it constitutes only a minor part of the commodity indices.

While there are important differences between conditions prevailing in the 1970s and today, the enormous surge in energy costs is reminiscent of 1973–80, when the price of crude oil rose eleven-fold (from about $3.56/bbl to $35.33/bbl). Moreover, as in the 1970s, agricultural inventories are low and metal prices high. Consumer confidence in the United States has now sunk to levels not seen since the early 1980s and consumers in other developed markets, such as Europe and the United Kingdom, have also become increasingly bearish.

Harvesting the Benefits of Commodities in a Portfolio

Yet if the current commodities story brings the 1970s to mind, it is important to recognize that the implications of a commodity boom (or bust) are much different for investors today compared with 30 years—or even a decade—ago. While commodity futures existed in the 1970s, their composition was quite different. For example, oil futures, the biggest segment of the commodity futures market today, were not even traded until 1983. Moreover, even though managed futures strategies evolved as commodity futures markets developed, these have always been active strategies designed to profit from alpha and leverage rather than to provide commodity market exposure. With the introduction of the S&P GSCI™ in 1991, however, the door opened for institutions to invest in long-only diversified baskets of fully collateralized commodities.

As commodity prices have skyrocketed in recent years, the number of managers benchmarked to these indices has grown. While we do not have data on the number of over-the-counter products or managers, we can get a sense of the growth in investment vehicles by looking at the rise in the number of commodity exchange-traded funds and exchange-traded notes, which is now 184 compared with only five at the end of 2004. In addition, there are some 30 new products awaiting approval from the Securities and Exchange Commission.

Meanwhile (and this of course helps explain the development of many new commodity products), investors have bought into the case for direct exposure to commodities, primarily through index-linked derivative products. The case for commodities has traditionally rested on their value as an inflation hedge and their low or negative correlations with many other asset classes (Tables G–K). However, it is worth noting that because commodities are for the most part dollar-denominated, they are most obviously an inflation hedge for U.S. investors and investors whose local currencies are pegged to the U.S. dollar. Given that currency risk can magnify the volatility of commodities (and the fact that the collateral return is a major part of total commodity returns), other investors must decide whether or not to hedge all or part of their direct commodity exposure.

In recent years, many proponents of commodity allocations have also begun citing commodities' high returns over the last two generations. From January 1, 1973, through May 31, 2008, the average annual compound return of the Goldman Sachs Commodity Index (now the S&P GSCI™) was 11.6%, compared with 10.7% for the S&P 500 and 8.1% for the Lehman Brothers Government/Credit Bond Index.[2] Thanks to their diversification, inflation-hedging, and return characteristics, commodities are now an integral part of alternative asset allocations.

Although neither the oldest nor by any means the only commodity index, the S&P GSCI™ remains the most popular. Its launch in 1991 was followed in 1998 by that of the Dow Jones-AIG Commodity Index and in the past few years investment banks such as Deutsche Bank, J.P. Morgan, Lehman Brothers, and Merrill Lynch have rushed out additional products to capitalize on growing investor interest, including some with rules intended to maximize the roll yield rather than roll at fixed periods. These indices provide useful benchmarks against which to measure performance (Table L).

No one doubts the huge jump in commodity-related investments, although there is disagreement over the actual amount invested. S&P estimates that $150 billion is now invested in S&P GSCI™-related products, five times more than was the case four years ago (Table M). Other estimates, which include assets indexed to the Dow Jones-AIG Commodity Index and other indices, are much higher. For example, Bloomberg reported in April 2008 that $354 billion had been invested in commodity strategies (which presumably includes non-index-linked strategies) while two more recent estimates (from Goldman Sachs and a hedge fund manager) came in at $215 billion (in commodity index–linked products) and $260 billion, respectively.

Evaluating Commodity Price Drivers

In contrast to valuations of public equities, where investors are interested in financial statement metrics and future earnings flows, commodity analysis traditionally begins with an examination of supply and demand factors. While the reasons for the most recent run-up in commodity prices are a subject of dispute, as will be discussed below, it is clear that the boom that began in 2002 resulted from supply and demand fundamentals, particularly in the case of energy.

Energy

World energy consumption has increased at a 2.9% annual rate over the past five years, the highest pace since 1985–89. This is due to the fact that the rapid growth of emerging markets this decade has been accompanied by a sharp increase in their energy needs. Most notably, China's demand alone composed 49.6% of the increase in world energy consumption from 2001 through 2007 (Table N). Indeed, emerging economies have accounted for nearly 86% of the growth in demand for oil since 2001, with China again looming large; despite being the world's fifth-largest oil producer, China has been a net importer since 1993 and now relies on external sources for more than half of its oil needs (Table N). China's coal usage has also increased rapidly and presently accounts for 41.3% of world consumption (Table O). Given its continued

[2] These numbers reflect commodities' substantial outperformance of equities since 2002. In our 2002 paper, *Commodities*, we found that the Goldman Sachs Commodity Index had achieved the same real average annual compound return as the S&P 500 over the period studied (January 1, 1970, through June 30, 2002). S&P GSCI™ returns prior to 1991 are backdated.

high growth rate, its enormous needs in basic infrastructure, and the centrality of heavy industry to its economic strategy, it seems clear that China's energy appetite will expand unabated for some time to come, with significant pricing and environmental implications.

Increased energy demand should normally lead to greater supply, but significant supply constraints have emerged. These are due partly to enhanced government control over the means of production, most notably in Russia, the world's second largest oil and gas producer, which has accounted for almost half of new oil production since 1999 (Table P). In markets such as Colombia, Iraq, and Nigeria, meanwhile, industrial unrest, terrorism, and other problems impact supply calculations for Western and other developed market oil firms.

Furthermore, potential private sector initiatives in open markets have been stymied by reluctance on the part of some governments to increase nuclear or coal production or to open up new areas for exploration (e.g., in the case of the United States, the Arctic, or off-shore sites). More generally, the aging of existing oil fields globally, together with the increased difficulty of accessing reserves, means that substantial investment is required to increase oil supplies. Government-run oil companies often have different agendas than private oil companies and may be less willing to make such investments—while private firms in developed markets are not necessarily prepared to participate, given the obvious constraints on their ability to manage their investments. Moreover, increases in refinery capacity have not kept pace with increases in demand and, according to International Monetary Fund (IMF) researchers, real investment in the upstream sector has barely grown despite a 70% increase in nominal investment from 2004 to 2006.

Agricultural Commodities

Higher energy prices mean higher crop-growing costs, which translate into more expensive agricultural commodities. Price increases, as well as concerns about global warming, have inspired governments to embark upon long-term efforts to develop alternative energy sources. Thus, biofuel mandates in the United States and Europe are increasingly impacting commodity pricing. Indeed, IMF estimates suggest that increased demand for biofuels account for 70% and 40%, respectively, of the increase in corn and soybean prices. The U.S. Department of Agriculture estimates that ethanol, which constitutes about 80% of global biofuel use, will account for just under one-third of U.S. corn use (about 60% more than in 2004) in 2008 and for the next nine years (Table Q).

Dietary changes in increasingly prosperous emerging markets, particularly a growing demand for meat, are also supporting grain prices. Meanwhile, harsh weather and desertification have damaged crop yields in many areas. The upshot is that record output (actual or expected) of a number of agricultural commodities (e.g., wheat, coarse grains, and rice) has not been sufficient to prevent declines in major food crop inventories; in fact, stock-to-use ratios of grains and oilseeds have fallen to post-1969 lows (Table R). With restive populations and a perceived much smaller margin for error, a host of governments have intervened in commodity markets using a variety of market-distorting measures such as subsidies and export restrictions.[3]

Metals

Chinese demand is an important driver of metal prices even though the Middle Kingdom is the world's largest producer of aluminum, zinc, tin, and iron ore, among other metals. To fuel its rapid growth China must import significant quantities of copper, nickel, and iron ore. Indeed, China accounted for about 90% of increased copper consumption from 2000 to 2007. Although economic growth remains very strong in China and other large emerging markets, industrial metals prices have retreated quite a bit from highs reached earlier in the commodity boom—although they remain far above their 2002 levels. This is likely due to the fact that, among commodities, base metals prices tend to be the most sensitive to business cycle fluctuations (Table S).

Gold has been another prominent performer over the past few years, but for reasons other than industrial growth in China and other emerging markets.[4] Rather, gold has benefited from both the weakening U.S. dollar and rising inflation worries. It breached the $1,000 per troy ounce barrier in mid-March for the first time ever, but has since retreated to a range around $900. While this is well over three times as high as the price in January 2002, it is important to recognize that in real terms gold remains some 60% below its May 1973 level.[5]

Other Possible Drivers of Commodity Prices

Notwithstanding the supply and demand fundamentals discussed above, alternative explanations for the ferment in commodity markets have been proffered. For example, given that commodities are generally priced in U.S. dollars, the weakness of the greenback since 2002 has been cited by the IMF, among others. Indeed, as we have seen, the rise in commodity prices has been much lower in terms of non–U.S. dollar developed markets currencies (Tables E and F); this is also the case with respect to emerging markets currencies.[6] The Chief Economist of the U.S. Commodities Futures Trading Commission (CFTC), meanwhile, has suggested that investor interest in commodities is due to poor returns in equity and debt markets.

The role of non-commercial traders or "speculators" has generated the most controversy, with some arguing that the growing popularity of commodities as an alternative asset class within the portfolios of

[3] Such measures are by no means confined to poor or authoritarian markets, as exemplified by longstanding U.S. and European Union policies.
[4] As of 2007 only 11.4% of gold consumption was for industrial usage. However, China is one of the world's largest gold bullion markets.
[5] We calculate from May 1973 based upon the fact that this represents the point at which gold prices, pegged to the U.S. dollar from 1934–71, were approximately equal to the level they would have been at had gold appreciated by the rate of inflation during that period.
[6] Thus, the Brazilian *real* (47.9%), Russian *rouble* (29.7%), Chinese *yuan* (19.2%), South Korean *won* (27.6%), and Indian *rupee* (14.3%) have all appreciated substantially against the U.S. dollar since the start of 2002.

institutional investors means that market fundamentals no longer apply in the commodities world. Proponents of this view argue that these investors are insensitive to price risk, and point to the rapid increases in prices and (particularly with respect to crude oil) open interest and long futures positions.

Others dispute this view, arguing that it is necessary to distinguish between physical and futures positions. Moreover, institutional investors are arguably inflation hedgers rather than speculators. Also, traded commodities (e.g., corn and wheat) included in commodity indices have certainly not been moving in sync and record prices have also been reached with respect to commodities that are not included in the major commodity indices (e.g., palm oil) or not even traded in the futures market (e.g., hay and rice). Finally, according to the CFTC, data on wheat and crude oil trading shows almost as many bearish funds as bullish funds.

The IMF concluded in 2006 that causality appeared to run from prices to changes in speculative positions rather than the other way around. The CFTC reached a similar conclusion, although it is apparently looking now at possible abuses in the trading of cotton. Thus far, efforts to measure the impact of non-commercial participants on prices have produced different conclusions (including the extent to which commodity investment figures reflect new investment rather than gains on prior investments), but further analysis may shed more light.[7] Interestingly, according to a report written in late June by Barclays Capital, investment flows into commodities slowed "markedly" in the second quarter—even as, we would add, scrutiny of non-commercial commodities trading was ramping up.

In our view, it is hard not to credit new investors such as hedge funds and institutional investors (however one wishes to label them) with at least some role in determining commodity prices. For example, the shape of the oil futures curve, with sharp contango at the short end followed by steadily declining futures prices at the farther end of the curve, suggests on its face that indexing has some impact (Table T). However, the real question remains how big the role of speculators is. Whatever the answer, as a practical matter we recognize that as long as prices remain high, the role of non-commercial investors will remain a major political issue. In the end, the U.S. Congress, which has been the political entity most actively examining the issue, may require changes such as greater reporting requirements,[8] restrictions on investing by at least some investors (particularly pension funds), or an increase in margin requirements.

[7] For a sampling of opinions, see, for example, Michael W. Masters, Testimony before the Permanent Subcommittee on Investigation, Senate Committee on Homeland Security and Governmental Affairs (May 20, 2008); Anatole Kaletsky, "They're Wrong About Oil, by George," *The Times* (May 22, 2008); Written Testimony of Jeffrey Harris (Chief Economist of Commodities Futures Trading Commission] Before the Senate Committee on Homeland Security and Governmental Affairs (May 20, 2008); Morgan Stanley, "The Commodity Boom: Speculative Bubble or Secular Increase in Demand" (June 2008); Deutsche Bank, "Commodities Quarterly" (June 27, 2008); and Goldman Sachs, "Speculators, Index Investors, and Commodity Prices" (June 29, 2008).

[8] In fact, on June 17, 2008, the CFTC imposed position and accountability limits on the West Texas Intermediate crude oil contracts traded on London's ICE Futures Europe exchange. Of particular interest for those monitoring potential regulatory changes will be a CFTC report that is supposed to be released in September 2008.

Some Risks to Consider

Are the risks in commodity investments greater now than "normal"? We would answer "Yes," based on the fact that the commodity boom has lasted for over six years and prices (especially in energy) are now historically high, on slowing global growth, and on greater-than-usual uncertainty regarding possible government intervention in the markets.

With respect to price risk, despite the strong supply and demand factors behind the bull run, the fact that returns have actually been higher over the last 18 months than during the first years of the boom (Table U) suggests that some commodity prices, while still well below real historical highs (with the important exception of oil), may have gotten ahead of fundamentals. And while we cannot forecast how long the current commodity boom will last—over the last two centuries past booms (and busts) have averaged about 18 years each according to one analyst[9]—we do know that a good percentage of returns may now be off the table for those just ramping up their investments in this sector. Moreover, on a relative basis S&P GSCI™ returns are now more volatile (i.e., riskier) than usual compared with those of the S&P 500 and Lehman Brothers Government/Credit Bond Index. Finally, investors should never forget that this sector is marked by long busts as well as long booms. Thus, after posting an AACR of 20.3% from 1970 through 1980, the S&P GSCI™ returned only 5.4% annually over the next 18 years, far less than either the S&P 500 (16.9%) or the Lehman Brothers Government/Credit Bond Index (11.0%).

A second major risk is the impact of higher commodity prices on global growth, which would most likely manifest itself through the response of central banks to higher inflation. Thanks to the commodity boom, global consumer price inflation is now running at an annual pace of nearly 5.5%, compared with less than 4% in recent years.[10] If higher inflation leads to higher interest rates that subsequently brake economic growth, the implications for commodities (as well as most other asset classes) may be negative given the normal downturn of commodity prices during economic slowdowns. For example, rising commodity prices have already led to increases in Asian interest rates, potentially curbing growth rates and dampening demand for raw materials. Indeed, the IMF now estimates that global growth will fall by a full percentage point to about 3.75% in 2008 and 2009.

Direct government responses to the effects of the commodity boom, meanwhile, are creating significant uncertainties. The sharp rise in commodity prices has created social unrest in many emerging markets, which not only potentially changes the risk-return profile of such markets, but has also led to government polices such as higher tariffs and price subsidies that distort the way the market functions. The implications for commodities investors are unclear. While such measures may help keep commodity prices

[9] Others have calculated that commodity cycles last even longer.

[10] It is worth noting here that if inflationary pressures have expanded beyond food and energy costs, a phenomenon of which there appears to be increasing evidence, inflation could rise even in the absence of further material increases in commodity prices. Also, although commodities have traditionally served as an effective hedge against inflation, higher unexpected inflation is negative for bonds and equities.

high, benefiting investors with direct exposure, they also may enhance the possibility of a sharp price correction later.[11]

There is also the possibility of regulation specifically aimed at commodities trading, especially since both the major U.S. presidential candidates have attacked commodity speculation. It is impossible at this stage to predict the effect of such measures, but they would likely prove negative for commodity allocations[12]—although possibly a boon for energy and materials stocks, to which investors could conceivably shift funds. Of course, government resistance to foreign investment in these sectors could increase even further, creating further problems. At this juncture, all we can conclude is that all bets are off if severe restrictions are placed on commodity investments.

Conclusion

Despite short-term price risk, especially in oil, commodity prices are likely to remain high for some time given both the length of commodities cycles and long-term supply and demand fundamentals, particularly the continued rapid development of emerging markets (most notably China and India). Indeed, the IMF believes that "policies will need to adjust both to the reality of permanent relative [commodity] price shifts and, in some cases, to a broader resurgence in overall inflation." Commodity allocations should therefore continue to contribute positively to investment performance for the foreseeable future. Of course, the laws of economics have not changed; at some point, the wheel will turn and, as producers, consumers, middle men, and governments respond to high prices, there will be a downturn.

In the meantime, given commodities' meteoric rise and related price risk, when allocations exceed target levels investors should be careful to rebalance to capture gains and maintain strategic target allocations. Investors also should carefully monitor the extent of exposure to commodities within their equity portfolios; for example, the energy and materials sectors now account for a combined 24.0% of the MSCI All Country World Index, compared with 10.9% at the start of 2002 and 17.7% a year ago. Equity-related commodity exposure is particularly high in the United Kingdom, with the energy and materials sectors now accounting for a combined 33.6% of the FTSE All-Share Index.

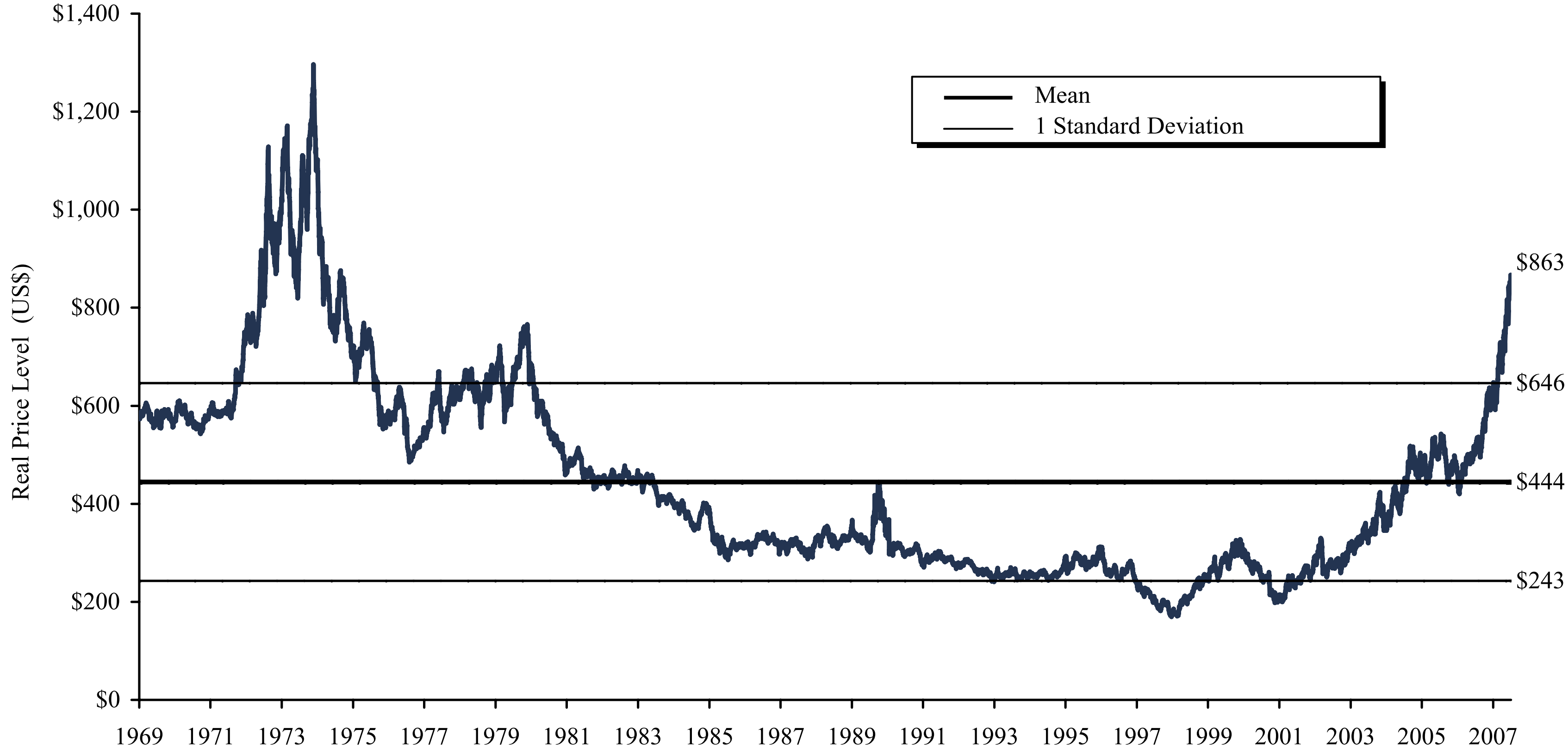
Finally, from a strategic perspective, the role of commodities for portfolio diversification and protection against unanticipated inflation remains intact, both for new investors in this asset class as well as for those already invested. Nevertheless, despite the fact that oil prices are more highly correlated with inflation than are those of commodities as a whole, because of high energy price risk we advocate focusing today on less energy-centric commodity vehicles (both active and passive). In sum, six years into the commodity boom and despite increasing risk factors, there remains a strong rationale for a properly conceptualized and managed portfolio allocation to commodities.

[11] From a broader investment perspective, one could argue that such measures, by reducing the possibility of social unrest, may be good for the investment climate generally.
[12] It is worth noting, however, that the effect of restrictions on commodity index–linked trading in the United States could still be overwhelmed by an increase in such trading in Europe, where it is already significant, and Asia, where it apparently is not.

Table A

S&P GSCI™ REAL PRICE LEVELS

As of June 30, 2008



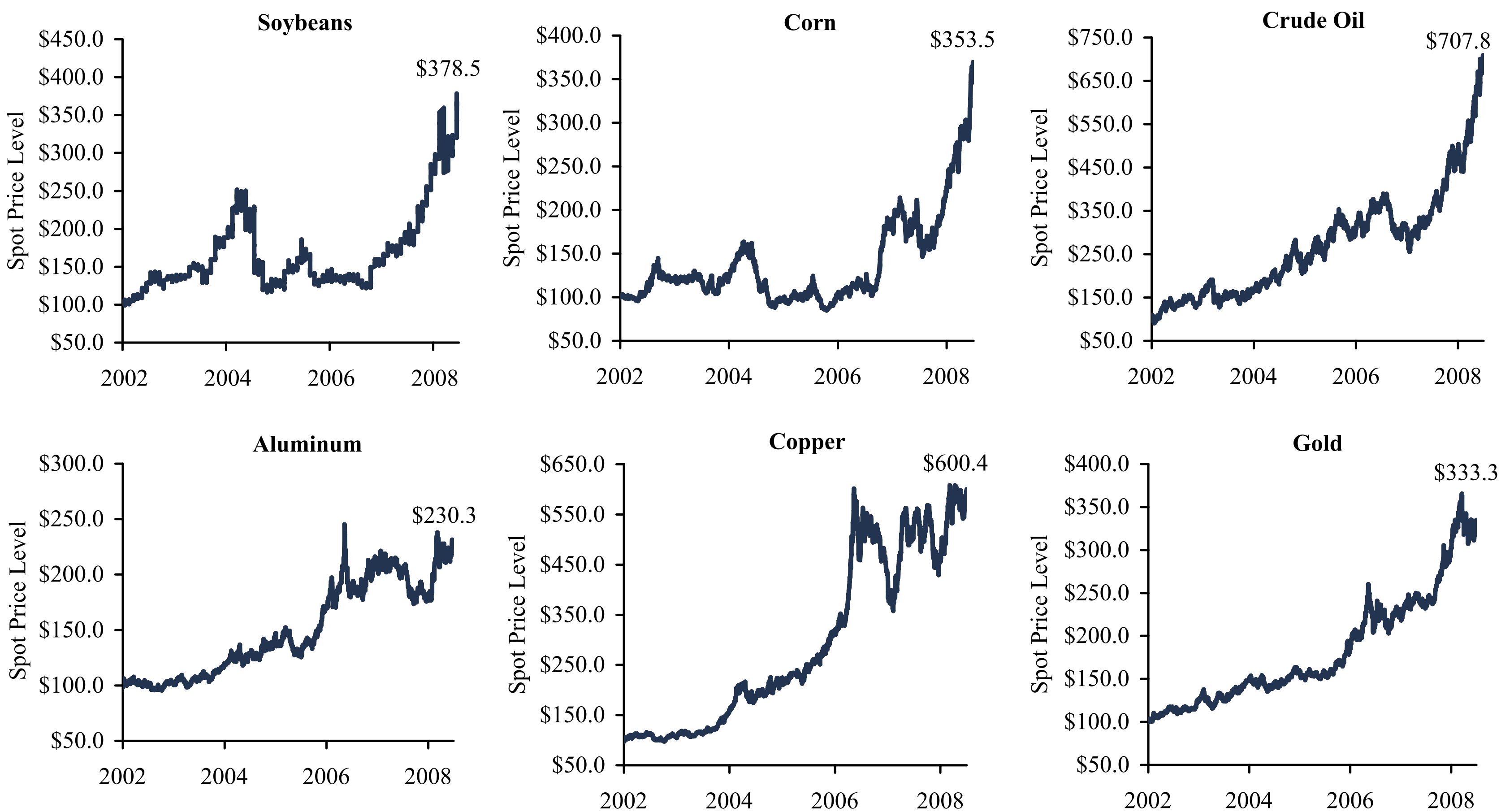
Sources: Standard & Poor's and Thomson Datastream.

Note: Chart constructed using daily S&P GSCI™ price levels adjusted to May 2008 dollars.

Table B

CUMULATIVE WEALTH OF MAJOR COMMODITY SPOT PRICES

January 1, 2002 – June 30, 2008



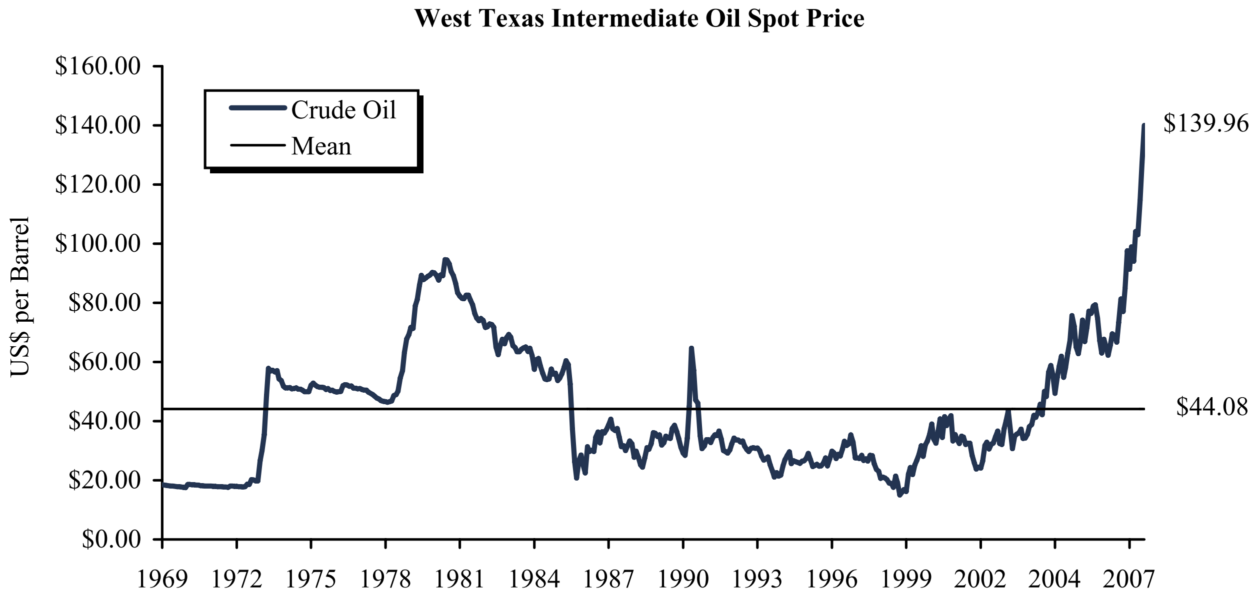
Source: Thomson Datastream.

Notes: Index levels rebased to 100 as of December 31, 2001. Charts are in U.S. dollars.

Table C

CRUDE OIL AND GOLD SPOT PRICES IN REAL TERMS

December 31, 1969 – June 30, 2008



Sources: Global Financial Data, Inc., Thomson Datastream, and U.S. Department of Labor - Bureau of Labor Statistics.

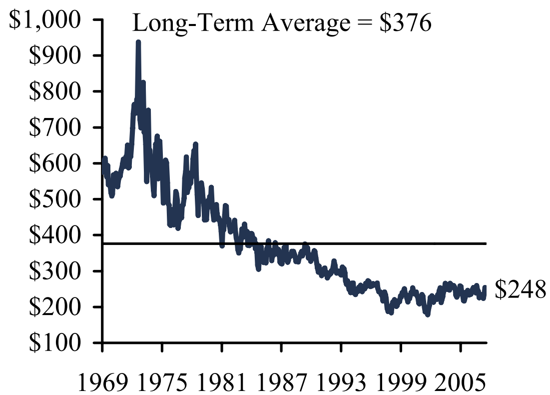
Note: Prices are in May 2008 dollars.

Table D

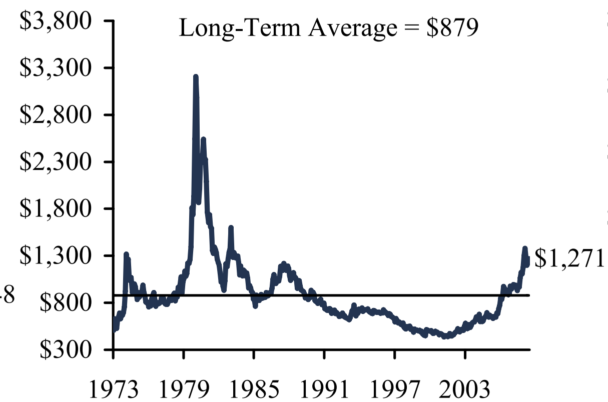
HISTORICAL REAL PRICES OF S&P GSCI™ INDICES

As of June 30, 2008

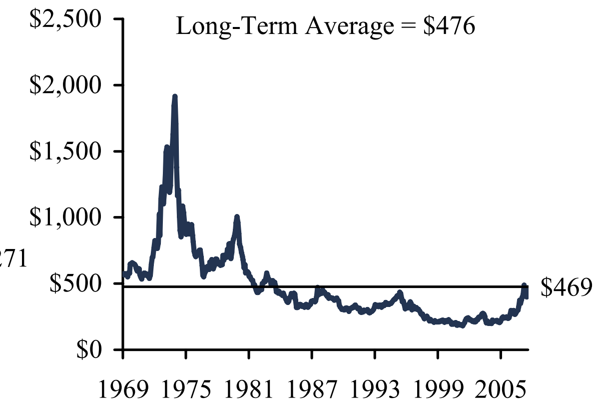
S&P GSCI™ Livestock Spot



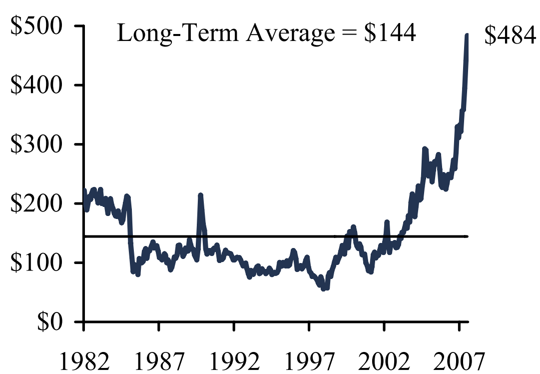
S&P GSCI™ Precious Metals Spot



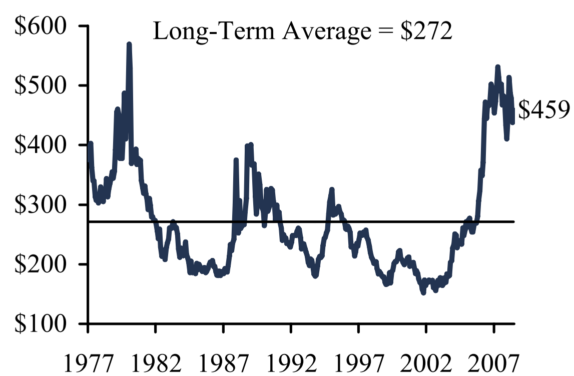
S&P GSCI™ Agricultural Spot



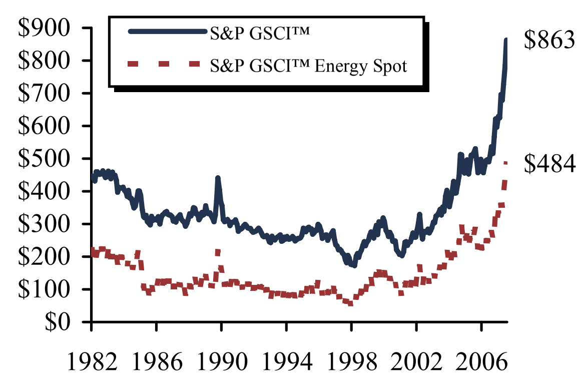
S&P GSCI™ Energy Spot



S&P GSCI™ Industrial Metals Spot



S&P GSCI™ Spot vs S&P GSCI™ Energy Spot



Sources: Standard & Poor's, Thomson Datastream, and U.S. Department of Labor - Bureau of Labor Statistics.

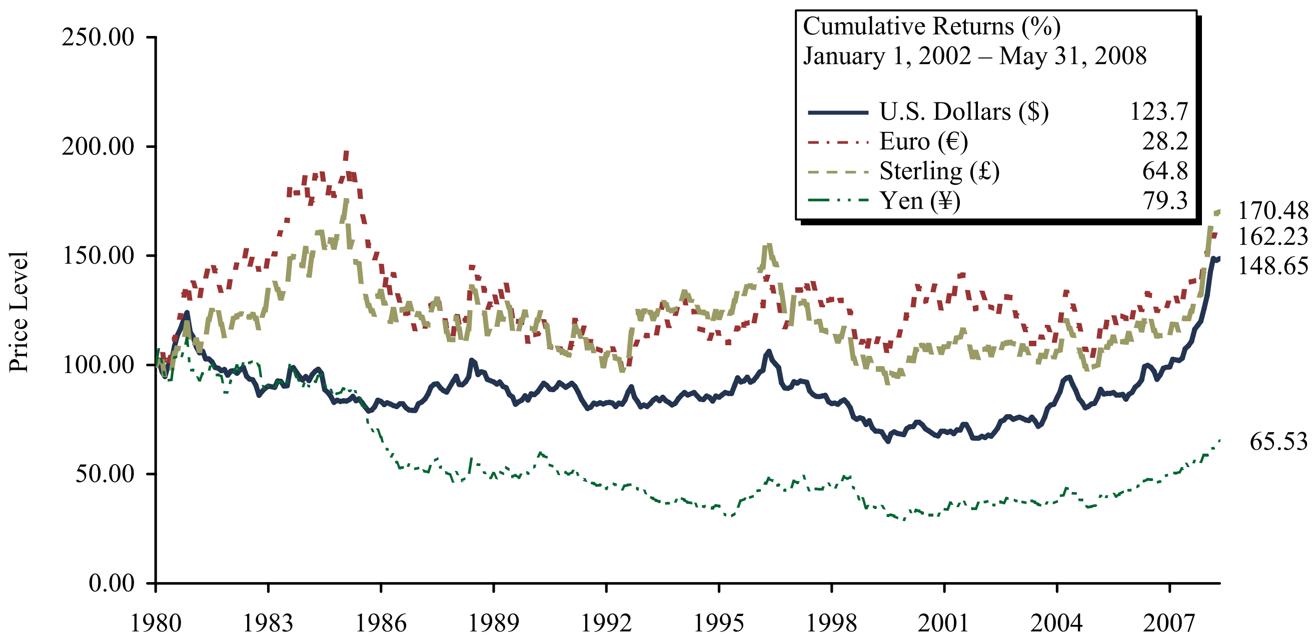
Note: Charts constructed using monthly price index levels in U.S. dollars adjusted to May 2008 dollars.

Table E

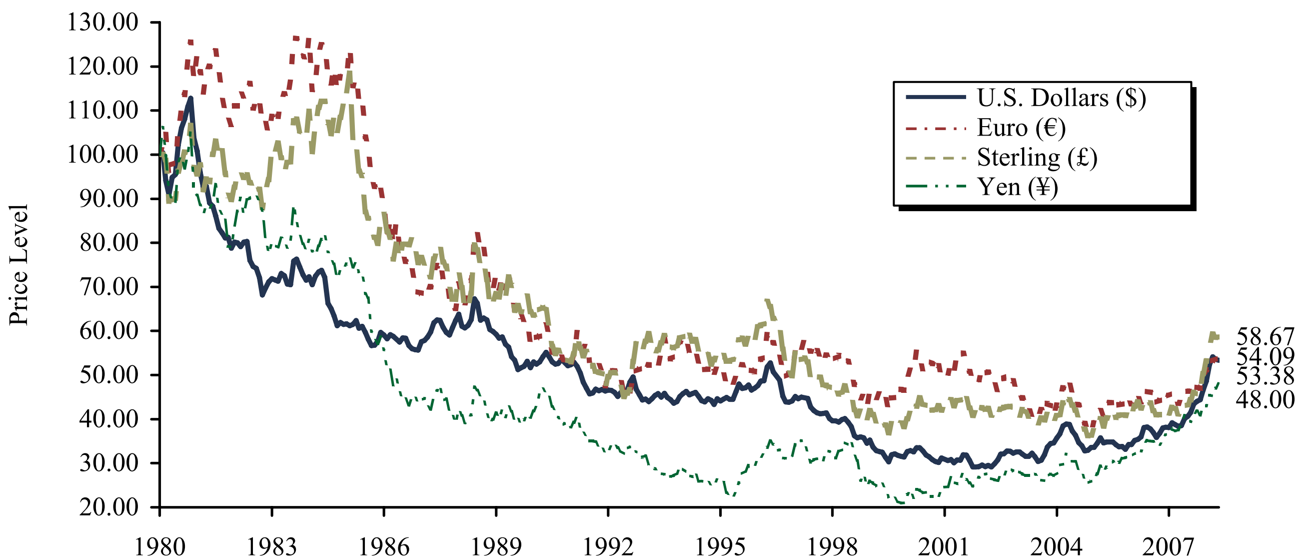
FOOD COMMODITY PRICE LEVELS

January 1, 1980 – May 31, 2008

Nominal



Real



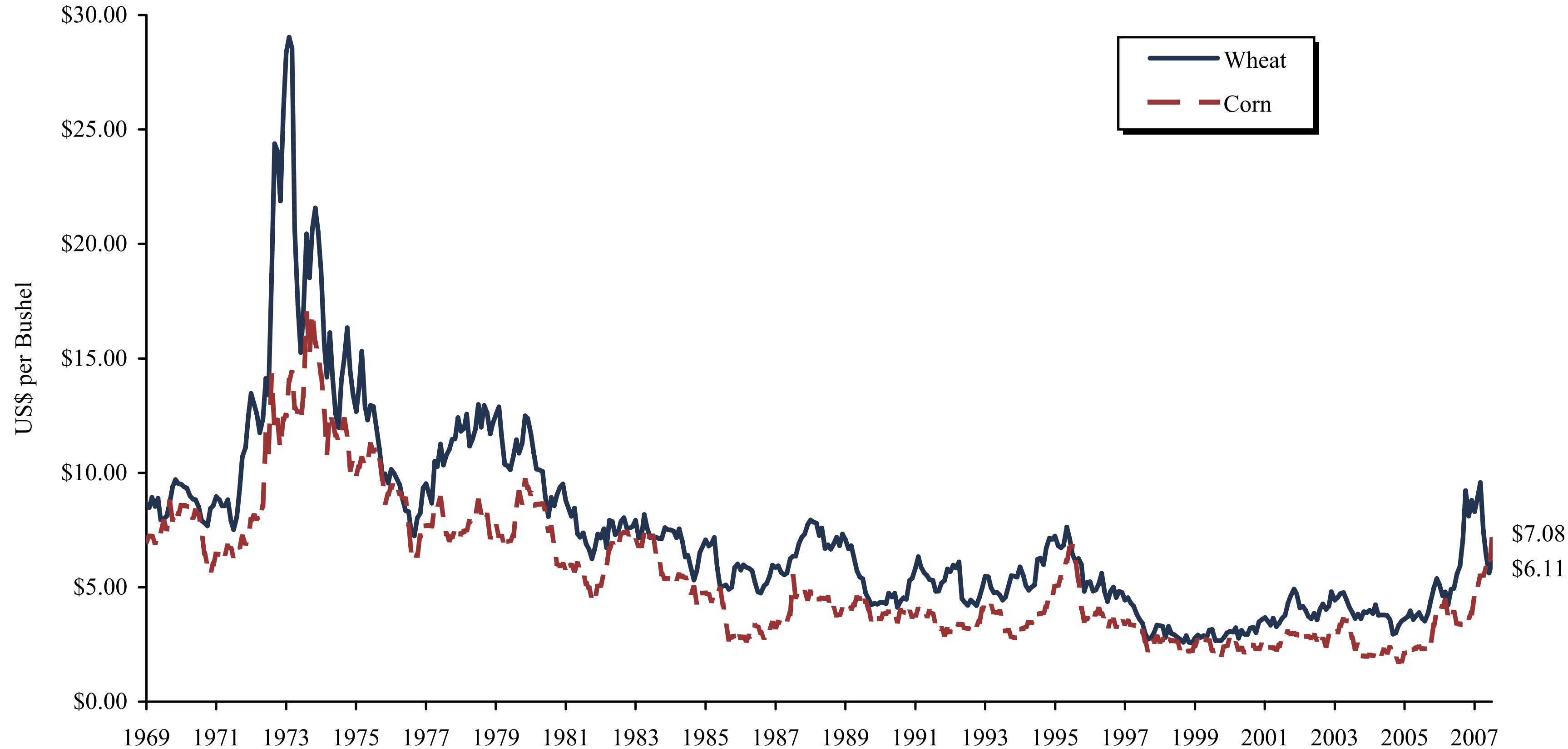
Sources: Bloomberg, L.P., International Monetary Fund, *International Financial Statistics,* and Thomson Datastream.

Note: Index levels rebased to 100 as of January 31, 1980.

Table F

WHEAT AND CORN SPOT PRICES IN REAL TERMS

December 31, 1969 – June 30, 2008



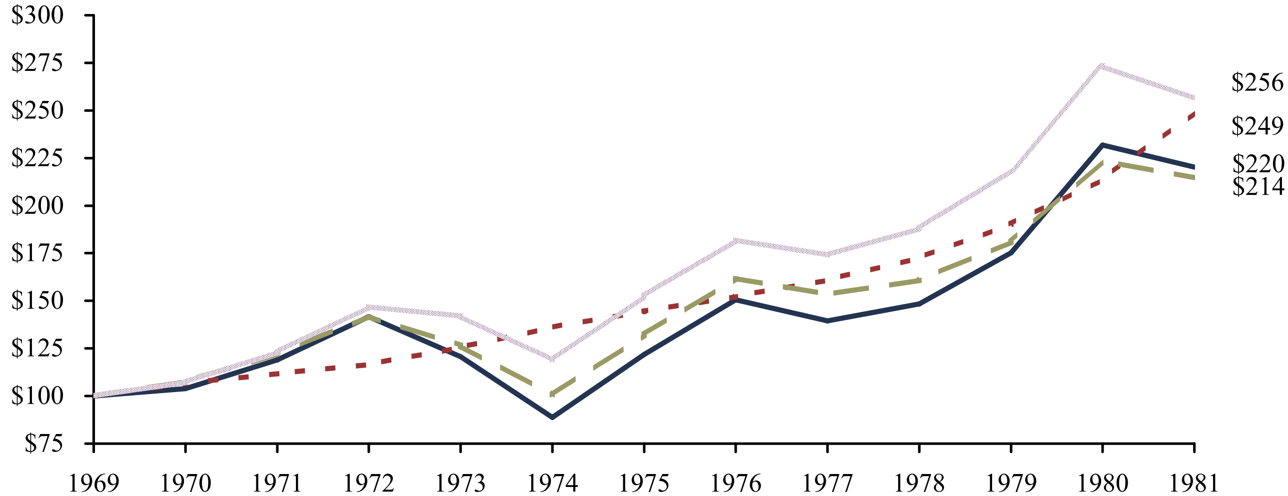
Sources: Global Financial Data, Inc. and U.S. Department of Labor - Bureau of Labor Statistics.

Note: Prices are in May 2008 dollars.

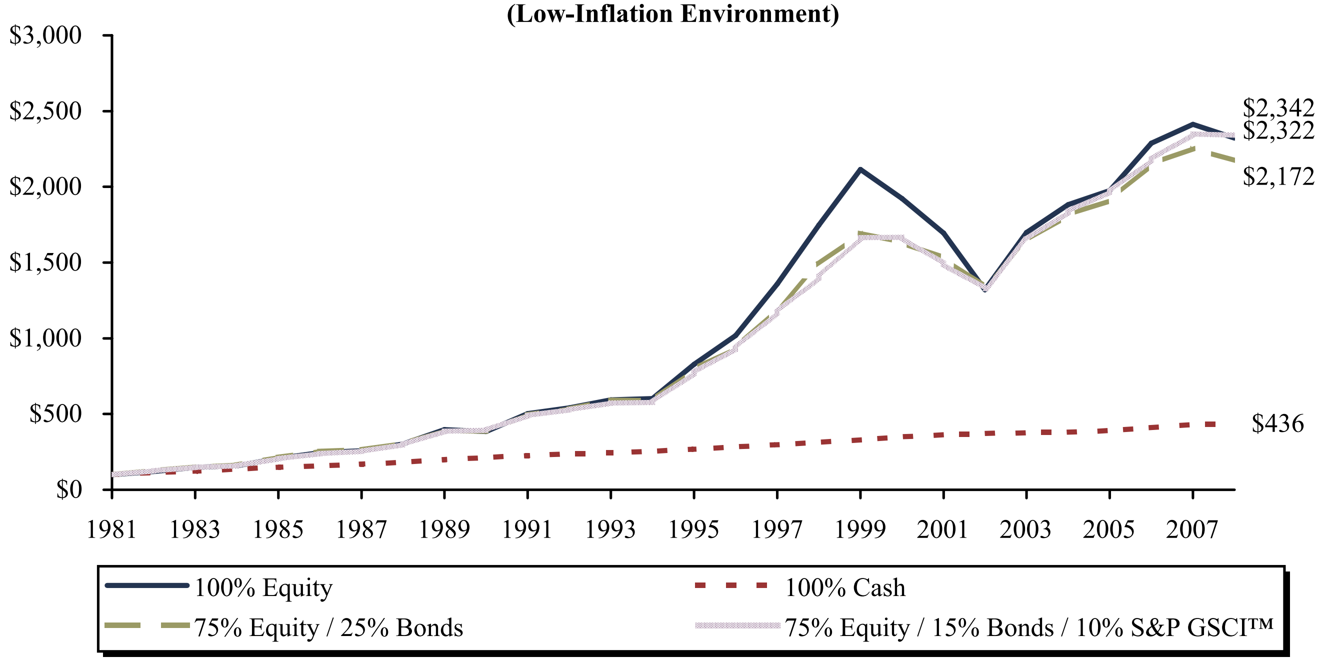
Table G

DIVERSIFICATION BENEFITS OF INCLUDING COMMODITIES IN A PORTFOLIO DURING PERIODS OF HIGH AND LOW INFLATION (U.S. INVESTOR)

January 1, 1970 – December 31, 1981
(High-Inflation Environment)



January 1, 1982 – May 31, 2008
(Low-Inflation Environment)



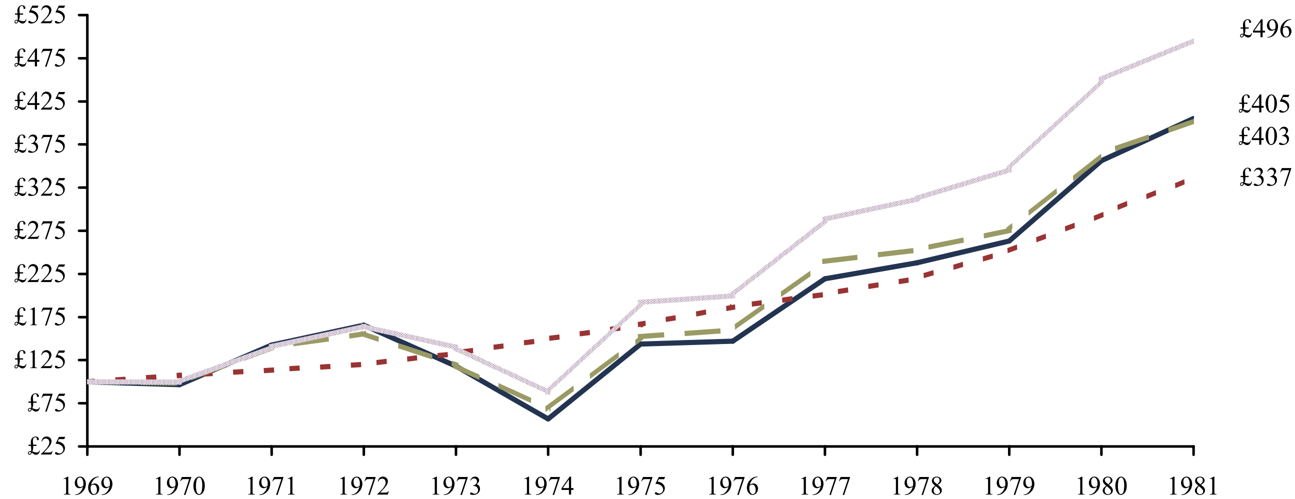
Sources: Citigroup Global Markets, Federal Reserve, Merrill Lynch & Co., Standard & Poor's, and Thomson Datastream.

Notes: Equity represents returns of the S&P 500 Index. Bonds represent returns of the Citigroup High-Grade AAA/AA Corporate Bond Index. Cash represents returns calculated using yield data from the Federal Reserve from 1970 to 1977 and the Merrill Lynch 91-Day Treasury Bill Index from 1978 to present.

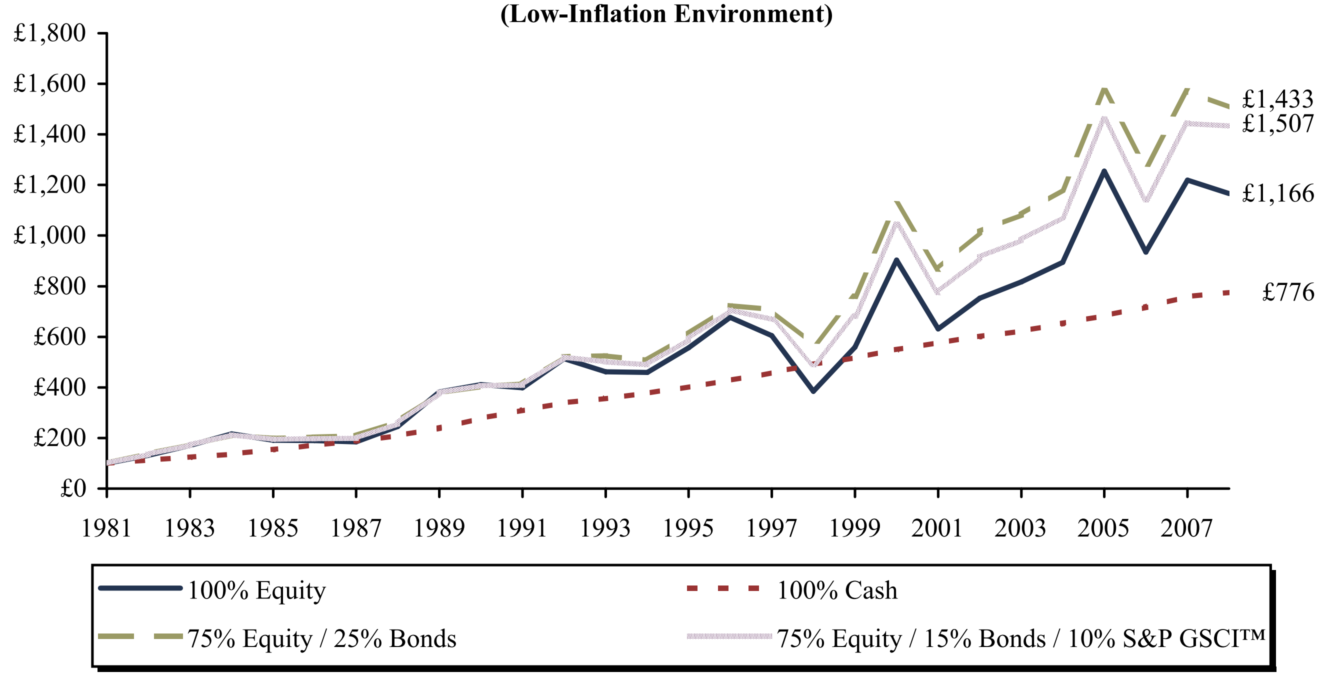
Table H

DIVERSIFICATION BENEFITS OF INCLUDING COMMODITIES IN A PORTFOLIO DURING PERIODS OF HIGH AND LOW INFLATION (U.K. INVESTOR)

January 1, 1970 – December 31, 1981
(High-Inflation Environment)



January 1, 1982 – May 31, 2008
(Low-Inflation Environment)

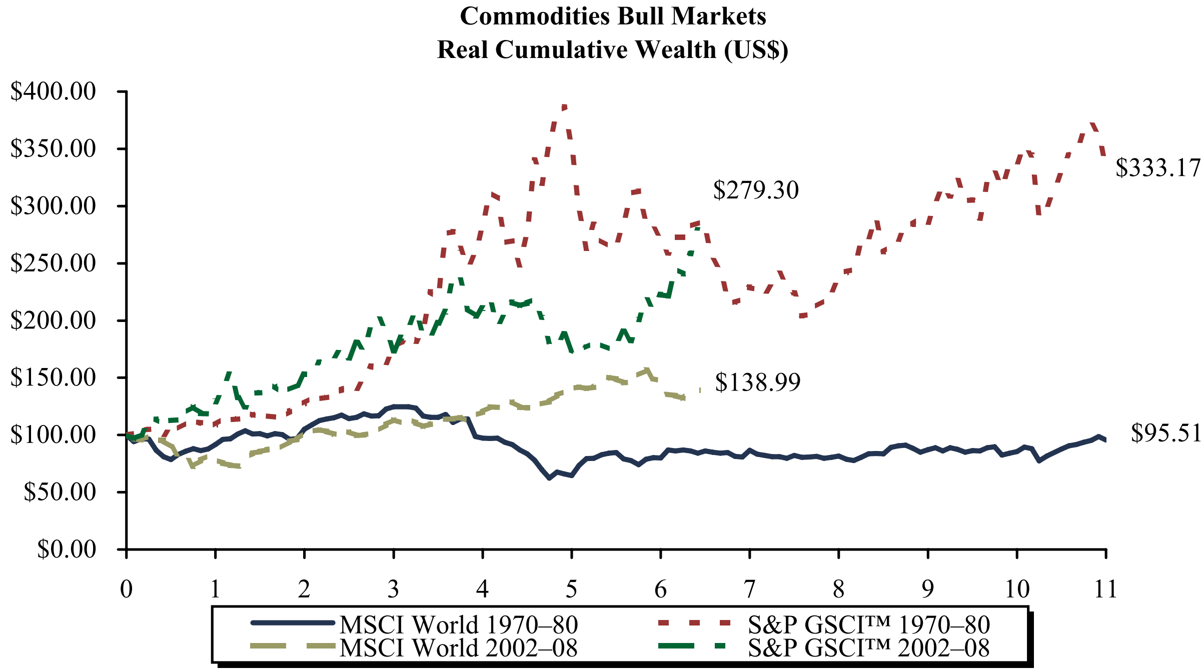


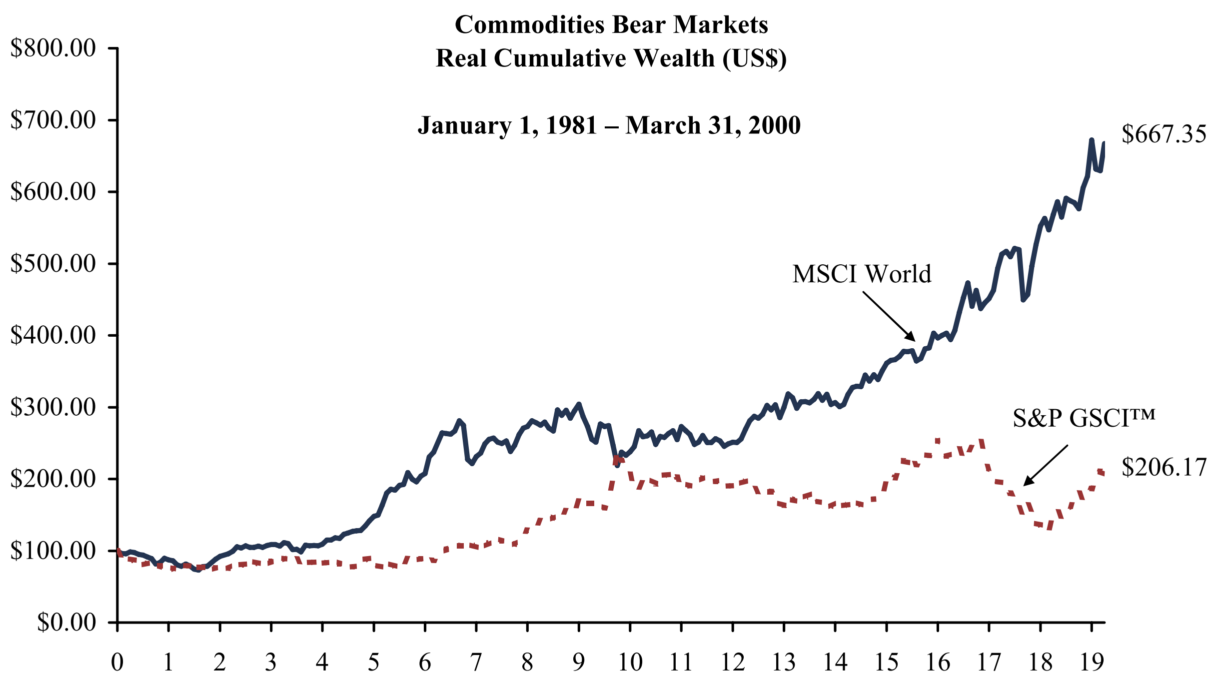
Sources: Barclays Capital, FTSE International Limited, Standard & Poor's, and Thomson Datastream.

Notes: Equity represents returns of the FTSE All-Share Index. Bonds represent returns of the Barclays Long-Dated Gilt from 1970 to 1975 and the FTSE British Government Over 15 Years Index from 1976 to present. Cash represents returns of the three-month U.K. Treasury Bill.

Table I

**COMMODITY BULL AND BEAR MARKETS:
REAL CUMULATIVE WEALTH OF THE S&P GSCI™ AND THE MSCI WORLD INDEX**





Sources: MSCI Inc., Standard & Poor's, Thomson Datastream, and U.S. Department of Labor - Bureau of Labor Statistics. MSCI data provided "as is" without any express or implied warranties.

Note: Data for 2008 are through May 31.

Table J

U.S. CORRELATION MATRIX:
COMMODITY INDICES, CAPITAL MARKET INDICES, INFLATION AND COMMODITIES

January 1, 1973 – March 31, 2008

	S&P GSCI™	S&P 500	MSCI EAFE	LB Govt/ Credit	91-Day T-Bills	U.S. CPI-U	G7 CPI	U.S. PPI	S&P 500 Energy	Oil	Gas	Gold	Soybeans
S&P GSCI™	1.00												
S&P 500	-0.31	1.00											
MSCI EAFE	-0.21	0.70	1.00										
LB Govt/Credit	-0.14	0.24	0.19	1.00									
91-Day T-Bills	-0.01	-0.01	-0.08	0.22	1.00								
U.S. CPI-U	0.25	-0.22	-0.25	-0.24	0.46	1.00							
G7 CPI	0.16	-0.14	-0.18	-0.14	0.52	0.92	1.00						
U.S. PPI	0.38	-0.24	-0.23	-0.26	0.26	0.76	0.74	1.00					
S&P 500 Energy	0.15	0.61	0.47	0.07	-0.08	0.02	0.00	-0.01	1.00				
Oil	0.59	-0.27	-0.30	-0.18	0.00	0.27	0.21	0.27	0.20	1.00			
Gas	0.20	-0.03	0.04	0.07	-0.04	0.00	0.01	0.17	0.15	0.07	1.00		
Gold	0.21	-0.08	0.16	0.03	-0.01	0.23	0.25	0.35	0.08	0.21	0.06	1.00	
Soybeans	0.26	-0.18	-0.05	-0.06	-0.10	0.01	0.00	0.17	-0.10	-0.11	-0.03	0.11	1.00

Sources: Lehman Brothers, Inc., Merrill Lynch & Co., MSCI Inc., Oil & Gas Journal Energy Database, Standard & Poor's, Standard & Poor's Compustat, Thomson Datastream, U.S. Department of Labor - Bureau of Labor Statistics, and *The Wall Street Journal.* MSCI data are provided "as is" without any express or implied warranties.

Note: The 91-Day Treasury Bill Index represents returns calculated using yield data from the Federal Reserve from 1970 to 1977 and the Merrill Lynch 91-Day Treasury Bill Index from 1978 to present.

Table K

U.K. CORRELATION MATRIX:
COMMODITY INDICES, CAPITAL MARKET INDICES, INFLATION AND COMMODITIES

January 1, 1973 – March 31, 2008

	S&P GSCI™	FTSE All-Share	MSCI World ex U.K.	U.K. Gilts	U.K. T-Bills	U.K. Inflation	G7 CPI	Oil	Gas	Gold	Soybeans
S&P GSCI™	1.00										
FTSE All-Share	-0.18	1.00									
MSCI World ex U.K.	-0.08	0.61	1.00								
U.K. Gilts	-0.20	0.46	0.13	1.00							
U.K. T-Bills	0.06	0.05	0.02	0.07	1.00						
U.K. Inflation	0.00	0.10	0.03	0.00	0.55	1.00					
G7 CPI	0.17	0.03	0.27	0.00	0.19	0.14	1.00				
Oil	0.58	-0.24	-0.19	-0.25	0.08	0.14	0.03	1.00			
Gas	0.21	-0.04	0.04	0.08	-0.03	0.03	0.14	0.09	1.00		
Gold	0.19	-0.18	0.06	-0.13	0.04	0.18	0.13	0.21	0.03	1.00	
Soybeans	0.35	-0.09	0.03	-0.05	-0.05	-0.05	0.10	-0.06	-0.02	0.11	1.00

Sources: FTSE International Limited, MSCI Inc., Standard & Poor's, Thomson Datastream, and *The Wall Street Journal.* MSCI data are provided "as is" without any express or implied warranties.

Notes: U.K. gilts represent returns of the FTSE British Government Over 15 Years Index. U.K. T-Bills represent returns of the three-month U.K. Treasury Bill. U.K. inflation data are represented by the U.K. RPI for the period 1973 to third quarter 2003 and the U.K. CPI for the period fourth quarter 2003 to the present, as the official U.K. measure of inflation changed to the CPI data series in December 2003. Total returns for MSCI developed markets indices are net of dividend taxes. Data are denominated in pounds sterling.

Table L

CHARACTERISTICS OF MAJOR COMMODITY INDICES

As of March 31, 2008

	Dow Jones-AIG Commodity Index	S&P GSCI™ Commodity Index	Lite Energy S&P GSCI™ Commodity Index	Deutsche Bank Liquid Commodity Index	Rogers International Commodity Index
Energy	35%	74%	41%	55%	44%
Livestock	7%	3%	7%	0%	3%
Crops	28%	13%	29%	23%	32%
Industrial Metals	21%	8%	18%	13%	7%
Precious Metals	10%	2%	5%	10%	14%
Number of Commodities	19	24	24	6	36
Weighting	Liquidity and Production	World Production Quantity	World Production Quantity	Constant Weighting by Sector	World Consumption Patterns
Weighting Changes	Annually Dollar Weight	Annually Dollar Weight	Annually Dollar Weight	Annually Fixed Weight	Annually Dollar Weight
Rebalancing	Annually	None	None	Annually	Monthly
Returns					
Price	Yes	Yes	Yes	Yes	Yes
Roll Yield	Yes	Yes	Yes	Yes	Yes
Collateral Yield	Yes	Yes	Yes	Yes	Yes
Return Series Inception Date	January 1, 1991	January 1, 1970	January 1, 1970	December 2, 1988	January 1, 1984

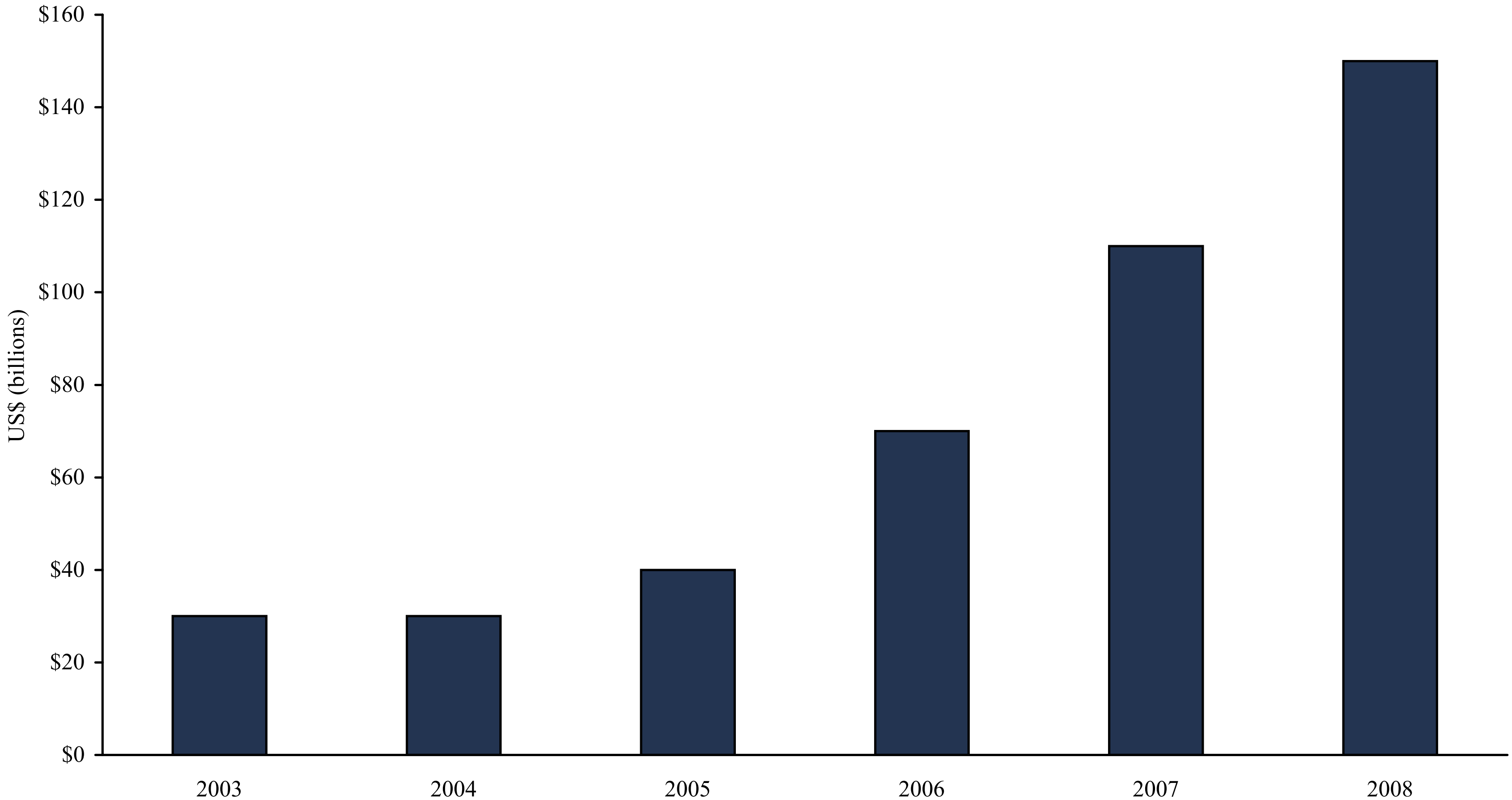
Sources: Deutsche Bank AG, Dow Jones & Company, Inc., Rogers Raw Materials, and Standard & Poor's.

Notes: All weightings are calculated using arithmetic averages. Numbers may not total due to rounding.

Table M

TOTAL ASSETS INDEXED TO S&P GSCI™ INDEX

2003–08



Source: Standard & Poor's.

Note: Data for 2008 represent estimated values as of December 31, 2007.

Table N

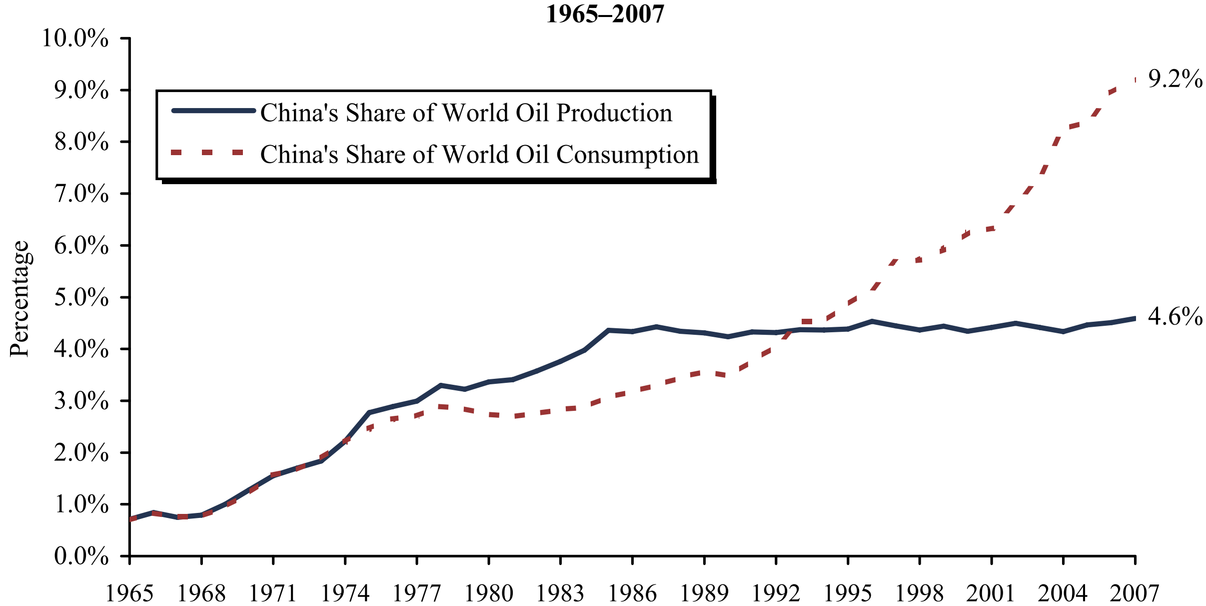
CHINESE ENERGY PRODUCTION AND CONSUMPTION

Increase in Chinese Energy Production
As a Percentage of Increase in World Production (Year-Over-Year)

1999–2007

China's Oil Usage and Production

1965–2007



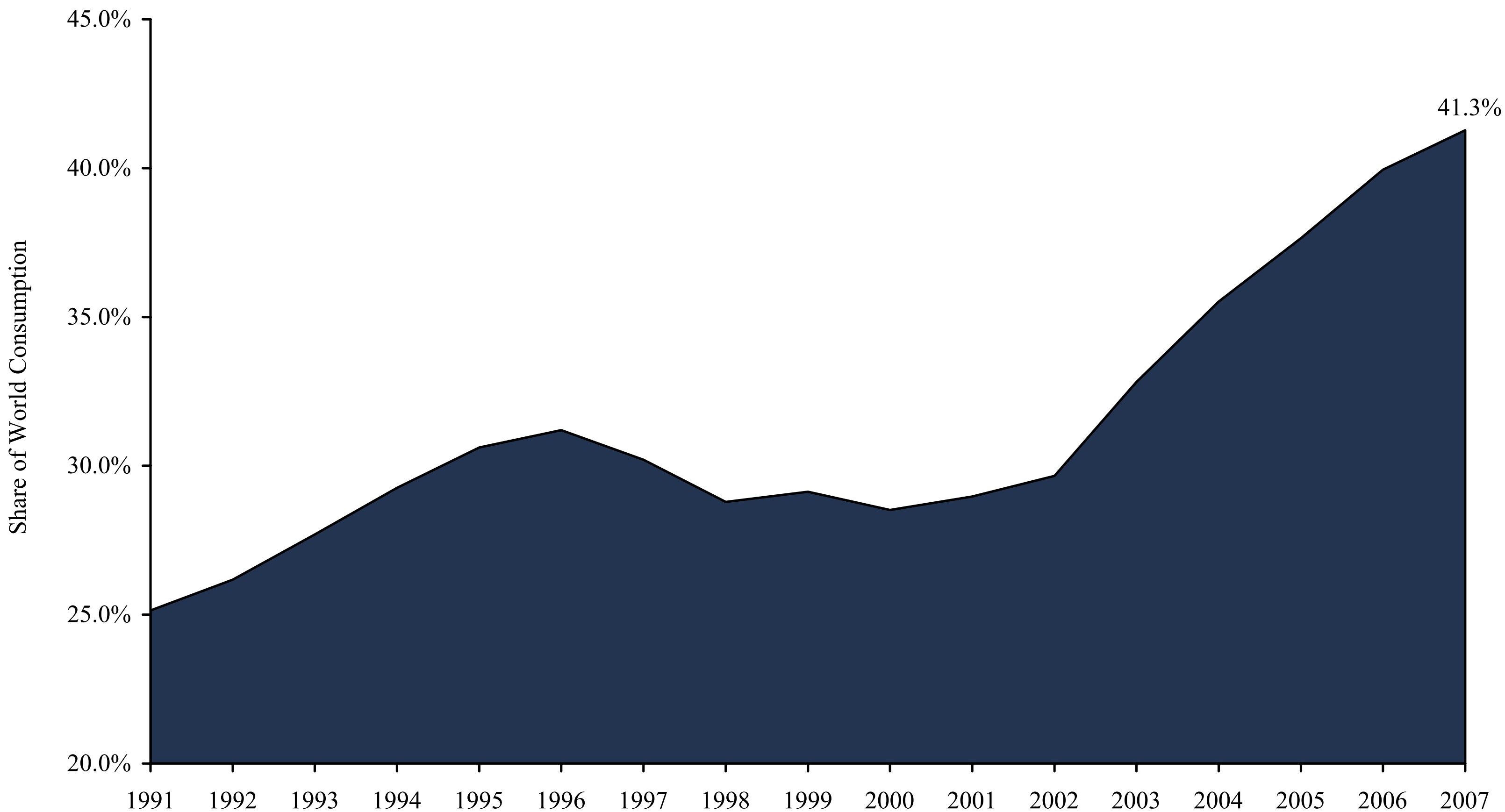
Source: BP Statistical Review of World Energy 2008.

Note: Energy production percentages are based on millions of tonnes of oil equivalent.

Table O

CHINA'S SHARE OF WORLD COAL CONSUMPTION

1991–2007

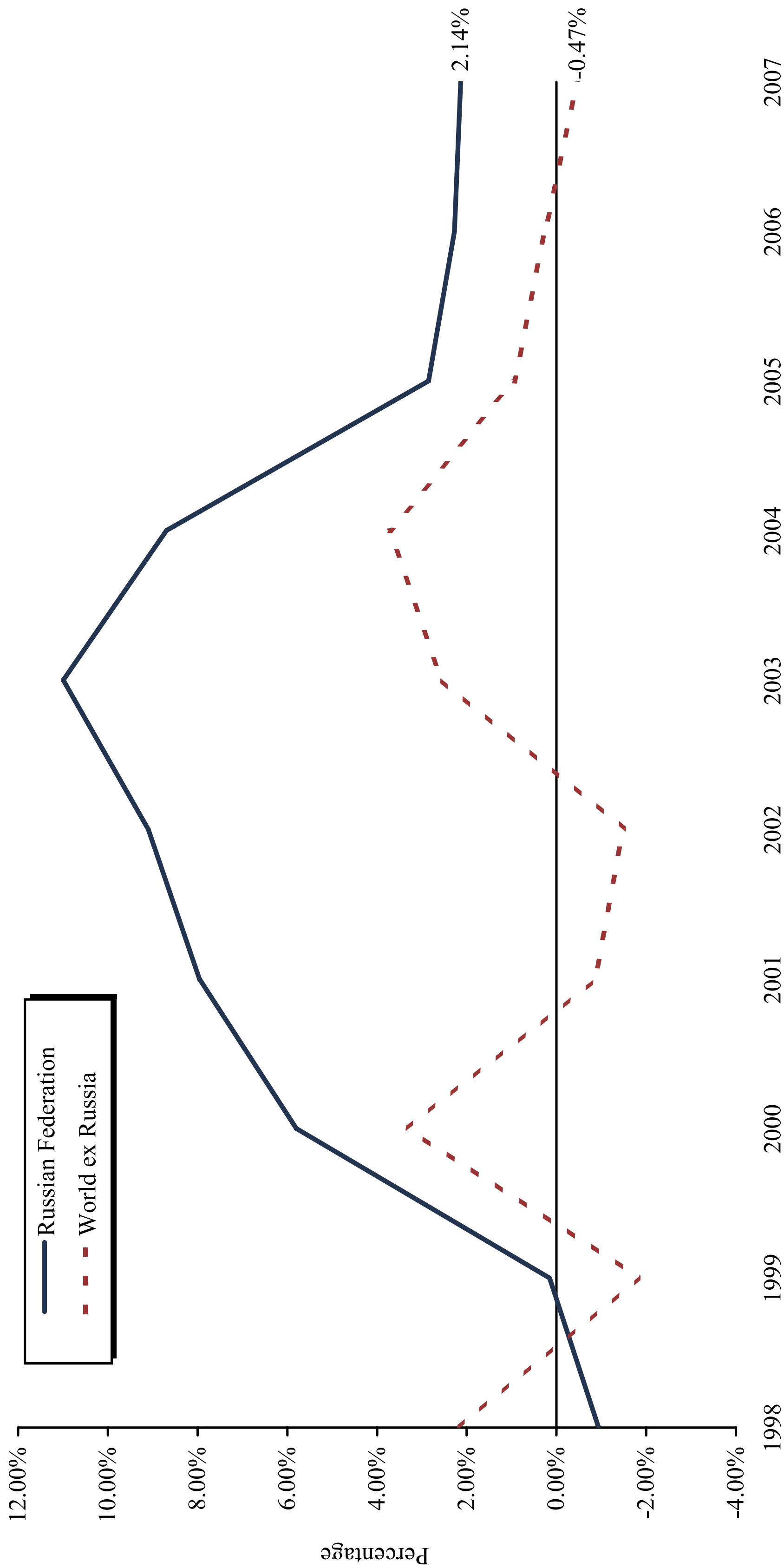


Source: BP Statistical Review of World Energy 2008.

Table P

ANNUAL PERCENT CHANGE IN RUSSIA AND WORLD EX RUSSIA OIL PRODUCTION

1998–2007

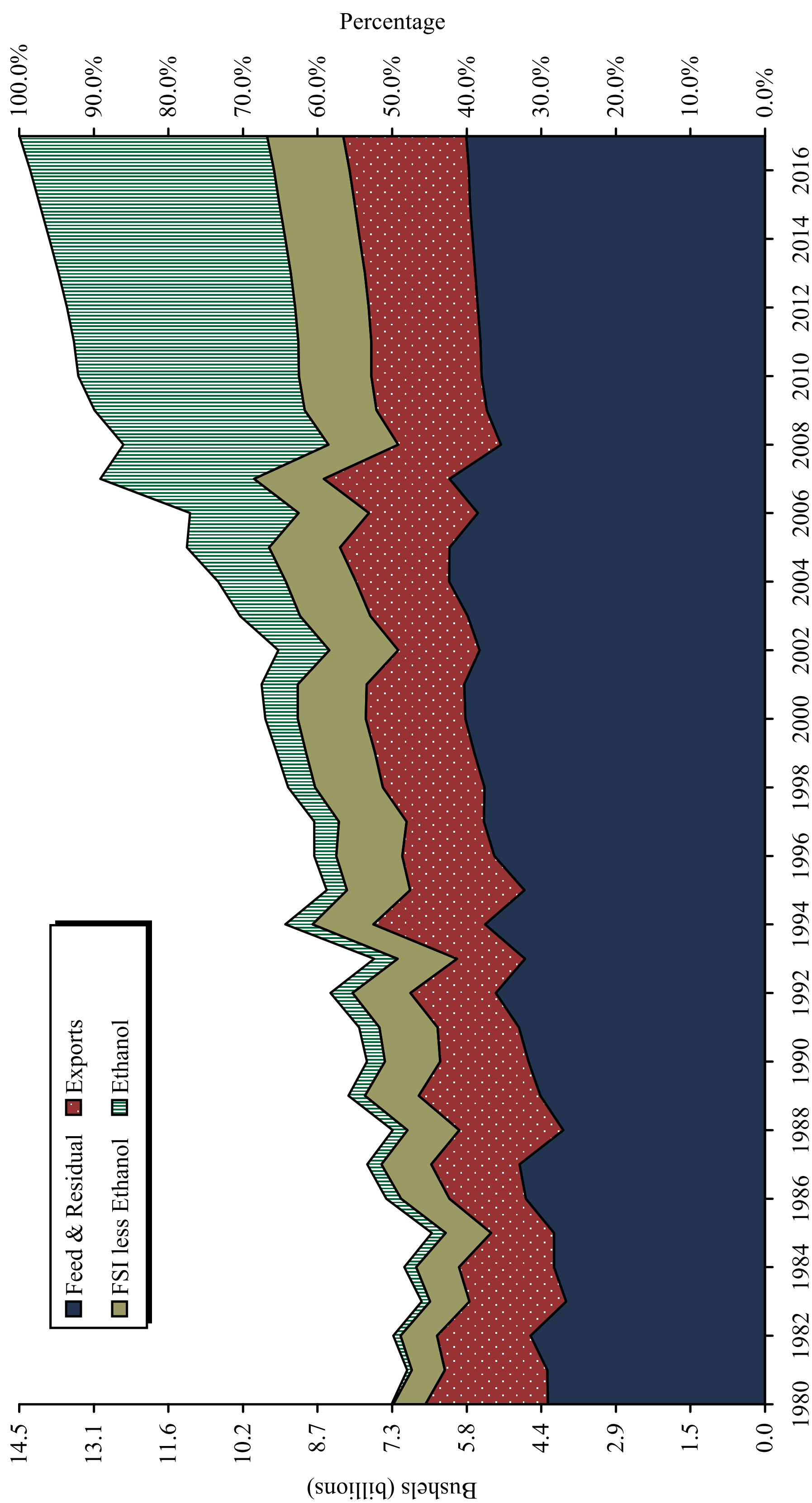


Source: BP Statistical Review of World Energy 2008.

Table Q

PAST AND PROJECTED USE OF U.S. GROWN CORN

1980–2017



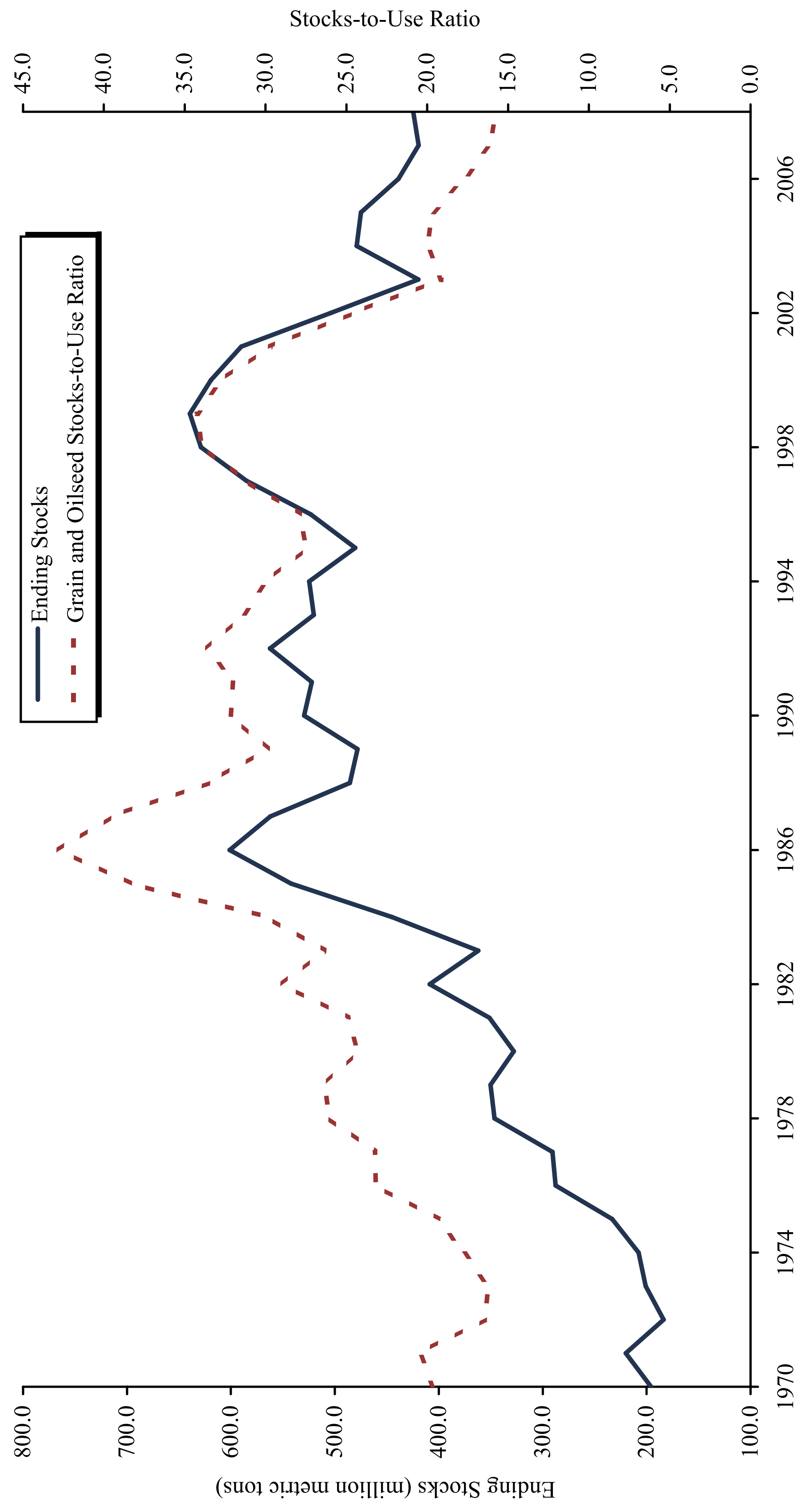
Sources: USDA Feed Grain database and USDA Agricultural Projections to 2017.

Notes: FSI less ethanol stands for food, seed, and industrial less ethanol. USDA projections released February 2008.

Table R

TOTAL WORLD GRAIN AND OILSEEDS ENDING STOCKS AND STOCKS-TO-USE RATIO

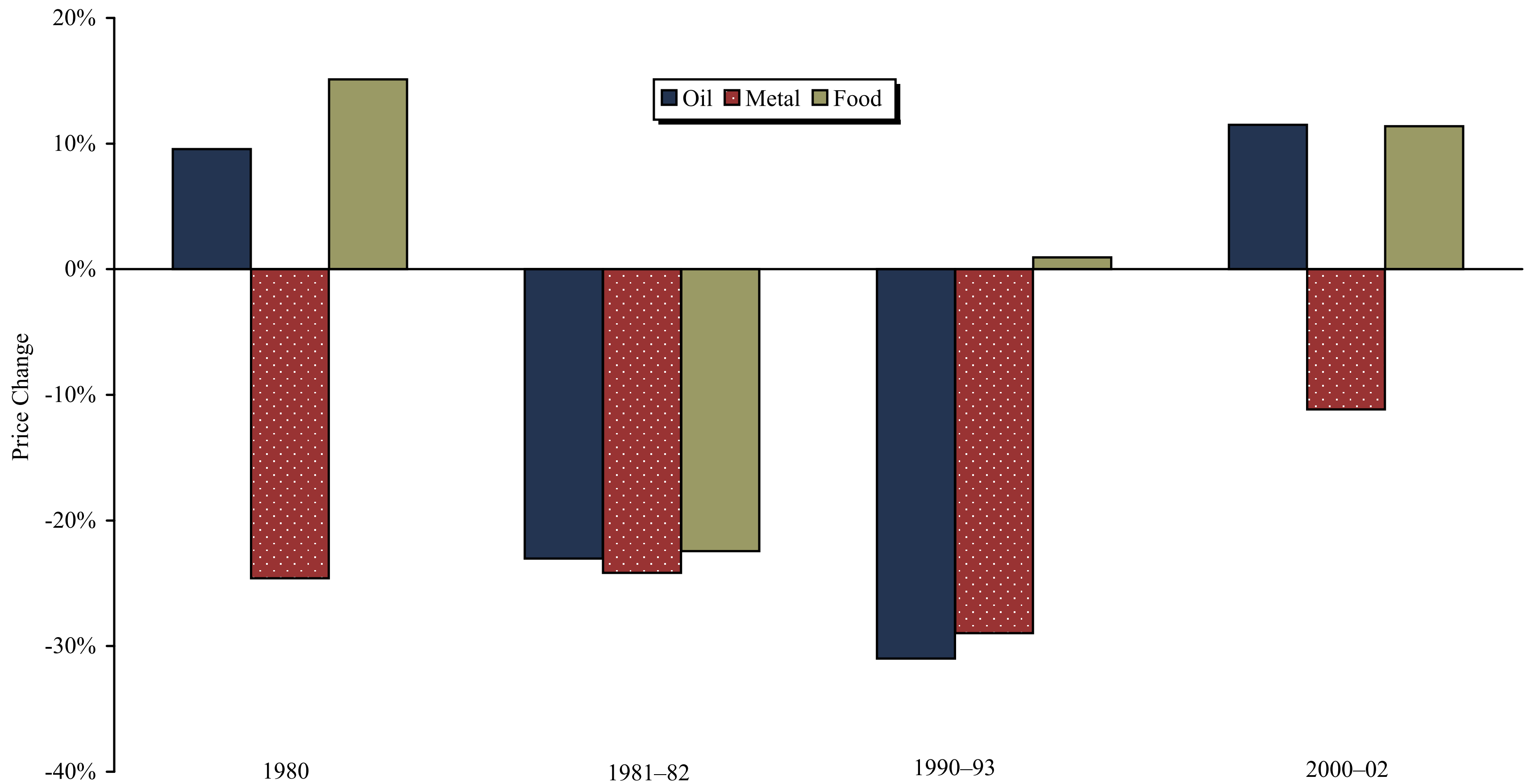
1970–2008



Source: Foreign Agricultural Service, Official USDA Estimates.

Table S

COMMODITY PRICE CHANGE DURING PAST GLOBAL DOWNTURNS



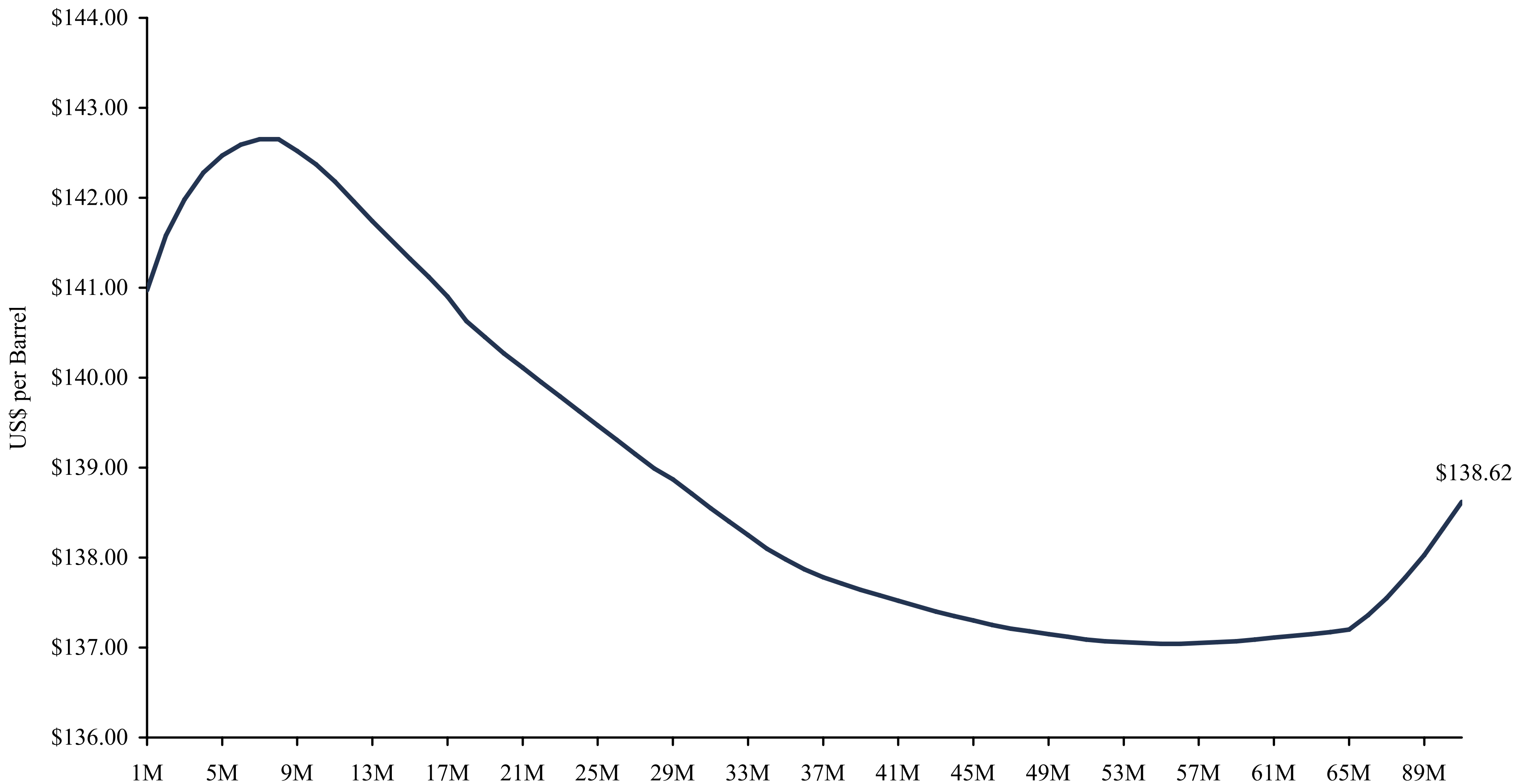
Source: International Monetary Fund, *International Financial Statistics*.

Note: Data for 1980 are from February 1 through December 31.

Table T

WEST TEXAS INTERMEDIATE CRUDE OIL FORWARD CURVE AS OF JULY 1, 2008

2008–16



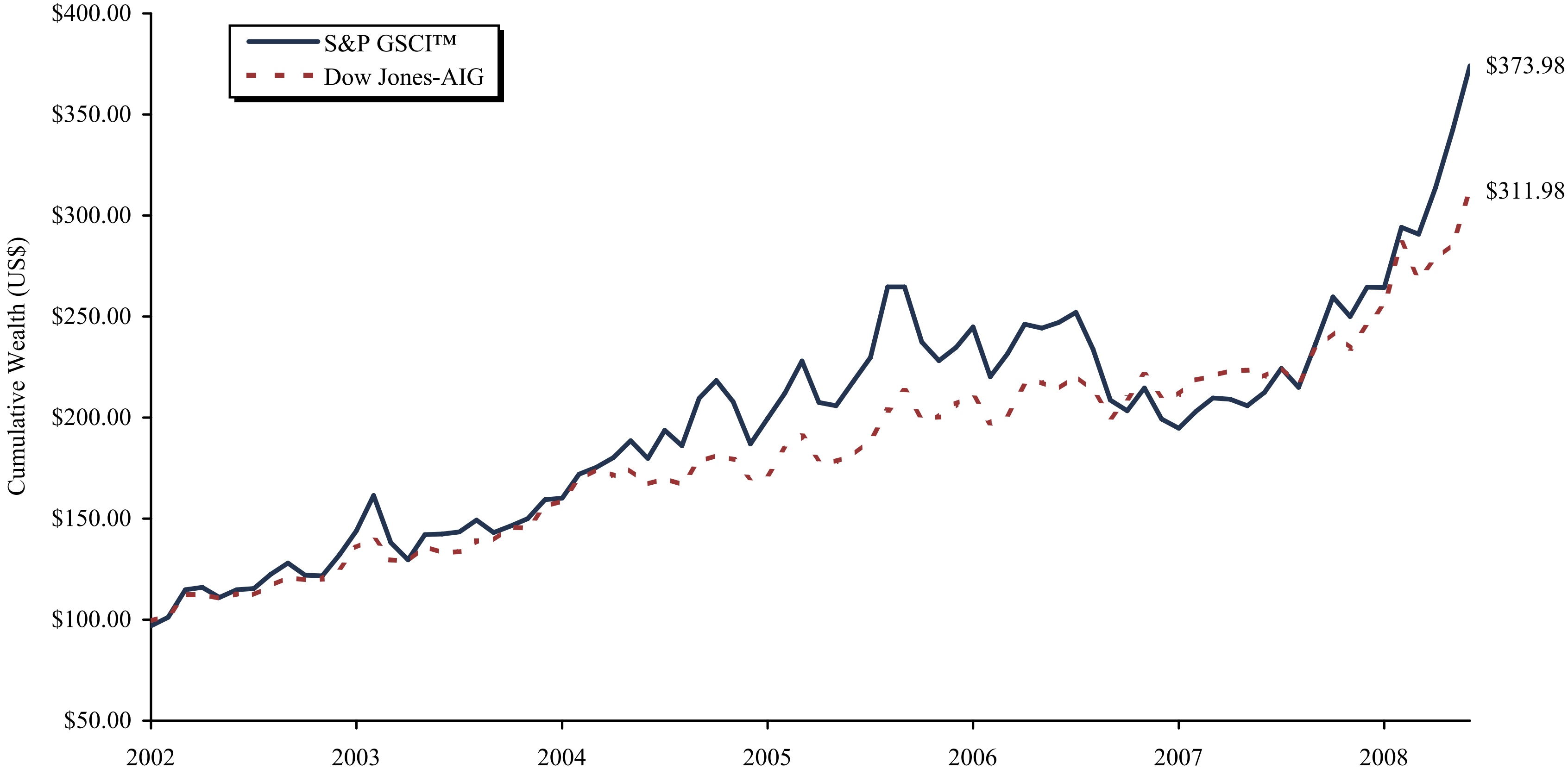
Source: Bloomberg L.P.

Table U

TRACKING THE COMMODITY BOOM

Cumulative Wealth of Passive Commodity Indices

January 1, 2002 – June 30, 2008



Sources: Bloomberg L.P., Standard & Poor's, and Thomson Datastream.

Note: Index levels rebased to 100 as of December 31, 2001.