



C A M B R I D G E A S S O C I A T E S L L C

GLOBAL MARKET COMMENTARY

Commodities and Natural Resources Equities: Waiting for the Bottom

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Commodities and Natural Resources Equities: Waiting for the Bottom

The collapse in commodity prices over the last eight months has erased years of gains. From their peaks in 2008 through March 2009, crude oil prices have plunged nearly 65%, while those of base metals and agriculture are down 45% to 71%. Natural resource–related equities were also thrashed, but their performance was slightly better and in line with broader equities (Tables A and B).

The current consensus seems to be that the commodity supercycle remains intact. This constructive outlook points to the rapid supply response to the fall in demand and prices. Firms have been cutting capital spending, investment, and exploration and production (E&P) budgets, which will, over the longer term, according to this view, exacerbate the supply-side constraints that were keenly felt during the boom years and push prices even higher when demand eventually resumes. A competing scenario is that the commodity boom has turned to bust. According to this interpretation, the rapid fall in demand will leave the oil industry with plenty of spare capacity, which will take years to absorb, even when demand eventually returns.

This research paper explores these alternative interpretations. Has the recent market turbulence altered commodities’ investment prospects for at least several years, thereby warranting a thorough re-evaluation of the rationale for exposure to real assets? Or, as most managers contend, is this just a temporary blip within a secular upward trend? Is now the time for investors to load up the truck, or, at the very least, rebalance to policy weights? Or, if it is reasonable to expect prices to fall further, perhaps only over the short term, it may be more prudent for investors to delay expending valuable resources in this particular area.

This paper begins by placing commodities’ current macro supply and demand factors in historical context, and discussing how they affect investments in commodities and natural resources equities, particularly energy equities. It focuses on crude oil, but also discusses natural gas, coal, base metals, gold, agriculture, and livestock. It then examines equity valuations—a current snapshot and relative to historical norms. Finally, we discuss the importance of timing and whether, in the midst of deteriorating economic conditions, investors should maintain a policy allocation to marketable real assets.

Energy Equities, Natural Resources Equities and Commodities—Defining the Universe

The universe of natural resources equities is broader than that of an energy equities–only mandate. Natural resources managers in our database generally offer 60% to 80% exposure to energy, with the rest in a handful of agriculture, base metals, precious metals, and forest products stocks.

Benchmarking for both natural resources and energy-only is a sticky issue, because there is no standard index. Managers argue that none adequately captures their investment approach, primarily because of the indices’ heavy exposure to mega- and large-cap stocks, and also because of the indices’ bias to large integrated oil & gas companies, which are considered “low beta” ways to invest in energy. For example, large-cap integrateds and refiners compose 70.0% of the S&P 500 Energy Index. MSCI World Natural

Resources is also energy centric (77.8% energy, with 52.9% in integrateds), while metals and mining account for 21.0% of the index, and paper/forest products, 1.2%.

Of the 11 natural resources equity managers in our database that have reported benchmarks, only two use the same benchmark and several report they use a custom benchmark.

The commodity universe is much easier to define. The most widely used commodity indices are the S&P GSCI™ and Dow Jones-AIG Commodity Total Return Index (DJ-AIG). The largest complexes in the S&P GSCI™ are energy, 65.8%, and agriculture, 17.6%. The DJ-AIG offers more diversified exposure and the largest complexes include energy, 30.8%; agriculture and softs, 28.8%; and base metals, 21.1%.

Will the Current Slowdown Turn to Bust?

Oil demand is falling off a cliff. Only several months ago analysts expected global oil demand in 2008 to grow roughly 2%. When final numbers came in, crude oil consumption fell 0.5%. Similarly, expectations for global oil demand growth in 2009 have been slashed to -1.6%, with some forecasts as low as -2.8%. These estimates are substantially below the 1.4% average annual growth rate of oil demand experienced over the last decade. So far, they compare favorably to the worst year on record, 1980, when global oil demand fell 3.9%, but conditions are clearly deteriorating, and these forecasts are at risk of further downward revisions (Table C).

In the United States, the epicenter of the oil demand shock, oil demand dropped 6.1% in 2008 (-9.1% and -6.3% year-over-year in the third and fourth quarters, respectively), the worst decline in a year since 1980, when demand fell 7.5%. For 2009, the Energy Information Administration (EIA) currently expects -2.2% growth, and for 2010, 1.4%.

Historical Context for the Current Environment

Over the last 40 years, there have been two main periods when global oil demand growth turned negative: 1974–75 and 1980–83.¹ During the fairly short-lived 1974–75 period, oil demand growth fell 2.4%, while global supply held steady in 1974, dropped 4.8% in 1975, then expanded in 1976 (Table D). Oil prices increased significantly over this period—76.6% from 1974 to 1975—and held steady in 1976, despite the increase in supply.

During the more protracted 1980–83 period, global oil demand dropped 10.0%. Crude oil prices peaked in February 1981 at \$38.30 per barrel, then proceeded to fall for six straight years, before bottoming at \$10.40 per barrel in March 1986. During this period, global oil production shrank 14.3%, but thanks only to OPEC's sharp cutbacks, because even while crude oil prices declined, non-OPEC supply rose each year. The increase in non-OPEC supply, in the face of the sharp drop in global oil demand and oil prices, exacerbated the supply-demand imbalance and lengthened the subsequent period of low oil prices.

¹ The only other period in which demand declined was in 1993, when it fell 21 basis points.

In contrast, the current slowdown in oil demand was preceded by a contraction in non-OPEC supply. From 1998 to 2007, despite a more than fivefold rise in oil prices, non-OPEC supply shrank nearly 2%. This suggests that non-OPEC countries are unlikely to flood the market, as they did in 1980–83, which would weigh on prices.

However, supply that seems tight when global demand is running 85.4 million barrels per day turns into a glut when demand drops 1% to 2% or more. Although inventories of U.S. total petroleum products are within levels seen in recent years (Table E), those of U.S. crude are at post-1991 highs. Over the next year or so, oil supply from non-OPEC sources will likely continue to increase, as companies continue to produce from existing projects. Capital-intensive projects with high marginal costs of production will keep producing until prices fall below their cash costs. For example, Canada's Tar Sands is considered to be the marginal non-OPEC producer, and the marginal cost of production is estimated at \$85 to \$90 per barrel. Firms have deferred new projects and cut E&P budgets, but existing projects will continue to produce as long as crude oil prices remain above their cash costs. Shutting existing production is too expensive and operationally difficult—unless crude oil prices fall below the marginal operating cash cost, which is currently estimated to be \$28 to \$35 per barrel, and remain at those levels for an extended period of time.

Regaining Balance Between Supply and Demand

In December 2008, OPEC announced record production cuts that total 4.2 million barrels per day, representing a nearly 5% reduction in both supply and demand. It also publicly declared that it will defend \$70 to \$80 per barrel, though it is unclear whether it will in fact be able to enforce the degree of compliance required to return oil to that price level. Global oil demand has fallen off so sharply that OPEC cuts alone may be insufficient to bring the market into balance, and non-OPEC sources may need to reduce their supply as well.

Companies have responded to the massive fall in energy prices by slashing their capital spending and drilling activity. Recent estimates suggest spending by North American oil & gas E&P companies will fall 40% in 2009, and U.S. oil drilling activity has already fallen nearly 38.5%.

Delayed investment in existing and new oil fields will likely have long-term ramifications for global oil supply. The current rate of decline in production in existing fields is much faster than in the past, with the consensus citing a range of 5% to 6%. This means that new production must grow by 5% to 6% to offset the decline rate. Using year-end 2008 levels, this decline rate removes between 4.3 and 5.1 million barrels per day from production, which is equivalent to roughly 5% to 6% of global demand. In other words, global demand would have to decline between 5% and 6% to bring global supply and demand back into balance.

Over the longer term, without necessary capital spending, production will decline one-third faster than would otherwise occur. According to the International Energy Agency (IEA), the global upstream oil & gas sector requires around \$350 billion of annual investment in order to offset the projected acceleration in the natural decline rate. Just to offset the depletion effect, even if oil demand remains flat until 2030, 45

million barrels per day of gross capacity—roughly four times the current capacity of Saudi Arabia—needs to be built worldwide by 2030.

Emerging Markets to the Rescue?

The current slowdown is distinctive because of the importance of emerging markets, especially China, in the global energy market. Going into the 1980 slowdown, emerging markets made up only 33.6% of total global oil demand; by 2001 their share expanded to 38.0%, and in 2007, 42.6%.

China is the world's second-largest oil consumer (behind the United States). Since 2004, China has accounted for roughly 20% of emerging markets annual demand. In 2007, China's total oil consumption exceeded that of Brazil, India, and Russia combined, and slightly exceeded Europe's top four oil consuming nations: Germany, France, Italy, and the United Kingdom.

The bullish case for crude oil is based on the expectation that future oil demand growth in non-OECD countries will offset lower demand in OECD countries. The validity of this argument depends on whether the underlying assumptions will remain intact in the coming months. For example, the EIA projects that oil demand in 2010 from non-OECD countries will offset slumping demand in OECD countries. According to this outlook, non-OECD demand will grow 2.9%, compared with essentially flat growth in OECD; indeed, this would offset the decline in the number of barrels taken offline by the drop in OECD demand in 2009. However, assuming flat growth in OECD demand may turn out to be overly optimistic. In addition, the expectation of non-OECD oil demand in 2010 is primarily driven by rapid oil demand growth in China and the Middle East (4.4% and 5.0%, respectively), forecasts which in turn are based on the expectation that Chinese GDP will grow 7.3%, and Middle Eastern, 4.4%.

These assumptions appear quite reasonable compared to their recent average demand growth rates. However, they will surely be tested in the coming months, and slower-than-expected GDP growth would clearly challenge the expectation that oil demand from non-OECD countries will offset lower demand from OECD countries and ultimately undermine the bull's scenario for the coming tightness of crude oil. Indeed, forecasts of China's oil demand growth in 2009 are already being lowered from 3% to about -2.0% to 1.5%.

The supply-demand dynamic would surely tighten if OPEC were to accomplish its plan to cut 4.2 million barrels per day from global supply. However, the EIA worries that this, along with lower demand for OPEC crude oil, increasing production of non-crude liquids, and capacity expansions expected in several OPEC countries, will dramatically expand surplus production capacity over the next two years.

Spare capacity will almost certainly rise, perhaps even substantially, though most observers believe the situation will not become as dire as in the mid-1980s. In the mid-1980s, spare capacity as a percentage of demand was around 15%, largely the result of capital investments in the late 1970s, and it took nearly two decades to work off this surplus. Today, that figure is estimated at less than 5%. For spare capacity as a percentage of global demand to reach double digits, production cuts must total about 9 million barrels per day, which, in order to rebalance the market, implies a 10% drop in global demand. Clearly, this is not

impossible, but it represents a significantly worse economic scenario than exists today. When the global economy eventually stabilizes, the length of time it will take for demand to eat through this building spare capacity obviously depends on how bad current conditions become.

How Are Other Commodities Faring?

Most, but not all, commodities exhibit a similar dynamic. Companies are responding to rapidly falling demand by deferring capital spending on existing projects. Underinvested infrastructure, coupled with the production challenges and bottlenecks seen in recent years, will likely force prices even higher when demand eventually recovers. The following summary describes circumstances similar to those of crude oil: price weakness in the short term and supply and demand tightness over the longer term.

Natural Gas. The U.S. natural gas market has fallen into oversupply, and production in 2009 could be the highest in 35 years, primarily because of increased output from unconventional gas fields. Producers are reducing capital expenditures and leasehold acquisitions; the number of rigs has fallen 38.5%, but many believe it will fall at least another 30%. Market observers worry that the pace of production cuts will not be rapid enough to offset supply growth from unconventional sources. Offsetting a good portion of this supply growth is the rapid decline rate of unconventional sources.

Coal. In recent years, emerging markets have generated most, if not all, of the growth in global coal consumption (Table F). China alone accounted for on average 40% of world coal demand, and its use of coal has nearly doubled since 2000. However, in recent weeks, China's two main sources of demand—electrical power generation and steel production—have fallen sharply. For the first time since these data have been recorded, power sector consumption fell for three consecutive months at the end of last year, and coal inventories have risen substantially. China has shifted from being a net importer of coal in the first half of 2008 to a net exporter. In addition, steel prices are down more than 50% since mid-June. Dry bulk freight prices have collapsed (down 85.3% since May, though they have come back in the last few weeks) and the supply of ships may be due for a period of surplus. Since transportation costs can account for up to 70% of the cost of coal, coal prices may face a prolonged period of weakness. Globally, companies have begun to reduce production, but these cuts have thus far been small, and current prices are still too high to eat into the coal cash curve.

Over the longer term, global coal consumption is projected to increase 2.0% per year from 2005 to 2030 to account for 29.1% of total world energy consumption in 2030 (Table G). The United States, China, and India are expected to account for nearly 90% of the projected increase, with China being the largest single source of demand. China relies on coal for 70% to 80% of its electrical power generation, and the country is expected to add 40% more power-generating capacity over the next three years.

Industrial Metals. The collapse in industrial metal prices has forced a significant number of companies to cut production and close mines, and the pace of closure is much faster than in the prior two recessions.

Despite this rapid supply response to the collapse in demand, all metals have moved into considerable surplus in recent months (Table H), and it is widely expected that inventories will rise even further in the coming months. The fall in demand has increased inventories of aluminum and nickel to ten-year highs, though stocks of other metals, while increasing, remain below the peak of previous cyclical downturns. Metals-intensive sectors—autos, construction, housing—are at the epicenter of the global slowdown. Even China, which consumes 30% of each of the six major base metals, has seen a drop in demand because use of these metals is closely tied to Chinese real estate sector.

Gold. Conventional supply-demand analysis cannot be applied successfully to gold. There is little agreement on how to value gold, given its lack of financial characteristics and economic use. Some investors try to value gold by considering what price it would bring were it to again become the sole global currency (i.e., global money supply divided by gold supply), but we are skeptical of the value of such exercises, as global money supply is a nebulous and fast-moving target. Finally, the small size of the gold market, coupled with central banks' control of a significant portion of the world's supply, means that small shifts in supply and demand (particularly those related to *investment* demand, rather than that for jewelry) can have an outsized impact on prices.

Given the lack of economic basis for the return of gold—it has no earnings, pays no interest, and has no maturity date—we generally prefer other hard assets and inflation-linked bonds as an inflation hedge. Most of the time, gold does not belong in portfolios due to high opportunity costs, absent high inflation or a sharp decline in currencies, and the availability of other options for hedging inflation, such as commodities and oil & gas partnerships that have higher expected returns over the long term.

However, gold may make sense for investors that are particularly concerned with currency debasement, wealth preservation, and/or deflation. The metal is unique in that it is perceived as a store of wealth that should hold value when investors lose faith in fiat currencies, particularly the U.S. dollar. At least over the last decade or so, the yellow metal has had an inverse relationship with the U.S. dollar (Table I). Other assets, such as oil, may also function as an “anti-dollar” investment, but this characteristic may not work in a deflationary environment, when falling demand would likely pressure prices. In the present environment, a run on the U.S. dollar is more plausible than was the case six months ago, given the U.S. government's commitment to use aggressive monetary and fiscal policy to prevent a sharp deflationary bust. Therefore, such a disaster hedge makes some sense today, particularly given the absence of an obvious strong currency that would attract capital in the event of a rapidly decelerating U.S. dollar.

The year 2008 saw an enormous disparity between the performance of gold bullion and gold equities (bullion, 4.3%, versus gold equities, -33.6%), and within equities, between large and small caps. The magnitude of this spread is remarkable, even considering the less-than-perfect correlation between gold bullion and gold equities (since 1973, 0.60 correlation). Under normal circumstances, one would expect the performance gap to narrow. However, the credit crunch has dramatically affected the ongoing financing capability of nearly all gold producing companies, especially the juniors. If the credit market does not thaw within the coming months, there is a real risk that many junior companies will go out of business.

If the purpose of a gold investment is to protect against a decline in the value of the U.S. dollar, an investor should invest in gold bullion or a gold exchange-traded fund, which is backed by the physical metal. Allocating to precious metal and mining shares will not be able to offer this degree of protection in one of these malign scenarios.

Agriculture and Livestock. Previous bull markets in the agricultural complex have seldom been long-lived because price increases tend to induce an immediate supply response. Indeed, this was the case with wheat in 2008 when farmers responded to the rise in prices by increasing areas planted to wheat; this, coupled with excellent yields, resulted in record wheat production, which exceeded consumption.

Over the long term, agricultural production will need to expand to meet growing global demand. At current prices, acreage will not be brought online, and production could fall short of demand, sending inventories lower, which may ultimately push prices higher. Similarly, among the meats, prices will need to increase to accommodate higher grain costs, as demand reaccelerates with an eventual rebound in global growth.

To summarize, across most commodities, companies have quickly responded to falling demand by reducing supply, though it is reasonable to expect that over the short term supply will increase from existing projects. We believe that over the longer term, today's underinvestment in infrastructure sets the stage for a strong recovery in commodity prices when demand *eventually* returns.

The risk is the *eventually*. It is quite possible that global oil demand will stay low for a longer-than-expected period, and that growth in non-OECD countries—principally, growth in China and the Middle East—remains subdued for longer than expected.

The eventual tightening of supply and demand may—or may not—be far away, but to what extent have equities already priced in the damage? Has the plunge in prices created an irresistible opportunity for either/both equities and commodities?

Equity Valuations—Watch Those Earnings

Only in a very broad sense do valuations of energy equities tell us much about the price risk and long-term potential of subsequent returns. This reflects the broader challenge of valuing cyclical companies, because, on a price-earnings (P/E) basis, they can appear the cheapest when earnings (denominator) are high, while the price (numerator) reflects investor expectations of lower earnings in the future. The interplay among energy equities, earnings, commodity futures, and spot oil prices is complex, and it is difficult to identify consistent performance patterns during past slowdowns and commodity cycle busts. This is complicated by the fact that energy futures, which now dominate the index, were not included in the S&P

GSCI™ until 1983,² as well as the fact that energy equities have essentially been in a secular bull market from 1983 to mid-2008.

Valuations and Returns—The Prior 40 Years

As mentioned above, there have been two main periods over the last 40 years when global oil demand fell sharply, and it is difficult to generalize about the performance of energy equities and commodities in these slowdowns. In the early 1970s, in a difficult market for broad equities, commodities outperformed energy equities. Energy equities started their tailspin in February 1973—eight months before the OPEC oil embargo officially began, and before global oil demand officially registered negative growth. For energy equities, the worst pain was concentrated in the February 1973 to September 1974 period, when they returned -35.5%, though they still managed to outperform the MSCI World Index's -40.4% return. During this period, nominal earnings of energy companies rose 103.1%, thanks to a more than threefold rise in crude oil prices, and P/E multiples contracted from 13.4 to 4.2 (Table J).

During the 1980–83 period when oil demand contracted over a more protracted period, energy equity prices fell more sharply. The downturn in energy equities was concentrated in the November 1980 to July 1982 period, when they returned -42.6%, far worse than MSCI World Index's -15.9% return.

Valuations on a price-to-book (P/B) and dividend yield (DY) basis became compelling in July 1982—just after the worst was over for equities.³ From July 1982, when P/Es were at their most attractive, to mid-1987, when they reached 1 standard deviation above their average, earnings fell 21.5%, while prices rose 165.0%. During this period of multiple expansion, energy equities posted an average annual compound return (AACR) of 28.3%—modestly below the MSCI World's 32.8% AACR—while the S&P GSCI™ substantially underperformed, rising 10.3%.

Energy equity valuations reached extreme levels in 1998–2000, depending on the metric. An investor that sold energy equities based on the reasonable assumption that they were overvalued at that time would have missed their subsequent nearly 300% return through 2007.

These historical examples illustrate the negative-to-very-low correlation between the growth of energy company earnings and their equity returns, even on a lagged basis. Further, energy equities do not move in lock-step with the underlying commodity price movement, and there is significant broad equity beta in energy equities.

² From 1970 to 1973, the S&P GSCI™ Index was composed of agriculture and livestock futures. In 1973, precious metals were added, followed by industrial metals in 1977 and energy in January 1983.

³ This is based on the Datastream World Oil & Gas Index, which is a custom index for developed markets. The index's P/E and DY valuation data date back to 1973, while those available on the MSCI World Energy Index go back only to 1995. Valuations on the MSCI World Energy Index exhibit a pattern consistent with the Datastream World Oil & Gas Index from 1995 to present. The Datastream World Oil & Gas Index is composed of 52 constituents compared to 118 in the MSCI World Energy Index.

Valuations and Returns—The Current Environment

At the end of March 2009, valuations were attractive based on their historical norms. Valuations on the MSCI World Energy Index indicated that energy equities were extremely inexpensive compared to their post-1995 averages (Table K). Using the return on equity (ROE)–adjusted P/E ratio to measure cyclically adjusted valuations also indicates that valuations are quite inexpensive. This is primarily the case with valuations of energy equities in developed markets, as relative valuations of emerging markets energy equities remain rich.

Similarly, on a longer-term basis, energy equities appear inexpensive. The Datastream World Oil & Gas Index P/E ratio was roughly 1 standard deviation below its post-1973 average at the end of March 2009, while the P/B and price-to-cash earnings multiples have almost fallen to this level. The DY is close to historical averages. Normalized P/Es on global energy equities, which smooth out the earnings cycle, have also dropped close to 1 standard deviation below their long-term average (Tables J and L).

The major worrying point is earnings. Real earnings reached an all-time peak in December 2008, which was nearly 1.9 standard errors from the trend line⁴ (Table M). Never before have earnings strayed so far from their long-term growth trend. How far could they drop? For real earnings to return to their post-1973 trend line, they must fall nearly 60%. Similarly, ROEs, while below their 1980 peak, are still 1 standard deviation above their historical average and we expect them to revert to their mean, or more likely below.

The current low P/E suggests the market has already discounted a sharp decline in earnings, as energy equity prices have dropped about 50% from their peak. Still, as earnings fall, we expect this to pressure energy equity prices, particularly if earnings fall below the trend line, as is typically the case during earnings cycles.

Conventional equity valuation metrics cannot be applied to commodity futures. Commodities, as measured by spot prices on the S&P GSCI™, are currently trading at 18.1% below their post-1969 inflation-adjusted average, which is near the lowest it has been since early 2005. This suggests that the froth in many commodities has been eliminated since last summer. Although the second half of 2008 was worse for commodities than natural resource–related equities, as the above discussion described, unfavorable short- to near-term supply-demand imbalances suggest prices could undergo even further weakness.

Investment Considerations—Long Term Versus Tactical

Investors should be mindful of the purpose of these real asset sectors in their policy portfolio. Over the longer term, natural resources equities and commodities should perform quite differently. The former contains broad equity beta, because, although their corporate revenues are leveraged to the change in commodity prices, profits are also affected by their cost of capital, health of balance sheet, cost of inputs,

⁴ We use “standard error,” instead of standard deviation, because the former reflects the variability of the mean values, as reflected by the trend line, while standard deviation shows the variability of the original data points.

quality of management, diversity of product lines, and the extent they hedge commodity price risk. Commodity returns are obviously directly affected by the change in spot prices, but also by the shape of the futures curve (and measured by the roll yield).

Relative to both natural resources equities and broad equities, commodities should offer more direct diversification and inflation protection. Historically, commodities have had low correlations with stocks and bonds, particularly during periods of unanticipated inflation when diversification is needed the most. An economic environment that is positive for commodity prices is generally negative for financial assets (and vice versa), because declining commodity prices reduce the cost of raw materials and increase corporate profits, which in turn support higher share prices, while the reverse is true of rising commodity prices.

However, hedge funds and institutional investors play a much larger role in commodity investments today compared to the past. This suggests that their diversification benefits may not be as strong as in past cycles. Unfortunately, there is not a single silver bullet to protect against the future drivers of inflation, which suggests that investors should construct a real asset program that consists of commodities, natural resources equities, as well as other investments with inflation protection properties.

Just as natural resources equities and commodities should provide protection against inflation, they will also be hammered in a deflationary environment. Over the longer term, however, when demand eventually picks up, commodity prices should quickly recover.

Although the market is currently caught in a deflationary scare, it is not at all far-fetched to envision a scenario of higher inflation in the future. If the various policies of governments—aggressive monetary and fiscal stimuli, and the transfer of private debt to the public sphere—prove successful in avoiding deflation, inflationary pressures could whip up into a formidable force.

To boil these long- and short-term nuances down into direct advice, investors should consider the following:

For those with existing allocations to natural resources—whether equities and/or commodities—maintain exposure, but be very patient about rebalancing. From a timing perspective, consider slowly averaging in, particularly on further weakness, to both natural resources equities and commodities. In recent weeks, energy equity valuations have become inexpensive compared to their long-term averages, though it is reasonable to expect them to become more undervalued, perhaps considerably so, before they resume an upward trend.

The current shape of the futures curve suggests it may be prudent to move cautiously. For example, the West Texas Intermediate curve is in sharp contango, which means the roll yield is extremely negative. Many observers believe that the roll yield will remain negative as long as crude oil inventories stay high (though spreads could narrow). However, the shape of the curve is quite volatile and contango is quite unlikely to persist into the indefinite future. Timing the commodity market based on the present shape of the curve is risky because the beta of the front month is higher than with deferred contracts, which means that it

will jump much more sharply when oil prices eventually begin their move upward. Despite this risk, in this environment investing with active commodity managers seems more attractive than passive alternatives, as they often manage the risks associated with rolling futures contracts, as well as a range of other risks. However, over the longer term they might not offer as strong inflation-hedging protection.

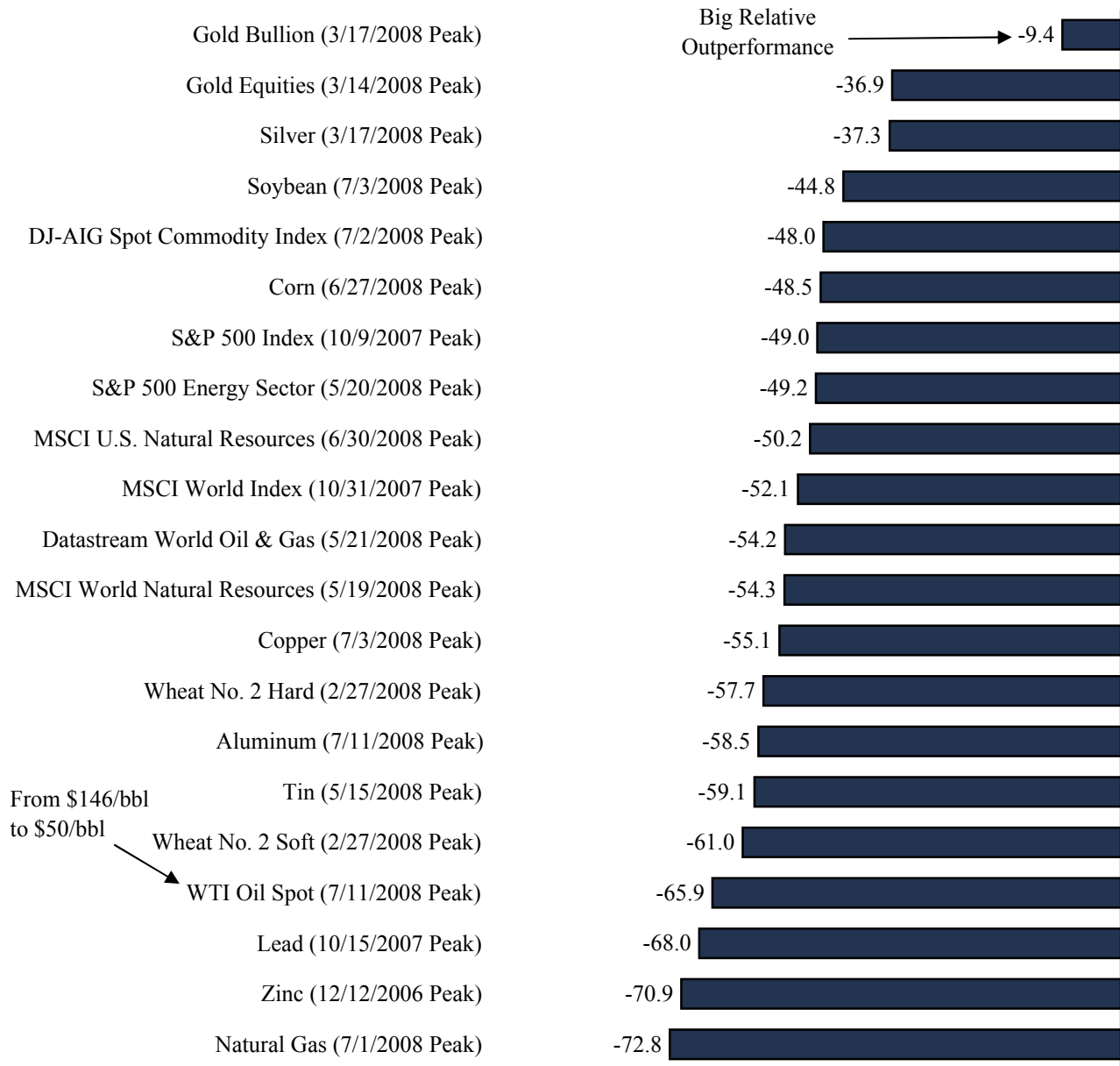
Much of the same advice applies to those who are in the process of building a real asset program. That is, investors should be very patient about deploying capital. In the meantime, identify quality managers and decide initial sizing as well as subsequent rebalancing criteria.

Despite the macro headwinds likely to confront commodities and natural resources equities over the short to medium term, real assets deserve a place in a policy portfolio. The most opportune time to invest in commodities and natural resources equities is in the teeth of a recession.

Table A

PERFORMANCE OF COMMODITIES AND NATURAL RESOURCES EQUITIES

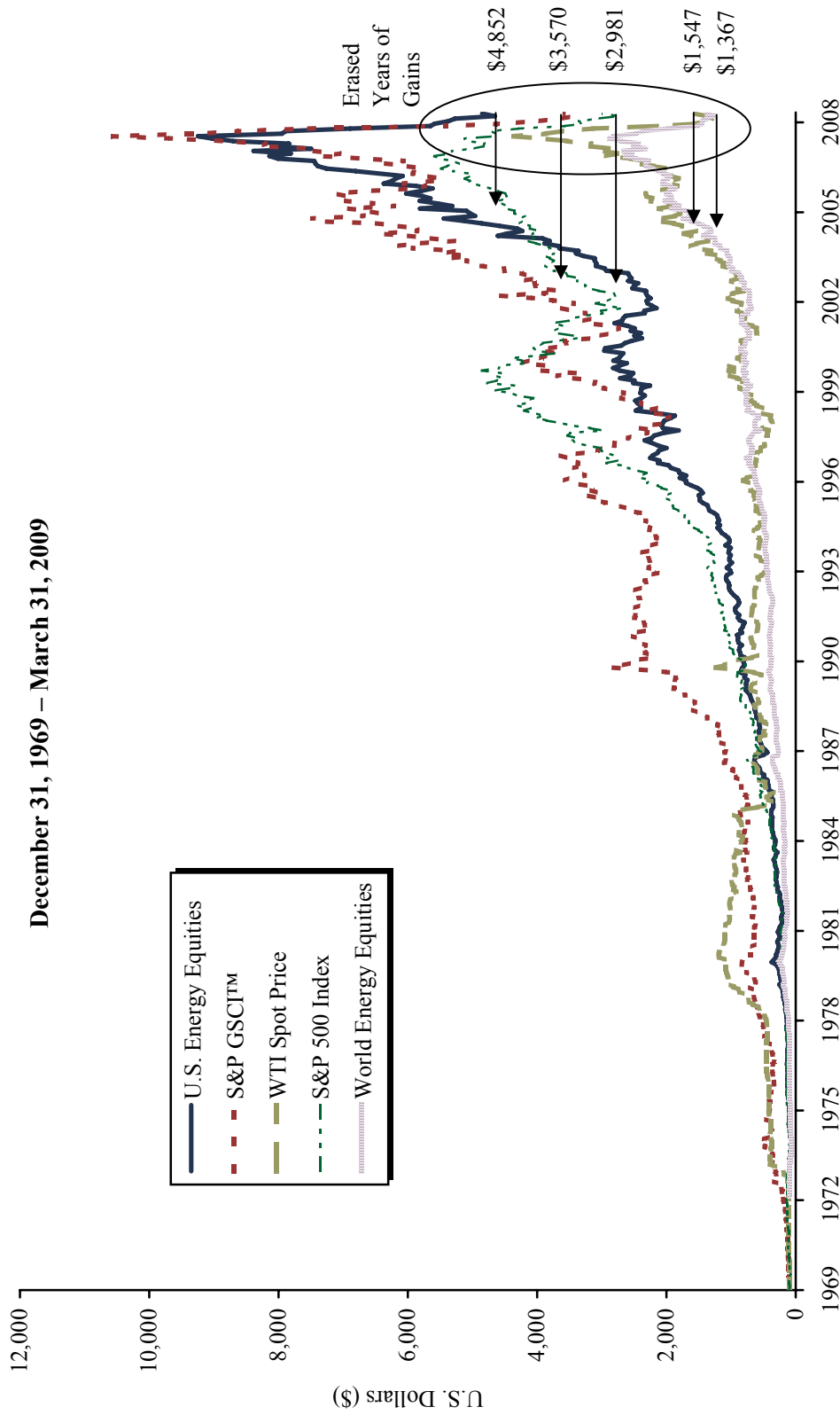
Recent Peak to March 31, 2009



Sources: Dow Jones & Company, Inc., MSCI Inc., Standard & Poor's, and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Notes: Gold equities are represented by the AMEX Gold Bugs Price Index. MSCI U.S. Natural Resources Index performance is based on monthly data.

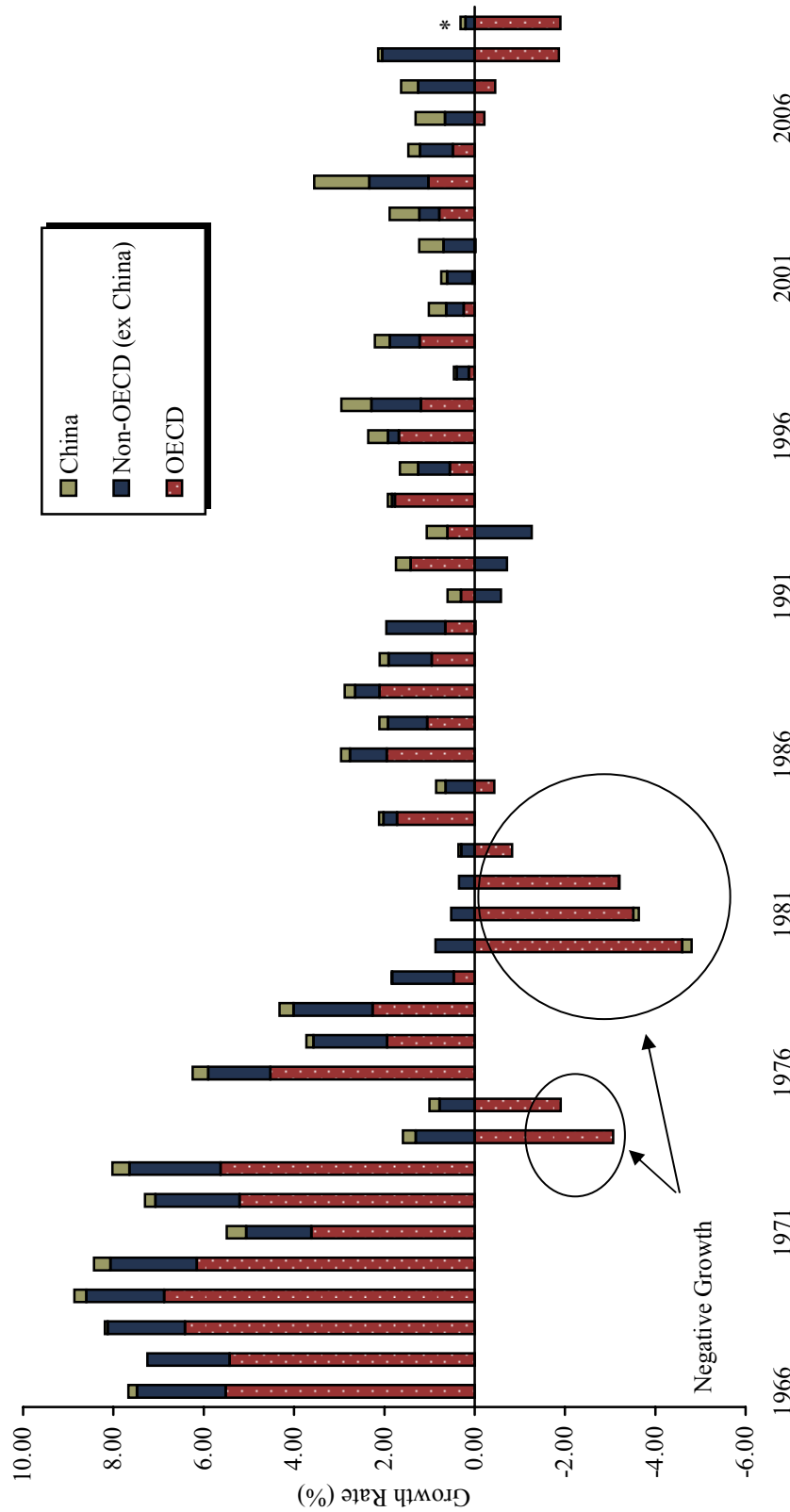
Table B
CUMULATIVE WEALTH OF ENERGY EQUITIES AND COMMODITIES



Sources: Global Financial Data, Inc., Standard & Poor's, and Thomson Datastream.

Notes: U.S. energy equities represented by the Datastream U.S. Oil & Gas Index. World energy equities represented by the Datastream World Oil & Gas Index. Data for U.S. and World energy equities begin January 31, 1973.

Table C
GLOBAL OIL DEMAND GROWTH
1965-2009

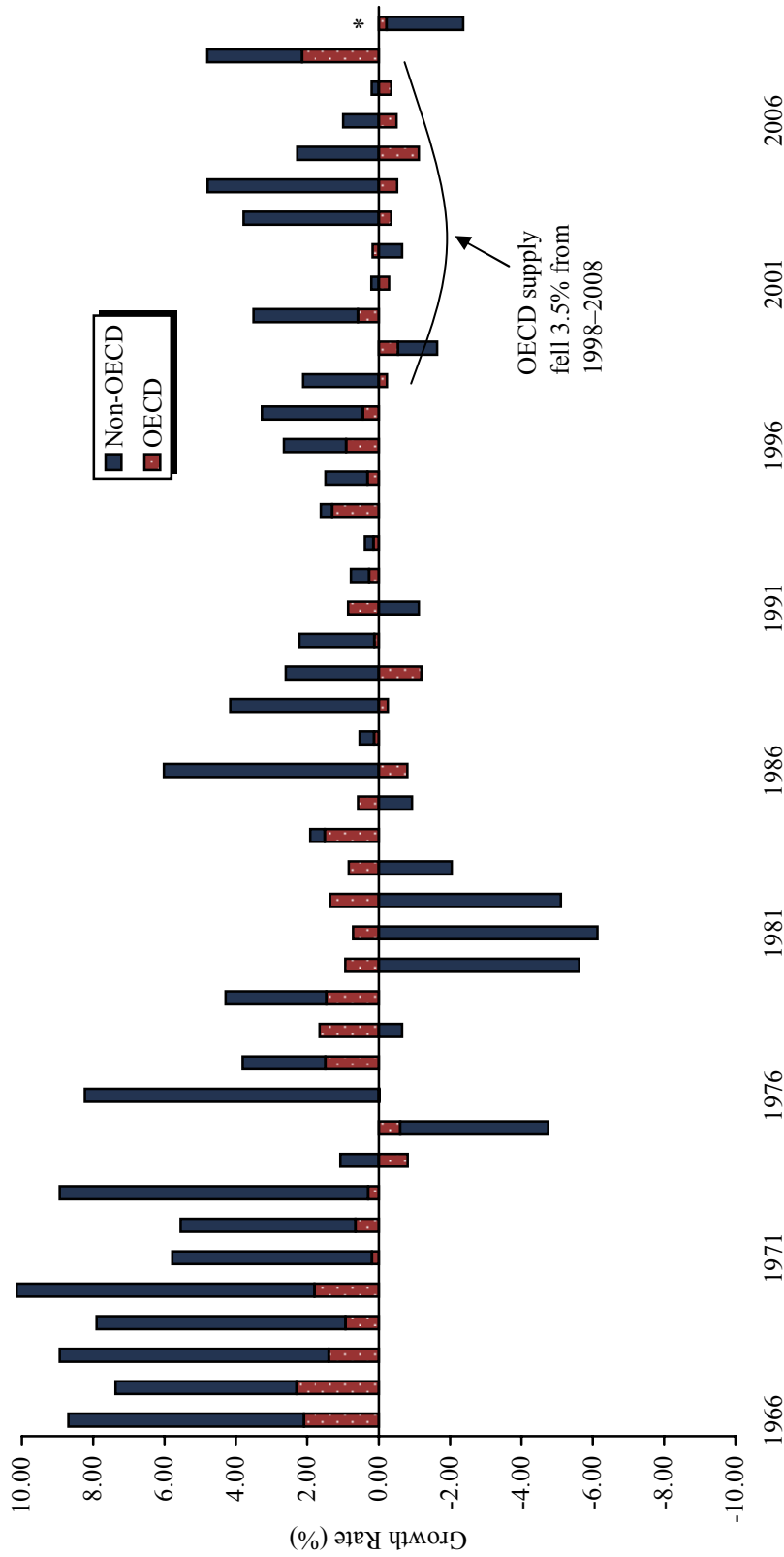


Sources: *BP Statistical Review of World Energy*, June 2008 and Energy Information Administration (EIA) *Short-Term Energy Outlook*, April 2009.

Notes: Data from 1965 to 2007 are from BP and data from 2008 and 2009 are from EIA.

* 2009 data are forecasts from EIA.

Table D
GLOBAL OIL SUPPLY GROWTH RATE
1965–2009

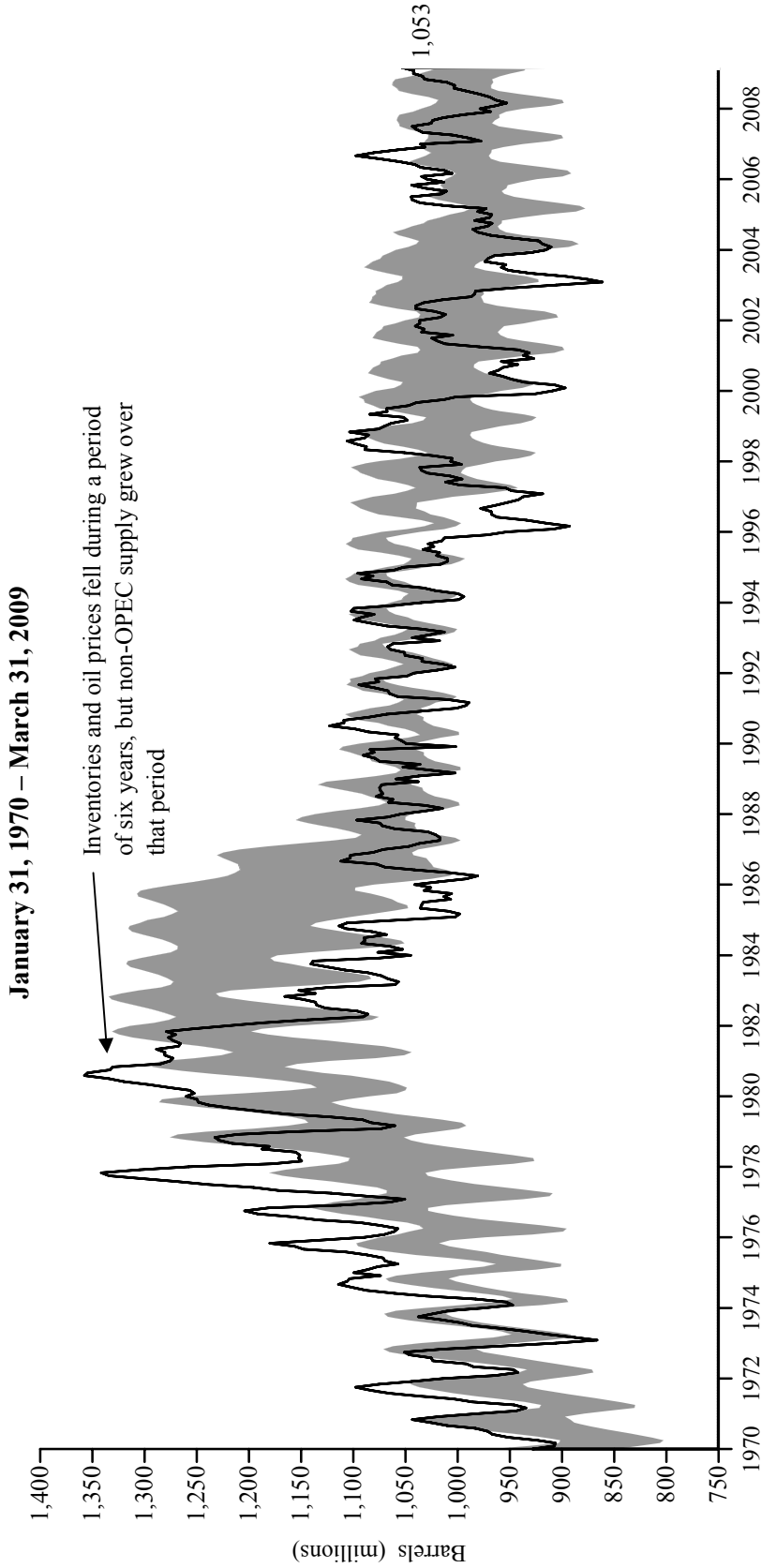


Sources: *BP Statistical Review of World Energy*, June 2008 and Energy Information Administration (EIA), *Short-Term Energy Outlook*, April 2009.

Note: Data from 1965 to 2007 are from BP and data from 2008 and 2009 are from EIA.

* Data for 2009 are forecasts from EIA.

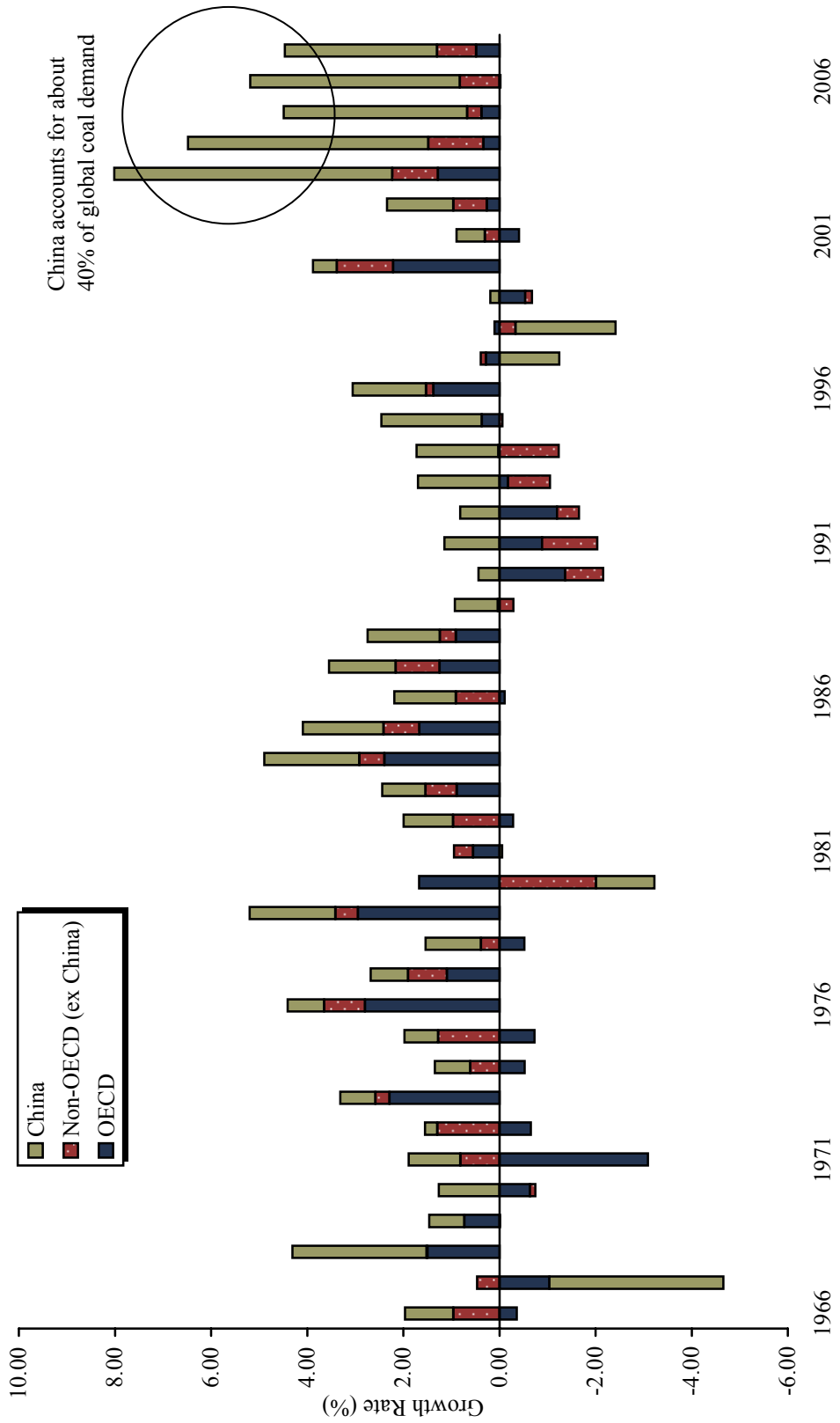
Table E
U.S. TOTAL PETROLEUM PRODUCTS



Sources: Energy Information Administration and Ned Davis Research, Inc.

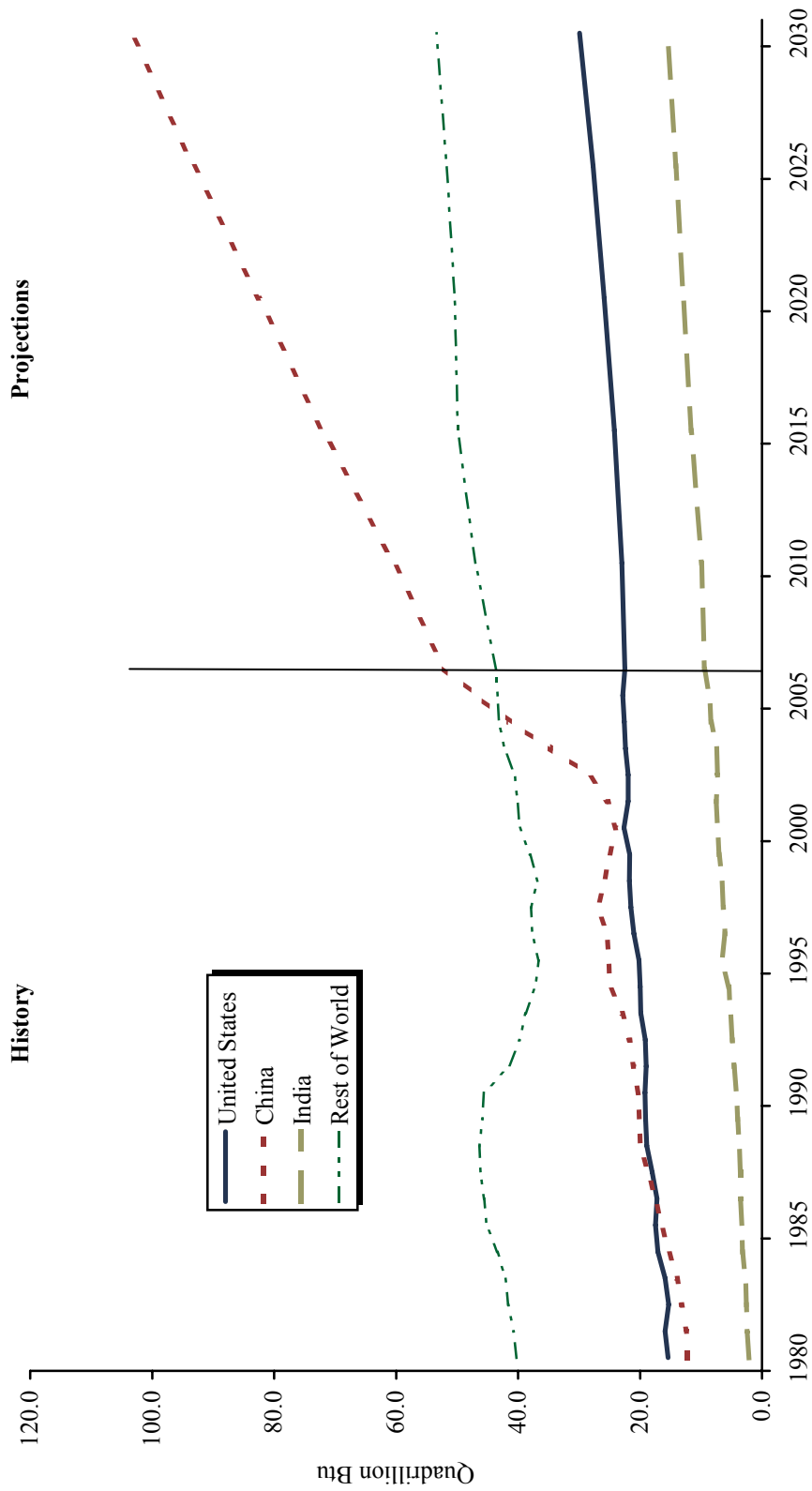
Notes: Shaded area represents rolling five-year monthly average +/- the standard deviation. Solid line represents U.S. Total Crude Oil and Petroleum Inventories Levels Excluding SPR (Strategic Petroleum Reserves). Total petroleum products include: crude oil (excluding SPR), pentanes plus, liquefied petroleum gas, unfinished oils, other HC/Oxygenates, motor gasoline, jet fuel, distillate fuel oil, residual fuel oil, aviation gasoline, kerosene, petrochemical feedstocks, special naphthas, lubricants, waxes, petroleum coke, asphalt and road oil, still gas, and miscellaneous products.

Table F
GLOBAL COAL DEMAND GROWTH
1965–2007



Source: BP Statistical Review of World Energy, June 2008.

Table G
COAL CONSUMPTION
1980–2030



Source: Energy Information Administration.

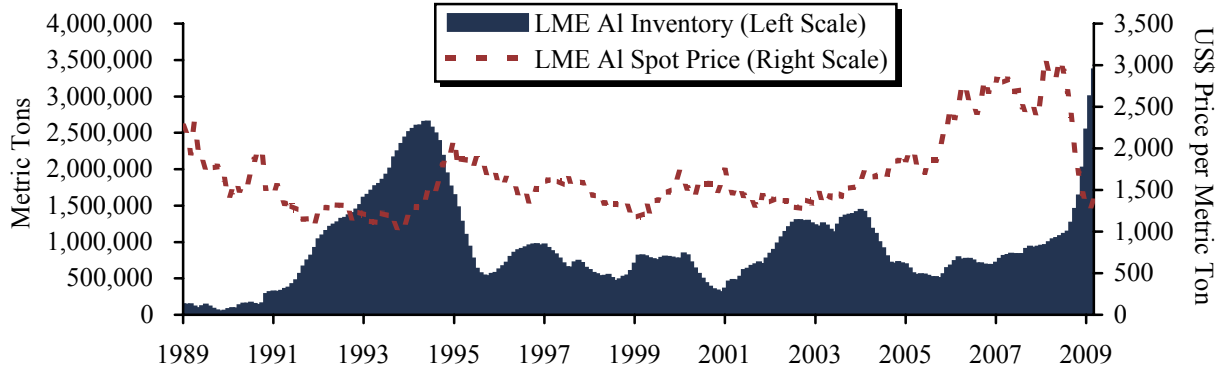
Notes: Graph represents annual data through 2006. Data beyond 2006 are projections.

Table H

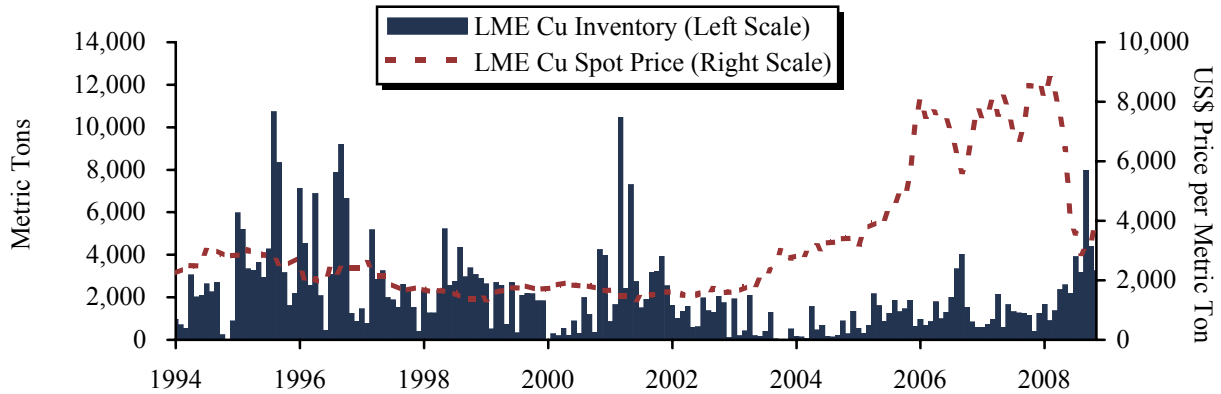
BASE METAL INVENTORIES AND PRICES

January 31, 1989 – March 31, 2009

Aluminum



Copper



Nickel

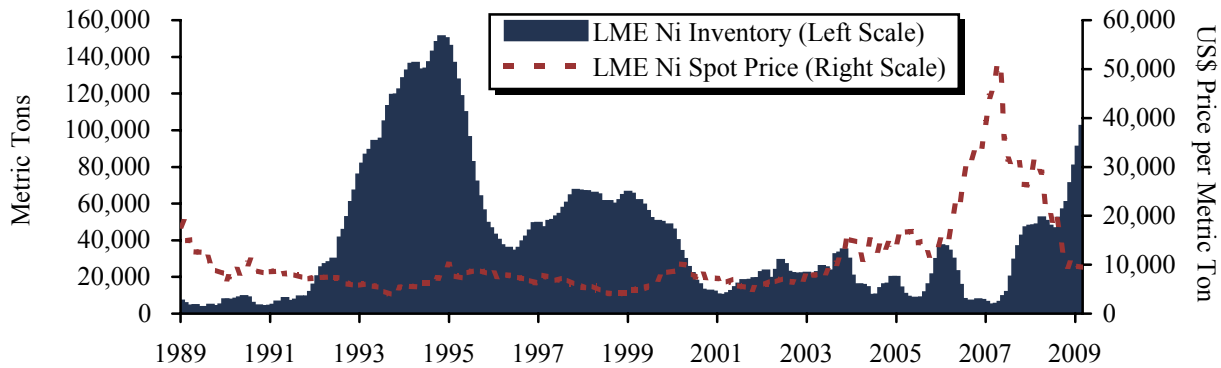
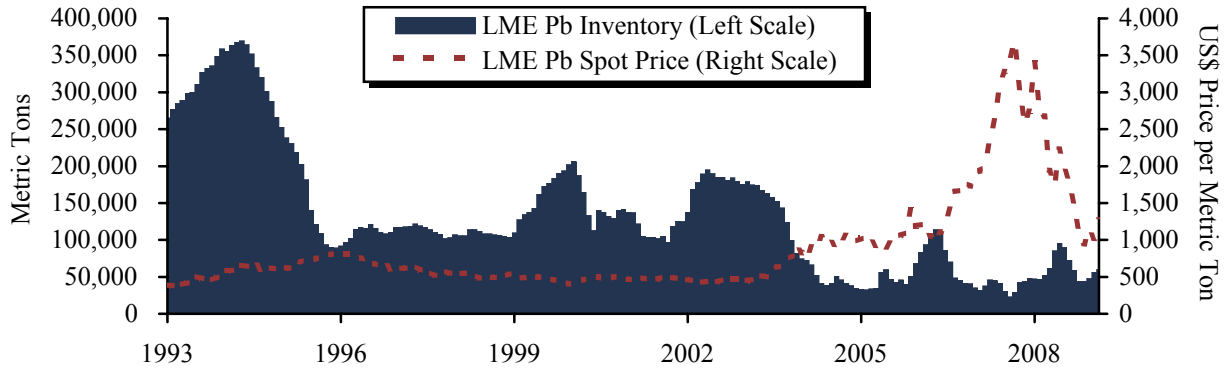


Table H (continued)

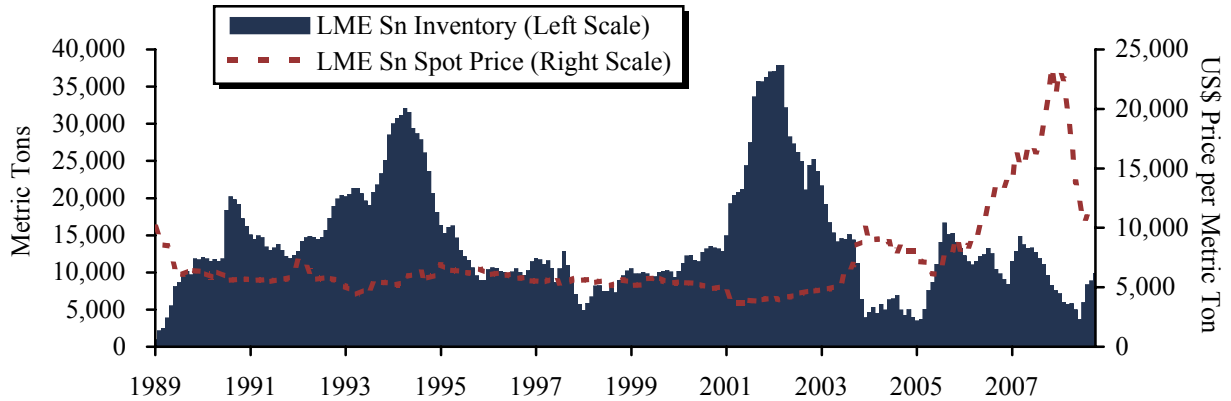
BASE METAL INVENTORIES AND PRICES

January 31, 1989 – March 31, 2009

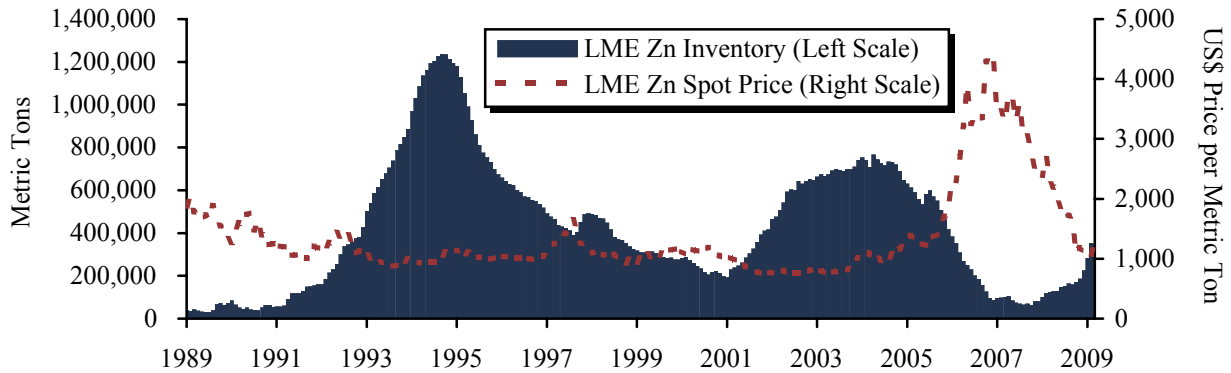
Lead



Tin



Zinc



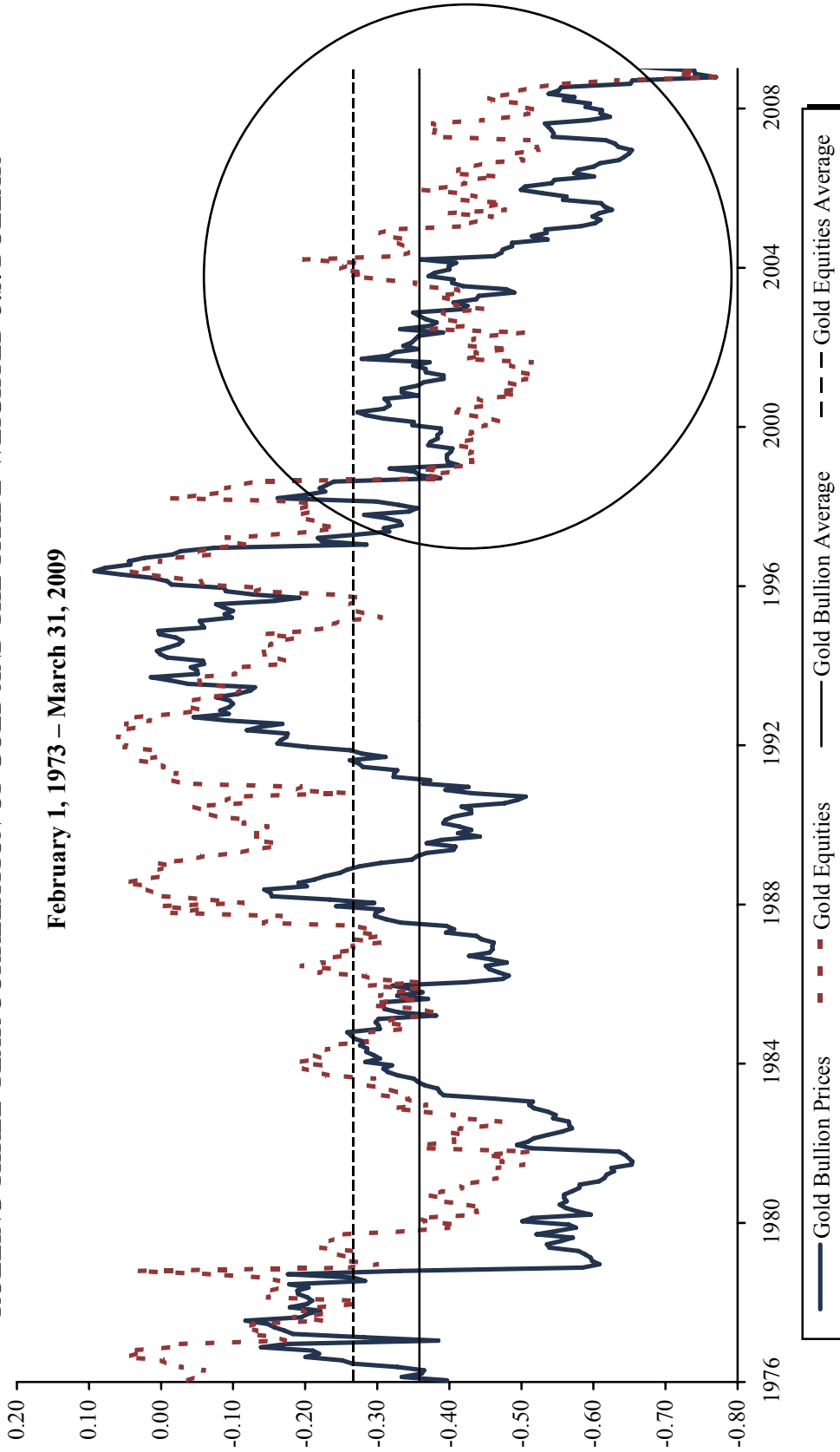
Sources: Bloomberg L.P., London Metal Exchange, and Thomson Datastream.

Note: Inventory and spot price data for copper, lead, and tin begin May 31, 1994; July 31, 1993; and June 30, 1989; respectively.

Table I

ROLLING THREE-YEAR CORRELATION OF GOLD AND THE TRADE-WEIGHTED U.S. DOLLAR

February 1, 1973 – March 31, 2009



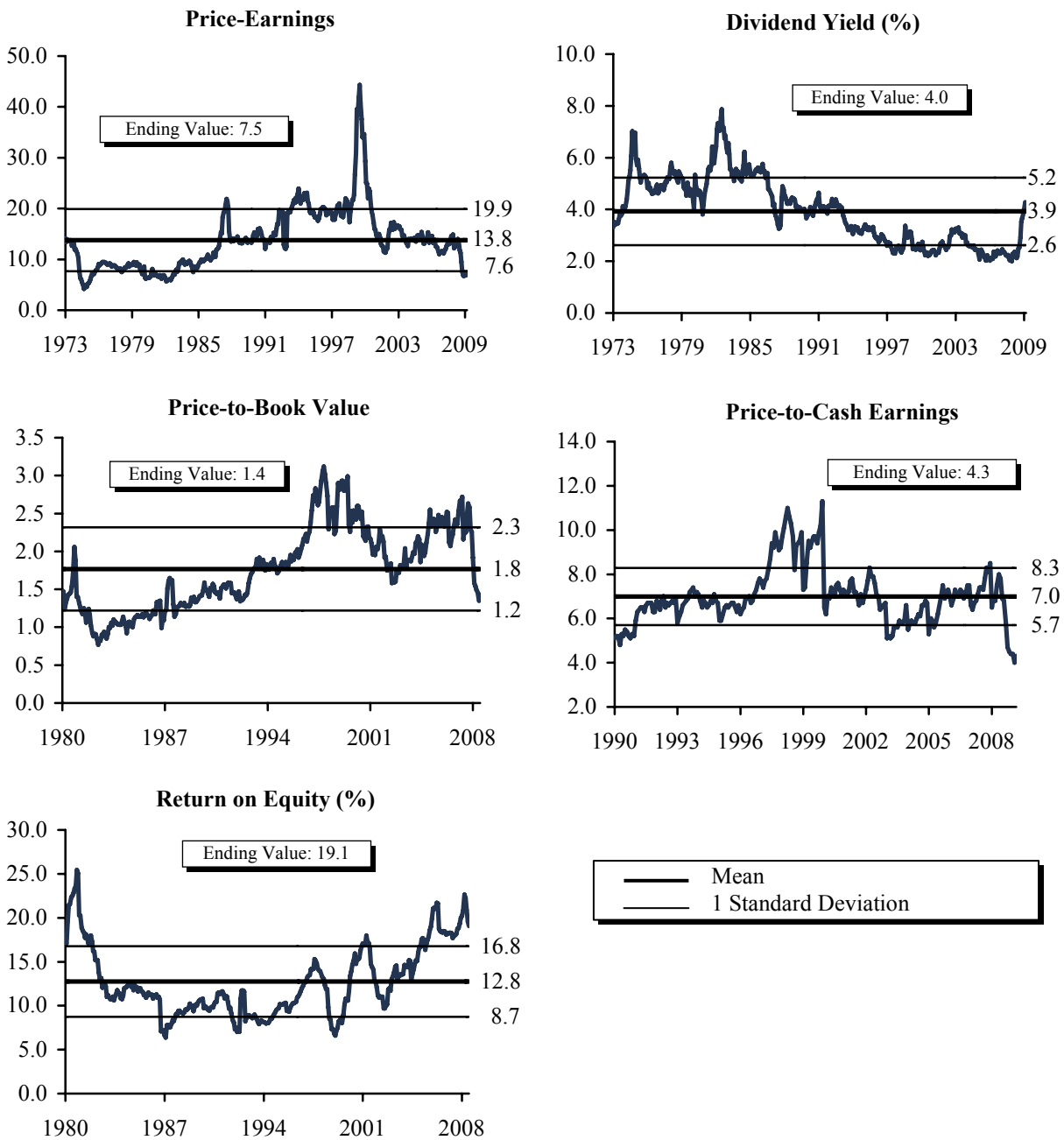
Sources: Bloomberg L.P., Global Financial Data, Inc., and Thomson Datastream.

Notes: Trade-weighted U.S. dollar is a representation of the foreign currency price of the U.S. dollar or the export value of the U.S. dollar. Gold equities represented by the S&P Gold & Precious Metals Index through 1983 and the XAU Index from 1984 through the present.

Table J

**ENERGY EQUITIES VALUATIONS:
DATASTREAM WORLD OIL & GAS INDEX**

January 31, 1973 – March 31, 2009

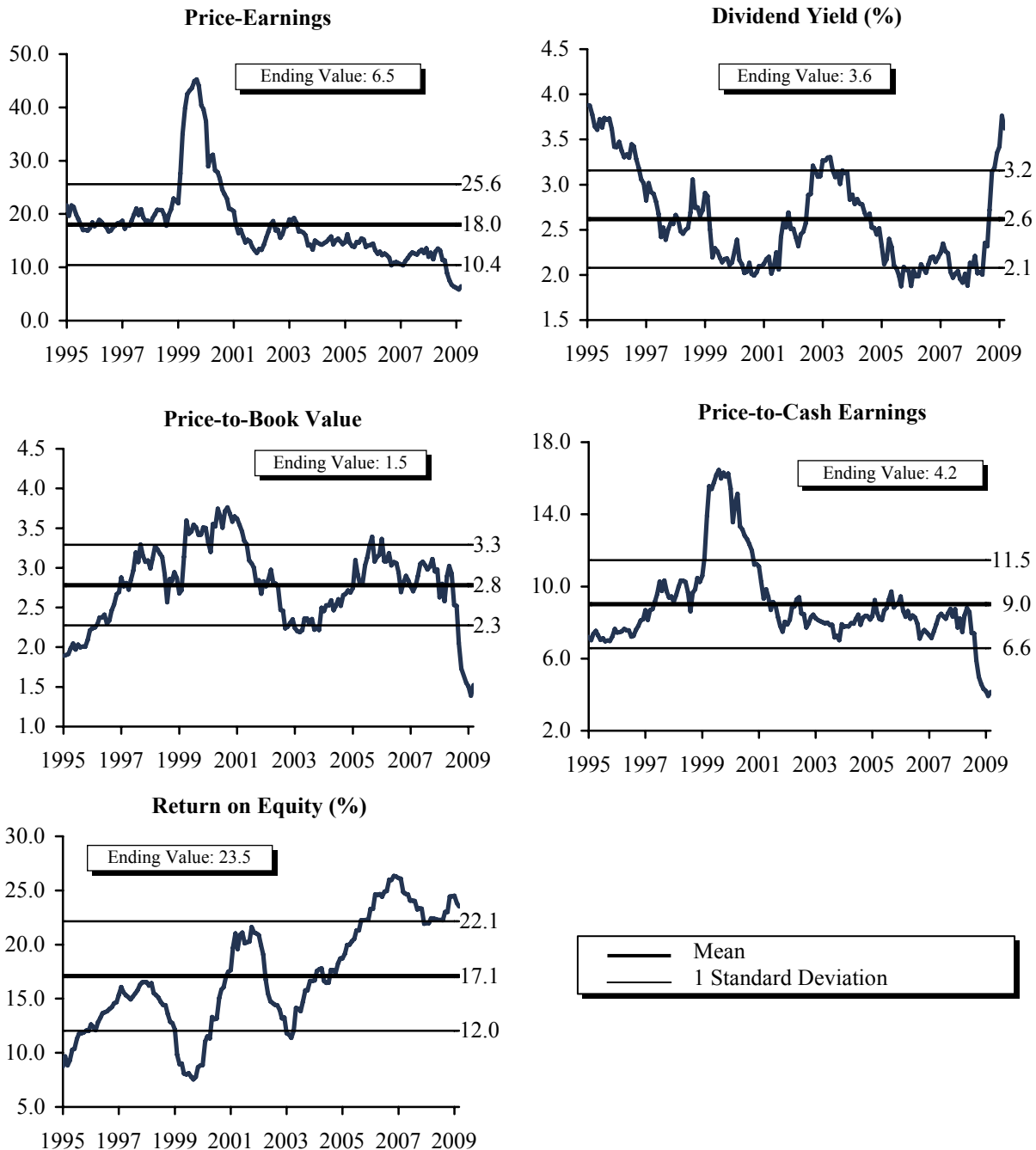


Notes: Return on equity is calculated by dividing the index's price-to-book ratio by its price-earnings ratio. Price-to-book value and return on equity data begin January 31, 1980, and price-to-cash earnings data begin January 31, 1990.

Table K

**ENERGY EQUITIES VALUATIONS:
MSCI WORLD ENERGY INDEX**

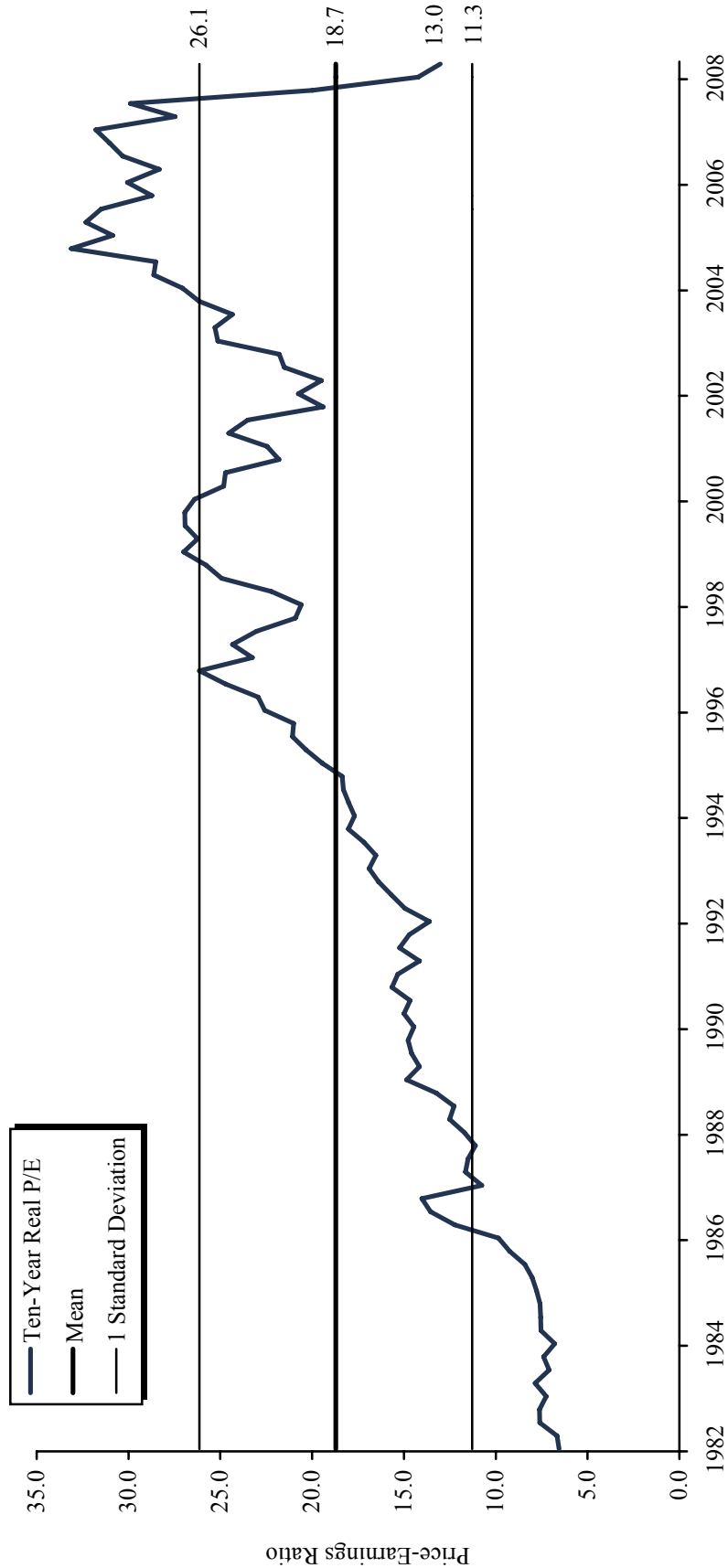
January 31, 1995 – March 31, 2009



Sources: MSCI Inc. and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Note: Return on equity is calculated by dividing the index's price-to-book ratio by its price-earnings ratio.

Table L
ENERGY EQUITIES VALUATION:
DATASTREAM WORLD OIL & GAS INDEX NORMALIZED P/E RATIO
January 1, 1973 – March 31, 2009

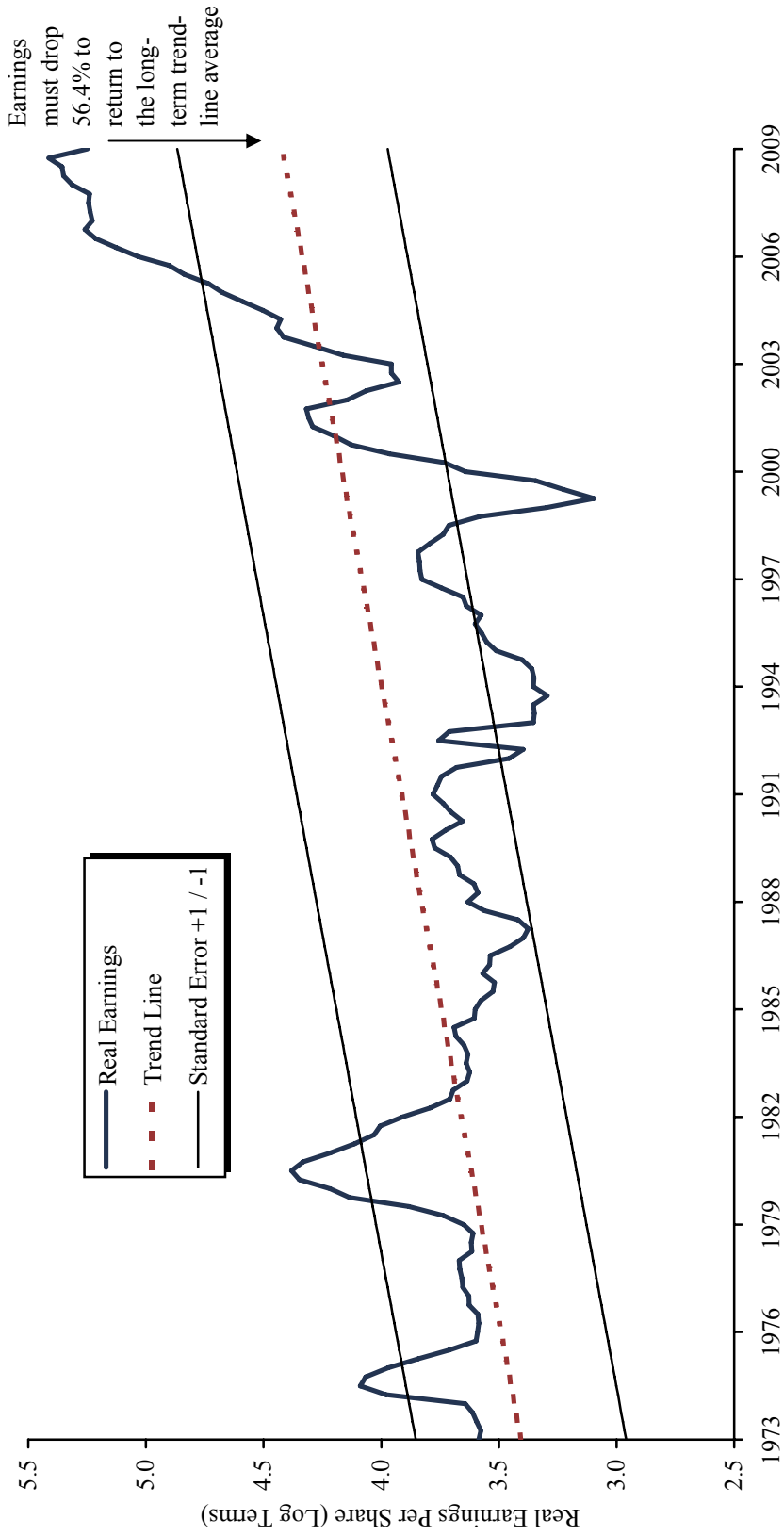


Sources: OECD and Thomson Datastream.

Notes: Graph represents quarterly data. Normalized price-to-earnings ratio deflated by G7-CPI, based on February 2009 levels.

Table M
ENERGY EQUITIES REAL EARNINGS:
DATASTREAM WORLD OIL & GAS INDEX

March 31, 1973 – March 31, 2009



Sources: OECD and Thomson Datastream.

Notes: Data are shown in logarithmic terms. Graph represents quarterly data. Real earnings deflated by G-7 CPI, based on February 2009 levels. Trend line based on simple linear regression trend model. Calculated from data provided by Thomson Datastream.