

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

GLOBAL MARKET COMMENT

ENERGY EXPOSURE: TOO MUCH? TOO LITTLE? TOO LATE?

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Celia Dallas
Marcelo Morales

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Energy Exposure: Too Much? Too Little? Too Late?

After hitting a low of \$10.73/bbl on December 10, 1998, prices for the near-term contract on West Texas Intermediate crude oil rose 551% to close at \$69.82 on August 30, 2005—a new nominal high. At the same time, investor interest in energy investments has risen dramatically. As clients have been developing and adding to their energy allocations, energy stocks also have grown as a percentage of developed and emerging markets equity portfolios. The result has been a meaningful increase in energy allocations for most institutions. Just how exposed are investors to energy today and does this raise concerns given that energy prices are quite expensive?

Quantifying the Rise in Energy Exposure

Equity market energy exposure has been rising at the same time that investors have been increasing their allocations to energy through investments in commodities and natural resource equity managers. Between June 30, 2000 and August 31, 2005, endowed U.S. institutions, assuming they have similar energy exposure to the broad market indices, saw their allocation to energy sector shares nearly double on average, from 2.7% to 5.1% of their total portfolio, and from 4.8% to 9.6% of their long-only marketable equities. The increase was driven both by the increase in energy stocks as a percentage of equity market capitalizations and by investors' increased allocations to non-U.S. developed and emerging equities, which have higher allocations to energy stocks than do U.S. equities (Tables A and B). For example, since its recent trough at the end of 1999, the energy weight in developed markets equities, as represented by the MSCI World Index, increased from 4.9% to 10.0%, while the energy sector's share of emerging markets increased from 5.3% to 13.9%. The U.S. equity market followed a similar pattern, with energy stocks increasing from 4.8% to 9.6% of the S&P 500 over the same period, while countries with significant energy exposure, such as the United Kingdom, experienced a more dramatic increase, as energy stocks accounted for a low of 5.8% of the MSCI U.K. Index at year-end 1998, 10.4% at year-end 1999, and 20.6% as of August 31, 2005.

In addition, a significant number of investors have added allocations to commodities over the last few years.¹ As of June 30, 2003, only eight of 302 responding institutions, or less than 3%, reported to us that they invested in commodities—roughly the same number of institutions reporting a commodity allocation since we began collecting these data in the late 1990s. By mid-year 2005, this number escalated to 151 institutions, or 40% of the 374 responding institutions. However, average exposures remain very low, at 1.1% of the total portfolio, ranging from 0.1% to 8.4%. The percentage of institutions reporting they invest in oil and gas partnerships has held relatively steady at roughly 25%, but this stability is likely driven by the limited access to high-quality investment opportunities, as funds that have come to market over the last several years have tended to be well oversubscribed. Anecdotally, we have also seen an increase in investments in diversified hard asset funds and energy stock and natural resource funds, although we have not surveyed institutions regarding their allocations to these strategies.

¹ Commodities are defined here as investments in commodity futures, such as the Goldman Sachs Commodity Index (GSCI) or the Dow Jones-AIG Index (DJ-AIG).

Is There Cause to be Concerned?

While investors generally have a higher exposure to the energy sector today than they have in the past, and energy-related commodities are overvalued today, we believe that the energy sector is in the midst of a secular bull market. Demand growth has been driven primarily by China, India, and other emerging nations that are experiencing significant increases in energy consumption as a result of rising wealth of their large populations and their less energy-efficient manufacturing operations. In addition, for many sources of energy, real spending on capacity and infrastructure has declined significantly over the past two decades. Just as the overinvestment in energy infrastructure during the 1970s lowered the cost of production in the 1980s and 1990s, maturing oil fields, underinvestment in capacity, and aging infrastructure are likely to result in higher average energy prices for the next few years. Oil and gas prices may be in the midst of a secular shift driven by emerging Asian demand, but they will always remain cyclical, like the economy in general.²

In addition, the risk that global inflation will increase faster than expected cannot be ignored, particularly given the significant run-up in energy prices and the very low inflation expectations priced into capital markets. While the globalization of labor supply has offset the impact of rising energy prices thus far, the possibility of rising inflation remains. Monetary policy continues to be relatively easy, while U.S. labor markets are beginning to tighten and capacity utilization has increased significantly.

From a cyclical standpoint over the short to intermediate term, energy prices are subject to significant downside risk. According to estimates by Goldman Sachs, crude oil is trading at a \$15/bbl premium to the marginal cost of production. This premium increases the downside risk to oil should global demand falter. However, if demand remains stable or increases, energy prices could continue to experience significant upside spikes given limited refining capacity and aging infrastructure. These factors support maintaining an allocation to hard assets that have historically provided some protection against unexpected inflation. Energy exposure is a logical component given the pricing pressure today stems largely from this source.

Hedge Against Inflation

While not perfect, investments in private oil and gas partnerships, energy futures, and public energy stocks should provide a reasonable degree of protection against high rates of unexpected inflation. Although the historical record is mixed, there is evidence to suggest that ownership of oil and gas producing properties does indeed serve as a fairly reliable hedge. Although the correlation between oil and gas prices and the Consumer Price Index is not particularly strong, it is important to note that it is higher than that of financial assets (stocks and bonds), which have negative correlations with high, unexpected inflation (Tables C and D).

² See our *Oil and Gas Investing* (2005) report for a more detailed discussion of the environment for energy investing.

While we would not expect energy stocks to provide the same degree of protection as direct investments in oil and gas during a spike in energy prices, they should perform reasonably well. However, history provides little guidance as to how wide a divergence in performance can be expected. Market shocks are few and far between, making historical data sparse and of limited use. For example, the 1970s and the current environment provide the only examples we have of energy stock performance during a period of significant energy price spikes. In the 1970s, we only have data on U.S. energy stocks, which earned an average annual compound return (AACR) of 11.0% from 1973-81, compared to average annual price increases of 28.9% for oil and 31.3% for gas. Given inflation for G7 countries was 10.0% (9.2% in the United States) over the period, energy stocks were able to keep slightly ahead of inflation, while global stocks and bonds were behind inflation.

The experience in the current environment has been quite different. While crude oil prices have increased a cumulative 543% since its low on December 10, 1998, through the end of August 2005, and 287% since the more recent low on November 15, 2001, inflation has remained well below 3% and energy stock performance has been exceptional. Since 2002, the AACR of the MSCI World Energy Index was 15.5%; the S&P 500 Energy Index, 20.2%; and the U.S. Dow Jones Oil and Gas Index, 19.9%. While these returns lag the exceptional performance of the GSCI Energy Index, which returned 43.4% over the period, it is clear that the correlation between energy prices and energy stocks has been far greater in the current period than it was in the 1970s.

The wide divergence in performance between oil prices and energy stocks in the 1970s was likely related to their relative valuations, as oil was more attractively valued than energy stocks coming into the first oil shock in the 1970s. In contrast, energy stocks today are much more attractively priced than energy commodities and equities in general, at least in the U.S. market for which we have a reasonable history of data (Table E). Since year-end 2002, when earnings growth of energy stocks hit a recent low, earnings on the Dow Jones Oil & Gas Index grew over 200% through August 31, 2005, nearly doubling price appreciation over the period. Therefore, despite the strong rally in energy stocks, valuations based on price multiples of trailing earnings have improved and imply these stocks are cheap at a price-earnings multiple of 14.4; of course, this assessment is predicated on the belief that energy earnings growth will continue to be very robust. Valuations based on price-to-book ratios and price-to-cash earnings ratios suggest the market is roughly fairly valued, which we regard as a more accurate assessment given the relatively high and likely unsustainable rate of energy stock earnings growth in recent years. In fact, the consensus expects operating earnings growth from energy stocks to fall precipitously in 2006, as earnings grew 54% in 2004, and are expected to grow 40% in 2005, dropping to only 4.4% in 2006.

Focus on Value-Added Energy Investments

For those building positions in energy, we would advocate focusing on value-added investments that are less dependent on rising energy prices—and less subject to risk from falling energy prices—until valuations improve. The environment for private equity investments in the energy industry remains attractive, notwithstanding current high energy prices and its impact on deal flow, particularly for smaller-

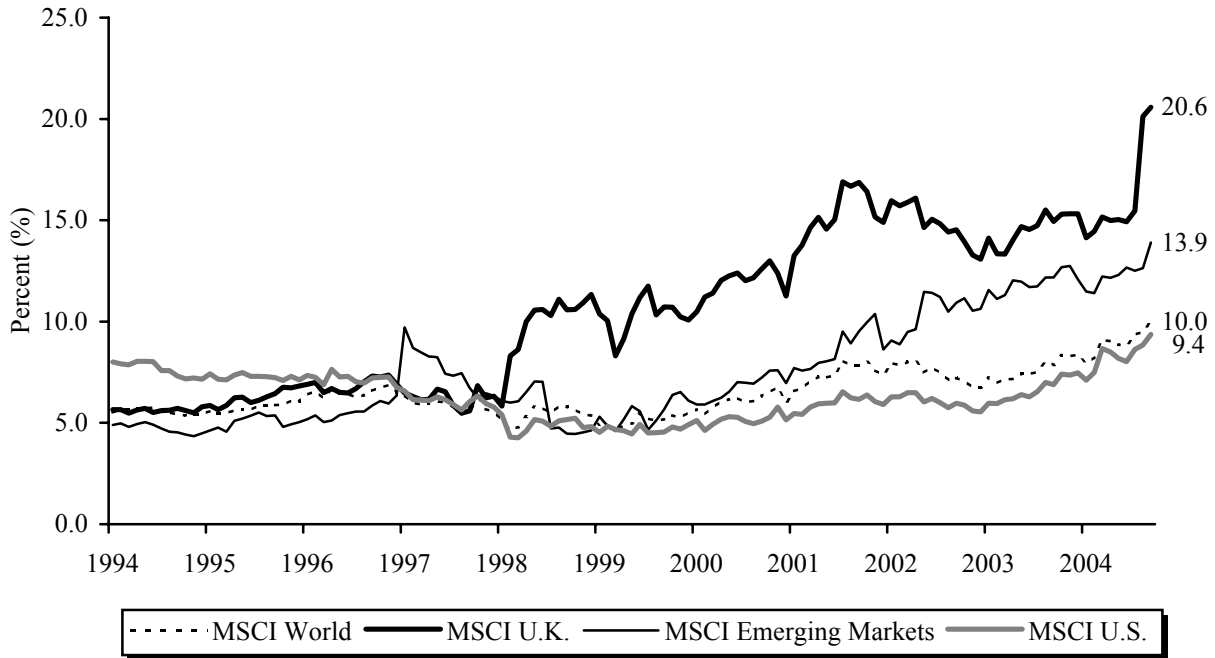
capitalization transactions favored by most firms since they face fewer alternative financing sources. Within public markets, energy stocks are fairly valued as a whole, but the market is not uniform, as smaller stocks are currently more expensive than large-cap stocks, for example. Therefore, we recommend careful implementation in adding to energy stock exposure, beyond what is achieved through allocations to global equity markets in general, through identifying energy managers that can add value through stock selection. Finally, diversified allocations to commodities that include exposure to agriculture, metals, and livestock, such as the DJ-AIG, offer better value than energy-centric commodity investments, such as GSCI, which as of August 31 had an energy allocation of 80.2%.

Conclusion

While most investors have seen their exposure to energy increase, even if they have not explicitly decided to raise their allocations, we are not overly concerned. We continue to recommend maintaining exposure to hard assets, including energy, particularly given their diversification and inflation-hedging characteristics. While crude oil at over \$65/bbl is clearly expensive, and energy prices on the whole are somewhat high, upward price risk remains, given the long lead time to bring on new energy capacity, as well as the potential for sharply growing demand led by China and India. In addition, energy-related investments should serve as a reasonable inflation hedge, should inflation pressures turn out higher than the benign levels priced into capital markets. Therefore investors should evaluate their portfolios to make sure that they have enough energy exposure to protect their portfolios should energy prices spike upward, but not so much that a retreat to more reasonable valuations would prove intolerable.

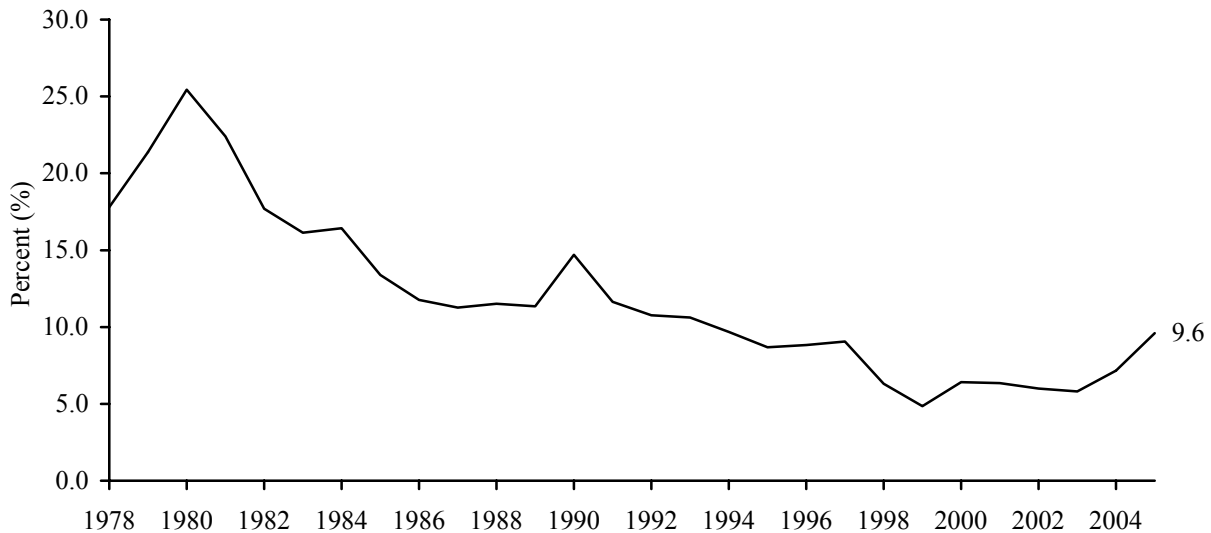
Table A
TRENDS IN EQUITY ENERGY SECTOR WEIGHTS

MSCI Equity Energy Index Weights
December 31, 1994 - August 31, 2005



S&P 500 Energy Index Weights

1978-2005



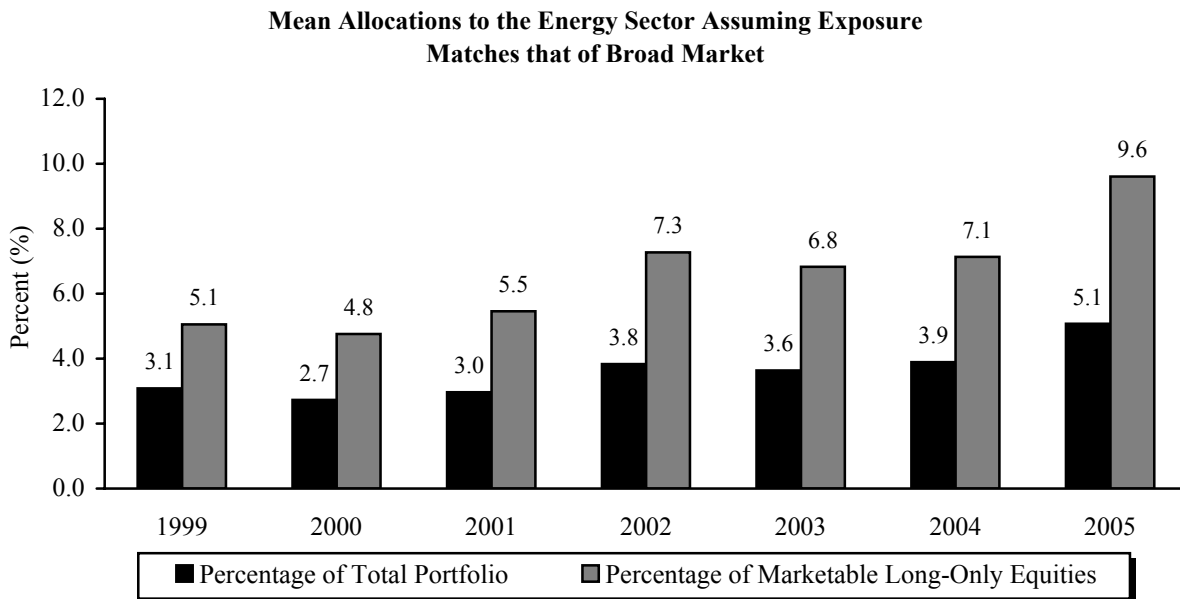
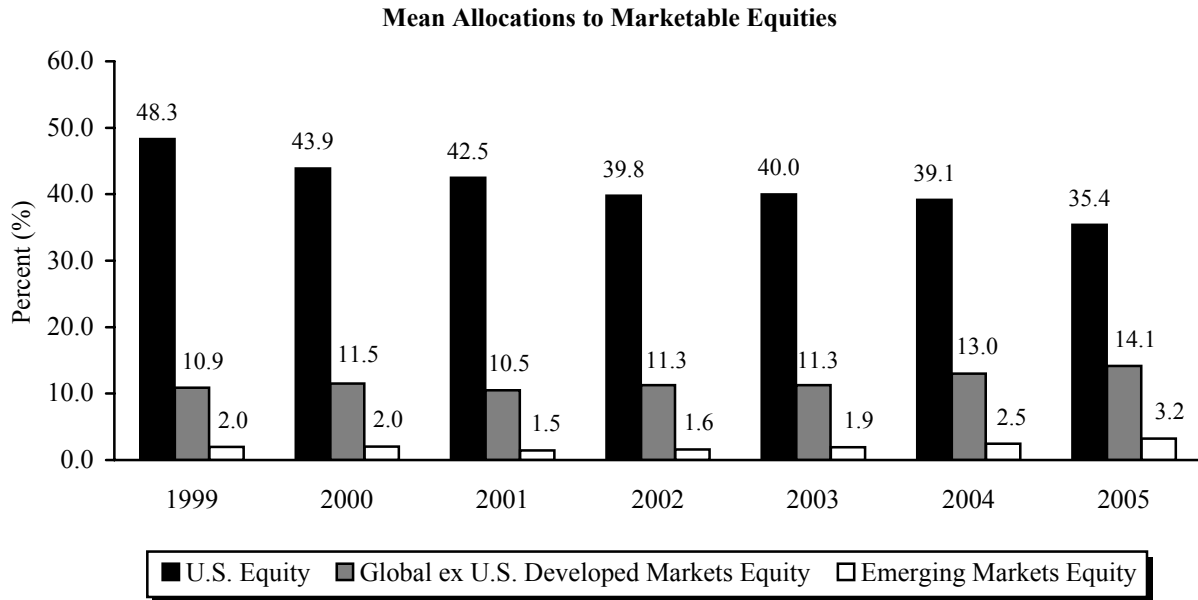
Sources: Morgan Stanley Capital International, Standard & Poor's, Standard & Poor's Compustat, and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Notes: S&P 500 Energy Index Weights represent annual data and 2005 data are through August 31. Data prior to 2001 represent the old S&P sectors. From December 2001 forward, data are represented by the new S&P Global Industry Classification Standard.

Table B

TRENDS IN ENERGY EXPOSURE THROUGH LONG-ONLY MARKETABLE EQUITIES

All U.S. Endowed Institutions, June 30, 1999 - June 30, 2005



Sources: Cambridge Associates LLC reports on *Annual Analysis of Investment Pool Returns*, Morgan Stanley Capital International, and Thomson Datastream. MSCI data provided "as is" without any express or implied warranties.

Note: Data for energy sector weights from 1999-2004 are as of June 30 and data for 2005 are as of August 31.

Table C
HISTORICAL NOMINAL RETURNS AND INFLATION

Investing in a High-Inflation Environment										
Calendar Years	CPI-U	G7 CPI	MSCI		Lehman		Change in Crude Oil Price	Change in Gas Price	Goldman Sachs Commodity Index	S&P Energy Index
			World Index	S&P 500	Govt/Credit Bond Index	Brothers				
1973	8.7	10.5	-18.1	-14.8	2.3	184.0	18.3	75.0	8.0	
1974	12.3	14.4	-26.3	-26.4	0.2	10.4	45.5	39.5	-24.3	
1975	6.9	9.3	36.3	37.2	12.3	0.0	12.5	-17.2	26.7	
1976	4.9	7.9	14.1	23.6	15.6	24.6	50.0	-11.9	32.2	
1977	6.7	7.3	-3.9	-7.4	3.0	6.8	37.0	10.4	-4.9	
1978	9.0	7.6	9.4	6.4	1.2	0.0	29.7	31.6	8.5	
1979	13.3	12.0	13.2	18.2	2.3	118.9	36.5	33.8	39.7	
1980	12.5	11.5	23.5	32.3	3.1	16.9	32.8	11.1	68.2	
1981	8.9	9.6	1.0	-5.0	7.3	-7.9	24.1	-23.0	-23.0	
Average Annual Compound Return	9.2	10.0	3.8	5.0	5.1	28.9	31.3	12.8	11.0	

Investing in a Low-Inflation Environment										
Calendar Years	CPI-U	G7 CPI	MSCI		Lehman		Change in Crude Oil Price	Change in Gas Price	Goldman Sachs Commodity Index	S&P Energy Index
			World Index	S&P 500	Govt/Credit Bond Index	Brothers				
1982	3.8	5.5	15.7	21.4	31.1	-8.6	20.4	11.6	-10.4	
1983	3.8	4.6	25.0	22.4	8.0	-7.3	0.4	16.3	25.1	
1984	3.9	4.2	10.6	6.1	15.0	-11.0	-1.5	1.1	15.9	
1985	3.8	3.7	28.5	31.6	21.3	-0.4	-11.3	10.0	33.2	
1986	1.1	1.3	29.8	18.6	15.6	-31.7	-35.4	2.0	21.3	
1987	4.4	3.4	0.0	5.1	2.3	-7.0	16.8	23.8	10.0	
1988	4.4	3.9	26.2	16.6	7.6	3.3	18.6	27.9	18.7	
1989	4.6	4.4	24.1	31.7	14.2	26.4	-1.0	38.3	39.7	
1990	6.1	5.5	-21.4	-3.1	8.3	30.5	5.1	29.1	2.9	
1991	3.1	3.5	16.3	30.5	16.1	-32.8	-10.7	-6.1	6.9	
1992	2.9	2.8	-1.3	7.6	7.6	2.9	15.8	4.4	2.3	
1993	2.7	2.6	20.9	10.1	11.0	-27.8	-2.3	-12.3	15.9	
1994	2.7	2.3	-0.8	1.3	-3.5	23.0	-17.8	5.3	3.7	
1995	2.5	2.2	19.4	37.6	19.2	12.2	60.8	20.3	31.0	
1996	3.3	2.4	16.6	23.0	2.9	32.4	47.3	33.9	25.9	
1997	1.7	1.8	22.5	33.4	9.8	-32.0	-44.1	-14.1	25.3	
1998	1.6	1.4	20.7	28.6	9.5	-31.7	-14.6	-35.7	0.6	
1999	2.7	1.8	27.7	21.0	-2.1	112.4	19.1	40.9	18.7	
2000	3.4	2.5	-9.9	-9.1	11.9	4.8	351.8	49.7	15.7	
2001	1.6	1.1	-14.2	-11.9	8.5	-26.3	-73.9	-31.9	-10.4	
2002	2.4	2.1	-24.1	-22.1	11.0	57.9	68.6	32.1	-11.1	
2003	1.9	1.6	24.9	28.7	4.7	4.2	27.0	20.7	25.6	
2004	3.3	2.6	11.3	10.9	4.2	33.5	6.2	17.3	31.5	
2005	2.2	1.5	3.4	-0.8	2.7	30.0	13.6	16.5	19.9	
Average Annual Compound Return	3.1	2.9	10.3	13.3	9.8	2.1	5.3	10.5	14.3	

Sources: Bureau of Labor Statistics, Lehman Brothers, Inc., Morgan Stanley Capital International, Oil & Gas Journal Energy Database, Standard & Poor's, Thomson Datastream, and *The Wall Street Journal*. MSCI data provided "as is" without any express or implied warranties.

Notes: S&P Energy data from first quarter 1973 through first quarter 1986 are from State Street Global Advisors and data from second quarter 1986 to third quarter 1989 are from Standard & Poor's Compustat. Data for 2005 are as of June 30. All data are in local currency. Total returns for MSCI developed markets indices are net of dividend taxes.

Table D

**CORRELATIONS DURING PERIODS OF HIGH AND LOW INFLATION:
COMMODITY INDICES, CAPITAL MARKET INDICES, INFLATION AND COMMODITIES**

January 1, 1973 - December 31, 1981 (High-Inflation Environment)

	<u>GSCI</u>	<u>S&P 500</u>	<u>MSCI World</u>	<u>LB Govt/Credit</u>	<u>91-Day T-Bills</u>	<u>U.S. CPI-U</u>	<u>G7 CPI</u>	<u>U.S. PPI</u>	<u>S&P Energy</u>	<u>Oil</u>	<u>Gas</u>	<u>Gold</u>
GSCI	1.00											
S&P 500	-0.41	1.00										
MSCI World	-0.47	0.97	1.00									
LB Govt/Credit	-0.07	0.46	0.46	1.00								
91-Day T-Bills	-0.10	-0.06	-0.04	0.12	1.00							
U.S. CPI-U	0.16	-0.25	-0.25	-0.25	0.44	1.00						
G7 CPI	0.06	-0.15	-0.17	-0.16	0.27	0.82	1.00					
U.S. PPI	0.39	-0.36	-0.37	-0.33	0.10	0.61	0.61	1.00				
S&P Energy	-0.15	0.75	0.62	0.34	-0.09	-0.08	-0.08	-0.22	1.00			
Oil	0.11	-0.19	-0.26	-0.07	-0.01	0.18	0.20	-0.02	0.07	1.00		
Gas	-0.32	-0.04	-0.06	-0.04	-0.09	0.09	0.08	0.05	0.00	-0.05	1.00	
Gold	0.22	-0.03	-0.04	0.07	-0.09	0.26	0.32	0.42	0.06	0.11	0.09	1.00

January 1, 1982 - June 30, 2005 (Low-Inflation Environment)

	<u>GSCI</u>	<u>S&P 500</u>	<u>MSCI World</u>	<u>LB Govt/Credit</u>	<u>91-Day T-Bills</u>	<u>U.S. CPI-U</u>	<u>G7 CPI</u>	<u>U.S. PPI</u>	<u>S&P Energy</u>	<u>Oil</u>	<u>Gas</u>	<u>Gold</u>
GSCI	1.00											
S&P 500	-0.24	1.00										
MSCI World	-0.24	0.93	1.00									
LB Govt/Credit	-0.19	0.10	0.03	1.00								
91-Day T-Bills	0.03	0.06	0.03	0.41	1.00							
U.S. CPI-U	0.33	-0.20	-0.25	-0.18	0.28	1.00						
G7 CPI	0.25	-0.07	-0.13	0.00	0.52	0.89	1.00					
U.S. PPI	0.44	-0.12	-0.20	-0.13	0.05	0.58	0.51	1.00				
S&P Energy	0.28	0.55	0.55	-0.08	-0.06	0.11	0.11	0.13	1.00			
Oil	0.83	-0.30	-0.34	-0.23	-0.07	0.30	0.18	0.40	0.26	1.00		
Gas	0.23	-0.01	0.00	0.16	-0.05	-0.22	-0.18	0.10	0.14	0.06	1.00	
Gold	0.22	-0.07	-0.05	0.11	-0.09	-0.05	-0.06	0.08	0.15	0.28	0.03	1.00

Sources: Bureau of Labor Statistics, Lehman Brothers, Inc., Merrill Lynch & Company, Morgan Stanley Capital International, Standard & Poor's, Standard & Poor's Compustat, Thomson Datastream, and *The Wall Street Journal*. MSCI data provided "as is" without any express or implied warranties.

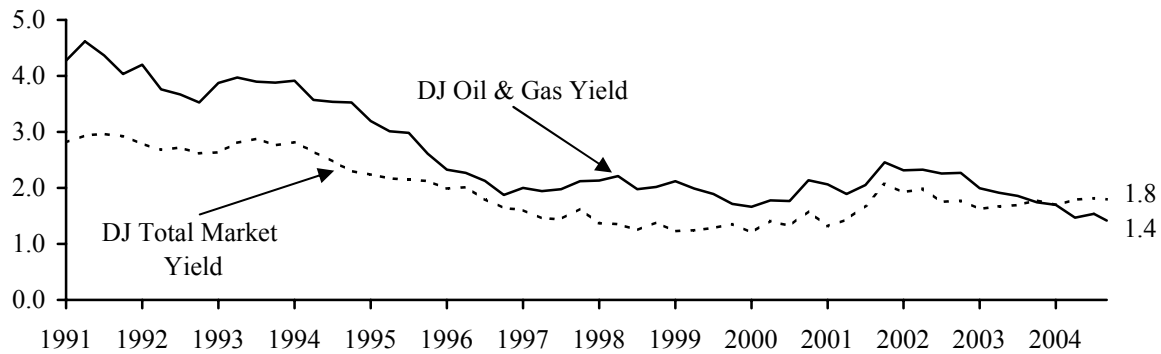
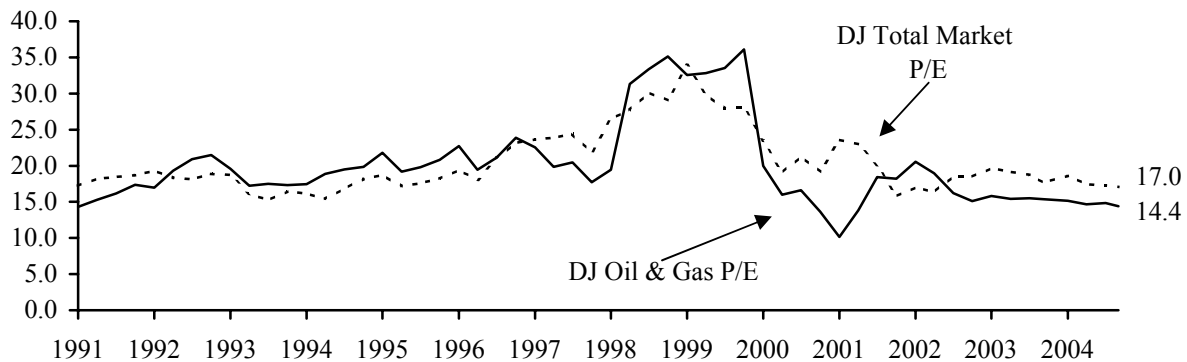
Notes: GSCI represents Goldman Sachs Commodity Index. The 91-Day Treasury Bill Index represents returns calculated using yield data from the Federal Reserve from 1970 to 1977 and the Merrill Lynch 91-Day Treasury Bill Index from 1978 to present. All data are in local currency. Total returns for MSCI developed markets indices are net of dividend taxes.

Table E

ENERGY SECTOR UPDATE

As of August 31, 2005

	YTD Total Return	Average Annual Compound Returns (%)		
		Trailing 3 Years	Trailing 5 Years	Trailing 10 Years
DJ Oil & Gas Index	35.2	34.4	11.8	15.7
DJ U.S. Total Market	3.1	17.8	-1.3	9.3
Russell 2000®	3.1	24.0	6.4	9.3
Lehman Aggregate	2.9	4.3	6.8	6.7



	Price/Earnings		Dividend Yield		Price/Book		Price/Cash Flow	
	Current Valuation	Post-1991 Average	Current Valuation	Post-1991 Average	Current Valuation	Post-1991 Average	Current Valuation	Post-1991 Average
DJ Oil & Gas Index	14.4	19.8	1.4	2.6	3.0	2.7	9.9	8.7
DJ Large Cap O&G	13.2	19.7	1.7	2.9	3.0	2.9	9.8	9.3
DJ Mid Cap O&G	21.6	20.7	0.6	1.7	3.1	2.4	10.9	7.4
DJ Small Cap O&G	20.3	45.5	0.3	0.8	2.9	2.3	9.8	7.8

Sources: Dow Jones & Company, Inc., Frank Russell Company, Lehman Brothers, Inc., and Thomson Datastream.

Note: Prior to December 31, 2004, Dow Jones Oil and Gas Index was named Dow Jones Energy Index.

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