

Performance Profiles of Major Energy Producers 2009



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of Major Energy Producers
2009
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U.S. Energy Information Administration

Office of Energy Statistics
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Major Findings

This edition of *Performance Profiles* reviews financial and operating data for the calendar year 2009 and discusses important trends and emerging issues relevant to U.S. energy company operations. Major U.S.-based oil and natural gas producers and petroleum refiners submit the data in this report annually on Form EIA-28, the Financial Reporting System (FRS).

FRS companies' net income declined to the lowest level since 2002.

- Net income fell 66 percent (in constant 2009 dollars) to \$30 billion in 2009 from \$88 billion in 2008. Substantial reductions in oil and natural gas prices in 2009 slowed revenue growth. FRS companies cut operating costs but by less than the decline in revenue, resulting in a 69-percent drop in operating income.
- FRS companies earned a 5-percent return on stockholders' equity (ROE) in 2009, 4 percentage points below the average ROE of the Census Bureau's All Manufacturing Companies. For the first time since 2002, the profitability of FRS companies fell below this industry benchmark.

Upstream and downstream profits fell substantially in 2009.

- Oil and natural gas production continued to be the most profitable business segment, contributing \$42 billion in net income, but this was a decline of 43 percent from 2008. Return on net investment in place (ROI) fell to 7 percent in 2009 from 13 percent in 2008.
- The refining/marketing segment reported a loss of \$7 billion in 2009, compared with a \$14-billion gain in 2008. ROI for domestic refining/marketing in 2009 declined to the lowest level ever reported in the FRS survey, negative 7 percent. Foreign refining/marketing ROI remained positive but was significantly lower, dropping to 6 percent in 2009 from 26 percent in 2008. The FRS companies' average domestic refining/marketing gross margin (essentially the difference between product prices and raw material input costs) dropped to the lowest level since 1999 and was the second lowest level ever reported on the survey. This contributed to the first negative net margin reported by FRS companies, negative \$0.36 per barrel in 2009.

Cash flow and capital expenditures fell substantially in 2009.

- Cash flow from operations decreased 41 percent from 2008 to \$131 billion in 2009, led by the decline in net income. Proceeds from the sales of assets fell 52 percent from 2008 to \$12 billion in 2009 as the value of assets declined in the lower price environment. Funds raised from equity security offerings declined 30 percent to \$5 billion, while proceeds from issuing long-term debt increased slightly to \$77 billion.
- The largest use of cash was for capital expenditures, which decreased 31 percent from 2008 to \$139 billion in 2009. Despite the large decline, capital expenditures in 2009 remained higher than every year prior to 2005. The amount of cash used to repurchase company stock fell 65 percent to \$20 billion in 2009, but FRS companies maintained dividend payments, which increased 2 percent to \$32 billion. FRS companies' long-term debt to equity ratio rose to 39 percent, the highest since 2004. Total uses of cash exceeded sources, resulting in the largest decline in cash and cash equivalents ever reported in the FRS survey, a decrease of \$21 billion in 2009.

Upstream expenditures fell but remained at historically high levels.

- Expenditures for exploration, development, property acquisition, and production decreased 24 percent from 2008 to \$166 billion in 2009. The 2009 expenditure level remained higher than every year prior to 2006.

Compared with the 2008 level, development expenditures decreased 21 percent to \$71 billion in 2009. It was the first decline in development expenditures since 1999. Exploration expenditures fell 1 percent to \$17 billion but remained higher than every year from 1986 through 2007.

Oil and natural gas production and reserve additions increased.

- Worldwide production of oil (crude oil and natural gas liquids combined) by the FRS companies was up markedly in 2009, while natural gas production grew slightly. The increase in oil production was the first substantial increase since 2001. In contrast, the increase in natural gas production was the smallest since 2006. Beginning in 2009, oil sands and other nonconventional oil production were included in the oil and natural gas production segment. This contributed to a substantial increase in oil production in Canada. Natural gas production decreased in three of the nine FRS regions, led by Europe. In 2009, FRS companies accounted for 43 percent of U.S. oil production and 43 percent of U.S. natural gas production.
- Worldwide reserve additions by the FRS companies for oil and for natural gas increased in 2009, with both growing more than 50 percent. Additions were most notable in the U.S. Onshore and Canada regions for oil and the U.S. Onshore and Other Eastern Hemisphere regions for natural gas.

Finding and lifting costs both declined.

- Average worldwide finding costs for the FRS companies decreased to \$18.31 per barrel of oil equivalent (boe) of reserves added in the 2007-2009 period compared with the 2006-2008 period, a decline of \$5.79 per boe from 2008. Finding costs declined in all FRS regions except the Former Soviet Union, Africa, and the Middle East. The U.S. Offshore, which had the highest finding costs among the FRS regions in 2006-2008, had the largest fall in 2007-2009. Europe's costs also fell substantially in 2007-2009. Europe had the highest finding costs among the foreign regions in 2006-2008. Canada displayed a large decline in part likely because of the inclusion of oil sands in 2009.
- Reversing an almost decade-long trend, worldwide total lifting costs for the FRS companies fell \$1.19 per boe, to \$11.51 per boe, in 2009. Total lifting costs also fell in each of the FRS regions except Canada, where they rose \$2.49, probably reflecting the inclusion of oil sands in 2009. Production taxes were the major contributor to the decline in total lifting costs. Worldwide they declined \$0.84 per boe in 2009, which is 70 percent of the decline in total lifting costs. Production taxes typically rise and fall with changes in the prices of oil and natural gas, both of which fell in 2009. Direct lifting costs fell 14 percent in the United States but increased in every foreign region. Finding and lifting costs combined fell almost \$5 per boe in the 2007-2009 period to \$29.81 per boe.

U.S. refining/marketing capital expenditures declined but remained high; U.S. refinery capacity increased.

- Capital expenditures for the FRS companies' domestic refining/marketing segment decreased 16 percent from 2008 to \$22 billion in 2009 while foreign refining/marketing capital expenditures increased 2 percent. Despite the net income loss reported by domestic refining/marketing, capital expenditures in 2009 remained higher than all but 3 prior years in the survey.
- FRS companies reported that their U.S. refinery capacity increased 2 percent, which includes the addition of three refinery joint ventures to the FRS survey. FRS companies accounted for 78 percent of U.S. refining capacity in 2009.

Financial Developments

The U.S. Energy Information Administration's (EIA) *Performance Profiles of Major Energy Producers 2009* provides a financial review and analysis of the domestic and worldwide activities and operations of the major U.S.-based energy-producing companies. *Performance Profiles* examines companies' operations on a consolidated corporate level, by individual lines of business, by major functions within each line of business, and by geographic regions. The report focuses on annual aggregate changes in profits, cash flow, and investment in the United States and international energy industry. It also explores changes in the majors' exploration and development expenditures, production, reserves additions, and refining costs and margins. The analysis in this report is based on detailed financial and operating data and information submitted each year to EIA on Form EIA-28, the Financial Reporting System (FRS).

Net Income and Profitability

Net income for FRS companies fell 66 percent (in constant 2009 dollars)¹ to \$30 billion in 2009 from \$88 billion in 2008 (**Table 1**). This was the lowest level of earnings since 2002 and was sharply lower than the record high levels of recent years (**Figure 1**). Substantial reductions in oil and natural gas prices in 2009 slowed revenue growth. FRS companies cut operating costs but by less than the decline in revenue, resulting in a 69-percent drop in operating income. FRS companies also reported a 43-percent decline in "Other Revenue," which was driven primarily by smaller gains on the sales of property, plant, and equipment and lower earnings for affiliates of FRS companies that are not included in the operating data.

FRS companies continued to write down assets in 2009 but the amount was significantly lower than in 2008. Natural gas prices generally declined in 2009, while oil prices generally rose from their level at the end of 2008. Excluding the effect of asset impairments and other special items, net income for FRS companies decreased 66 percent to \$50 billion in 2009.

The FRS companies' return on stockholders' equity (ROE) fell to 5 percent in 2009, the lowest level since 1992 (**Figure 2**). For the first time since 2002, the profitability of FRS companies fell below that of the Census Bureau's All Manufacturing Companies (**Figure 3**), which is a survey of the financial results of manufacturing corporations with assets greater than \$250,000. From 2000 to 2008, the FRS companies outperformed the Census Bureau's All Manufacturing Companies by an average of 7 percentage points, compared with an average 2 percentage points lower from 1985 to 1999, but in 2009, the FRS companies' ROE fell 4 percentage points below this industry benchmark.

Among the FRS companies' lines of business and business segments, oil and natural gas production continued to be the most profitable, contributing \$42 billion in net income in 2009 (**Table 2**), although this was a decline of 43 percent from the 2008 level, due in large part to lower revenues as a result of much lower oil and natural gas prices. Return on net investment in place (ROI) for the oil and natural gas production segment fell to 7 percent in 2009 from 13 percent in 2008. The difference between domestic and foreign ROI widened as domestic oil and gas production ROI fell to 4 percent, the lowest level since 1998 (**Figure 4**).

The refining/marketing segment reported a loss of \$7 billion in 2009, compared with a \$14-billion gain in 2008. Domestic refining/marketing had a \$9-billion loss in 2009, while foreign refining/marketing net income fell 77 percent to \$3 billion. ROI for domestic refining/marketing in 2009 declined to the lowest level ever reported in

¹ Unless otherwise indicated, all dollar values and percentage changes in this report are based in constant 2009 dollars, adjusted using the gross domestic product (GDP) deflator.

Table 1. Consolidated Income Statement for FRS Companies, 2008-2009
(Billion 2009 Dollars)

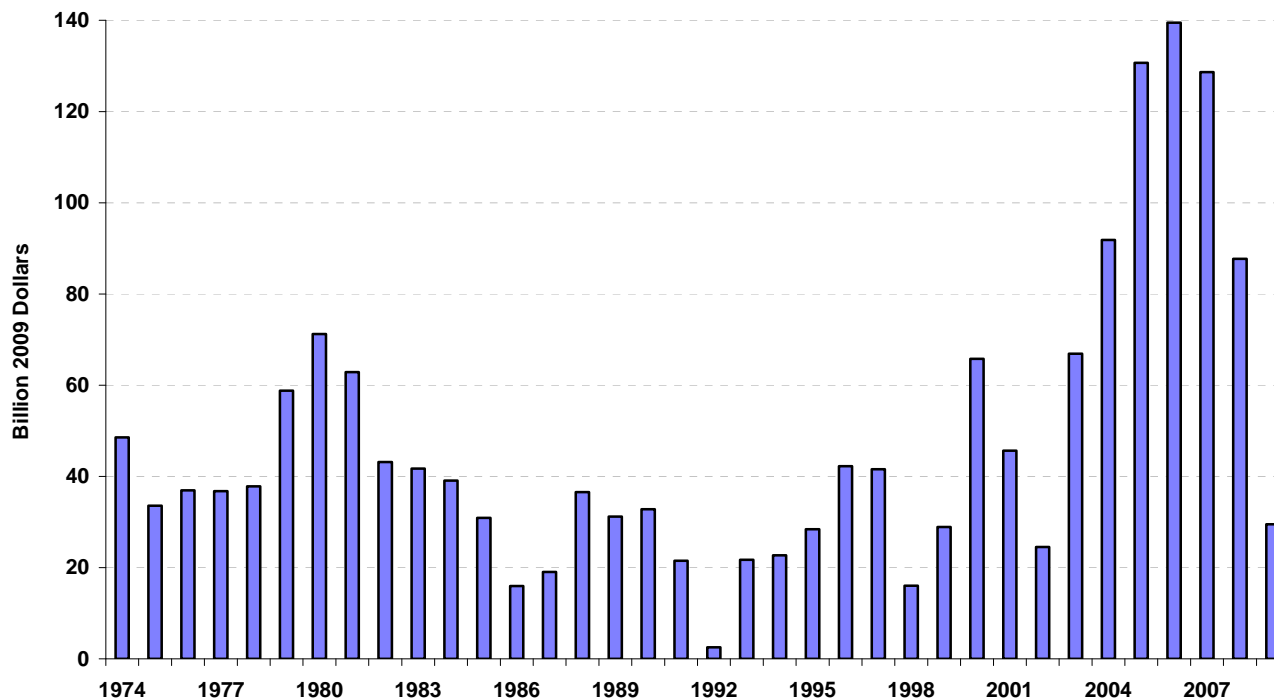
Income Statement Items	FRS Companies		
	2008	2009	Percent Change 2008-2009
Operating Revenues	1,834.7	1,145.6	-37.6
Operating Expenses	1,669.1	1,094.3	-34.4
Operating Income (Revenues minus Expenses)	165.6	51.2	-69.1
Interest Expense	11.5	10.9	-5.3
Other Revenue (Expense)	32.9	18.8	-42.8
Income Tax Expense	99.4	29.7	-70.1
Net Income	87.7	29.5	-66.4
Net Income Excluding Special Items	144.7	49.8	-65.6

Note: Sum of components may not equal total due to independent rounding. Percent changes were calculated from unrounded data.

NA= not available.

Source: U.S. Energy Information Administration Form EIA-28 (Financial Reporting System).

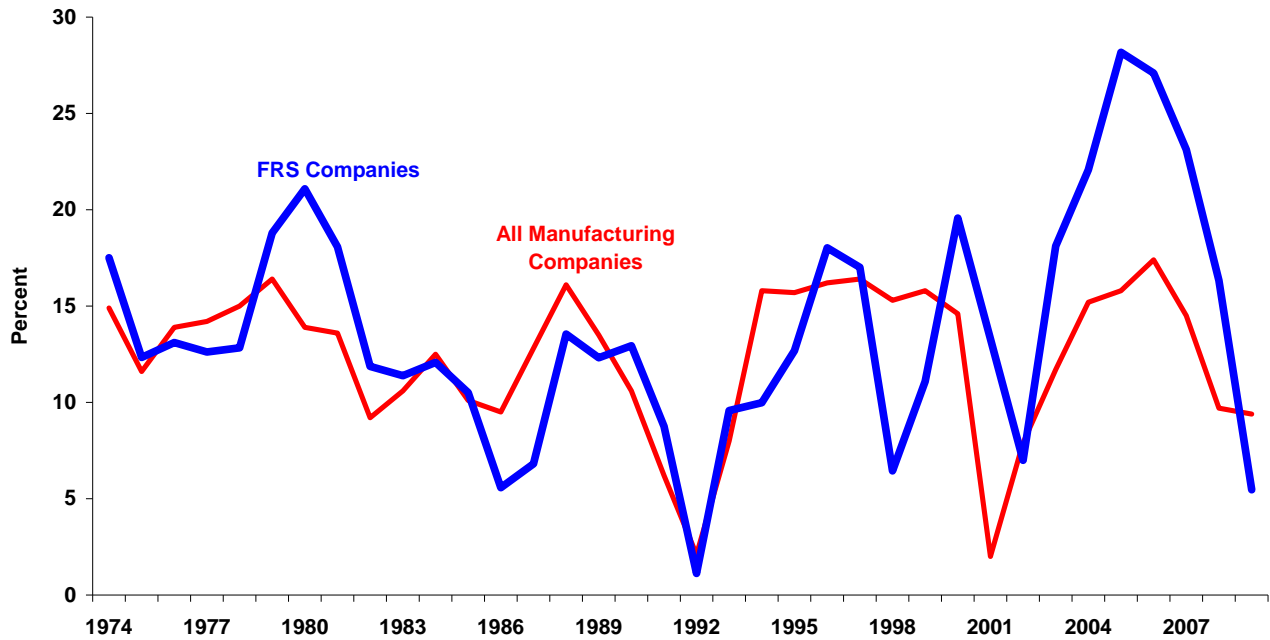
Figure 1. FRS Net Income, 1974-2009



Note: The FRS group of companies has changed incrementally over the years.

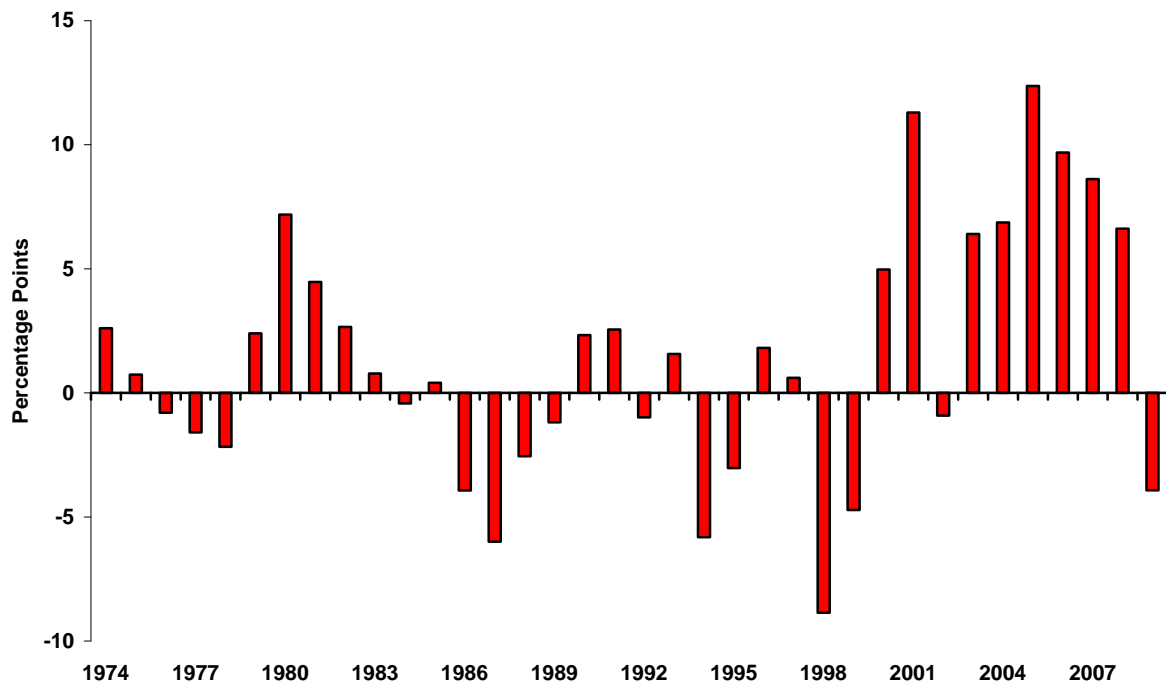
Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Figure 2. Return on Stockholders' Equity for FRS Companies and All Manufacturing Companies, 1974-2009



Sources: **FRS Companies:** U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System). **All Manufacturing Companies:** U.S. Census Bureau Quarterly Financial Report, All Manufacturing Companies.

Figure 3. Difference Between FRS and All Manufacturing Companies Return on Stockholders' Equity, 1974-2009



Sources: **FRS Companies:** U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System). **All Manufacturing Companies:** U.S. Census Bureau Quarterly Financial Report, All Manufacturing Companies.

Table 2. Contributions to Net Income by Line of Business for FRS Companies, 2008-2009
(Million 2009 Dollars)

Line of Business	Net Income			Net Income Excluding Special Items		
	2008	2009	Percent Change 2008-2009	2008	2009	Percent Change 2008-2009
Petroleum						
U.S. Petroleum						
Oil and Natural Gas Production	32,594	10,628	-67.4	52,418	24,534	-53.2
Refining/Marketing	3,045	-9,396	n.a.	8,611	-5,663	n.a.
Pipelines	238	478	100.7	239	478	99.6
Total U.S. Petroleum	35,877	1,710	-95.2	61,268	19,349	-68.4
Foreign Petroleum						
Oil and Natural Gas Production	40,132	31,019	-22.7	66,494	31,699	-52.3
Refining/Marketing ^a	11,162	2,576	-76.9	11,392	2,107	-81.5
Total Foreign Petroleum	51,294	33,595	-34.5	77,886	33,806	-56.6
Total Petroleum	87,171	35,305	-59.5	139,154	53,155	-61.8
Downstream Natural Gas	3,581	6,722	87.7	3,494	6,995	100.2
Electric Power	9,396	-1,767	n.a.	9,396	-1,767	n.a.
Other Energy ^b	-327	206	n.a.	1,187	216	-81.8
Nonenergy	-2,383	1,316	n.a.	1,317	1,368	3.9
Total Allocated	97,439	41,782	-57.1	154,549	59,967	-61.2
Nontraceable ^c	-9,731	-12,280	n.a.	-9,811	-10,130	n.a.
Consolidated Net Income ^d	87,708	29,502	-66.4	144,737	49,837	-65.6

^aInternational Marine is included in Refining/Marketing.

^bThe Other Energy line of business includes coal, nuclear, and non-conventional energy.

^cRevenues and expenses that cannot be directly attributed to a line of business.

^dThe total amount of special items was -\$57,030 million and -\$20,335 million in 2008 and 2009, respectively.

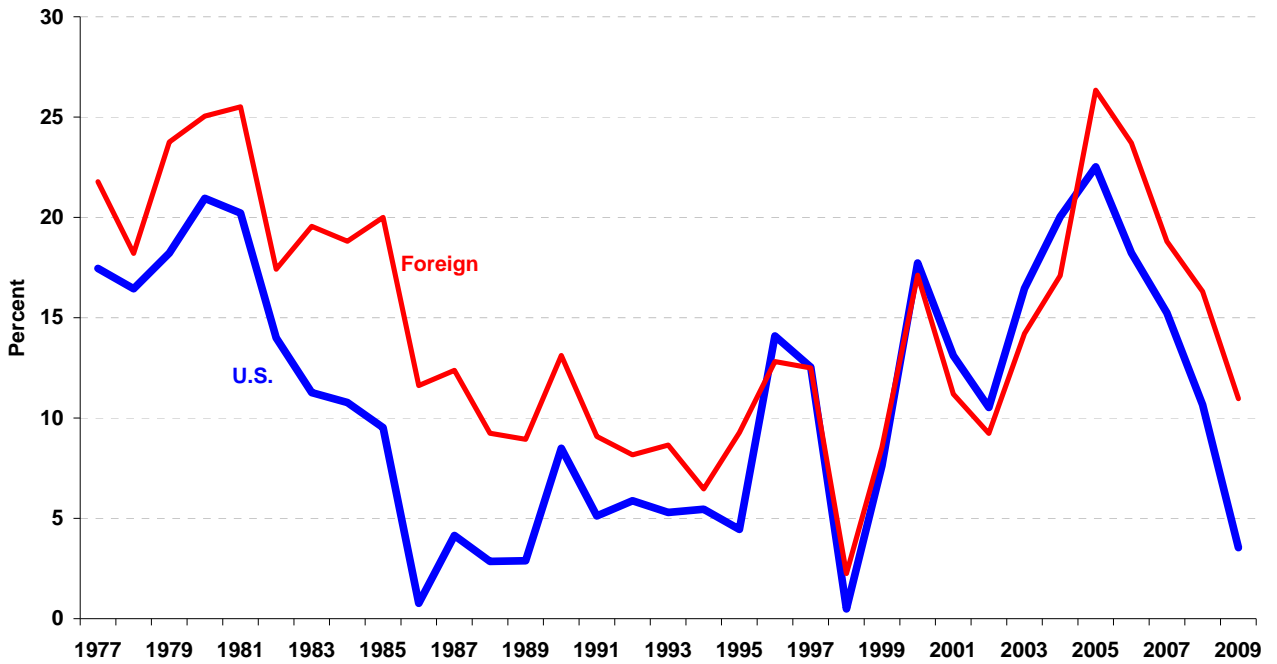
n.a.: not applicable

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

the FRS survey, negative 7 percent. Foreign refining/marketing ROI remained positive but was significantly lower, dropping to 6 percent in 2009 from 26 percent in 2008 (**Figure 5**).

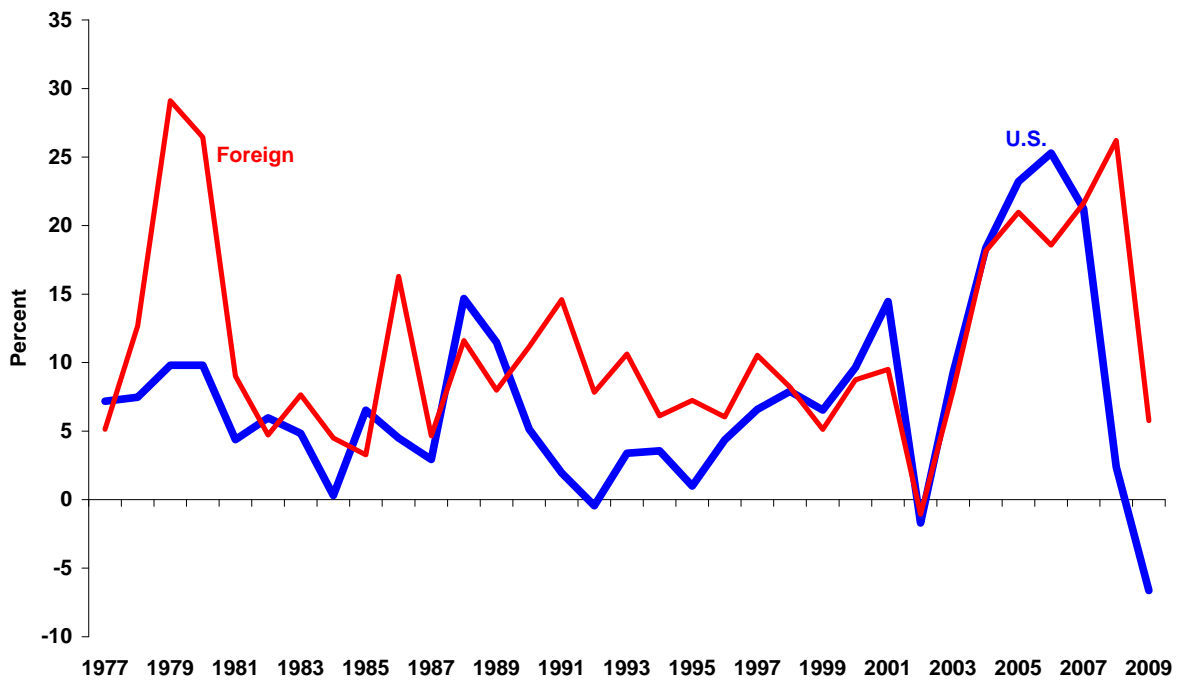
The FRS companies' average domestic refining/marketing gross margin (essentially the difference between product prices and raw material input costs) dropped to the lowest level since 1999 and was the second lowest level ever reported on the survey (**Figure 6**). Per-barrel operating costs also declined, but by a much smaller amount. Refinery energy costs fell 48 percent from 2008, reflecting the decline in petroleum and natural gas prices, while marketing costs and other operating costs each decreased by 17 percent. The combination of the lower average gross margin and operating costs led to the first negative net margin reported by FRS companies, negative \$0.36 per barrel in 2009.

Figure 4. Return on Net Investment in Place for U.S. and Foreign Oil and Natural Gas Production for FRS Companies, 1977-2009



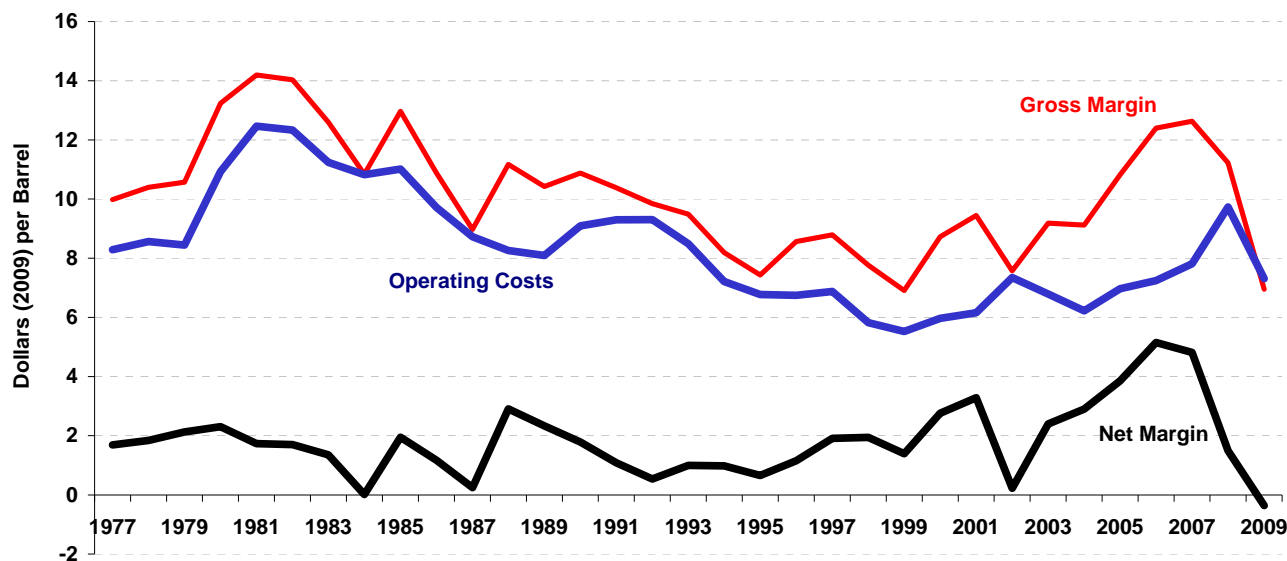
Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Figure 5. Return on Net Investment in Place for U.S. and Foreign Refining/Marketing for FRS Companies, 1977-2009



Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Figure 6. U.S. Refined Product Margins and Costs per Barrel of Petroleum Product Sold for FRS Companies, 1977-2009



Note: The gross margin is refined product revenues less raw material cost and product purchases divided by refined product sales volume.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

The marketing/trading segments of the downstream natural gas and electric power lines of business heavily influenced the earnings of these lines of business. Net income for the downstream natural gas line of business increased 88 percent to \$7 billion in 2009 while electric power net income dropped from a \$9-billion gain in 2008 to a \$2-billion loss in 2009. The non-energy line of business reported net income of \$1 billion in 2009 after showing a loss in 2008. Chemical operations account for a large portion of the non-energy line of business. Higher margins, higher sales volumes, and lower operating costs were cited as reasons for higher chemical earnings.²

Cash Flow and Capital Expenditures

The cash flow statement provides information on sources and uses of cash, with sections for operations, investing activities, and financing activities. Cash flow from operations consists of net income after taxes plus depreciation and other noncash expenses. Investing activities include the net effect of buying and selling property, plant, and equipment. Financing activities include the net effect of issuing and purchasing company stock, issuing and paying off debt, and paying dividends. Major sources of cash include cash flow from operations, sales of assets, and proceeds from issuing debt or equity. Primary uses of cash include making capital expenditures, paying dividends, purchasing company stock, and paying off debt. Capital expenditures represent the value of assets acquired in the current time period net of depreciation and also include investments and advancements to unconsolidated affiliate companies. This report also refers to capital expenditures as additions to investment in place. The current cash flow statement was added to the survey in 1986.

² U.S. Energy Information Administration, *Financial News for Major Energy Companies, Fourth Quarter 2009* (February 2010), p. 6, available at http://www.eia.gov/emeu/perfpro/news_m/q409.pdf (as of October 13, 2010).

The effects of the economic slowdown were evident in the FRS companies' cash flow statement in 2009, which showed declines in both sources and uses of cash. Cash flow from operations decreased 41 percent from 2008 to \$131 billion in 2009 (**Table 3**), led by the decline in net income. Proceeds from the disposal of assets fell 52 percent to \$12 billion in 2009 as the value of assets declined. Funds raised from equity security offerings declined 30 percent to \$5 billion while proceeds from issuing long-term debt increased slightly to \$77 billion.

Table 3. Sources and Uses of Cash for FRS Companies, 2008-2009
(Billion 2009 Dollars)

Sources and Uses of Cash	2008	2009	Absolute Change 2008-2009	Percent Change 2008-2009
Main Sources of Cash				
Cash Flow from Operations	221.9	131.5	-90.4	-40.8
Proceeds from Long-Term Debt	76.4	76.9	0.6	0.7
Proceeds from Disposals of Assets	25.6	12.2	-13.4	-52.2
Proceeds from Equity Security Offerings	7.4	5.2	-2.2	-29.5
Main Uses of Cash				
Additions to Investment in Place	200.6	138.5	-62.0	-30.9
Reductions in Long-Term Debt	58.2	52.3	-5.9	-10.2
Dividends to Shareholders	31.8	32.2	0.5	1.5
Purchase of Treasury Stock	56.1	19.8	-36.3	-64.7
Net Change in Cash and Cash Equivalents	-2.9	-20.7	-17.8	n.a.

Percent changes were calculated from unrounded data.

n.a.: not applicable

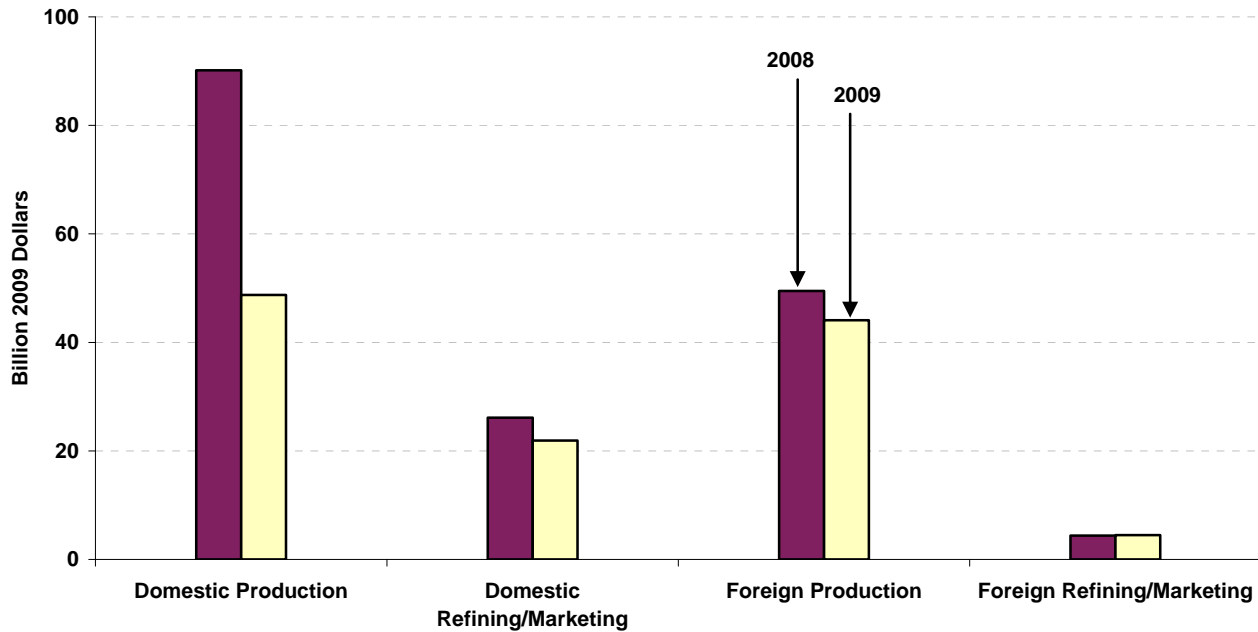
Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Capital expenditures fell 31 percent to \$139 billion in 2009, but remained the largest use of cash. Despite the large decline, capital expenditures in 2009 remained higher than every year prior to 2005. Oil and natural gas production (domestic and foreign combined) accounted for 67 percent of the total and refining/marketing 19 percent. Domestic oil and natural gas production capital expenditures fell 46 percent in 2009 from 2008 and foreign upstream capital expenditures fell 11 percent (**Figure 7**).

The amount of cash used to repurchase company stock fell 65 percent to \$20 billion in 2009. Funds used to reduce long-term debt fell 10 percent from the previous year, which, combined with the slight increase in proceeds from long-term debt, resulted in an increase in the long-term debt to equity ratio to 39 percent, the highest since 2004. FRS companies maintained dividend payments, which increased 2 percent to \$32 billion.

Overall, net uses of cash for investing activities decreased 22 percent to \$127 billion in 2009 (**Figure 8**). Merger and acquisition activity fell to the lowest level since 1999. (See **Table 4** for a listing of some of the acquisition transactions.) Other additions to property, plant, and equipment declined for the first time since 2002 but remained higher than every year prior to 2007 (**Figure 9**). Net uses of cash for financing activities dropped to \$26 billion in 2009 from \$59 billion in 2008 primarily as a result of much lower repurchases of company stock. Total uses of cash exceeded sources, resulting in the largest decline in cash and cash equivalents ever reported in the FRS survey, a decrease of \$21 billion in 2009.

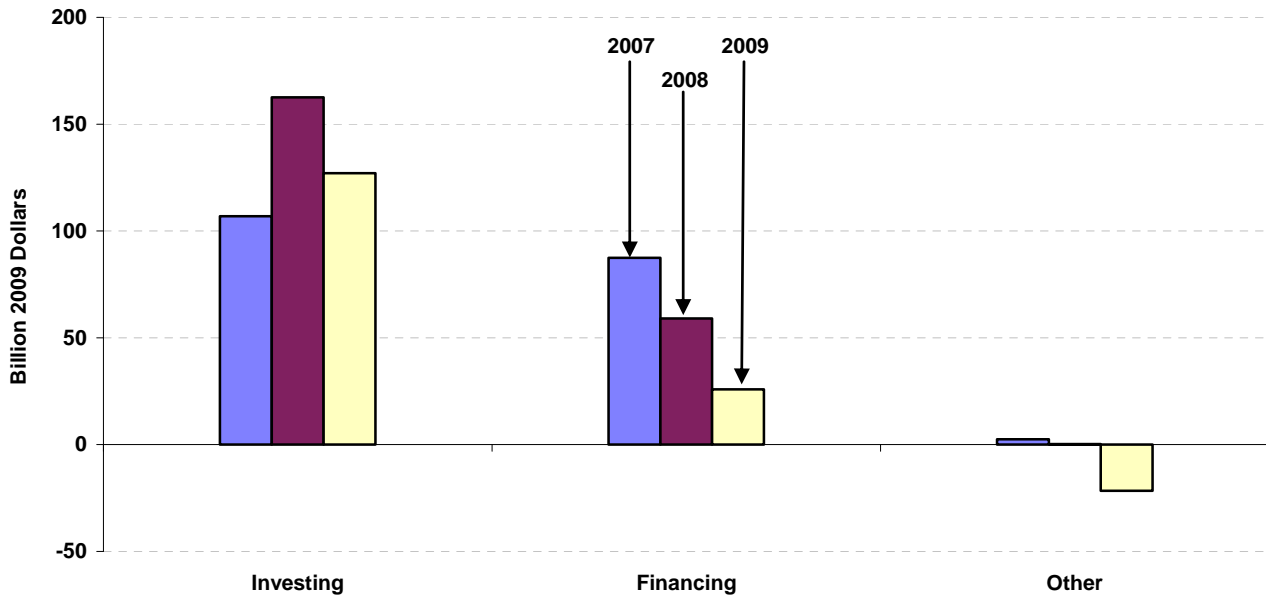
Figure 7. FRS Companies' Capital Expenditures by Petroleum Business Segment, 2008-2009



Capital Expenditures - additions to property, plant and equipment plus additions to investments and advances to unconsolidated affiliates.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Figure 8. FRS Companies' Net Uses of Cash Flow, 2007-2009



Investing - buying and selling property, plant, and equipment. Financing - issuing and purchasing company stock, issuing and paying off debt, and paying dividends.

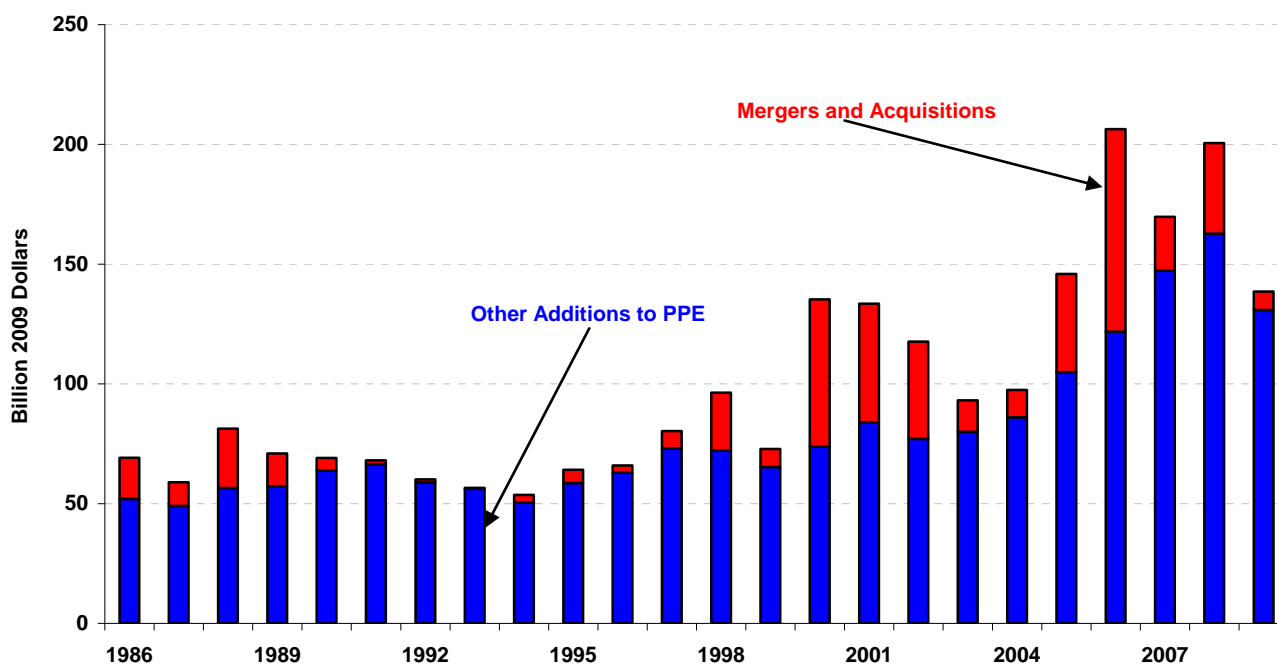
Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Table 4. Reported Value of Mergers, Acquisitions, and Related Transactions by FRS Companies, 2009
(Million Dollars)

Acquiring Company	Assets Acquired	Reported Value of Acquisition
Total	25 percent Barnett shale interest from Chesapeake	2,250
Valero	Ethanol plants and site development	429
Occidental	Phibro LLC from Citigroup, Inc.	370
Occidental	Plains All American Pipeline	330
Occidental	California properties from Crimson	300
Williams	Properties in the Piceance Basin	253
Anadarko	Property exchange	230
Occidental	Calcium chloride business from Dow Chemical	210
Apache	Nine Permian Basin properties from Marathon	187
Williams	51 percent interest in Laurel Mountain, LLC	126

Sources: Company annual reports to shareholders and press releases.

Figure 9. FRS Capital Expenditures, 1986-2009



PPE - property, plant, and equipment.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Oil and Gas Production Expenditures

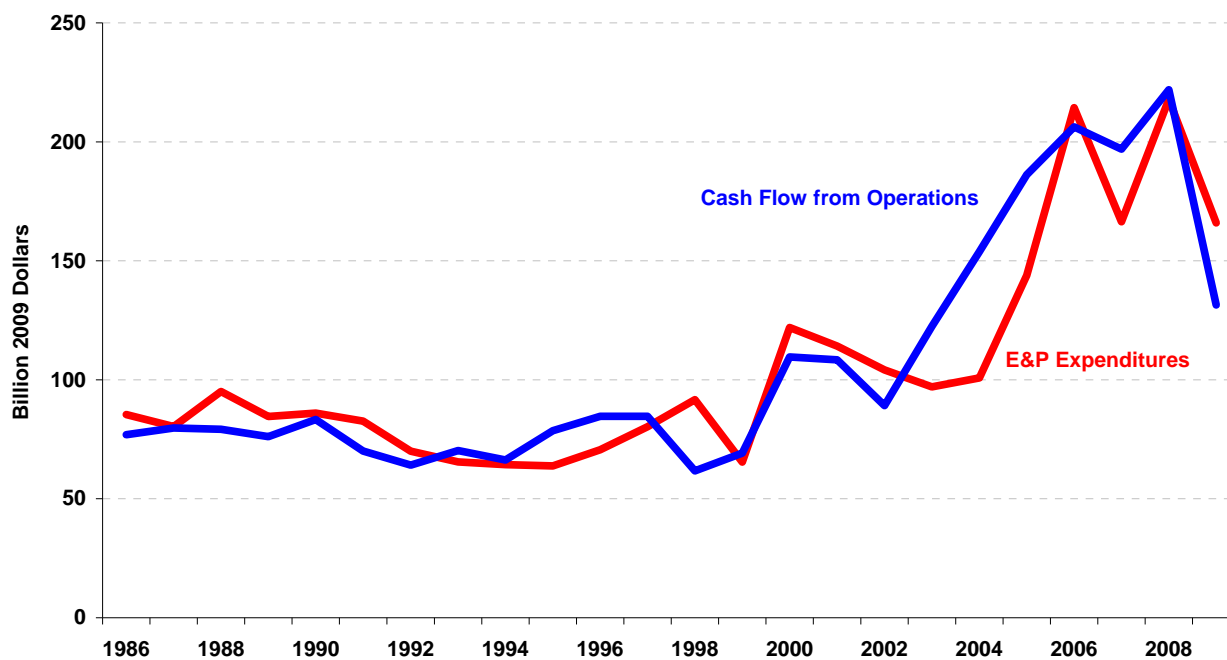
In addition to capital expenditures, FRS companies report expenditures for unproved and proved property acquisition, exploration, development, and production (E&P) for the oil and natural gas production segment. The data include current and capital expenditures, but capital expenditures predominate.

E&P expenditures decreased 24 percent from 2008 to \$166 billion in 2009 (**Figure 10**). The \$52 billion decline in E&P expenditures was considerably less than the \$90 billion drop in cash flow from operations, and the 2009 expenditure level remained higher than every year prior to 2006. Expenditures for development accounted for 43 percent of the 2009 E&P expenditure total and production added 39 percent. Exploration comprised 10 percent of the total, the highest share since 1999. Acquisition expenditures fell in 2009; their share of expenditures declined to 7 percent.

Compared with the 2008 level, development expenditures decreased 21 percent to \$71 billion in 2009 (**Figure 11**). It was the first decline in development expenditures since 1999. Exploration expenditures fell 1 percent to \$17 billion but remained higher than every year from 1986 through 2007. Expenditures for production declined 6 percent to \$65 billion in 2009.

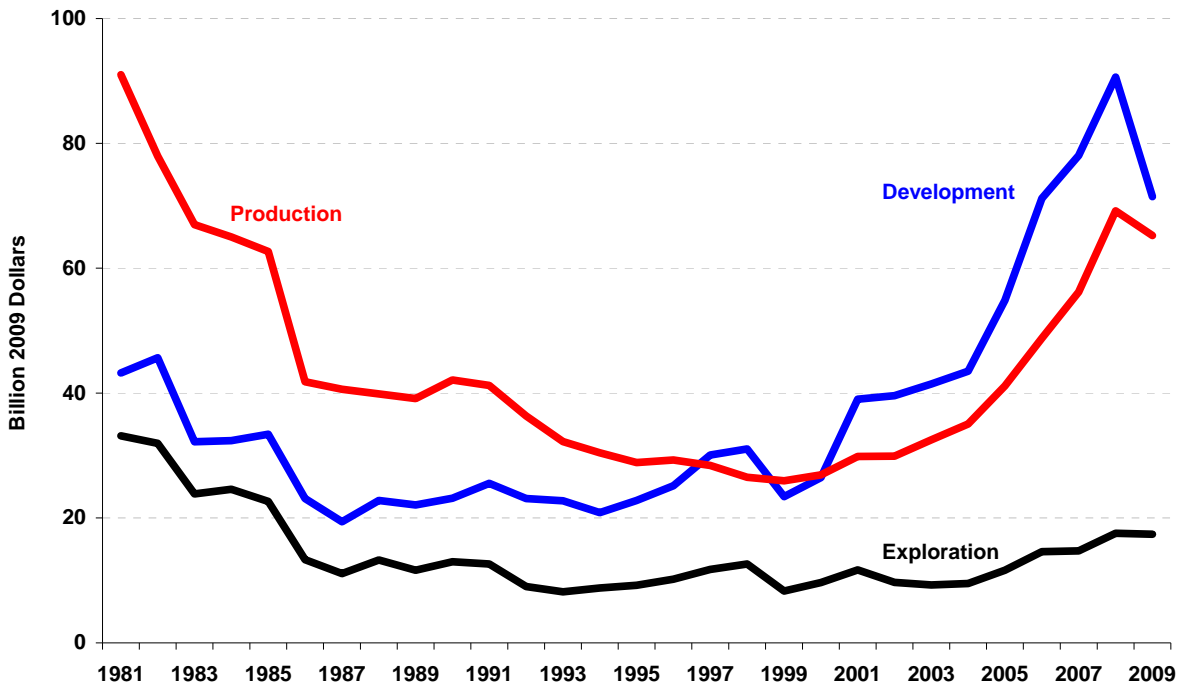
Regional expenditures are also reported, which provide insight into trends in upstream investment by FRS companies across world regions. The U.S. Onshore remains the most active region for the FRS companies' oil and natural gas operations. Expenditures for exploration and development (excluding expenditures for acquisitions) in the U.S. Onshore region fell 34 percent from 2008 to \$30 billion in 2009 (**Figure 12**), which, despite the decline, remained nearly twice the level in 2004. Expenditures for development predominate in the U.S. Onshore region: they declined to \$25 billion in 2009, which was 35 percent of FRS companies' development expenditures worldwide. Exploration expenditures, though considerably smaller than development expenditures, decreased 2 percent in 2009 to \$5 billion.

Figure 10. Cash Flow from Operations and Exploration and Production (E&P) Expenditures for FRS Companies, 1986-2009



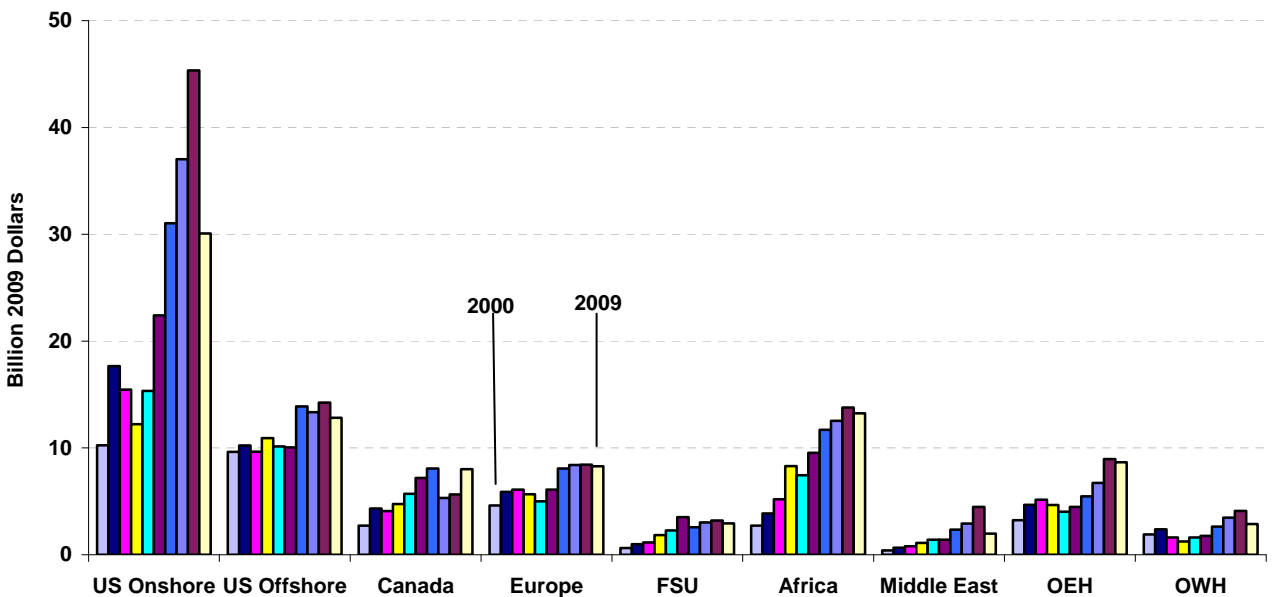
Note: E&P expenditures includes exploration, development, production, unproved acreage, and proved acreage expenditures. Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Figure 11. FRS Worldwide Expenditures for Exploration, Development, and Production, 1981-2009



Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Figure 12. FRS Expenditures for Oil and Natural Gas Exploration and Development by Region, 2000-2009



Note: FSU is Former Soviet Union. OEH is Other Eastern Hemisphere, which is primarily the Asia Pacific region. OWH is Other Western Hemisphere, which is primarily Central and South America and the Caribbean.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Exploration and development expenditures in the U.S. Offshore region decreased 10 percent from 2008 to \$13 billion in 2009 (**Figure 12**). Expenditures for exploration account for 33 percent of the total in the U.S. Offshore region, compared with an average of 20 percent for FRS worldwide expenditures.

Exploration and development expenditures in foreign FRS regions decreased 5 percent from 2008 to \$46 billion in 2009. All regions except Canada declined from the previous year. Exploration and development expenditures in Canada jumped 42 percent from 2008 to \$8 billion in 2009. This was the first year that companies included expenditures from oil sands mining operations in the oil and gas production segment, because of a new Securities and Exchange Commission (SEC) rule. Development spending accounted for nearly all of the increase.

In 2009, FRS companies put more exploration and development expenditures into Africa than any other foreign region, as they have every year since 2002. Exploration and development expenditures in Africa decreased 4 percent from 2008 to \$13 billion in 2009. Exploration and development expenditures in the Other Eastern Hemisphere region were the second highest among the FRS foreign regions, remaining slightly ahead of Canada and Europe despite declining 3 percent from 2008 to \$9 billion in 2009.

Refining/Marketing Capital Expenditures

Capital expenditures for the FRS companies' domestic refining/marketing segment decreased 16 percent from 2008 to \$22 billion in 2009 while foreign refining/marketing capital expenditures increased 2 percent (**Figure 7**). Despite the net income loss reported by domestic refining/marketing, capital expenditures in 2009 remained higher than all but 3 prior years in the survey. From 2000 to 2009, average annual capital expenditures in the FRS domestic refining/marketing segment were twice that of 1990 to 1999, which reflects the improved return on investment throughout most of this period compared with the 1990s.

Oil and Natural Gas Production

Oil and Natural Gas Reserves

At the end of 2008, the U.S. Securities and Exchange Commission (SEC) adopted a rule that made substantial changes in the ways oil (crude oil and natural gas liquids) and natural gas reserves are accounted for in the financial reporting subject to its jurisdiction. For most companies, and all FRS companies, this rule took effect when they reported their 2009 financial results. Briefly, the rule, “Modernization of Oil and Gas Reserve Reporting,” has four major stipulations.³ One changed the specification of the price of oil or natural gas that is used to determine whether oil and natural gas resources can be included in proved reserves. Previously, the price specified was the price on the last day of the previous year. The new rule uses an average of monthly prices over the time period covered by the financial report. Another change is the inclusion of nontraditional resources in oil and gas reserves. Companies will be able to include previously excluded resources such as “saleable hydrocarbons, in the solid, liquid, or gaseous state, from oil sands, shale, coalbeds, or other nonrenewable natural resources which are intended to be upgraded into synthetic oil or gas.”⁴ Another change redefines “reliable technology”⁵ to broaden the types of technologies that a company may use to estimate reserves. And finally, in addition to proved reserves, companies may now disclose probable and/or possible reserves.

Proved reserves of oil and natural gas held by the Financial Reporting System (FRS) companies rose for both oil and natural gas in 2009, with oil reserves increasing at almost twice the rate of natural gas (**Table 5**). By far the largest increase in oil reserves occurred in Canada, with oil reserves falling in all other FRS regions, most notable the Former Soviet Union, except the U.S. Onshore and Offshore.⁶ The massive increase of more than 4 billion barrels in Canada is largely due to the SEC rule change that allowed for the inclusion of reserves of oil sands for the first time in 2009; Canada has an abundant endowment of this type of reserves. For the FRS companies in total, 2.7 billion barrels of their increased oil reserves came from the addition of oil sands in Canada. Oil reserve additions in the United States probably also benefited from an increase in the price of oil used to estimate proved reserves, which, as a result of another part of the SEC rule change, changed from the year-end value used in 2008 to the annual average value used in 2009. This resulted in a price increase from 2008 to 2009.⁷ This same effect may have mitigated the decreases in oil reserves in the other FRS regions. Natural gas reserves grew modestly in the U.S. Onshore and strongly in the Other Eastern Hemisphere; they decreased notably in Europe. In the U.S. Onshore, two of the largest contributors to the increase, Chesapeake Energy and EOG Resources, reported large increases in proved undeveloped reserves and cited the SEC rule change regarding the recognition of these

³ This discussion is derived from slides for a presentation by Rawdon J.H. Seager, “The New SEC Oil and Gas Reporting Regulations,” Gaffney, Cline & Associates, to the AAPG Geoscience Technology Workshop, September 9-11, 2009. For the complete SEC rule itself, see Securities and Exchange Commission, “Modernization of Oil and Gas Reporting,” Federal Register, January 14, 2009.

⁴ Securities and Exchange Commission, “Modernization of Oil and Gas Reporting,” Federal Register, January 14, 2009, p. 2163.

⁵ Securities and Exchange Commission, “Modernization of Oil and Gas Reporting,” Federal Register, January 14, 2009, pp. 2166-2167.

⁶ The reserves compared here are year-end 2008 and year-end 2009. They differences between them include the standard categories or reserve changes, revisions, improved recovery, extensions and discoveries, sales, purchases, and production, and also one category unique to 2009, changes from the new SEC rule, which, in FRS reporting, are added to beginning of year reserves and not any of in the standard categories.

⁷ For more information on oil and natural gas reserves for the United States, see U.S. Energy Information Administration, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Proved Reserves, 2009*, http://www.eia.gov/pub/oil_gas/natural_gas/data_publications/crude_oil_natural_gas_reserves/current/pdf/arrsummary.pdf.

Table 5. Oil and Natural Gas Reserves of FRS Companies, 2008 and 2009

Region	Crude Oil and Natural Gas Liquids (million barrels)			Natural Gas (billion cubic feet)		
	2008	2009	Percent Change	2008	2009	Percent Change
United States						
Onshore	9,842	10,147	3.1	103,310	108,745	5.3
Offshore	2,972	3,040	2.3	7,603	6,811	-10.4
Total United States	12,814	13,187	2.9	110,913	115,556	4.2
Foreign						
Canada	1,372	5,473	298.9	9,868	9,789	-0.8
Europe	2,308	2,055	-11.0	9,956	8,523	-14.4
Former Soviet Union	1,906	1,203	-36.9	2,647	2,279	-13.9
Africa	5,070	4,718	-7.0	10,601	10,174	-4.0
Middle East	2,030	1,979	-2.5	7,566	7,488	-1.0
Other Eastern Hemisphere	1,911	1,721	-10.0	26,038	34,519	32.6
Other Western Hemisphere	486	425	-12.7	15,065	14,536	-3.5
Total Foreign	15,084	17,574	16.5	81,741	87,308	6.8
Total Worldwide	27,897	30,761	10.3	192,654	202,864	5.3

Notes: The reserves compared here are at year-end. The differences between them include the standard categories or reserve changes, revisions, improved recovery, extensions and discoveries, sales, purchases, and production, and also one category unique to 2009, changes from the new SEC rule, which, in FRS reporting, are included in beginning-of-year reserves and not any of in the standard categories. Sums of elements may not add to totals due to independent rounding.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

reserves as a major contributor to their reserve increases.⁸ In the Other Eastern Hemisphere, Exxon Mobil, a large contributor to the increase, completed the initial booking of its Gorgon Jansz liquefied natural gas (LNG) project in Australia and its Papua New Guinea LNG project, and Chevron, another large contributor, added extensions and discoveries at its Gorgon Project in Australia to its Other Eastern Hemisphere reserves.⁹

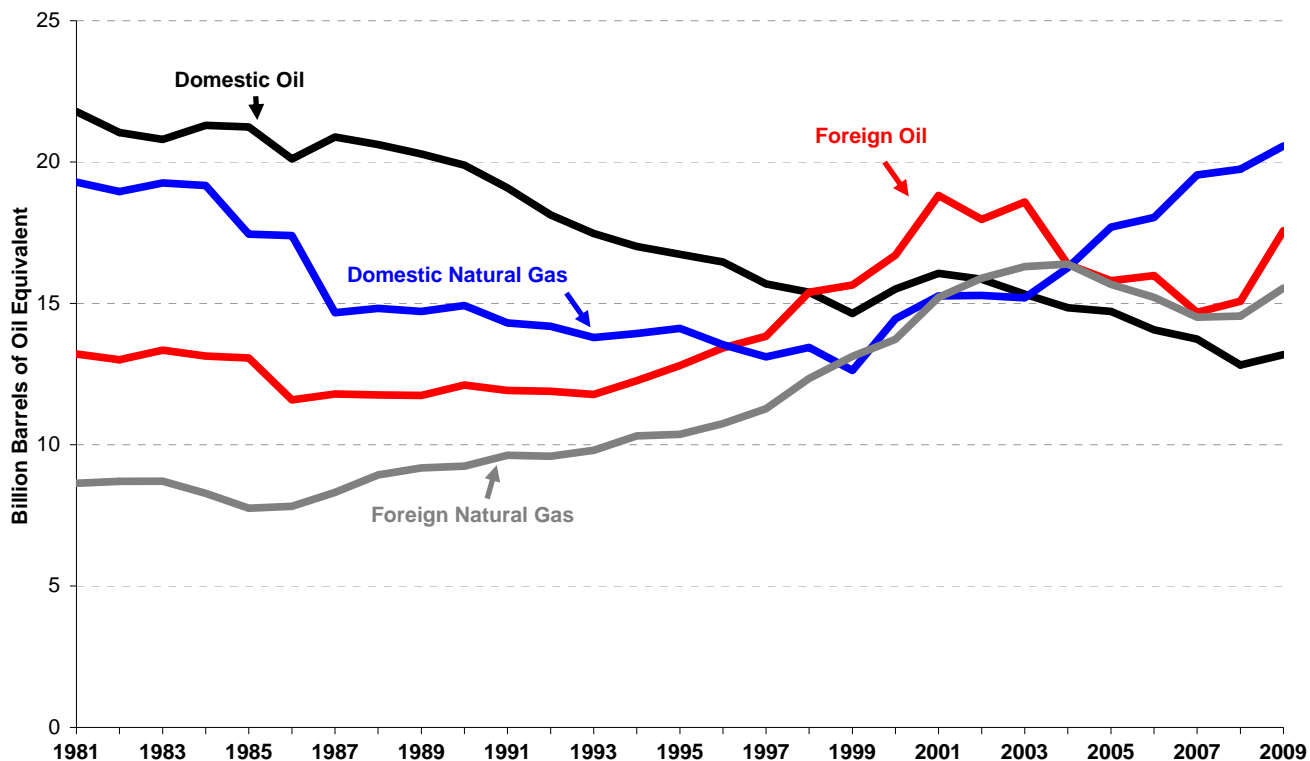
The domestic oil, domestic natural gas, foreign oil, and foreign natural gas reserves held by the FRS companies in 2009 all increased (**Figure 13**). A small increase in domestic oil reserves, in part likely because of the increase in the price used to value reserves, reversed their long-term declining trend, while a slightly larger increase in domestic natural gas reserves continued their decade-long climb, despite lower natural gas prices in 2009. The increase in natural gas reserves was partly driven by the changes in the rules for booking reserves that took effect in 2009 and also by the increases in unconventional gas reserves (shale gas), which have grown strongly in recent years.¹⁰ Foreign natural gas and especially oil reserves expanded on their small prior-year increases in 2009. As with domestic reserves, it is likely that price affected the increase in foreign oil reserves. Foreign reserves of natural gas were propelled by reserves booked for huge LNG projects in Australia and Papua New Guinea.

⁸ Chesapeake Energy, U.S. Securities and Exchange Commission Form 10-K, 2009, p. 10 and EOG Resources, U.S. Securities and Exchange Commission Form 10-K, 2009, p. F-39.

⁹ Exxon Mobil, U.S. Securities and Exchange Commission Form 10-K, 2009, p. 98, and Chevron, U.S. Securities and Exchange Commission Form 10-K, 2009, p. FS-75.

¹⁰ For more information on oil and natural gas reserves for the United States, see U.S. Energy Information Administration, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Proved Reserves, 2009*, http://www.eia.gov/pub/oil_gas/natural_gas/data_publications/crude_oil_natural_gas_reserves/current/pdf/arrsummary.pdf.

Figure 13. Oil and Natural Gas Reserves of FRS Companies, 1981-2009



Note: Natural gas was converted to barrels of oil equivalent at 0.178 barrels per 1000 cubic feet.
 Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

In 2009, the growth in U.S. reserves for the FRS companies was notably less than that for the United States as a whole: 2.9 percent versus 8.7 percent, respectively, for oil and 4.2 percent versus 11.4 percent, respectively, for natural gas (Table 6). However, the annual growth rates for U.S. reserves for the FRS and the entire United States and the differences between them vary widely from year-to-year, and 2009 was for the most part anomalous for reserve growth for both the FRS and the entire country when compared to recent years. Both U.S. oil and natural gas reserves for FRS companies and for the United States grew faster in 2009 than their averages in recent years due to increases in crude oil prices and shale gas developments. However, total reserves in the United States as a whole grew faster relative to their previous averages than did FRS reserves.

A further factor in the growth of U.S. reserves for the FRS companies is the extent to which the FRS companies have been relying on foreign reserves as a source of growth. While U.S. oil reserves for the FRS companies fell 15.0 percent between 2000 and 2009, foreign oil reserves for the FRS companies increased 5.2 percent. However, for natural gas, the opposite relationship holds, with U.S. natural gas reserves growing 42.3 percent and foreign natural gas reserves growing 13.2 percent. To some extent, foreign reserves have acted as a safety valve for the FRS companies.

U.S. reserves for the FRS companies have been growing more slowly than reserves for the total United States in recent years. From 2000-2009, U.S. oil reserves for the FRS companies declined 15.0 percent and natural gas reserves grew 42.3 percent, while total U.S. oil reserves grew 1.6 percent and natural gas reserves grew 53.4 percent.

Table 6. Growth Rates of U.S. Oil and Natural Gas Reserves for FRS Companies and Total United States, 2001 - 2009
(Percent)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	Average Annual Growth Rate 2001-2009
Oil										
FRS Companies	3.6	-1.3	-3.3	-3.2	-0.8	-4.4	-2.3	-6.7	2.9	-1.8
Total United States	0.2	0.8	-4.3	-0.2	2.1	-1.6	3.5	-6.8	8.7	0.2
Difference (FRS - Total)	3.4	-2.1	1.0	-3.0	-3.0	-2.8	-5.8	0.0	-5.8	-
Natural Gas										
FRS Companies	5.6	0.1	-0.5	7.0	8.8	1.9	8.3	1.0	4.2	4.0
Total United States	3.4	1.9	1.1	1.8	6.2	3.3	12.6	2.9	11.4	4.9
Difference (FRS - Total)	2.2	-1.8	-1.7	5.2	2.7	-1.4	-4.3	-1.9	-7.2	-

Note: Differences calculated from unrounded data.

Sources: Energy Information Administration, Form EIA-28 (Financial Reporting System), and Energy Information Administration, *U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Proved Reserves, 2009*, (November 30, 2010), http://www.eia.gov/oil_gas/natural_gas/data_publications/crude_oil_natural_gas_reserves/cr.html.

The reserves of oil and natural gas combined¹¹ held by the FRS companies showed sharp increases in a couple of foreign regions in 2009 (**Figure 14**). Most outstandingly, Canadian reserves, which had been declining since 2001, achieved a remarkable gain of 131 percent, largely from the SEC accounting rule change that allowed oil sands to be included in proved reserves for the first time in 2009. Similarly, although much less dramatically, in the Other Eastern Hemisphere, where reserves had also been declining since 2001, oil and natural gas reserves increased 20 percent in 2009 (after a 6 percent increase in 2008). Reserves in the Middle East experienced a minor decline in 2009, after successive, strong increases since 2005.

Oil and Natural Gas Reserve Additions

Reserve additions (excluding purchases of reserves) are the quantities of proved reserves added each year as extensions and discoveries of reserves, improved recovery methods used to extract reserves, or revisions to previous estimates of reserves.¹² Unless a company purchases its reserves, reserve additions are necessary for an upstream company to continue operating, since production reduces its inventory of oil and gas. By their nature reserve additions are often added in large blocks, such as when a new discovery is made or when a new technology makes certain reserves economic to produce.

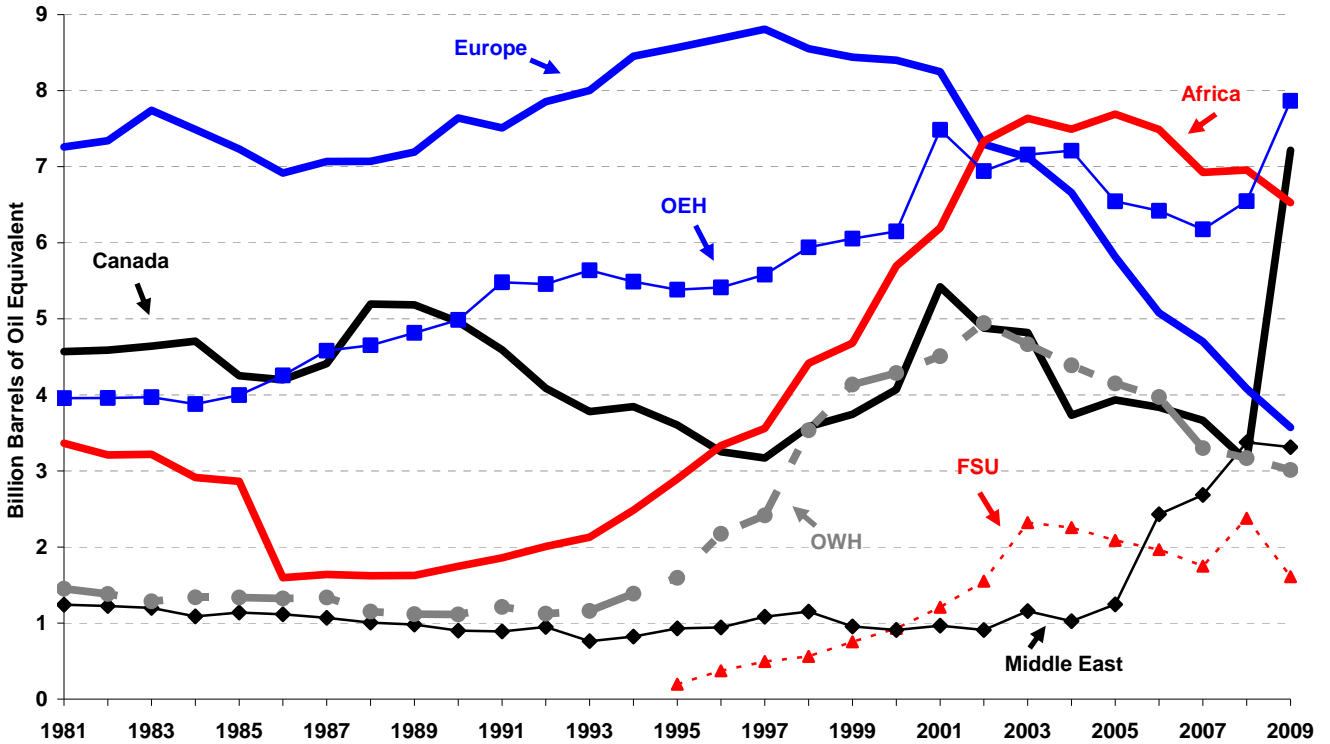
Worldwide reserve additions by the FRS companies for oil and for natural gas increased in 2009, with both growing more than 50 percent (**Table 7**).¹³ Additions were most notable in the U.S. Onshore and Canada for oil and the U.S. Onshore and the Other Eastern Hemisphere for natural gas. Declines were strongest in oil reserves in the Former Soviet Union and in natural gas reserves in the Middle East. The increase for oil in the U.S. Onshore and in Canada resulted from large positive revisions in the amount of reserves added. For natural gas in the U.S. Onshore and the Other Eastern Hemisphere, extensions and discoveries contributed the most to the increase, while the declines in the Former Soviet Union and the Middle East were caused by large negative revisions.

¹¹ Natural gas was converted to equivalent barrels of oil at 0.178 barrels per thousand cubic feet.

¹² For more detailed definitions, see the "Brief Description of Financial Terms" or the glossary at <http://www.eia.gov/emeu/perfpro/glossary.html>.

¹³ The reserves additions considered here do not include those resulting from the one-time implementation of the new SEC rule in the beginning of 2009, but do include any changes to those reserves that occurred during the year.

Figure 14. Oil and Natural Gas Reserves of FRS Companies in Foreign Regions, 1981-2009



Note: FSU = Former Soviet Union; OEH = Other Eastern Hemisphere; OWH = Other Western Hemisphere. Data for FSU confidential before 1995. Natural gas was converted to barrels of oil equivalent at 0.178 barrels per 1000 cubic feet. Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Oil and Natural Gas Production

Worldwide production of oil by the FRS companies was up markedly in 2009, while that of natural gas grew slightly (**Table 8**). The increase in oil production was the only notable one in recent years. In contrast, the increase in natural gas production was the smallest since 2006. The regions contributing the largest amounts to the increase in oil production were, most notably, the U.S. Offshore, with Africa and Canada making a strong showing. Note that worldwide oil production would have increased, even without the increase from Canada, where the inclusion of oil sands for the first time likely had a positive impact on production. Three regions showed an oil production decline, most especially the Former Soviet Union, where reserves also had a large proportional decline (**Table 5**). The largest contributor to the increase in natural gas production was the U.S. Onshore, with the Other Eastern Hemisphere and Africa adding substantial production. As noted above, several LNG projects ramping up in the Other Eastern Hemisphere likely contributed to the increase there.

Table 7. Oil and Natural Gas Reserve Additions* by FRS Companies, 2008 and 2009

Region	Crude Oil and Natural Gas Liquids (million barrels)			Natural Gas (billion cubic feet)		
	2008	2009	Percent Change	2008	2009	Percent Change
United States						
Onshore	-258	983	480.8	8,001	12,353	54.4
Offshore	226	483	113.2	305	331	8.5
Total United States	-32	1,466	4,710.6	8,307	12,685	52.7
Foreign						
Canada	-246	1,397	668.5	478	1,113	132.8
Europe	107	123	14.4	-67	105	256.2
Former Soviet Union	692	-52	-107.5	642	-63	-109.8
Africa	577	246	-57.3	585	233	-60.1
Middle East	585	88	-84.9	1,811	-467	-125.8
Other Eastern Hemisphere	419	76	-81.9	2,545	10,706	320.7
Other Western Hemisphere	69	16	-77.4	1,073	773	-28.0
Total Foreign	2,204	1,894	-14.1	7,066	12,400	75.5
Total Worldwide	2,172	3,360	54.7	15,373	25,085	63.2

* Excludes net purchases.

Notes: The reserves additions considered here do not include those resulting from the one-time implementation of the new SEC rule in the beginning of 2009, but do include any changes to those reserves that occurred during the year. Additions to reserves can be negative due to downward revisions. For percent change calculations, when the initial value is less than zero, the calculation has the opposite sign of the standard percent change calculation. Sums of elements may not equal totals due to independent rounding.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Upstream Income

In 2009, both the domestic and foreign net incomes of the oil and natural gas production operations (oil and natural gas exploration, development, and production) of the FRS companies declined (**Table 9**). Revenues from the sale of oil and natural gas fell almost 40 percent (in constant 2009 dollars)¹⁴ as average prices for oil and natural gas declined for 2009. While general operating expenses fell somewhat further (proportionally) than revenues, depreciation, depletion and amortization, which companies have little control over once a long-lived asset has been acquired, increased 24 percent domestically; however, this category fell 16 percent overseas. General operating expenses and depreciation, depletion, and amortization are the two largest categories for upstream operating costs. Combining the effects of operating revenues and operating costs, worldwide operating income fell 57 percent, a decline of \$82 billion. The decline was almost evenly split between domestic and foreign operations, however, domestic operating income was reduced proportionally more because they had a smaller operating income in 2008. Non-operating income increased for foreign activities and decreased for domestic activities, the two changes largely offsetting each other worldwide. The inconsiderable amount of other income did little to boost domestic results, even with the help of the fall of domestic income taxes by 84 percent. These domestic results, together with the results for foreign operations and non-operating activities, yielded a fall in worldwide net income of 43 percent, in domestic income by 67 percent, and in foreign income by 23 percent.

¹⁴ Unless otherwise indicated, all dollar values and percentage changes in this report are based in constant 2009 dollars, adjusted using the gross domestic product (GDP) deflator from the Bureau of Economic Analysis.

Table 8. Oil and Natural Gas Production by FRS Companies, 2008 and 2009

Region	Crude Oil and Natural Gas Liquids (million barrels)			Natural Gas (billion cubic feet)		
	2008	2009	Percent Change	2008	2009	Percent Change
United States						
Onshore	715	717	0.3	7,677	7,950	3.6
Offshore	298	412	38.0	1,062	1,097	3.3
Total United States	1,014	1,129	11.4	8,739	9,047	3.5
Foreign						
Canada	153	192	25.5	1,140	1,162	1.9
Europe	383	373	-2.7	1,650	1,442	-12.6
Former Soviet Union	92	60	-34.3	85	83	-2.4
Africa	547	594	8.5	562	660	17.5
Middle East	150	150	-0.1	357	378	5.7
Other Eastern Hemisphere	227	240	5.9	1,990	2,103	5.7
Other Western Hemisphere	67	66	-1.1	1,296	1,218	-6.0
Total Foreign	1,619	1,675	3.5	7,080	7,045	-0.5
Total Worldwide	2,633	2,803	6.5	15,818	16,092	1.7

Note: Sums of elements may not add to totals due to independent rounding.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

However, it must be remembered that the results of 2008 were in part the result of some of the highest prices for crude oil and natural gas since World War II, so 2008 net income was particularly high.

Lifting Costs

Lifting costs (also called production costs) are the costs to operate and maintain wells and related equipment and facilities per barrel of oil equivalent (boe) of oil and gas produced by those facilities after the hydrocarbons have been found, acquired, and developed for production.¹⁵ Direct lifting costs are total production spending minus production taxes (and also minus royalties in foreign regions) divided by oil and natural gas production in boe. Total lifting costs are the sum of direct lifting costs and production taxes.

Reversing an almost decade-long upward trend, worldwide total lifting costs for the FRS companies fell \$2.66 per boe, to \$10.04 per boe, in 2009 (**Table 10**). Total lifting costs also fell in each of the FRS regions, except Canada, where they rose \$2.49 dollars, probably reflecting the inclusion of oil sands there in 2009.¹⁶ The FRS regions with the largest decline in total lifting costs, the U.S. Onshore, the U.S. Offshore, the Middle East, and the Other Eastern Hemisphere, sustained declines of \$4.55, \$3.83, \$2.91, and \$2.61 dollars, respectively.

Production taxes were the major contributor to the decline in total lifting costs. Worldwide they declined \$2.30 per boe in 2009, which is 86 percent of the decline in total lifting costs (**Table 9**). Production taxes typically rise and fall with changes in the prices of oil and natural gas, both of which fell in 2009. All FRS regions except

¹⁵ Because oil and gas are often produced together, it is not usually feasible to separate their costs, so lifting cost calculations are based on oil and natural gas production combined.

¹⁶ Oil sands often have high lifting because of the considerable amount of processing that must be done to them before the leave the production area.

Table 9. Income Components and Financial Ratios in Oil and Natural Gas Production for FRS Companies, 2008 and 2009
(Billion 2009 Dollars)

Income Components and Financial Ratios	Worldwide		United States		Foreign	
	2008	2009	2008	2009	2008	2009
Oil Sales	NA	156.3	87.6	59.2	NA	97.0
Natural Gas Sales	NA	58.4	67.4	30.9	NA	27.5
Total Oil and Natural Gas Sales	361.7	214.6	155.0	90.1	206.6	124.5
Other Revenues	6.5	13.1	5.1	12.6	1.3	0.5
Total Revenues	368.1	227.7	160.2	102.7	208.0	125.0
Expenses						
General Operating Expenses	143.0	79.4	64.3	35.5	78.6	43.9
Depreciation, Depletion, and Amortization	76.6	81.1	42.8	52.8	33.9	28.3
General and Administrative Expenses	4.4	4.8	3.0	3.4	1.4	1.4
Total Operating Expenses	224.0	165.3	110.1	91.7	113.9	73.6
Operating Income	144.1	62.3	50.1	11.0	94.1	51.3
Other Income (Expense) ^a	13.9	13.7	6.5	3.4	7.5	10.3
Pre-tax Income	158.0	76.1	56.5	14.4	101.5	61.6
Income Tax Expense	86.3	34.5	23.9	3.8	62.4	30.7
Net Income	72.7	41.6	32.6	10.6	40.1	31.0
Special Items	46.1	14.6	19.8	13.9	26.3	0.7
Net Income, Excluding Special Items ^b	118.8	56.2	52.4	24.5	66.5	31.7
Percentage						
Effective Income Tax Rate ^c	54.6	45.3	42.3	26.3	61.5	49.8

^aEarnings of unconsolidated affiliates, gain (loss) on disposition of assets, discontinued operations, extraordinary items, and cumulative effect of accounting change.

^bSpecial Items are items that are similar to, but do not necessarily qualify as, extraordinary or unusual items under U.S. generally accepted accounting principles.

^cIncome tax expense divided by pretax income.

NA = Not available.

Note: Sum of elements may not equal total due to independent rounding.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Canada, where the increase was small, had declines in production taxes in 2009, with the largest declines in the Middle East the United States, and the Other Eastern Hemisphere. Canada and the Former Soviet Union were the lowest production tax regions in 2009, as they were in 2008.

Direct lifting costs for the United States took a dramatic downward turn in 2009, falling at the fastest rate (-14 percent) since reaching their nadir in 2000 (**Figure 15**). This plunge follows 8 years of essentially uninterrupted growth. Direct lifting costs in combined foreign regions extended their climb that also began in 2000. But their climb has been more deliberate than the growth in domestic lifting costs. Domestic direct lifting costs still exceed foreign costs by \$0.47 per boe, even with the domestic decline in 2009.

Finding Costs

Finding costs are the average costs of adding proved reserves of oil and natural gas via exploration and development activities and the purchase of properties that might contain reserves. These costs are measured for oil and natural gas on a combined basis in dollars per boe. Ideally, finding costs would include all costs incurred (no matter when these costs were incurred or recognized on a company's books) in finding any particular proved reserves (not including the purchases of already discovered reserves). In practice, and as reported here, finding

Table 10. Lifting Costs for FRS Companies, 2008 and 2009

(2009 Dollars Per Barrel of Oil Equivalent)

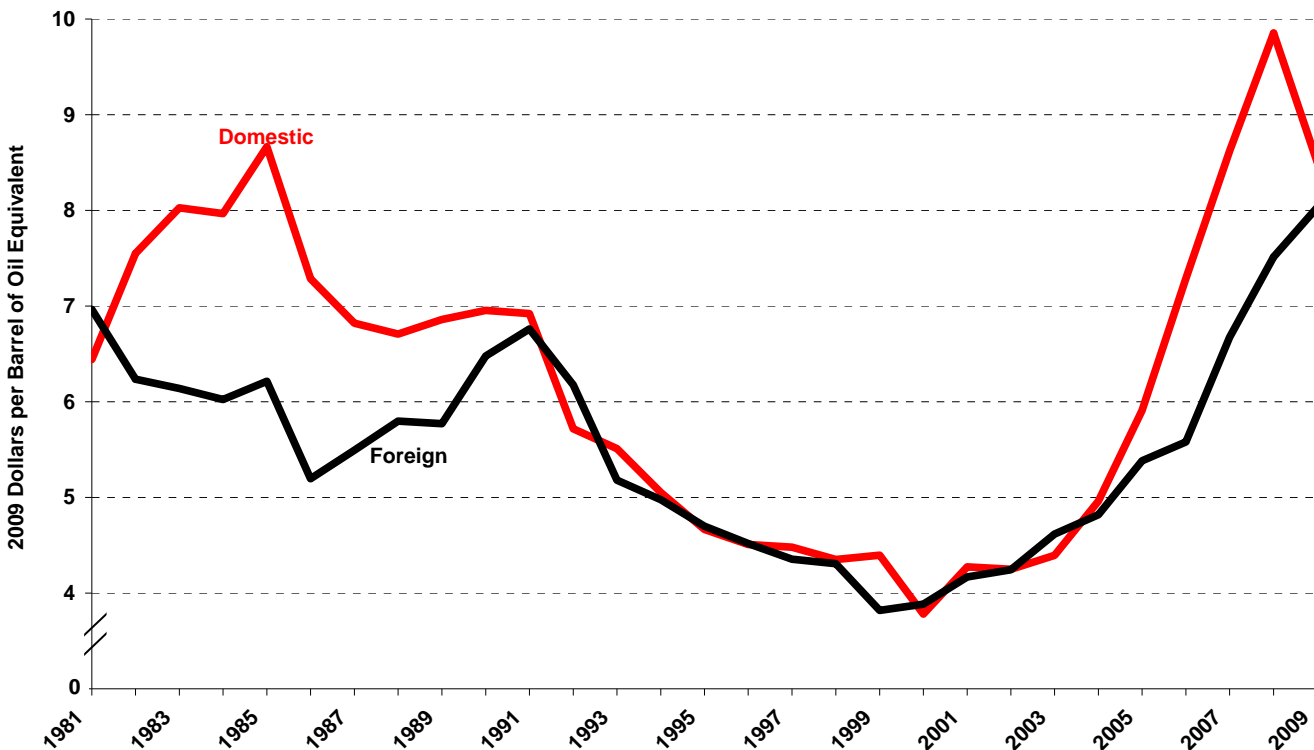
Region	Direct Lifting Costs			Production Taxes			Total		
	2008	2009	Percent Change	2008	2009	Percent Change	2008	2009	Percent Change
United States									
Onshore	NA	NA	NA	NA	NA	NA	15.24	10.69	-29.9
Offshore	NA	NA	NA	NA	NA	NA	12.66	8.83	-30.2
Total United States	9.85	8.50	-13.7	4.90	1.78	-63.7	14.75	10.28	-30.3
Foreign									
Canada	11.90	14.38	20.8	0.43	0.44	2.5	12.33	14.82	20.2
Europe	8.69	8.96	3.1	3.02	1.79	-40.6	11.70	10.75	-8.1
Former Soviet Union	6.84	7.95	16.2	2.18	0.64	-70.8	9.03	8.59	-4.9
Africa	7.27	7.31	0.5	4.12	2.62	-36.4	11.39	9.93	-12.9
Middle East	5.53	5.75	4.0	6.31	3.17	-49.7	11.83	8.92	-24.6
Other Eastern Hemisphere	6.21	6.31	1.6	4.27	1.56	-63.4	10.48	7.87	-24.9
Other Western Hemisphere	4.32	4.36	1.1	2.49	1.32	-46.7	6.80	5.69	-16.4
Total Foreign	7.51	8.03	6.9	3.36	1.79	-46.7	10.87	9.82	-9.7
Worldwide Total	8.62	8.26	-4.2	4.08	1.78	-56.3	12.70	10.04	-20.9

NA = Data not available.

Notes: Natural gas was converted to equivalent barrels of oil at 0.178 barrels per thousand cubic feet. Sum of elements may not add to total due to independent rounding.

Source: U.S. Energy Information Administration, Form EIA-28, (Financial Reporting System).

Figure 15. Direct Oil and Natural Gas Lifting Costs for FRS Companies, 1981-2009



Notes: Direct lifting costs are the costs of extracting oil and gas, excluding production taxes.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

costs are actually measured as the ratio of exploration and development expenditures (including expenditures on unproved acreage but excluding expenditures on proved acreage) to proved reserve additions (excluding net purchases of proved reserves) over a specified period of time.¹⁷ Finding costs are generally calculated in *Performance Profiles* as a weighted average over a period of 3 years.

Average worldwide finding costs for the FRS companies decreased \$5.79 per boe of reserves added in the 2007-2009 period compared to the 2006-2008 period (**Table 11**). Finding costs declined in all FRS regions except the Former Soviet Union, Africa, and the Middle East. Europe, which had the highest finding costs of all of the foreign FRS regions in 2006-2008, had a large fall in costs in 2007-2009, \$19.66 per boe, but, nonetheless, became the highest cost of any of the regions, worldwide (**Figure 16**). That is because the former highest cost region, the U.S. Offshore, fell the most in 2007-2009, \$23.02, and lost its position as the highest cost region. Canada displayed a large decline in part likely because of the inclusion of oil sands in 2009.¹⁸ Of the regions with increasing finding costs, the largest increase was in the Former Soviet Union, with a modest increase of \$3.38.

For the U.S. Onshore, U.S. Offshore, and Foreign regions, finding costs fell the most in the U.S. Offshore in 2007-2009, bringing its costs closer to the lower cost U.S. Onshore and Foreign regions (**Figure 17**). The U.S. Offshore has had the highest finding costs of these three regions since 2001-2003, and the fall in its finding costs was its largest since 1981-1983, when data are first available.¹⁹ U.S. Onshore and Foreign finding costs also fell in 2007-2009, but not as steeply as the U.S. Offshore. All three regions experienced climbing finding costs in the mid-2000s, with those of the U.S. Offshore skyrocketing. The increases for the U.S. Offshore were reversed in the 2005-2007 period, with the region falling an amount that was at the time the largest of any decline of the three regions since 1981-1983.

Upstream Costs

Total upstream costs are the sum of finding costs and lifting costs.²⁰ Because, in the last several years, finding costs usually have been much larger than lifting costs, the calculations of upstream costs have been dominated by finding costs. Upstream costs in the aggregate fell more than \$5 per boe for the FRS companies for the years 2007-2009 (**Table 12**). The Former Soviet Union and Africa were the only regions that had increased upstream costs, at \$4.26 per boe and \$3.07 per boe, respectively, while the U.S. Offshore, Europe, and Canada had conspicuous declines.

¹⁷ One inherent limitation of measuring finding costs this way is that the expenditures and the reserve additions recognized in a particular interval do not usually correspond exactly with each other. Expenditures are usually recognized in the period in which the payment actually occurred. Proved reserves are usually recognized when there is reasonable certainty that they can be produced economically. There is no reason that these must occur in the same time period (oil and gas wells are often operated over a long time period), so that some expenditures may not be recognized in the same time period in which their corresponding reserves are recognized. One way to moderate this limitation is to increase the length of the time period over which finding costs are measured, allowing reserve additions and exploration and development expenditures to match more closely. However, the longer the time period over which finding costs are measured, the more out of date they become, because they include increasingly older expenditures and reserves, and costs and technology are constantly changing. The only way to solve the correspondence problem would be to calculate an average finding cost for all oil and gas produced by a well after it is permanently shut in. But then many costs included would be far out of date.

¹⁸ Oil sands often have low finding costs in part because they are relative close to the surface and in known locations.

¹⁹ The steep fall in finding costs in 1986-1988 is excluded from this discussion because it is based on a change in reserve accounting practices, not reserves found and dollars spent to find them. Before then, natural gas reserves in the Alaska onshore were included in proved reserves, even though there was no way to get them to market. During the 1986-1988 period, these natural gas reserves were removed from the books of the companies operating in northern Alaska.

²⁰ Lifting costs are averaged over 3 years to make them comparable with 3-year finding costs.

Table 11. Finding Costs for FRS Companies, 2006-2008 and 2007-2009
(2009 Dollars per Barrel of Oil Equivalent)

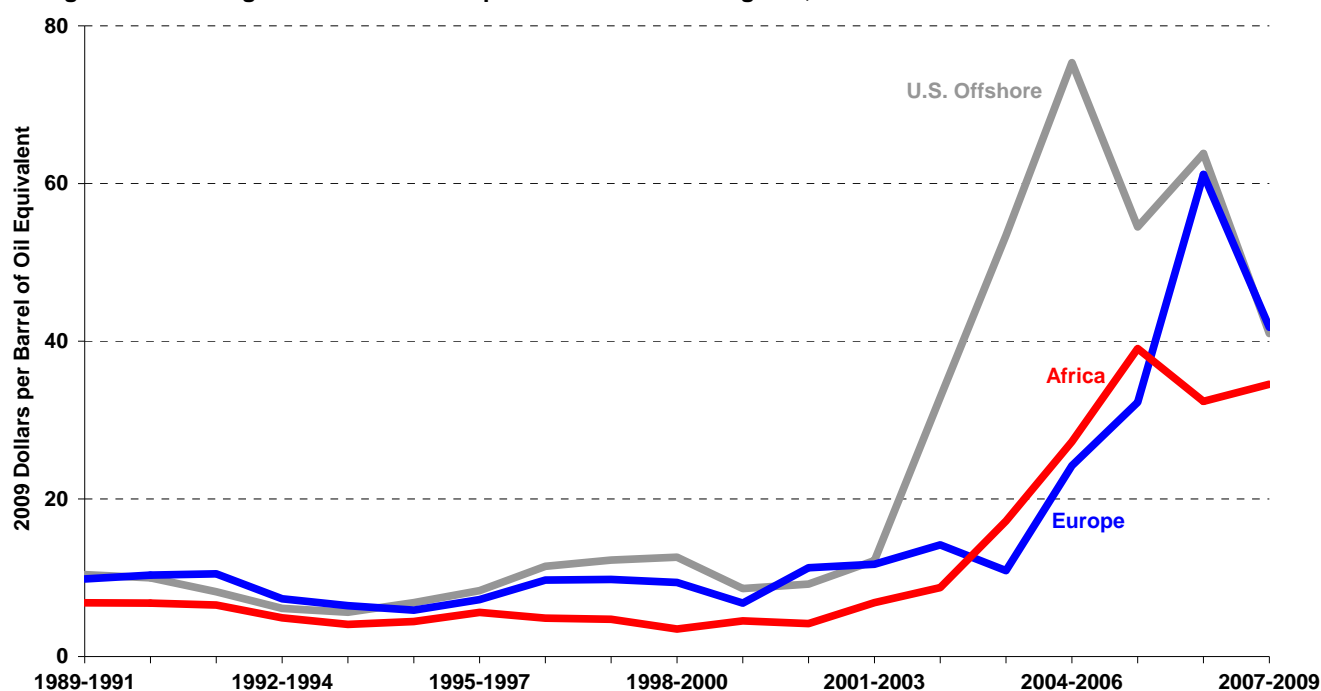
Region	2006-2008	2007-2009	Percent Change
United States			
Onshore	24.61	18.65	-24.2
Offshore	64.53	41.51	-35.7
Total United States	29.45	21.58	-26.7
Foreign			
Canada	28.08	12.07	-57.0
Europe	61.98	42.32	-31.7
Former Soviet Union	10.55	13.92	32.0
Africa	32.82	35.01	6.7
Middle East	5.17	6.99	35.1
Other Eastern Hemisphere	12.57	7.64	-39.2
Other Western Hemisphere	27.60	20.43	-26.0
Total Foreign	18.93	15.13	-20.1
Worldwide	24.10	18.31	-24.0

NM = Not meaningful.

Notes: The above figures are 3-year weighted averages of exploration and development expenditures, excluding expenditures for proven acreage, divided by reserve additions, excluding net purchases of reserves. Natural gas was converted to equivalent barrels of oil at 0.178 barrels per thousand cubic feet. Sum of elements may not add to total due to independent rounding.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

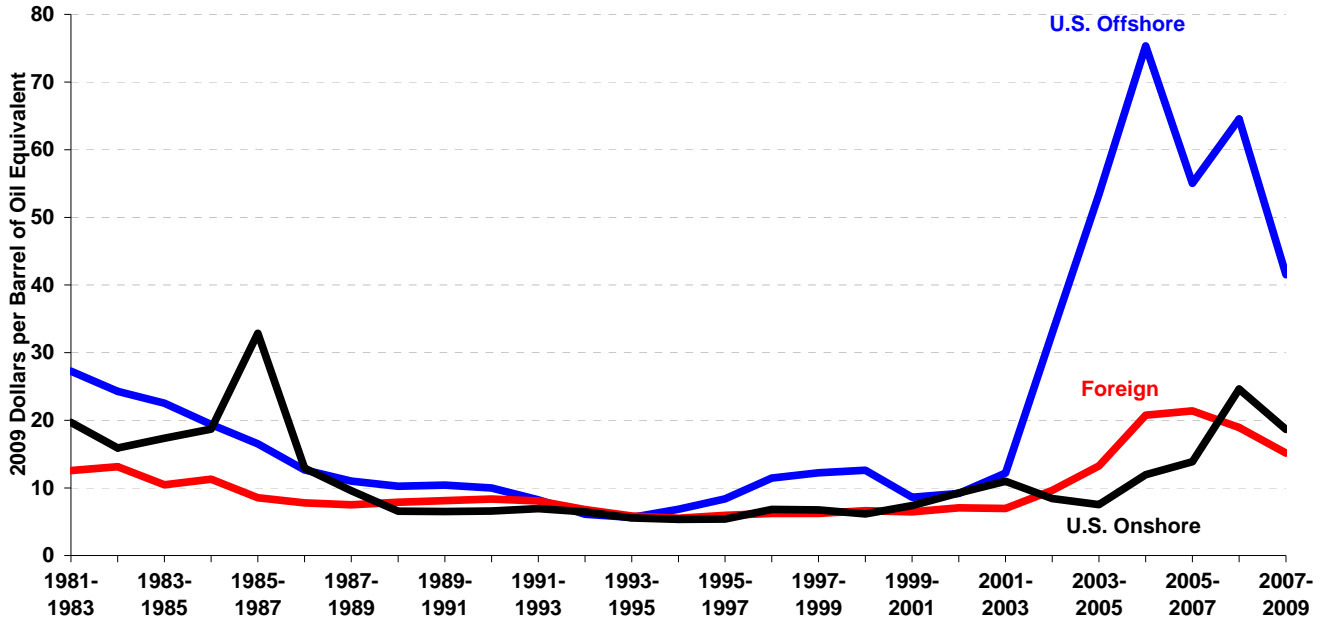
Figure 16. Finding Costs for FRS Companies for Selected Regions, 1989-1991 to 2007-2009



Notes: Costs are the quotient of costs and reserve additions for each 3-year period. BOE = Barrels of oil equivalent.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Figure 17. Finding Costs for FRS Companies, 1981-1983 to 2007-2009



Notes: The increase in Onshore finding costs in 1985-87 was caused by the write-off of natural gas reserves in Alaska, which had been booked, but were not deliverable to markets. Finding costs are the quotient of costs and reserve additions for each 3-year period. BOE = Barrels of oil equivalent.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Table 12. Upstream Costs for FRS Companies, 2006-2008 and 2007-2009 (2009 Dollars per Barrel of Oil Equivalent)

Region	2006-2008	2007-2009	Percent Change
United States			
Onshore	37.32	31.38	-15.9
Offshore	74.20	51.60	-30.5
Total United States	41.49	33.76	-18.6
Foreign			
Canada	38.75	24.76	-36.1
Europe	72.32	53.37	-26.2
Former Soviet Union	16.70	20.96	25.5
Africa	42.24	45.32	7.3
Middle East	17.09	16.88	-1.3
Other Eastern Hemisphere	21.18	16.56	-21.8
Other Western Hemisphere	33.88	26.64	-21.4
Total Foreign	28.31	25.08	-11.4
Worldwide	34.71	29.31	-15.6

Notes: Upstream costs are finding costs plus lifting costs. Natural gas was converted to equivalent barrels of oil at 0.178 barrels per thousand cubic feet. Sum of elements may not add to total due to independent rounding.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

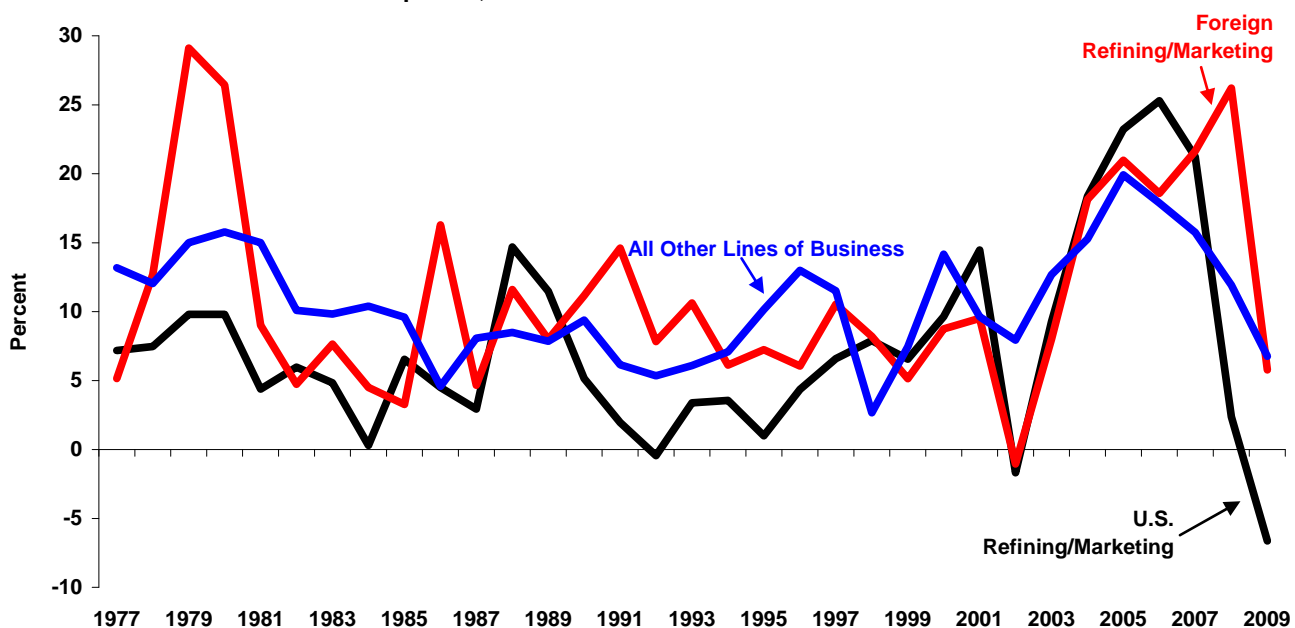
Refining and Marketing

U.S. Refining/Marketing

The average profitability (contribution to net income divided by net investment in place or return on investment (ROI)) of U.S. refining/marketing operations of the respondents to the Financial Reporting System (FRS) survey was negative 7 percent in 2009 (**Figure 18**), the lowest in the 33-year history of the FRS. Further, because the loss of 2009 almost immediately followed an unusually profitable 5-year period (2004 through 2008) that included the 4 highest returns in the history of the FRS, the perception of the loss may be magnified.

Changes in the profitability of the FRS companies generally happen for two reasons: differences in the rate of change of FRS²¹ product prices relative to the rate of change of the crude oil price; and changes in operating costs. Reductions in operating costs due to successful cost-cutting efforts during the 1990s and early 2000s led to increased profitability during that period (see **Figure 6** in the “**Financial Developments**” section). Subsequently, product prices grew faster than crude oil prices during 2004-2008,²² leading to a period of unusually high profitability. Relative to 2008, 2009 product prices fell by more than did crude oil prices, resulting in lower profitability. Concurrent reductions in operating costs (**Table 13**) were insufficient to prevent the largest loss in the history of the FRS.²³

Figure 18. Return on Investment in U.S. and Foreign Refining/Marketing,^a and All Other Lines of Business for FRS Companies, 1977-2009



^a: International Marine has been combined with Foreign Refining/Marketing for the years 2003-2009 to avoid disclosure of company-level data.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

²¹ Unless stated otherwise, all references to things such as prices and volumes are those reported by the FRS companies.

²² The weighted-average profitability over 2003-2008 was 16 percent, and the weighted-average profitability of the 1990-2002 period was 5 percent.

²³ Although low earnings often occur over the history of the FRS, losses are unusual, occurring only in 1992, 2002, and 2009.

Table 13. Sales, Prices, Costs, and Margins in U.S. Refining/Marketing for FRS Companies, 2008-2009

	2008	2009	Percent Change 2008-2009
Refined Product Sales (Million Barrels per Day) ^a	20.4	20.6	1.0
	(2009 dollars per barrel)		
Gasoline Average Price	110.05	74.46	-32.3
Distillate Average Price	126.39	70.96	-43.9
Other Products Average Price	80.87	51.09	-36.8
All Refined Products Average Price	110.20	69.41	-37.0
Less: Raw Materials Costs and Product Purchases	98.97	62.46	-36.9
Equals: Gross Refining Margin	11.23	6.95	-38.1
Less: Operating Costs	9.73	7.31	-24.9
Equals: Net Refining Margin ^b	1.49	-0.36	n.a.
Reseller/wholesaler spread (dealer price - wholesale price)	4.99	2.32	-53.5
Retailer spread (company-operated price - dealer price)	8.74	7.69	-12.0

^aRefined product sales include sales for resale to other FRS companies and sales of imported products.

^bThe components to calculate the refined product margin may be retrieved from the EIA website at <http://tonto.eia.doe.gov/cfapps/frs/frstables.cfm?tableNumber=28>. Note that the table may be customized by changing the years selected.

n.a.: not applicable

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

The net refined product margin (net margin) strongly correlates with profitability.²⁴ Examination of the components of the net margin usually illuminates the underlying reasons for changes in the profitability of U.S. refining/marketing operations. The net margin is the gross margin²⁵ minus operating costs per barrel of refined product sold. The negative \$0.36-per-barrel net margin of 2009 was the lowest (in terms of 2009 dollars)²⁶ in the 33-year history of the FRS (see **Figure 6**, above) and the only time that a negative net margin occurred.

The average gross refining margin reported by the FRS companies in 2009 fell 38 percent compared with 2008 (**Table 13**). The average price received for petroleum products in 2009 decreased almost \$41 per barrel relative to the 2008 value, while raw materials and purchased product costs fell almost than \$37 per barrel to \$62.46. These changes resulted in a \$4.27-per-barrel decrease in the gross refining margin to \$6.95. Further, the gross margin of 2009 was almost the lowest in the history of the FRS, exceeding only 1999's \$6.91 gross margin.

²⁴ The net margin highly correlates with return on investment. The latest estimation of the relationship between refining margins and profitability is that the correlation coefficient is 0.94. Regressing the change in the U.S. refining/marketing return on investment (ROI) on the change in the net refining margin (2009 dollars) yielded the following estimated equation: $\text{diff ROI} = -0.124 (0.411) + (\text{diff net margin} * 4.803 (0.324))$, where the standard error of each estimated coefficient is listed in parentheses. The adjusted R-squared is 0.875. The F-statistic for the regression equation is 218.53, which is significant at a 99-percent level of confidence. The data used to estimate the relationship are for the years 1977 through 2009. Statistical testing indicates that a structural change may have occurred in 1998 when the FRS selection criteria changed and that the 2004 data may be an outlier, but incorporating adjustments to account for these does not materially affect the estimation results.

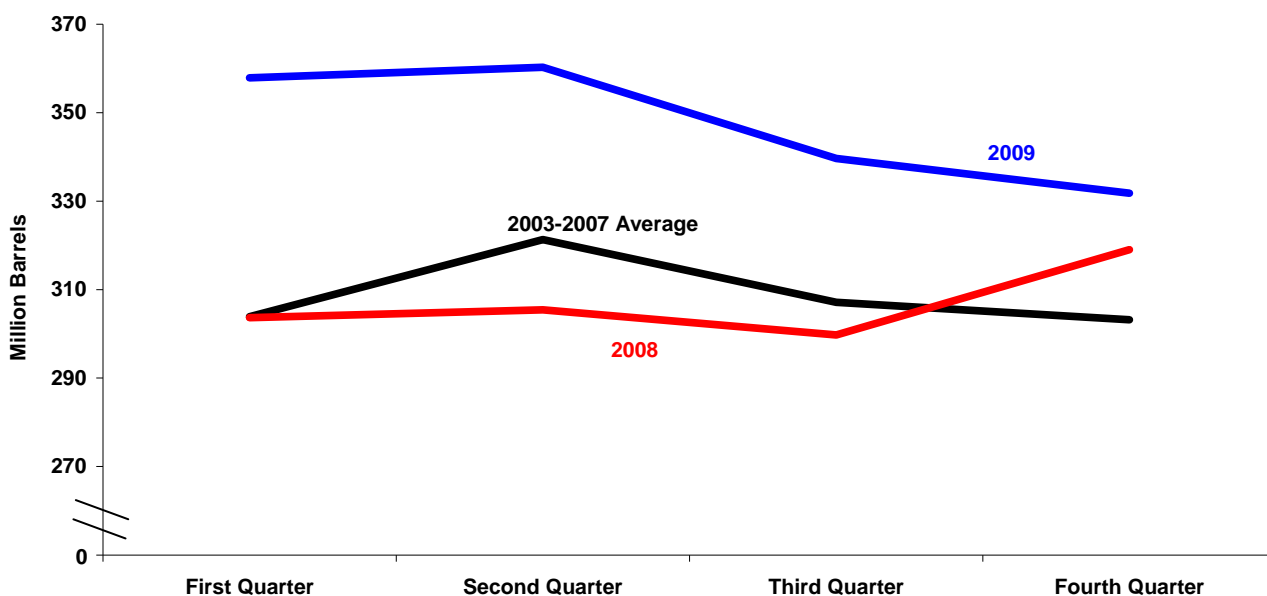
²⁵ For more detailed definitions, see the Brief Description of Financial Terms section.

²⁶ Unless otherwise indicated, all dollar values and percentage changes in this report are in constant 2009 dollars, adjusted using the Gross Domestic Product implicit price deflator.

Revenues and Costs

Industry-wide U.S. crude oil stock levels were higher in 2009, especially early in the year, than both 2008 and the average for 2003-2007 (**Figure 19**). This put downward pressure on industry-wide crude oil prices. During most of 2009 industry-wide crude oil prices were lower than in 2008 and resulted in a 37-percent lower average price.²⁷ These changes contributed to the 36-percent decrease in FRS raw material and purchased product costs for 2009 relative to 2008 (**Table 13**).²⁸

Figure 19. Quarterly Average U.S. Crude Oil Stocks, 2003-2007 Average, 2008, and 2009



Source: U.S. Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109 (Various issues, Washington, DC), Table 51.

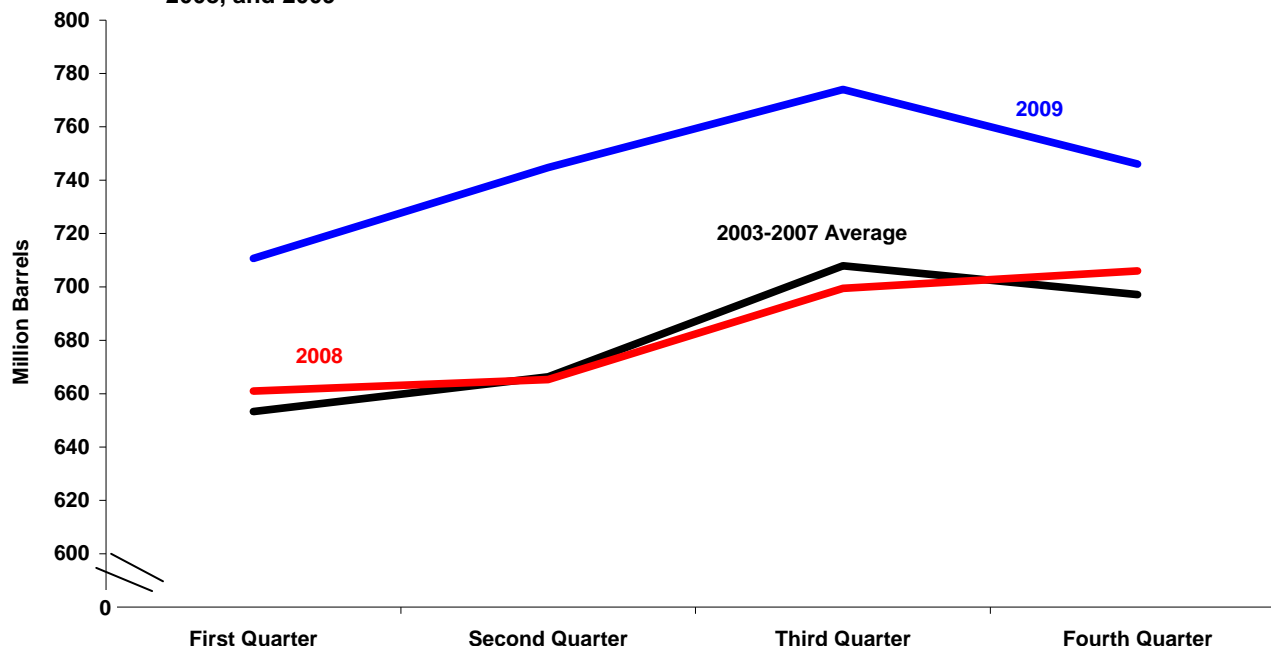
Petroleum product prices tend to move with crude oil prices, both of which fell in 2009 (compared with 2008). Additionally, industry-wide stocks of petroleum products were higher in 2009 than in 2008 (and the average over 2003-2007) throughout the year (**Figure 20**). Although relatively high petroleum product stocks levels put downward pressure on product prices in general, total motor gasoline²⁹ stock levels were essentially unchanged in 2009 relative to 2008 (or the average over 2003-2007) (**Figure 21**) and exerted little pressure on motor gasoline prices.

²⁷ Calculated for composite refiner acquisition cost of crude oil, see U.S. Energy Information Administration, *Petroleum Marketing Monthly* (October 2010), Table 1.

²⁸ Crude oil stock levels are only one of many factors affecting the price of crude oil. See the *Short-Term Energy Outlook* for a broader discussion of crude oil prices (<http://www.eia.gov/emeu/steo/pub/contents.html> as of November 9, 2010).

²⁹ Total motor gasoline stocks are stocks of both finished motor gasoline and motor gasoline blending components. This measure of motor gasoline, rather than only finished motor gasoline, is used because the substitution of ethanol for MTBE has changed the storage pattern of motor gasoline. Less finished motor gasoline and more unfinished motor gasoline is now stored nationwide. Ethanol is added to unfinished gasoline at the terminal, only then creating finished reformulated motor gasoline.

Figure 20. Quarterly Average U.S. Commercial Petroleum Product Stocks, 2003-2007 Average, 2008, and 2009



Source: U.S. Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109 (Various issues, Washington, DC), Table 51.

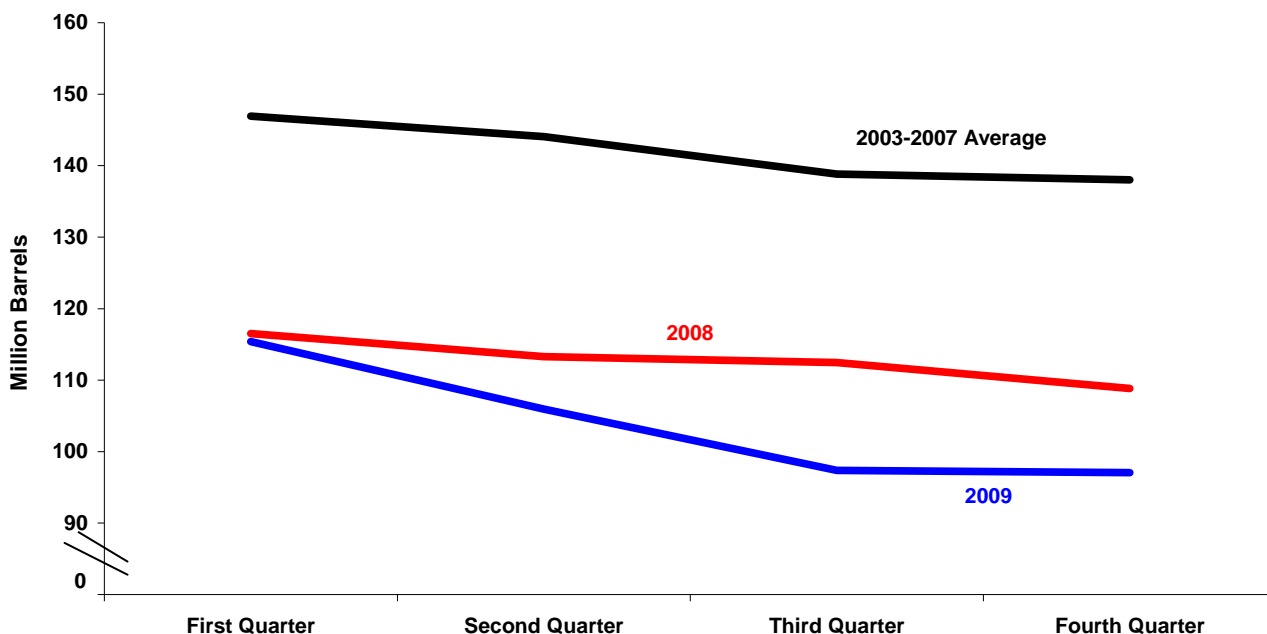
FRS petroleum product sales increased 1 percent in 2009 relative to 2008 (**Table 13**), largely because of the addition of Alon, Chalmette, and Western Refining³⁰ to the FRS group, against an industry backdrop of a 4-percent decline in product sales.³¹ Product sales are composed chiefly of motor gasoline and distillate. Gasoline sales increased 4 percent while distillate sales decreased slightly more than 1 percent. Sales of all other petroleum products declined 2 percent in 2009 relative to 2008 (**Table 14**). Negligibly higher sales and much lower average petroleum product prices reduced domestic petroleum product sales revenues by \$298 billion (**Table 15**). Meanwhile, operating costs fell by \$284 billion, resulting in a decline in operating income of more than \$18 billion (including the decline in other revenue). Comparing 2009 with 2008, the changes in revenues and costs resulted in an operating loss of more than \$12 billion and a net loss (including special items) of more than \$9 billion in 2009.

Those operating expenses most closely associated with refining and marketing operations decreased by 25 percent on a per-barrel basis between 2008 and 2009 (**Table 13**), led by decreases in refining energy costs and other operating costs (**Table 14**).

³⁰ Product sales for Chalmette are not publicly available, however Alon and Western Refining accounted for almost 0.35 million barrels of product sales. Thus, in the absence of only Alon and Western, FRS petroleum product sales would have declined by more than 0.14 million barrels, or 0.7 percent. See Alon USA Energy Inc., 2009 U.S. Securities and Exchange Commission Form 10-K, p. 57; and Western Refining Inc., 2009 U.S. Securities and Exchange Commission Form 10-K, p. 43.

³¹ U.S. Energy Information Administration, *Monthly Energy Review* (September 2010), Table 3.1.

Figure 21. Quarterly Average Total U.S. Motor Gasoline Stocks, 2003-2007 Average, 2008, and 2009



Source: U.S. Energy Information Administration, *Petroleum Supply Monthly*, DOE/EIA-0109 (Various issues, Washington, DC), Table 51.

Energy costs decreased by \$1.20 to \$1.32 per barrel,³² their lowest level since 2002 and one of the lowest levels ever reported in the history of the FRS.³³ Average wellhead natural gas prices fell \$4.46, from \$8.18 in 2008 to \$3.72 per thousand cubic feet³⁴ in 2009, accounting for some of the decrease. Lower energy costs also could be attributed to factors such as lower utility costs,³⁵ lower fuel costs,³⁶ and a full year of benefits from cost-reductions implemented during 2008.³⁷ FRS companies continue to implement changes aimed at the containment of energy costs, but it appears that one of the major efforts over the last 10 years, U.S. cogeneration projects, have finally been completed.³⁸

³² The per-barrel energy costs are computed by dividing U.S. refining energy costs by total product sales, and, thus, may not fully reflect changes in per-unit energy costs if there are unusual changes in the net sales/refinery output of the respondent companies.

³³ The energy cost level of 2009 is the 6th lowest in the 33-year history of the FRS and was lower only in 1994 (\$1.31/barrel), 2002 (\$1.30/barrel), 1995 (\$1.11/barrel), 1999 (\$1.04/barrel), and 1998 (\$0.94/barrel).

³⁴ U.S. Energy Information Administration, *Monthly Energy Review* (September 2010), Table 9.11.

³⁵ ConocoPhillips Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 26

³⁶ Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. FS-9.

³⁷ For example, BP acquired a cogeneration facility from NiSource for its 405,000-barrels-per-day Whiting, Indiana refinery July 1, 2008 (BP plc, "BP Buys Whiting Clean Energy Power Plant in Indiana," press release (July 1, 2008) and 2008 U.S. Securities and Exchange Commission Form 20-F, p. 115).

³⁸ This ends (or at least pauses) a recurring storyline that has characterized the FRS U.S. refining/marketing operations for 11 of the last 12 years, excepting only the year 2000. Only Exxon Mobil explicitly mentioned ongoing cogeneration projects, and both refineries were outside the United States (see Exxon Mobil Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 48).

Table 14. U.S. Refined Product Margins and Costs per Barrel Sold and Product Sales Volume for FRS Companies, 2008-2009

	2008	2009	Percent Change 2008 - 2009
	(2009 dollars per barrel)		
Gross Margin	11.23	6.95	-38.1
- Marketing Costs	1.76	1.47	-16.6
- Energy Costs	2.52	1.32	-47.6
- Other Operating Costs	5.45	4.52	-17.1
= Net Margin	1.49	-0.36	n.a.
	(Thousand Barrels per Day)		
Product Sales Volume ^a			
Motor Gasoline	10,300	10,664	3.5
Distillate	6,526	6,436	-1.4
Other Products	3,551	3,482	-1.9
Total	20,376	20,583	1.0

^aRefined product sales include sales for resale to other FRS companies and sales of imported products.

n.a.: not applicable

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Other operating costs related to refining decreased from \$5.45 per barrel in 2008 to \$4.52 per barrel in 2009 (**Table 14**). Operating costs associated with compliance with the Clean Air Act Amendments of 1990 were mixed in 2009 relative to 2008, increasing for some companies and falling for others.³⁹

Additional reasons that other operating costs fell in 2009 include reduced negotiated prices for materials, labor, and services;⁴⁰ reduced waste water-treatment costs due to recently introduced technology;⁴¹ lower turnaround costs,⁴² and an absence of hurricane-related charges.⁴³ Meanwhile, impairment write-downs were another major reason for higher costs.⁴⁴

³⁹ Although EIA has no estimate of the significance of the environmental spending in 2009 for other operating costs, some companies indicated that their operating expenses attributable to environmental cost were higher in 2009 than in 2008. For example, Sunoco reported environmental operating costs of \$210 million in 2008 and of \$217 million in 2009, and ConocoPhillips reported environmental expenses of \$957 million in 2008 and \$1,070 million in 2009 (see Sunoco Inc., 2009 U.S. Securities and Exchange Commission Form 10-K, p. 51; ConocoPhillips, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 59; and ConocoPhillips Corporation, 2008 U.S. Securities and Exchange Commission Form 10-K, p. 65). Alternatively, Exxon Mobil indicated that its environmental operating costs decreased from \$2,730 million in 2008 to \$2,610 million in 2009 (see Exxon Mobil Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 54). For additional discussion of this topic, also see an EIA study that examined the effects of environmental compliance on operating costs on EIA's website at http://www.eia.gov/emeu/perfpro/ref_pi2/index.html.

⁴⁰ Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. FS-9.

⁴¹ ConocoPhillips Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 26.

⁴² Marathon Oil Corporation, "4Q 2009 Earnings Conference Call Remarks" (February 2, 2010). Available on the internet at http://www.marathon.com/Investor_Center/Speeches_and_Presentations/Speeches_and_Presentations/4Q2009_Earnings_Conference_Call_Remarks/ (as of October 11, 2010).

⁴³ Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. FS-9.

⁴⁴ For example, Valero Energy Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 78.

Table 15. U.S. and Foreign Refining/Marketing^a Financial Items for FRS Companies, 2008-2009
(2009 Million Dollars)

	2008	2009	Percent Change 2008-2009
Domestic Refining/Marketing Operations			
Refined Product Sales Revenue	819,586	521,497	-36.4
Other Revenue ^b	21,483	17,479	-18.6
Operating Expense ^{b, c}	835,031	550,871	-34.0
Operating Income ^c	6,038	-11,895	n.a.
Net Income, excluding special Items	8,611	-12,468	n.a.
Special Items	-5,566	3,072	n.a.
Net Income	3,045	-9,396	n.a.
Foreign Refining/Marketing Operations^a			
Refined Product Sales Revenue	364,849	233,264	-36.1
Other Revenue ^b	15,527	10,966	-29.4
Operating Expense ^{b, c}	365,331	240,431	-34.2
Operating Income ^c	15,045	3,799	-74.7
Net Income, excluding special Items	11,393	2,557	-77.6
Special Items	-231	19	n.a.
Net Income	11,162	2,576	-76.9

^aIn order to prevent disclosure of company-level data the International Marine business segment has been combined with Foreign Refining/Marketing for this presentation. Relative to Foreign Refining/Marketing, International Marine is about one-tenth the size and has little material effect on the overall results of Foreign Refining/Marketing.

^bRaw materials revenues are netted against total operating expense.

^cExcludes Special Items.

n.a.: not applicable

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Operational Changes

The FRS companies refocused their marketing operations for the last several years, culminating in the lowest outlet total in the history of the FRS in 2009. Historically, this was accomplished by making selective investment in some outlets,⁴⁵ acquiring some outlets,⁴⁶ and divesting others,⁴⁷ which also was true of 2009. However, the last

⁴⁵ For example, BP continues to make investments to implement its “am pm” convenience store concept. BP plc, 2009 U.S. Securities and Exchange Commission Form 20-F, p. 37.

⁴⁶ Hess “acquired 37 previously leased retail gasoline stations ...” and Marathon acquired “89 new stores during ... [the most recent] five-year period.” See, Hess Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 52 and Marathon Oil Corporation, 2009 Annual Report, p. 11.

⁴⁷ Chevron “sold its interest in about 465 individual service-station sites in various other countries, including the United States. The majority of these sites continue to market company-branded gasoline through new supply agreements The company plans to discontinue, by mid-2010, sales of Chevron- and Texaco-branded motor fuels in the mid-Atlantic and other eastern states, where the company sold to retail customers through approximately 1,100 stations and to commercial and industrial customers through supply arrangements. Sales in these markets represent approximately 8 percent of the company's total U.S. retail fuels sales volumes (see Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 26).” Marathon sold or closed “155 non-core and underperforming stores (see Marathon Oil Corporation, 2009 Annual Report, p. 11).” Sunoco noted that it divested 261 outlets during the 2007-2009 period in order “to selectively reduce the Company’s invested capital in Company-owned or leased sites. Most of the sites were converted to contract dealers or

two years have brought unusually large changes as BP,⁴⁸ ConocoPhillips, Exxon Mobil, three of the largest FRS respondents, began exiting motor gasoline retailing rather than merely “refocusing” their operations as had been the case.⁴⁹ The FRS companies’ continued reduction in their direct-supplied outlets may demonstrate their confidence that the low returns of 2008 and 2009, not the high returns of 2004-2007, from their U.S. refining/marketing operations will persist.

Marketing costs fell \$0.29 per barrel in 2009 relative to 2008 (**Table 14**) as FRS direct-supplied⁵⁰ motor gasoline outlets were reduced 6 percent in 2009⁵¹ (**Table 16**), continuing a long-time trend (**Figure 22**). Companies’ marketing costs decreased as they shifted sales of motor gasoline from higher-cost channels of distribution, company-operated outlets and dealer outlets, to lower-cost channels of distribution, wholesale and direct sales.

The number of company-operated outlets fell 11 percent while dealer outlets fell 5 percent⁵² during 2009 (**Table 16**) against an industry backdrop of a small increase in U.S. motor gasoline outlets.⁵³ The overall effect was a reduction of 2,153 direct-supplied FRS branded outlets during 2009 and a small decline in the FRS share of total U.S. outlets from 22 percent at year-end 2008 to 20 percent at year-end 2009.

Marginal outlets ideally would be the first divested, which would tend to increase average productivity of the remaining outlets,⁵⁴ measured by average monthly motor gasoline sales volume. Dealer productivity increased 5 percent between 2008 and 2009. However, productivity of company-operated outlets fell 4 percent,⁵⁵ which may

distributors thereby retaining most of the gasoline sales volume (see Sunoco, Inc., 2009 U.S. Securities and Exchange Commission Form 10-K, p. 6).”

⁴⁸ Although it was BP plc, the parent company of the FRS respondent BP America, that made the announcement, the number of BP-branded U.S. outlets has fallen from 12,200 in 2007 to 11,500 in 2009. See BP plc, 2009 U.S. Securities and Exchange Commission Form 20-F, p. 36.

⁴⁹ ConocoPhillips Company, 2008 U.S. Securities and Exchange Commission Form 10-K, p. 19; BP plc, “BP to Sell Most Company-Owned, Company-Operated Convenience Stores to Franchisees,” press release (November 15, 2007); and “Exxon Plans to Sell Its Gas Stations,” *The New York Times* (June 13, 2008). The article noted that Exxon Mobil already did not own about 75 percent of its branded outlets. ConocoPhillips has nearly completed its exit as of January 2010 with only another 100 outlets to divest (see ConocoPhillips, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 17). More recently, Royal Dutch Shell, the parent of the FRS respondent Shell Oil, announced substantial reductions in its refining/marketing operations (“Shell to slash downstream as Q4 profits collapse,” Reuters (February 4, 2010). Available on the internet at <http://www.reuters.com/article/idUSTR6130XR20100204> (as of October 11, 2010)). The implications this has for Shell Oil’s future U.S. refining/marketing operations are presently unclear.

⁵⁰ An FRS “direct-supplied” motor gasoline outlet is one that has a supply contract directly with an FRS company. Many outlets that display an FRS motor gasoline brand are not directly supplied by the FRS company whose brand the outlet displays.

⁵¹ However, this figure may be misleading due to the addition of Western Refining (149 outlets, see Western Refining Inc, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 53) and Alon USA (308 outlets, see Alon USA Energy Inc., 2009 U.S. Securities and Exchange Commission Form 10-K, p. 57) for the 2009 reporting year. Exclusive of the outlets of these two companies, the decline in FRS-supplied outlets was a slightly larger 8 percent.

⁵² Again, in the absence of Western and Alon, the decline would have been 15 percent and 6 percent, respectively.

⁵³ According to the *National Petroleum News*, there were 161,068 outlets in 2008 and 162,350 in 2009 (M2Media360, *NPN Magazine, 2009 Market Facts*, p. 70).

⁵⁴ However, as some FRS companies have noted in the past, these efforts can be frustrated if productive dealers elect to change brands.

⁵⁵ Part of the reason is that the entrants with company-operated outlets (Alon and Western) had sales volumes below the FRS average, which were 33,000 gallons/month and 114,950 gallons/month, respectively. See Alon USA Energy Inc., 2009 U.S. Securities and Exchange Commission Form 10-K, p. 57 and Western Refining Inc., 2009 U.S. Securities and Exchange Commission Form 10-K, p. 53.

Table 16. Motor Gasoline Distribution and Number of Direct-Supplied Branded Outlets for FRS Companies, 2008-2009

	2008	2009	Percent Change 2008-2009
	(Million Barrels)		
Third-Party Volume			
Wholesale	2,064.9	2,184.2	5.8
Retail			
Dealer	796.4	796.9	0.1
Company-Operated	338.5	290.3	-14.3
Total Retail	1,134.9	1,087.2	-4.2
Direct	504.8	573.7	13.6
Total Third-Party Volume	3,704.6	3,845.1	3.8
Intersegment Volume	54.8	47.4	-13.6
	(Number of Direct-Supplied Branded Outlets)		
Dealer Outlets	28,335	26,923	-5.0
Company-Operated Outlets	6,937	6,196	-10.7
Total Retail Outlets	35,272	33,119	-6.1
	(Thousand Gallons per Month)		
Average Monthly Outlet Volume			
Dealers	98.4	103.6	5.3
Company-Operated	170.8	164.0	-4.0
All Direct-Supplied Outlets	112.6	114.9	2.0

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

indicate the FRS companies' strategy to exit this part of their marketing operations, regardless of its effect on per-outlet productivity.⁵⁶

Meanwhile, refinery capacity reported by the FRS companies increased by 2 percent (**Table 17**), primarily because of the addition of the joint venture Chalmette (Exxon Mobil and Petroleos de Venezuela, S.A.), Alon USA, and Western Refining. The addition of their total capacity of 649,900 barrels per day⁵⁷ (bpd) more than offset the reduction of capacity of 412,200 bpd from the shutdown of two refineries and the sale of another. In June 2009, Sunoco both permanently shut down its 145,000 barrel-per-day Westville, New Jersey (Eagle Point), refinery in June 2009 and sold its 85,000 barrels-per-day Tulsa, Oklahoma, refinery to Holly Corporation.⁵⁸ Additionally, Valero shut down its 182,200-barrels-per-day Delaware City, Delaware, refinery in November 2009.⁵⁹

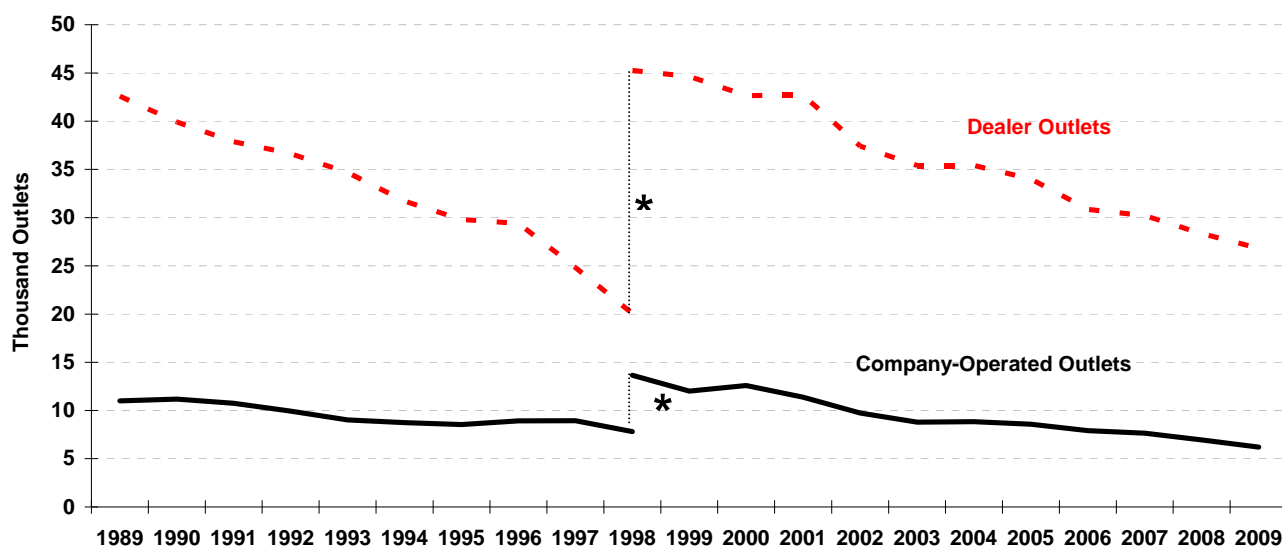
⁵⁶ Calculations such as this can be affected by the timing of the change in the status of the outlets and of differences in the timing between years. That is, divesting a large number of outlets near year-end will tend to generate an inflated average sales volume while divesting a large number of outlets near year-beginning will tend to generate a depressed average sale volume.

⁵⁷ The individual capacities are: Alon – 231,500 barrels per day (bpd), Chalmette – 192,500 bpd, and Western – 225,900 bpd. See Energy Information Administration, "Refinery Capacity Report 2010" (June 2010), Table 5. Available on the internet at http://www.eia.gov/oil_gas/petroleum/data_publications/refinery_capacity_data/refcapacity.html (as of October 10, 2010).

⁵⁸ Sunoco, Inc., 2009 U.S. Securities and Exchange Commission Form 10-K, p. 33.

⁵⁹ Valero Energy Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 78.

Figure 22. Company-Operated and Direct-Supplied Dealer Outlets for FRS Companies, 1989-2009



*The addition of 11 companies to the group of U.S. majors in 1998, the largest single-year change in the history of the Financial Reporting System, resulted in the vertical displacement of the series in 1998.

Note: Only outlets directly supplied by the FRS companies are included here.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Increased ability to process heavier and/or higher sulfur crude oil⁶⁰ and further environmental investments,⁶¹ including those related to ethanol,⁶² were among the major motivations for the refinery investments of 2009. The combination of transactions and marginal upgrades resulted in a 1-percent increase in U.S. refining additions to net investment in place (**Table 17**). Although the increase in addition to net investment in place was modest, it resulted in 2009 supplanting 2008 as the year of the greatest investment in U.S. refining by the FRS companies in the history of the FRS.⁶³

⁶⁰ Several companies noted such investment. For example, BP, Chevron, ConocoPhillips, Exxon Mobil, and Marathon made upgrades in their refining capacity (see BP plc, 2009 U.S. Securities and Exchange Commission Form 20-F, p. 41; Chevron Corporation, U.S. Securities and Exchange Commission Form 10-K, p. 25; ConocoPhillips Corporation, U.S. Securities and Exchange Commission Form 10-K, p. 57; Exxon Mobil Corporation, 2009 *Financial & Operating Review*, p. 79; Marathon Oil Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 59).

⁶¹ Several companies indicated that they continued making environmental investments (e.g., expand their ability to make Phase II-compliant petroleum products or meet other environmental requirements), including BP, Chevron, ConocoPhillips, Exxon Mobil, Marathon, Sunoco, Tesoro, and Valero (see BP plc, 2009 U.S. Securities and Exchange Commission Form 20-F, p. 56; Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 29; ConocoPhillips Company, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 57; Exxon Mobil Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 48; Marathon Oil Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 76; Sunoco Inc., 2009 U.S. Securities and Exchange Commission Form 10-K, pp. 4-5; Tesoro Energy Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 43; and Valero Energy Corporation, 2008 U.S. Securities and Exchange Commission Form 10-K, p. 46).

⁶² Sunoco “[c]ompleted an acquisition totaling \$9 million in June 2009 of a 100 million gallon-per-year ethanol manufacturing facility in New York (see Sunoco, Inc., 2009 U.S. Securities and Exchange Commission Form 20-F, p. 33).”

⁶³ Although 2009 had the highest level of additions to net investment in place for U.S. refining, the story for U.S. marketing was the opposite; it was the lowest in the history of the FRS, but in keeping with the change in retail outlets, for example.

Table 17. U.S. and Foreign Refining/Marketing Investment and Refining Operating Items for FRS Companies, 2008-2009

	2008	2009	Percent Change 2008-2009
	(2009 Billion Dollars)		
U.S. Refining Additions to Investment in Place	30.7	31.0	1.1
U.S. Marketing and Transportation Additions to Investment in Place	7.1	3.0	-57.5
Foreign Refining/Marketing Additions to Investment in Place	14.3	15.1	5.7
	52.1	49.2	-5.6
	(Thousand Barrels per Day)		
U.S. Refining Capacity	14,880	15,153	1.8
U.S. Refinery Output	14,519	14,686	1.2
Foreign Refining Capacity	5,461	5,470	0.2
Foreign Refinery Output	4,998	4,768	-4.6
	(Percent)		
U.S. Refinery Utilization Rate ¹	87.2	82.0	(²)
Foreign Refinery Utilization Rate ¹	84.3	80.8	(²)

¹Refinery utilization rate is calculated by dividing runs to stills at own refineries by the average of the year-beginning and year-ending crude oil distillation capacity.

²Not meaningful.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

For the last several years the relatively complex FRS refineries (**Table 18**) provided cost savings by taking advantage of price differences between the relatively lower-cost heavy crude oils and the relatively higher-cost light crude oils because the refineries can refine a wide range of crude oils. Further, revenues were increased marginally because complex refineries can produce relatively more higher-priced, light products. However, the circumstances of 2009 diminished both advantages of refining complexity.

The difference between the prices of light crude oil and heavy crude decreased substantially (**Figure 23**) as the discount paid for heavy crude oil fell from \$16.65 per barrel in 2008 to \$8.13 per barrel in 2009. Further, the difference between the price of lighter products (represented by the price of motor gasoline) and the price of heavier products (represented by the price of residual fuel oil) decreased between 2008 and 2009 (**Figure 24**), falling \$12.67 per barrel. These changes put upward pressure on raw materials costs and downward pressure on product revenues. Thus, despite reductions in all crude oil and product prices in 2009, the decline in FRS costs of raw materials and product purchases (\$36.51 per barrel) was smaller than the decline in FRS product revenues (\$40.79 per barrel) (**Table 13**), diminishing the bottom line of the FRS U.S. refining/marketing operations.

The year 2009 not only was the least profitable for U.S. refining/marketing operations in the 33-year history of the FRS, but it seemed all the more so by following the three most profitable years in the history of the FRS so closely. The primary reason for the decreased profitability of the FRS U.S. refining/marketing operations in 2009 relative to 2008 was a reduced gross refining margin (i.e., average annual petroleum product prices increased by less than average annual raw materials costs), which was somewhat offset by lower operating costs for all categories of cost – marketing, energy costs, and “other” operating costs. The combination of these changes resulted in a decline in the net refining margin from \$1.49 in 2008 to a loss of \$0.36 per barrel, the only negative net margin in the 33-year history of the survey. Falling revenues and earnings provided incentives for FRS companies to realign their U.S. refining/marketing operations. The long-time divestiture of their motor gasoline retailing assets continued in 2009. Upgrading of refinery capacity also continued in 2009, further expanding their ability to refine the lowest quality (and lowest cost) crude oils available and produce more highly-valued products. Despite these cost reduction and revenue maximization efforts, the FRS companies

Table 18. U.S. Refinery Configurations for FRS Companies, Selected Years, 1974-2009
(Percent)

	Downstream Capacity as a Percent of Crude Distillation Capacity																
	1974	1981	1993	1996	1997	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	
FRS Integrated Refiners^a																	
Coking	n.c.	n.c.	n.c.	13.0	12.6	12.9	13.9	14.1	15.8	15.4	15.7	15.4	15.4	15.9	16.0	16.3	
Catalytic cracking	27.7	30.4	36.5	33.8	35.9	35.8	35.6	35.2	33.0	33.4	33.7	33.9	33.4	34.3	33.6		
Catalytic reforming	17.6	22.4	25.8	24.9	23.4	22.3	22.4	22.2	21.8	21.8	21.8	21.4	21.7	21.9	21.0	21.5	
Hydro cracking	5.6	5.7	9.6	9.6	9.6	10.9	11.0	10.9	10.7	10.4	10.7	10.5	11.0	11.4	11.1	12.1	
Catalytic hydrotreating	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	79.5	82.3	85.8	88.0	87.7	87.0	
Alkylation	4.8	5.3	7.7	6.8	7.5	7.4	7.4	7.2	7.1	7.2	7.3	7.3	7.5	7.1	7.2	7.0	
FRS Non-Integrated Refiners^b																	
Coking	n.c.	n.c.	n.c.	11.0	12.7	12.0	12.1	12.4	12.0	13.5	14.7	14.3	14.4	14.4	14.2	12.5	
Catalytic cracking	n.c.	n.c.	n.c.	29.8	34.1	34.0	35.5	35.5	36.3	36.7	38.4	37.2	37.2	37.1	36.7	34.0	
Catalytic reforming	n.c.	n.c.	n.c.	18.9	21.5	22.5	21.9	21.7	21.4	21.1	21.8	20.4	20.1	20.6	21.2	20.1	
Hydro cracking	n.c.	n.c.	n.c.	6.3	7.8	8.6	8.6	8.4	7.8	8.5	8.7	8.1	8.3	8.4	8.5	8.4	
Catalytic hydrotreating	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	n.c.	71.4	73.3	74.3	74.2	76.9	73.5	
Alkylation	n.c.	n.c.	n.c.	6.0	6.8	6.0	6.3	6.3	6.4	6.4	6.9	6.6	6.6	6.6	6.8	6.6	

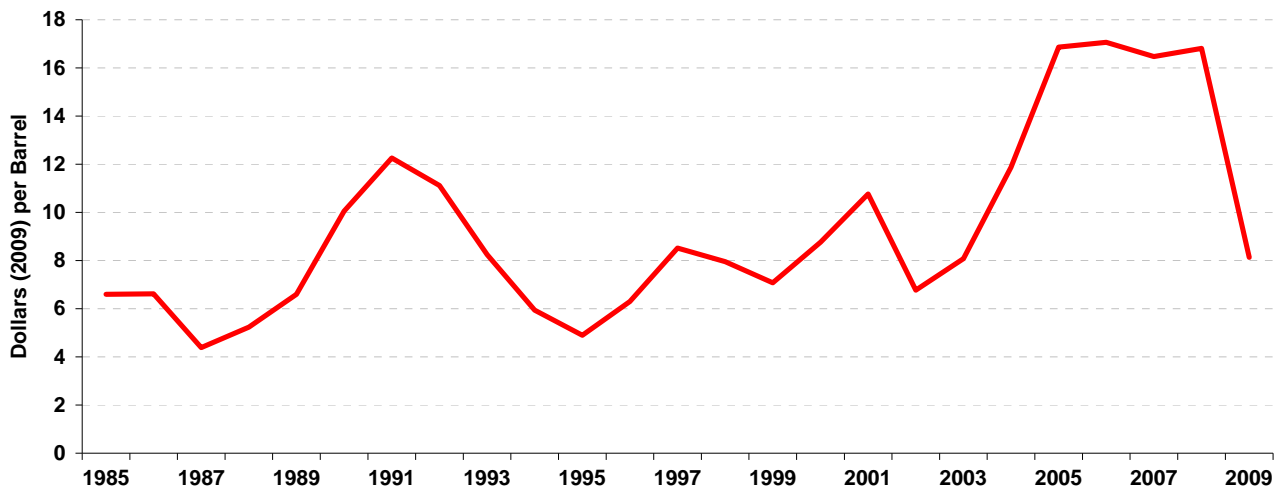
n.c.: Information not collected.

^a: FRS Integrated Refiners includes BP America, Chevron, ConocoPhillips, Deer Park (consolidated with Shell for FRS reporting), Exxon Mobil, Marathon, Shell Oil, and Total Holdings USA.

^b: FRS Non-Integrated Refiners includes Alon (2009 only), Chalmette (2009 only), CITGO, Lyondell Chemical, Motiva, Sunoco, Tesoro, Valero, Western Refining (2009 only), and WRB (2008 and 2009).

Sources: Oil and Gas Journal, "Worldwide Refinery Report," 1974, 1981, 1993, 1996, 1997, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, and 2009.

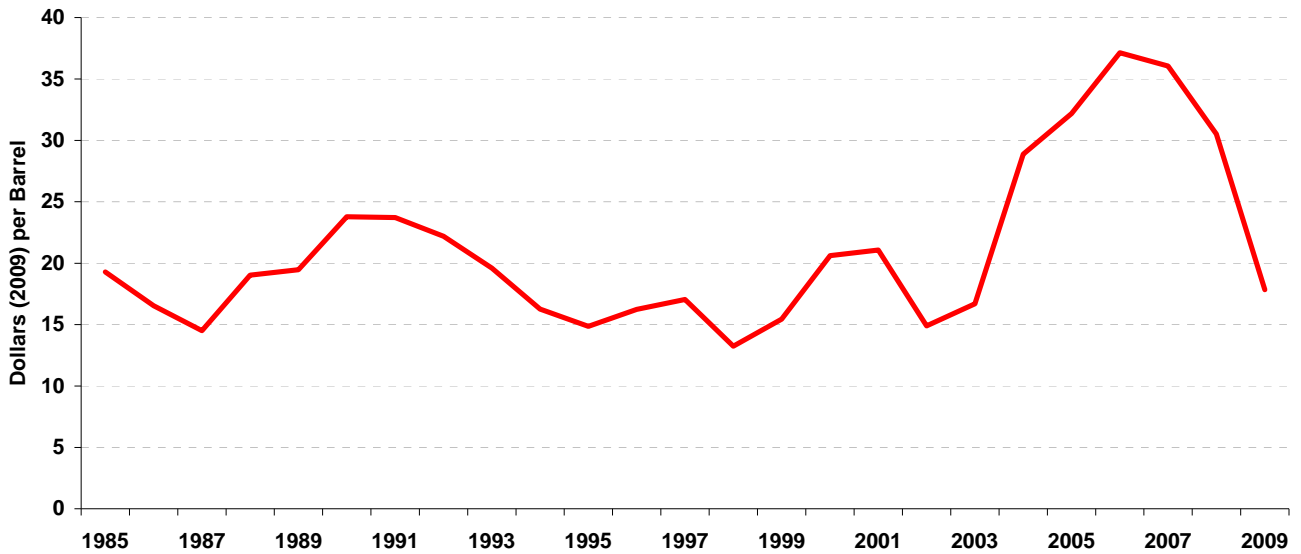
Figure 23. Price Difference Between Light Crude Oil and Heavy Crude Oil, 1985-2009



Note: Light crude oil tends to sell for a higher price per barrel than does heavy crude oil. Thus, the vertical distance of the line in the figure from the horizontal axis indicates the premium paid for light crude oil relative to heavy crude oil. The more expensive light crude oil is defined here as having an API gravity of 40.1 or greater, and heavy crude oil is defined as having an API gravity of 20 or less.

Source: U.S. Energy Information Administration, *Petroleum Marketing Monthly*, DOE/EIA-0380, Tables 27 and 28 (2006 and earlier), and Tables 24 and 25 (2007, onward).

Figure 24. Resale Price Difference Between Motor Gasoline and Residual Fuel Oil, 1985-2009



Note: Motor gasoline tends to sell for a higher price per barrel than does residual fuel oil. Thus, the vertical distance of the line in the figure from the horizontal axis indicates the premium paid for motor gasoline relative to residual fuel oil.

Source: U.S. Energy Information Administration, *Petroleum Marketing Monthly*, DOE/EIA-0380, Table 4.

experienced the worst year in survey’s history. However, early returns⁶⁴ suggest that these efforts will be more successful in 2010.

Foreign Refining/Marketing⁶⁵

Somewhat similar to their 2009 domestic refining/marketing performance, the FRS companies reported the eighth-lowest profitability for their foreign refining/marketing operations in the history of the FRS. The profitability of 2009 was 6 percent, slightly more than 20 percentage points below 2008’s rate, which was the third-highest in FRS history (**Figure 18**). The combination of refined product and other revenue decreased by \$136.1 billion relative to 2008, which exceeded the \$124.9-billion decrease in operating expense and resulted in an \$11.2-billion decrease (-75 percent) in operating income and an \$8.6-billion decrease (-77 percent) in net income (**Table 15**).

The FRS companies derive their foreign refining/marketing earnings from two sources: consolidated operations and unconsolidated affiliates. A fully consolidated affiliate is directly controlled by the parent corporation (although it could be owned by several companies, with the parent corporation retaining control). In addition, public financial disclosures of the parent corporation include all operating financial information about a fully consolidated affiliate (such as revenues). Conversely, the corporate parent of an unconsolidated affiliate usually

⁶⁴ Energy Information Administration, “Financial News for Major Energy Companies, Second Quarter 2010” (September 8, 2010). Available on the internet at http://www.eia.doe.gov/emeu/perfpro/news_m/index.html (as of October 12, 2010).

⁶⁵ For this report, the International Marine and Foreign Refining/Marketing business segments are combined to prevent disclosure of company-level data. Relative to Foreign Refining/Marketing, International Marine is about one-tenth the size of Foreign Refining/Marketing and has little material effect on the overall results.

owns 50 percent or less of the affiliate, and does not directly control the affiliate⁶⁶ (a joint venture, for example, is usually an unconsolidated affiliate from the perspective of at least one of the partners). Essentially, the unconsolidated affiliate is more of a property or holding of the parent corporation than a company that the parent actually operates. The effect on financial operations of an unconsolidated affiliate can be seen only on the parent corporation's income statement, on which the parent company reports its proportional share of the affiliate's net income.

Historically, approximately half of the FRS consolidated foreign refinery capacity is located in Europe, reaching 54 percent in 2009 (**Table 19**), with most of the remaining consolidated refinery capacity in Asia. Historically and at present the operations of the FRS companies' unconsolidated foreign refining/marketing affiliates overwhelmingly are in Asia, with Chevron the primary owner of unconsolidated FRS Asian refinery capacity.

Table 19. Regional Distribution of Foreign Refinery Capacity for FRS Companies, 2008-2009
(Percent)

	Consolidated Operations		Unconsolidated Affiliates	
	2008	2009	2008	2009
Europe	51.1	54.2	9.0	8.6
Asia	24.1	25.5	76.5	77.6
Latin America	8.7	2.8	0.3	0.3
Canada	13.6	14.9	0.0	0.0
Africa and Middle East	2.4	2.6	14.2	13.5
Total	100.0	100.0	100.0	100.0

Sources: Company Annual Reports and filings of U.S. Securities and Exchange Commission Form 10-K.

Reduced net income in 2009, relative to 2008, from FRS foreign refining/marketing operations was because of decreased income from both consolidated and unconsolidated operations (**Figure 25**). Worldwide petroleum demand fell slightly in 2009, primarily due to lower North American and OECD Europe consumption (**Figure 26**), putting downward pressure on prices and revenues. Further, companies reported reduced revenues due to lower product sales,⁶⁷ leading to additional downward pressure on their revenues and bottom line. Additional reasons for reduced earnings from both FRS consolidated and FRS unconsolidated operations noted in public statements included foreign currency losses,⁶⁸ an absence of trading gains,⁶⁹ decreased refining and marketing margins,⁷⁰ capital expenditures to produce clean fuels,⁷¹ lower sales, and lower refinery utilization rates⁷² (**Table 16**). However, the companies also undertook several actions aimed at improving future profitability – increasing ability to process lower-cost crude oil,⁷³ and divestitures of refinery⁷⁴ and other assets.⁷⁵

⁶⁶ The actual percentage of ownership necessary to convey control of an entity is open to debate and, for some purposes, can be as little as 10 percent.

⁶⁷ Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. FS-8; and ConocoPhillips, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 46.

⁶⁸ Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. FS-8.

⁶⁹ Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. FS-8.

⁷⁰ Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. FS-8; ConocoPhillips Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 46; and Exxon Mobil Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 45..

⁷¹ Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 25.

⁷² ConocoPhillips Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 46.

⁷³ Chevron Corporation, *2009 Supplement to the Annual Report*, p. 46; and ConocoPhillips Corporation, *2009 Fact Book*, p. 49.

⁷⁴ Chevron divested refinery capacity during 2009. Chevron sold its 16-percent interest in the Kenya Petroleum Refinery Ltd (Mombasa , 90,000-barrels-per-day) in July 2009 (Chevron Corporation, *2009 Supplement to the Annual Report*, p. 46).

Consolidated Operations

Much lower earnings from consolidated FRS foreign refining/marketing operations occurred within an industry environment of lower (**Figure 26**) European petroleum demand, which fell 4 percent (0.6 million barrels per day) compared with 2008 and 9 percent (1.0 million barrels per day) relative to the 2003-2007 average. Earnings from the FRS companies' consolidated operations decreased (**Figure 25**) more than \$7.1 billion (77 percent) between 2008 and 2009, providing \$2.1 billion of net income. Historically, 2009 is in the lower half of all-time FRS consolidated results, the lowest level since 2002's loss of \$37 million, and one year after the second-highest⁷⁶ FRS result ever.

The FRS consolidated operations generated lower earnings due to lower prices received, lower margins, and reduced sales.⁷⁷ However, they attempted to increase future profitability by adding cogeneration capacity,⁷⁸ making refinery upgrades,⁷⁹ and divesting non-core marketing outlets.⁸⁰

Unconsolidated Operations

During 2009, the FRS companies' unconsolidated affiliates generated \$0.5 billion of net income, which was 76 percent lower than 2008. Lower earnings occurred despite increased product demand in all of Asia/Pacific, both relative to 2008 and to the 2003-2007 average. However, changes in petroleum product consumption in Asia were varied (**Figure 26**). Consumption by the Asian Developing Countries rose 4 percent (0.8 million barrels per day) relative to 2008 and 14 percent (2.6 million barrels per day) relative to the 2003-2007 average. However, consumption in the developed Asian countries of Australia, Japan, and New Zealand collectively fell 8 percent (0.5 million barrels per day) relative to 2008 and 13 percent relative to the 2003-2007 average (0.8 million barrels per day). The higher petroleum consumption level in all of Asia/Pacific was insufficient to prevent a decline in FRS earnings from their unconsolidated foreign refining/marketing operations, which fell to \$461 million -- the lowest level since 2002, the sixth-lowest in FRS history, and a mere 4 years removed from the all-time high of 2005.

Company public disclosures included some reasons for the lower earnings generated by the Asian (and other unconsolidated) operations of the FRS companies, which included declines in foreign exchange rates,⁸¹ lower prices, and lower margins.⁸² Future revenue-enhancing efforts made during 2009 include increasing refinery

⁷⁵ Chevron Corporation, *2009 Annual Report*, p. 16.

⁷⁶ Although 2008 was the second-highest result in the history of the FRS, it was slightly less than \$91 million (1 percent) lower than the highest ever of 1979.

⁷⁷ Exxon Mobil Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p.49.

⁷⁸ Exxon Mobil Corporation, *2009 Financial & Operating Review*, p. 77.

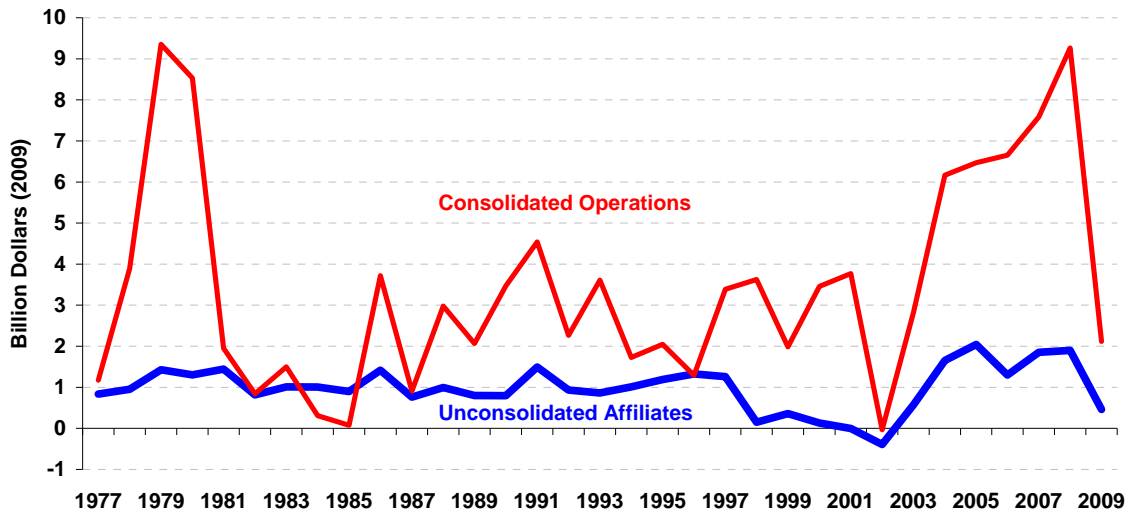
⁷⁹ Exxon Mobil Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 48.

⁸⁰ ConocoPhillips Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 20; and ConocoPhillips Corporation, 2008 U.S. Securities and Exchange Commission Form 10-K, p. 21.

⁸¹ Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. FS-8.

⁸² Chevron Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. FS-8.

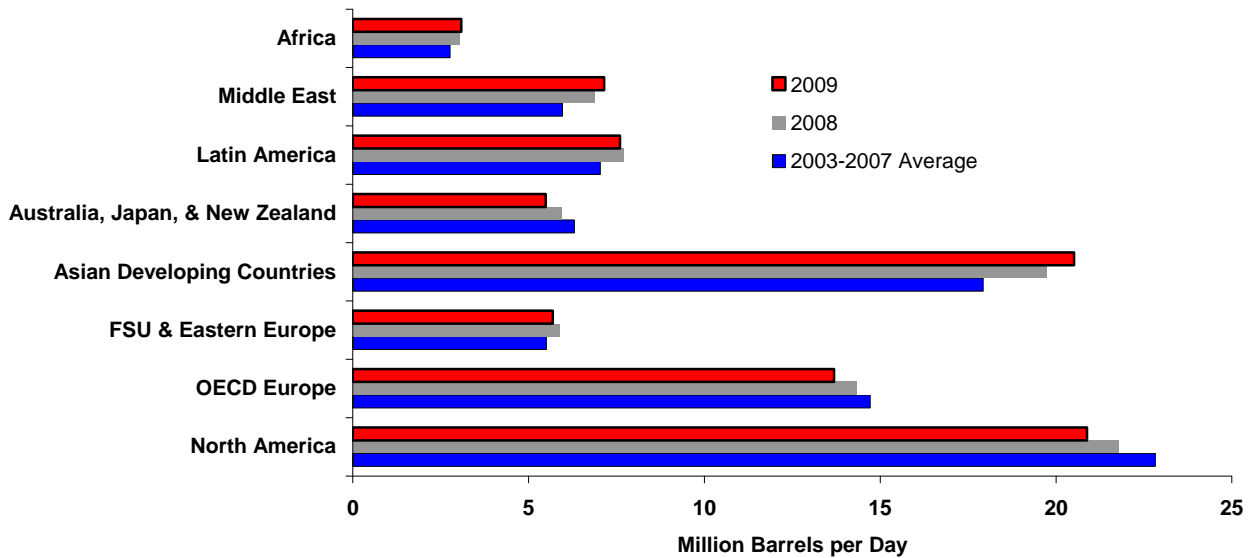
Figure 25. Foreign Refining/Marketing Net Income^a from Consolidated Operations and Unconsolidated Affiliates of FRS Companies, 1977-2009



^aThe International Marine business segment has been combined with Foreign Refining/Marketing for the years 2003 - 2009 in order to prevent disclosure of company-level data. Relative to Foreign Refining/Marketing, International Marine is about one-tenth the size and has little material effect on the overall results of Foreign Refining/Marketing.

Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

Figure 26. Petroleum Consumption by Region, 2003-2007 Average, 2008, and 2009



Note: OECD stands for the Organization for Economic Cooperation and Development.

Source: BP plc, *BP Statistical Review of World Energy* (June 2010), p. 11.

capability to refine lower-quality crude and produce ultra-low sulfur products,⁸³ adding refinery and cogeneration capacity,⁸⁴ revising refining upgrade schedules,⁸⁵ and refocusing marketing operations.⁸⁶

FRS companies' foreign refining/marketing earnings decreased substantially in an industry setting of lower worldwide petroleum product consumption, particularly in Europe and the more developed Asia/Pacific countries of Japan, Australia, and New Zealand. Foreign exchange declines, lower product prices, margins, and sales all contributed to the much lower profitability of the FRS companies' foreign refining/marketing operations in 2009. Thus, long-term strategies to maximize revenues and minimize costs remain important, if not more so. Cost-cutting measures, such as increasing cogeneration capacity⁸⁷ and strategic divestment,⁸⁸ likely will continue to occupy prominent positions in the companies' ongoing strategic actions.

⁸³ ConocoPhillips Corporation, 2009 U.S. Securities and Exchange Commission Form 10-K, p. 20.

⁸⁴ Exxon Mobil completed its Fujian, China refinery-expansion project, which tripled the refinery's crude oil distillation capacity (Exxon Mobil Corporation, *2009 Financial & Operating Review*, p. 77)."

⁸⁵ ConocoPhillips Corporation, "ConocoPhillips Delays Wilhelmshaven Upgrade Project," press release (November 17, 2009).

⁸⁶ Chevron sold its marketing operations in several Latin American (Brazil, Chile, Haiti, and Peru) and African (Benin, Cameroon, Cote d' Ivoire, Kenya, Nigeria, Republic of the Congo, Togo, and Uganda) countries during 2009. It additionally sold its marketing operations in India and Italy. See Chevron Corporation, *2009 Supplement to the Annual Report*, pp. 45 and 47.

⁸⁷ Exxon Mobil Corporation, *2009 Financial & Operating Review*, p. 77.

⁸⁸ Chevron sold its marketing operations in several Latin American (Brazil, Chile, Haiti, and Peru) and African (Benin, Cameroon, Cote d' Ivoire, Kenya, Nigeria, Republic of the Congo, Togo, and Uganda) countries during 2009. It additionally sold its marketing operations in India and Italy. See Chevron Corporation, *2009 Supplement to the Annual Report*, pp. 45 and 47.

About the Financial Reporting System Companies

Changes in the Financial Reporting System Companies for the 2009 Reporting Year

For the 2009 reporting year, 30 major energy companies (**Table 20**) reported their financial⁸⁹ and operating data to the U.S. Energy Information Administration's (EIA) Financial Reporting System (FRS) on Form EIA-28. The number of companies (referred to as the FRS companies in this report) increased by three from 2008 with the addition of Alon USA, Chalmette, and Western Refining.

Table 20. The FRS Companies in 2009

Alenco	Hess Corporation
Alon USA	Hovensa LLC
Anadarko Petroleum Corporation	Lyondell Chemical Corporation
Apache Corporation	Marathon Oil Corporation
BP America, Inc.	Motiva Enterprises, L.L.C.
Chalmette Refining LLC	Occidental Petroleum Corporation
Chesapeake Energy Corporation	Shell Oil Company
Chevron Corporation	Sunoco, Inc.
CITGO Petroleum Corporation	Tesoro Petroleum Corporation
ConocoPhillips	The Williams Companies, Inc.
Devon Energy Corporation	Total Holdings USA, Inc.
El Paso Corporation	Valero Energy Corp.
EOG Resources, Inc.	Western Refining, Inc.
EQT Corporation*	WRB Refining LLC
Exxon Mobil Corporation	XTO Energy, Inc.

*: Equitable Resources, Inc. announced on February 4, 2009 that its name would become EQT Corporation effective February 9, 2009.

Note: See "Historical Respondent Company List" on the Energy Finance page for the list of FRS respondents from 1974 forward. Six of the FRS companies are owned by foreign companies: Alenco -- owned by Encana; Alon USA -- owned by Alon; BP America—owned by BP plc; CITGO -- owned by Petroleos de Venezuela, S.A.; Shell Oil—owned by Royal Dutch Shell plc.; and Total Holdings USA—owned by Total S.A.

Alon USA, which initially entered the U.S. refining industry with its August 2000 acquisition of the Big Spring, Texas, refinery of FRS respondent Fina, acquired three refineries (two that were operational) during 2006, more than doubling its refinery capacity, but leaving it just below the threshold for inclusion in the FRS. However, its July 2008 acquisition of FRS respondent Valero's Krotz Springs, Louisiana, refinery increased its corporate capacity well beyond the threshold of 1 percent of U.S. crude oil distillation capacity for inclusion in the FRS.⁹⁰ The company was subsequently added for the 2009 reporting year. Alon's refinery capacity is concentrated on the west coast and the Gulf coast areas.

Chalmette, a refinery joint venture between Exxon Mobil Corporation and Petroleos de Venezuela, S.A. (PdVSA, the state oil company of Venezuela) is a 192,500 barrels-per-day refinery in Chalmette, Louisiana. The joint venture began in 1998.⁹¹

⁸⁹ The financial data are collected for the company's fiscal year, which is identical to the calendar year for all included companies.

⁹⁰ Oil and gas producers' threshold for inclusion is 1 percent, or more, of either crude oil and natural gas liquids, or natural gas production.

⁹¹ The venture, which began in January 1998, was initially between Mobil Oil Corporation and PDV America, the U.S. affiliate of the state oil company of Venezuela, Petroleos de Venezuela, S.A. After Exxon and Mobil merged, the venture was continued with Exxon Mobil as the partner.

Western Refining Inc., entered the U.S. refining industry with its August 2003 acquisition of the 99,000 bpd El Paso, Texas, refinery of FRS respondent Chevron.⁹² Subsequently, Western acquired Giant Industries and its 101,250 bpd corporate capacity in May 2007. Western has since suspended refining operations at its Bloomfield, New Mexico, refinery effectively transforming it into a product terminal, in November 2009.⁹³ More recently, Western suspended refining operations at its Yorktown, Virginia refinery due to poor refinery economics, also transforming it into a product terminal.⁹⁴ All of Western's remaining operating refinery capacity is in the Gulf Coast region.

Although the composition of the FRS group of companies changes over time, the changes usually are incremental, as evident from the above discussion. A company is added to the survey when, through growth or acquisition, it meets the criteria classifying it as a major energy company. Typically, no more than two companies are added to the survey in any given year. The new companies usually are relatively small compared with the existing FRS group, so the effect on the aggregate totals is marginal. The year 1998 was an exception. Because of a change in the FRS criteria, 11 companies were added to the FRS group. Companies rarely exit unless through merger, in which case the assets of the exiting company are absorbed into the surviving company. Thus, despite occasional year-to-year changes in the FRS group composition, comparisons are still meaningful and informative.

The FRS Companies' Importance in the U.S. Economy

The FRS companies occupy a significant position in the U.S.⁹⁵ economy. In 2009, operating revenues of the FRS companies totaled \$1.297 trillion, which is equal to 13 percent of the \$9.763 trillion in revenues of the Fortune 500 corporations.^{96,97}

The reporting companies engage in a wide range of business activities, but their most important activities are in the energy sector. They derived about 94 percent, or \$1,223 billion, of allocated operating revenues⁹⁸ from energy lines of business and derived nearly all of these revenues from their core petroleum operations (**Figure 27**). A majority of these companies are multinational, with 40 percent of the majors' net investment located abroad. Worldwide petroleum and natural gas market developments are of primary importance to these companies' financial performance.

In 2009 the FRS companies accounted for 43 percent of total U.S. crude oil and natural gas liquids (NGL) production,⁹⁹ 43 percent of natural gas production, 78 percent of U.S. refining capacity, and 0.3 percent of U.S.

⁹² Chevron was known as Chevron Texaco at the time of the transaction.

⁹³ Western Refining Inc., *Annual Report 2009*, p. 3.

⁹⁴ Western Refining, Inc., "Western Refining Announces Completion of Refining Operations Shutdown at Yorktown" (September 13, 2010). The press release is available on the internet at <http://ir.westernrefining.com/phoenix.zhtml?c=194293&p=irol-newsArticle&ID=1470524&highlight=> (as of September 14, 2010).

⁹⁵ For the purposes of this report, the term "United States" includes the 50 states, the District of Columbia, Puerto Rico, and the U.S. Virgin Islands.

⁹⁶ Unless otherwise indicated, all dollar values and percentage changes in this report are in constant 2009 dollars, adjusted using the Gross Domestic Product implicit price deflator.

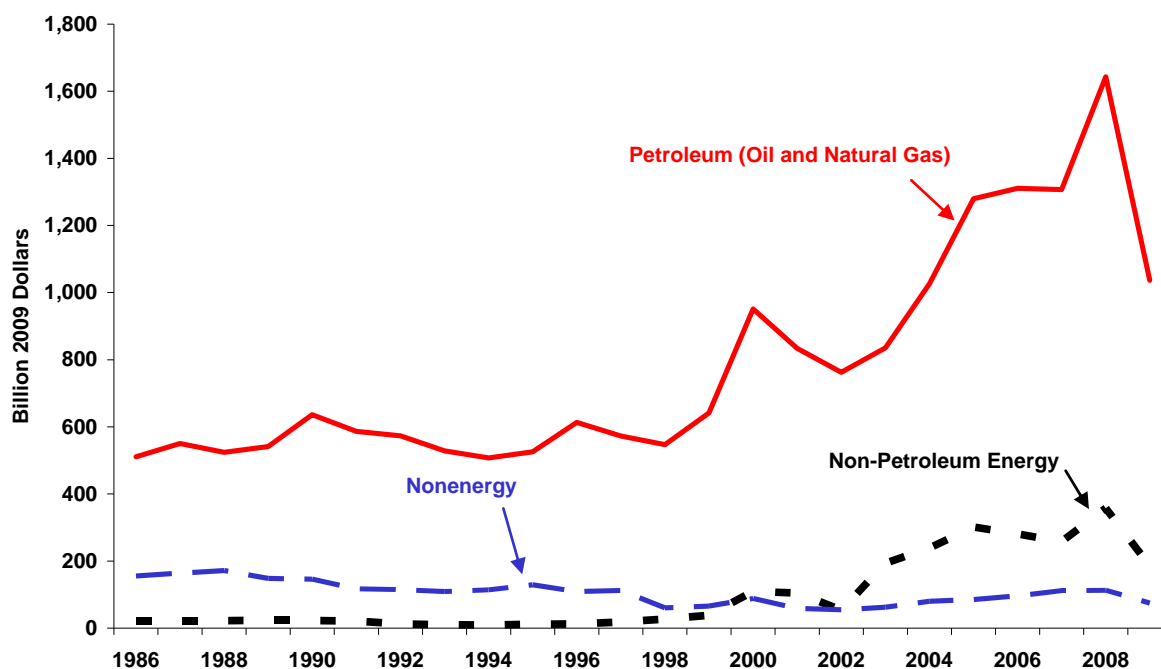
⁹⁷ The Fortune 500 is a list of the 500 largest U.S. corporations, ranked by revenues, published annually by *Fortune* magazine on their website at http://money.cnn.com/magazines/fortune/fortune500/2010/full_list/ (as of September 14, 2010).

⁹⁸ The sum of allocated operating revenue (\$1,297 billion) exceeds corporate operating revenue (\$1,145 billion) because allocated revenues include revenues from sales within the company and between different lines of business, in addition to the revenue from sales by the company to third parties (i.e., those outside the company). However, revenues from intersegment sales are eliminated in calculating corporate operating revenue, which includes only sales by the company to third parties.

⁹⁹ Note that U.S. totals include royalty production, while the FRS companies' production levels do not. Thus, these calculations understate the FRS companies' share of crude oil and NGL production and natural gas production.

electricity net generation (**Figure 28**). During 2009, these companies devoted about 85 percent of their assets and 87 percent of new investments to sustaining various aspects of petroleum production, processing, transportation, and marketing.

Figure 27. Operating Revenues by Line of Business for FRS Companies, 1986-2009



Source: U.S. Energy Information Administration, Form EIA-28 (Financial Reporting System).

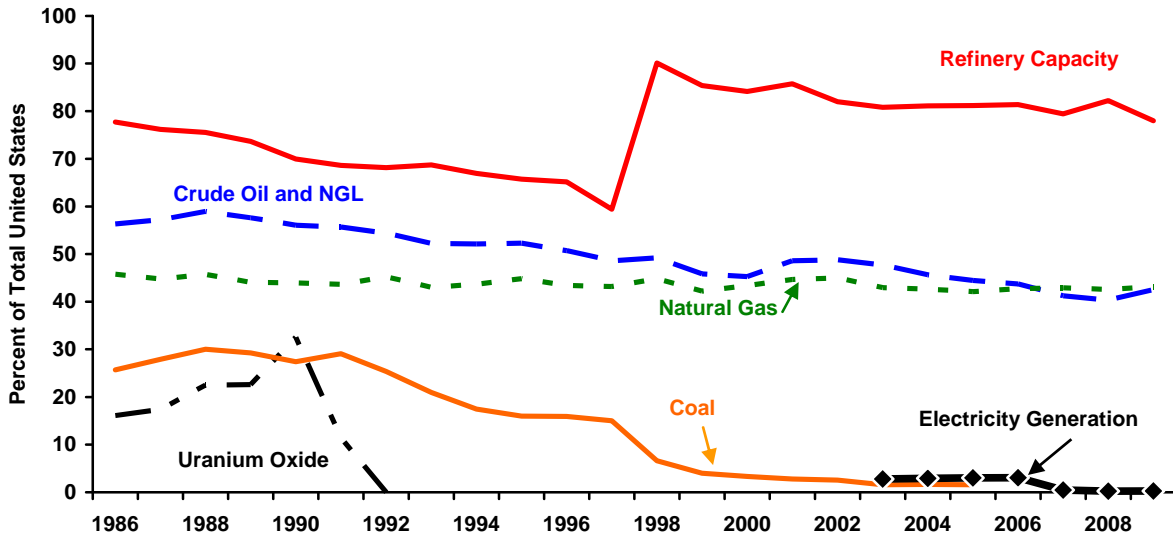
Energy production, other than petroleum, has been a relatively small but growing part of the FRS companies’ operations since 1994. During 2009, the combined operating revenues of the downstream natural gas, electricity, and other energy operations¹⁰⁰ of the FRS companies totaled \$186 billion, or 14 percent of allocated revenues. The importance of actual electric power operations to the FRS companies, which substantially declined with the exit of Dominion Resources for the 2007 reporting year,¹⁰¹ recovered marginally in 2009 as the FRS share of U.S. electricity generation capacity increased from 0.2 percent in 2008 to 0.3 percent in 2009, leaving electricity trading activity as the primary FRS involvement in electricity.

Nonenergy businesses, mainly chemicals, accounted for 6 percent, or \$74 billion, of the FRS companies’ allocated revenues in 2009. During the 1980s, the FRS companies were major producers of domestic uranium. However, FRS domestic production of uranium oxide last occurred in 1991.

¹⁰⁰ Beginning with the 2003 reporting year, “other energy” operations include coal operations. Before 2003, coal was a separate line of business. Financial information for coal operations now is merged with that of the other energy operations.

¹⁰¹ The FRS share of U.S. electricity generation fell from 3 percent in 2006 to 0.5 percent in 2007.

Figure 28. Shares of U.S. Energy Production^a and Refinery Capacity for FRS Companies, 1986-2009



^aOil and natural gas production for the FRS companies includes only the production that is owned by the FRS companies; it does not include any interests not owned by the FRS companies (e.g., royalty interests owned by others). Total production for the United States includes the interests of all owners.

Note: The FRS companies last produced uranium in 1991 and coal production data was last collected in 2005.

Sources: Table B1; Total industry uranium oxide production is from U.S. Energy Information Administration, *Uranium Industry Annual 1992*, DOE/EIA-0478(92) (Washington, DC, October 1993).

Overview of 2009 Petroleum and Natural Gas Markets

- Crude oil, natural gas, and petroleum products prices all fell sharply in 2009 from the record high prices in all three categories for 2008. On an average annual basis, crude oil prices dropped 37 percent from 2008 (in constant 2009 dollars), and natural gas wellhead prices dropped 54 percent to \$3.71 per thousand cubic feet (mcf) in 2009.
- Within-year price movements, however, amend the story told by average annual prices: oil prices fell in the second half of 2008, and it was only because price increases in the first part of the year were so large that the average annual price reached a record high in 2008. From the relative low of December 2008, oil prices increased most months of 2009 to a level of \$72.64 per barrel in December 2009, over twice the level of December 2008.
- The prices of each of the major petroleum products dropped sharply from their record highs of 2008: gasoline by 32 percent, distillate by 43 percent, and jet fuel by 44 percent.
- World oil demand decreased 1.7 percent, or 1.4 million barrels per day (mmbd), from the 2008 level to 84.3 mmbd in 2009.
- Worldwide reserve additions replaced 102 percent of crude oil and natural gas liquids (NGL) production in 2009.
- U.S. petroleum product demand dropped 3.7 percent in 2009 to 18.8 mmbd (Table 22), following 2008's decline of 5.7 percent.
- U.S. natural gas demand decreased 1.8 percent in 2009 to 22.8 trillion cubic feet, while domestic natural gas production increased 3.3 percent, following the 7.7 percent increase in 2008. U.S. natural gas reserves increased to their highest level since the U.S. Energy Information Administration began reporting them in 1977.

The market overview section provides a brief review of prices, demand, and supply for petroleum and natural gas markets to give an indication of the general market conditions in which FRS companies operated in 2009.

The FRS companies' financial results for 2009 were driven primarily by sharp drops in the annual average prices of crude oil, petroleum products and natural gas, coupled with declines in consumption of oil and natural gas. Crude oil prices (imported refiner acquisition cost) dropped 37 percent in 2009 from the all-time high of \$93.62 per barrel in 2008 (in constant 2009 dollars),¹⁰² while natural gas wellhead prices decreased 54 percent to \$3.71 per thousand cubic feet (mcf) in 2009.¹⁰³ World oil consumption declined for the second straight year (1.7 percent in 2009, 0.6 percent in 2008), following twenty-four consecutive years of increases.¹⁰⁴ The decline in

¹⁰² Unless otherwise indicated, all dollar values and percentage changes in this report are based in constant 2009 dollars, adjusted using the gross domestic product implicit price deflator.

¹⁰³ U.S. Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035 (2010/10) (Washington, DC, September 2010), Tables 9.1, 9.11.

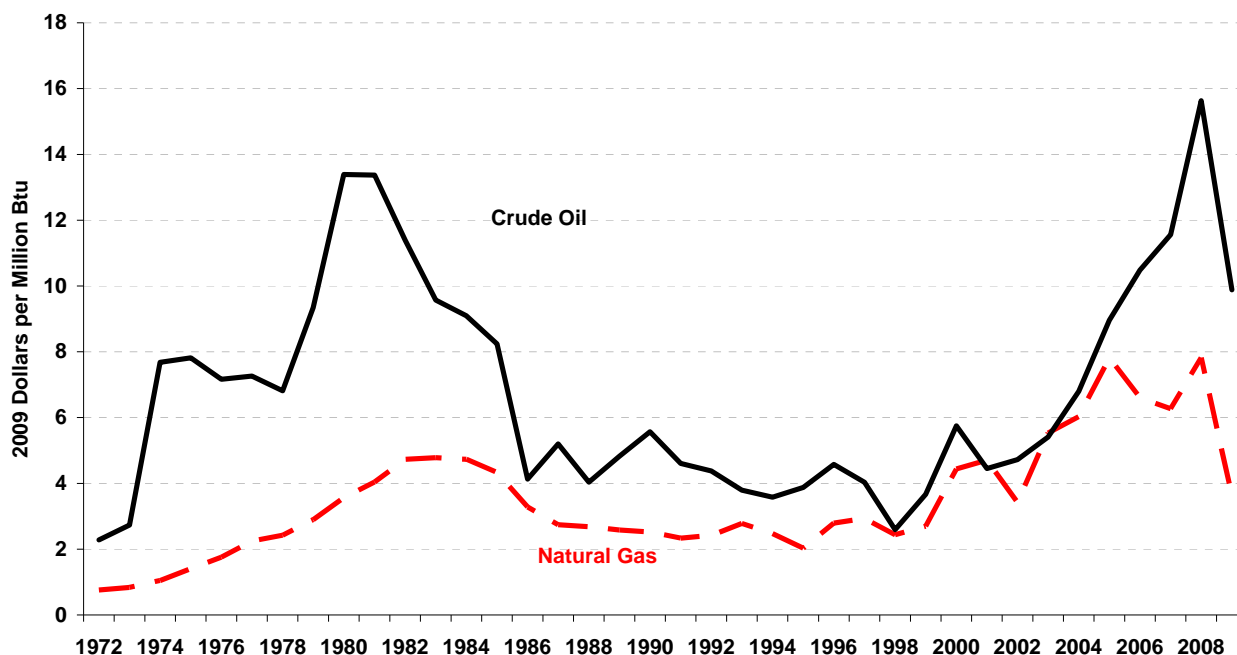
¹⁰⁴ U.S. Energy Information Administration, *International Petroleum Monthly*, August 2010, Table 4.6, available on the Internet at <http://www.eia.gov/ipm/> (as of September 30, 2010).

petroleum consumption was sharper in the United States, with a drop of 3.7 percent in 2009 following the drop of 5.7 percent in 2008.¹⁰⁵ U.S. natural gas consumption also declined in 2009, by 1.8 percent.¹⁰⁶

Since 1998, crude oil prices have increased by nearly a factor of four and natural gas prices by almost one-and-one-half times (**Figure 29**). These changes have steadily widened the gap between crude oil and natural gas prices on a million British thermal unit basis over the 2006-2009 period, compared to relatively narrow gaps for most of the decade before that (**Figure 29**).

Annual average prices, however, do not tell the whole story of price movements in 2009 (or 2008). Though oil prices averaged over the year reached a record high in 2008, they fell substantially in the second half of the year reaching a low of \$35.72 per barrel in December 2008. From that relative low, oil prices increased most months of 2009 relative to the prior (not year-ago) month, to a level of \$72.64 per barrel in December 2009, over twice the level of December 2008. So oil prices averaged over the year decreased sharply while year-end price levels increased sharply. For natural gas, the price decline from 2008 to 2009 for year-end levels of 20 percent was a milder decline than the 54 percent drop in the annual average.

Figure 29. Imported Refiner Acquisition Cost of Crude Oil and Natural Gas Wellhead Prices, 1972-2009



Sources: Crude Oil Price: U.S. Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035 (2010/09) (Washington, DC, September 2010), Table 9.1; Natural Gas Price: U.S. Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035 (2010/09) (Washington, DC, September 2010), Table 9.11; Heat Content Factors: U.S. Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035 (2010/09) (Washington, DC, September 2010), Tables A2 and A4.

Gasoline, distillate, and jet fuel prices decreased 32 percent, 43 percent, and 44 percent, respectively, in 2009, after two successive years of the highest prices since the Energy Information Administration (EIA) began reporting product prices in 1978 (**Figure 30**). The 2009 price averages of the three fuels in 2009 were tightly bunched between \$1.71 and \$1.77 per gallon. By comparison, crude oil prices decreased 37 percent.

World oil demand decreased 1.4 million barrels per day (mmbd) (1.7 percent) from the 2008 level to 84.3 mmbd in 2009 (**Table 21**). Demand growth had slowed considerably since the large increase in 2004 (**Figure 31**), but

¹⁰⁵ U.S. Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035 (2010/10) (Washington, DC, September 2010), Table 3.1.

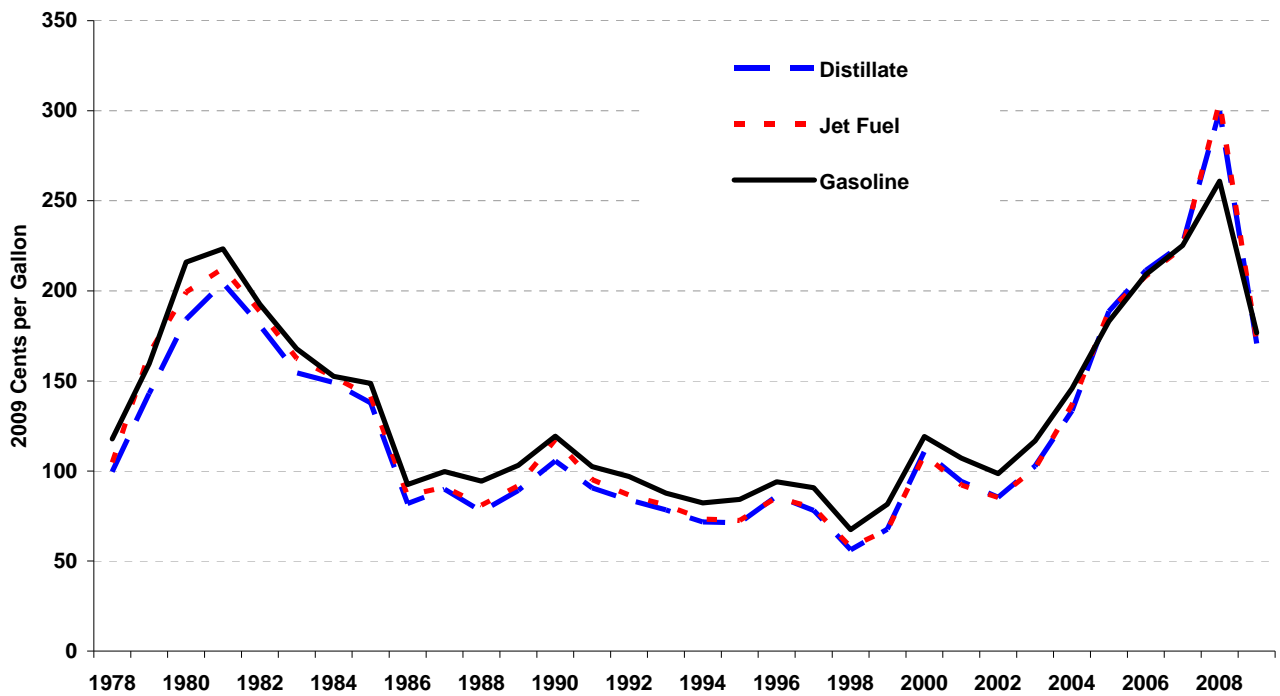
¹⁰⁶ U.S. Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035 (2010/10) (Washington, DC, September 2010), Table 4.1.

consecutive declines in 2008 and 2009 were the only decreases in world demand since 1983. Supply, which includes the production of crude oil, natural gas liquids (NGLs) and other liquids, and refinery processing gain, decreased 1.1 mmbd (1.3 percent) in 2009 to 84.4 mmbd. The decline in demand exceeded the decline in supply by enough to put demand just below supply. This led to a small increase in petroleum inventories of about 40,000 barrels per day in 2009. Worldwide reserve additions replaced 102 percent of crude oil and NGL production in 2009.¹⁰⁷ The reserve replacement rate for non-Organization of the Petroleum Exporting Countries was 101 percent.

Petroleum product demand (represented by petroleum product supplied) in the United States dropped 3.7 percent in 2009 to 18.8 mmbd (**Table 22**), following 2008's decline of 5.7 percent. There had not been such large percentage declines in demand since 1981 and 1982. Consumption of gasoline increased slightly by 0.1 percent (8,000 barrels per day) in 2009, but consumption of all other major petroleum products (distillate fuel, jet fuel, and residual fuel) in 2009 declined substantially: 8.0 percent (314,000 barrels per day) for distillate, 9.5 percent (146,000 barrels per day) for jet fuel and 17.8 (111,000 barrels per day) for residual fuel (**Figure 32**).

Domestic crude oil production increased 8.3 percent (410,000 barrels per day) in 2009 from 2008, while NGL production increased 7.1 percent (126,000 barrels per day). Net imports of petroleum decreased by 13.0 percent (1.4 mmbd) in 2009. The excess of petroleum product supply over demand led to an injection of 109,000 barrels per day into petroleum product inventories.

Figure 30. Refiner Prices of Petroleum Products for Resale, 1978-2009



Source: U.S. Energy Information Administration, Refiner Petroleum Product Prices by Sales Type, available on at http://www.eia.gov/dnav/pet/xls/pet_pri_refoth_dcu_nus_a.xls (as of December 7, 2010).

¹⁰⁷ Calculated from reserves and production data in BP plc, *BP Statistical Review of World Energy* (June 2009), pp. 6, 8.

Table 21. World Petroleum Balance, 2008-2009
(Million Barrels per Day)

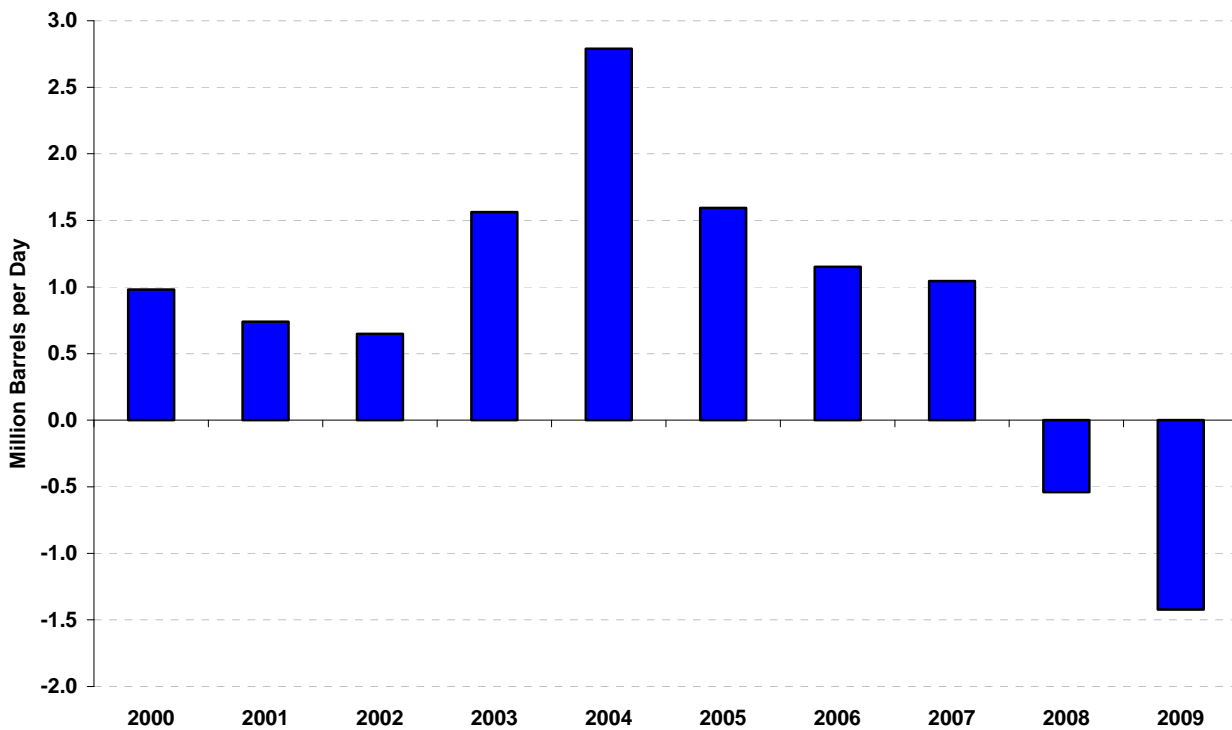
	Quarterly 2009				Annual	
	Q1	Q2	Q3	Q4	2008	2009
Demand	83.6	84.0	84.5	85.2	85.8	84.3
Supply	83.6	83.7	84.8	85.4	85.5	84.4
Supply from Inventories	0.0	0.3	-0.2	-0.3	0.3	0.0

Note: Supply from Inventories includes statistical discrepancy.

Source: U.S. Energy Information Administration, *International Petroleum Monthly* (August 2010), Table 2.1.

Crude oil and NGL reserve additions in the United States in 2009 more than matched production with a combined reserve replacement rate of 194 percent.¹⁰⁸ This happened in part due to a new Securities and Exchange Commission (SEC) rule in 2009 requiring an average of first-day-of-the-month prices throughout the year to determine reserves rather than year-end prices as had been the case in 2008 when year-end prices were low. The new SEC rule also changed the methodology for determining reserves and allowed the inclusion of certain non-conventional oil in reserves.

Figure 31. World Oil Consumption, Change from Previous Year, 2000-2009



Source: U.S. Energy Information Administration, *International Petroleum Monthly*, September 2010, Table 4.6, available at <http://www.eia.gov/ipm/> (as of September 29, 2010).

¹⁰⁸ Reserve additions include revisions and adjustments, net sales and acquisitions, and total discoveries. U.S. Energy Information Administration, *Summary: U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves, 2009* (November 2010), Table 4.

Table 22. U.S. Petroleum Balance, 2008-2009
(Million Barrels per Day)

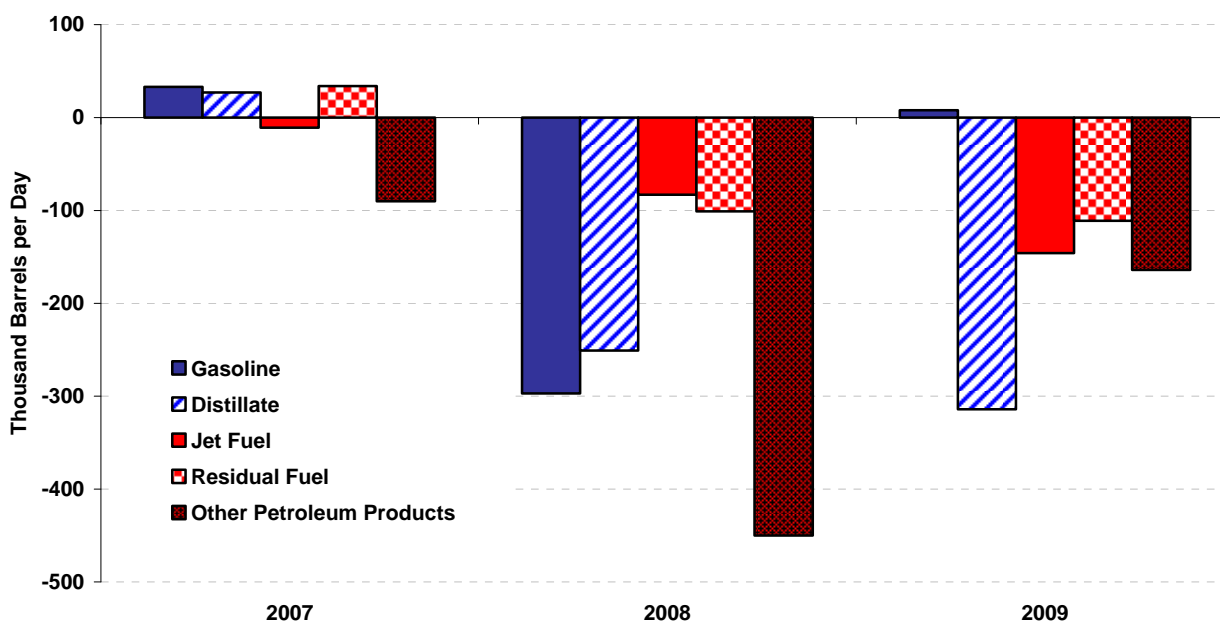
Income Statement Items	Quarterly 2009				Annual	
	Q1	Q2	Q3	Q4	2008	2009
Demand	20.0	19.8	18.9	19.3	19.5	18.8
Crude Oil Production	5.1	5.1	4.7	4.9	5.0	5.4
NGL Production	1.8	1.9	1.7	1.7	1.8	1.9
Other Inputs	1.8	1.8	1.9	1.9	1.8	1.9
Net Imports	11.2	11.3	10.8	11.2	11.1	9.7
Supply from Inventories	0.1	-0.3	-0.2	-0.4	-0.2	-0.1

Note: Other Inputs includes adjustments and refinery processing gain.

Source: Calculated from U.S. Energy Information Administration, *Monthly Energy Review*, DOE-EIA-0035 (2010/09) (Washington, DC, September 2010), Tables 3.1 and 3.2.

U.S. refineries decreased output in 2009 by 264,000 barrels per day (1.4 percent) from 2008.¹⁰⁹ But that decline in output was exceeded by a decrease in U.S. petroleum product demand in 2009, leading to the 13.0-percent drop in net imports of petroleum previously mentioned.

Figure 32. U. S. Petroleum Product Consumption, Change from Previous Year, 2007-2009



Source: Calculated from U.S. Energy Information Administration, Petroleum Product Supplied Data, available at http://www.eia.gov/dnav/pet/xls/pet_cons_psup_dc_nus_mbbldp_a.xls (as of December 7, 2010).

Natural gas demand in the United States decreased 1.8 percent in 2009 to 22.8 trillion cubic feet (**Table 23**). Domestic natural gas production increased 3.3 percent in 2009 over 2008, following the 7.7 percent increase in 2008. The increase in natural gas production caused natural gas imports to decrease by 11.2 percent. U.S. natural gas reserve additions more than matched production, with a reserve replacement rate for natural gas of 229

¹⁰⁹ Calculated from U.S. Energy Information Administration, U.S. Refinery and Blender Net Production Data, available at www.eia.gov/dnav/pet/pet_pri_refoth_dcu_nus_a.htm (as of September 29, 2010).

percent, following last year's rate of 134 percent.¹¹⁰ U.S. natural gas reserves increased to their highest level since the U.S. Energy Information Administration began reporting them in 1977.

Table 23. U.S. Natural Gas Balance, 2008-2009
(Trillion Cubic Feet per Day)

Income Statement Items	Quarterly 2009				Annual	
	Q1	Q2	Q3	Q4	2008	2009
Demand	7.2	4.8	5.0	5.9	23.2	22.8
Natural Gas Production	5.2	5.2	5.2	5.3	20.3	21.0
Other Inputs	0.1	0.0	-0.1	-0.5	-0.1	-0.5
Net Imports	0.7	0.6	0.7	0.6	3.0	2.7
Supply from Inventories	1.2	-1.1	-0.9	0.5	0.0	-0.3

Note: Other Inputs includes supplemental gaseous fuels and the balancing item.

Source: U.S. Energy Information Administration, *Monthly Energy Review*, DOE-EIA-0035 (2010/09) (Washington, DC, September 2010), Table 4.1.

¹¹⁰ Reserve additions include revisions and adjustments, net sales and acquisitions, and total discoveries. U.S. Energy Information Administration, Advance Summary: U.S. Crude Oil, Natural Gas, and Natural Gas Liquids Reserves 2008 Annual Report (October 2010), Table 4.

Acronyms

API	American Petroleum Institute
boe	barrels of oil equivalent
Btu	British thermal unit
DD&A	depreciation, depletion, and amortization
DOE	U.S. Department of Energy
E&P	exploration and production
EIA	Energy Information Administration
FAS	Financial Accounting Standard
FRS	Financial Reporting System
FTP	File Transfer Protocol
GDP	gross domestic product
LNG	liquefied natural gas
mcf	thousand cubic feet
mmbd	million barrels per day
mmcf	million cubic feet
MTBE	methyl tertiary butyl ether
NGL	natural gas liquids
OECD	Organization for Economic Cooperation and Development
OPEC	Organization of the Petroleum Exporting Countries
P.L.	Public Law
PP&E	property, plant, and equipment
ROE	return on equity
ROI	return on net investment in place

Brief Description of Financial Terms

For additional information, see the Glossary, available at http://www.eia.gov/emeu/perfpro/form/eia28_instructions_2009.pdf.

Additions to Investment in Place: See Capital Expenditure.

Capital Expenditure: Also referred to as Additions to Investment in Place. Funds (including cash) used by a company to acquire or upgrade physical assets such as property, industrial buildings, or equipment that are expected to provide benefits for more than just the current year. Additions to property, plant and equipment as well as additions to investments and advances to unconsolidated affiliates are classified as capital expenditures.

Cash Flow From Operations: The amount of cash a company generates from operations, defined as net income after taxes plus depreciation and other noncash expenses.

Current Expenditure: An expenditure that is expected to provide benefit only in the current year and is classified as an expense in the income statement.

Development Expenditures: Costs of developmental wells, facilities and support equipment used to access and prepare oil and gas deposits for production.

Exploration Expenditures: Costs of locating oil and gas deposits, including the costs of retaining and carrying undeveloped property, geological and geophysical costs, and the costs of drilling and equipping exploratory wells.

Extensions and Discoveries: Reserve additions (see below) that result from the extension of previously discovered reservoirs or the discovery of new fields or reservoirs.

Finding Costs: The per-barrel costs of adding oil or gas proved reserves.

Gross Refining Margin: The difference between the revenue from the sale of petroleum products (e.g., motor gasoline) and the cost of the raw materials (e.g., crude oil) used to produce the products.

Improved Recovery: Reserve additions (see below) resulting from the application of improved recovery techniques.

Lifting (Production) Costs: See Production Costs.

Lines of Business: The FRS lines of business consist of petroleum, downstream natural gas (including NGL processing and natural gas pipelines), electric power, nonenergy, and other energy (including coal, nuclear, renewable fuels, and nonconventional fuels). The petroleum line of business is further segmented into production (including oil and natural gas exploration, development, and production), refining/marketing, crude and petroleum product pipelines (for domestic petroleum), and international marine transport (for foreign petroleum).

Net Income: A company's total earnings, or profit. Net income is calculated by taking revenues less the cost of doing business, depreciation, interest, taxes and other expenses. This number is an important measure of how profitable the company is over a period of time.¹¹¹

Net Investment In Place: The value of property, plant, and equipment net of depreciation, plus investments and advances to unconsolidated affiliates.

Net Refining Margin: The difference between the gross refining margin and the costs of producing and selling the petroleum products (e.g., refining energy costs and selling costs). The net margin measures before-tax cash earnings from the production and sale of refined products. The net margin excludes peripheral activities such as non-petroleum product sales at convenience stores.

Production (Lifting) Costs: The per-barrel costs associated with the extraction of a mineral reserve from a producing property.

Production Expenditures: The costs of extracting oil and gas from oil and gas deposits.

Profitability: The measure of a company's or an industry's net income relative to the equity or capital provided by its investors. Profitability for the consolidated FRS companies can be measured by return on equity (ROE). Because stockholders' equity is a corporate concept, the lines of business within the company use return on investment (ROI) as a measure of profitability. Net investment in place consists of the value of property, plant, and equipment net of depreciation, plus investments and advances to unconsolidated affiliates.

Regions: The FRS regions consist of U.S. Onshore, U.S. Offshore, Canada, Europe, Former Soviet Union, Africa, Middle East, Other Eastern Hemisphere (primarily Asia Pacific), and Other Western Hemisphere (primarily South America).

Reserve Additions: The quantity of oil and gas reserves added each year as a result of exploration and development activities. Reserve additions are reported in three categories: reserve revisions, improved recovery, and extensions and discoveries.

Reserve Replacement Ratio: The amount of oil and gas reserves added in a year divided by the amount of oil and gas produced during that same year.

Reserve Revisions: Changes (upward or downward) made to previous estimates as a result of new information obtained from development drilling and production history or from changes in economic factors.

Reserves-to-Production Ratio: The number of years that oil and gas reserves would last at the current production rate.

Return on Equity (ROE): Net income as a percentage of shareholders' equity. ROE measures performance (i.e., net income) relative to the value of stockholders' equity (retained earnings plus other equity) in the company.

Return on Investment (ROI): Net income divided by net investment in place for that segment. ROI measures performance relative to the value of investments by the company in property, plant and equipment (PP&E) (long-term capital assets) for a particular business segment or project.

¹¹¹ See the dictionary on Investopedia.com for additional information. Investopedia.com can be found at <http://www.investopedia.com> (as of October 20, 2010).

Special Items: Accounting changes, asset dispositions and write-downs, tax adjustments, and related items that affect net income but are not part of normal operations. Special items are items that are similar to, but do not necessarily qualify as, extraordinary or unusual items under U.S. generally accepted accounting principles. Excluding special items (which to great extent are not reoccurring) from annual net income is a standard practice to attempt to give a clearer picture of a company's ongoing operations for any particular year.

