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**THE PRICING OF INTERNATIONAL OIL AND GAS COMPANIES**  
**1990-2003 –**  
**A STRUCTURAL SHIFT IN THE EQUITY VALUATION PROCESS**

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Relevance for valuation purposes is unquestionably a desirable quality of financial disclosures. Moreover, for historical and current earnings to be useful predictors of future earnings, the relationship between the fundamentals and valuation ought to be stable over time. However, a major event, such as an industry restructuring, may influence the value-relevance of accounting data for companies in that industry, and thereby affecting the equity valuation process. The aim of our paper is to investigate how the major industry restructuring that took place in the oil and gas industry during 1998-2002 has influenced the equity valuation process. In particular, we test for a structural break in the relation between contemporaneous accounting data and market valuation. Furthermore, we try to determine which, and to what extent, key value-drivers are instrumental in explaining a structural break in the equity valuation process.

Commentators and researchers have set forth several reasons explaining the massive industry restructuring that took place among the largest international oil and gas companies during 1998-2002. First, the development in share market returns lagged the general market development considerably prior to 1998. In fact, while the share prices in general tripled during this period, oil shares grew only by 80%.

Second, oil prices fell dramatically in 1998 and 1999, reaching \$10 a barrel, severely affecting oil company profitability. This led the newspaper *The Economist* to predict that the oil price would remain low for the foreseeable future, even as low as \$5 a barrel (*The Economist*, 1999). Osmundsen *et al.* (2005) argue that the temporary financial distress led to a stronger focus on cost discipline and short-term profitability across the oil and gas industry.

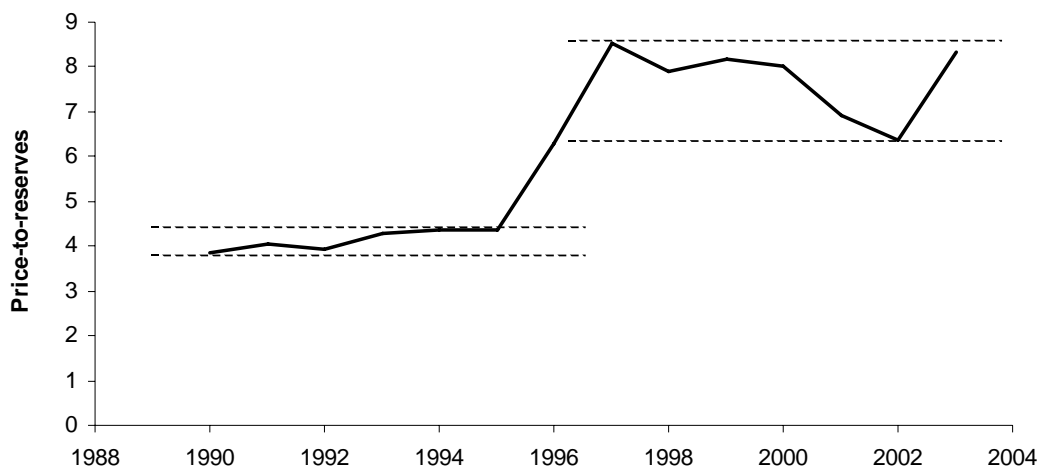
Third, the availability of exploration projects in OECD was shrinking, making it necessary to search for petroleum reserves in other parts of the world (Weston *et al.*, 1999), in regions where the geopolitical risks are greater than in the West. Fourth, the relative low value of oil shares made acquisition costs for reserves lower than expected finding and development costs (Antill and Arnott, 2002; Weston *et al.*, 1999).

Clearly, the major oil and gas companies did not view the inferior stock market development as satisfactory. At the same time, the oil companies witnessed increasing pressures from investors and the analyst community to set and meet aggressive growth targets (Wilson, 2002). The result was a wave of merger and acquisition activities among the largest oil and gas companies. BP and AMOCO announced their merger in August 1998, followed by the mergers of Exxon/Mobil, Total/Elf/Fina, Chevron/Texaco, BP-AMOCO/ARCO, and Conoco/Phillips. Royal Dutch/Shell took a different route to the other majors by acquiring companies instead of growing by way of mega-mergers. Thus, the period of 1998-2002 represents a unique period for the oil majors. The industry also witnessed a high degree of oil price volatility. How this industry upheaval has affected the equity valuation process is an interesting topic for research. An indication of this is shown by the development in the relationship between key value-drivers, such as oil and gas reserves, and valuation. The average price-to-total oil and gas reserves (in barrels of oil equivalent) ratio rose from a level of around 4 during 1990-1995 to a level of 6-8 during 1997-2004 (Figure 1). This represents a substantial increase, over a relatively short period of time, in how the market values the companies in relation to their underlying assets. The doubling of this ratio during the 2-3 years between 1995 and 1998 - a period of fairly stable oil prices - indicates a change in the way value-relevant information in

terms of accounting and non-accounting data are related to the market equity value. According to finance theory, market values of companies should reflect expected future cash flows. Consequently, for the theoretical valuation models to hold, any changes in market values must be balanced by changes in beliefs of expected cash flows, or discount rates, among market participants. In essence, the equity valuation process for oil and gas companies, and thus the relationship between value-drivers and market value of equity must have changed.

The aim of our study is analyse if there has been a structural break in the equity valuation process during the 1990s. Furthermore, we seek to determine which, and to what extent, key value-drivers have been instrumental in such a structural break. Using value-relevance methodology we test for structural shift in the equity valuation process for integrated international oil and gas. Studies of the value-relevance of accounting information from US E&P companies typically consider a large number of companies for periods of 2-4 years (e.g. Quirin *et al.*, 2000; Berry and Wright, 2001; Bryant 2003). Our data set (1990-2003), allows us to investigate market and company behaviour over 14 years, covering a least one full oil price cycle. This enables us to take advantage of additional information in the time-series dimension. Our data set covers the recent period of substantial industry restructuring, which very few studies have examined.

Figure 1: The price-to-proven oil and gas reserves ratio, 1990-2003



Notes: Calculated as the ratio of market capitalization (USD millions) to volume of oil and gas reserves (million barrels of oil equivalent). Source: company data.

Our results confirm that a structural break took place in the valuation of the largest oil and gas companies in the late 1990s. Furthermore, we show that financial figures such as net income, cash flows and accruals, and operational measures such as the size of oil and gas reserves are instrumental in explaining this structural break. In particular, these variables have become more important in the equity valuation process for oil and gas companies during the 1990s. Other key value drivers, such as the book value of equity, remained stable throughout the entire period. Our study provides new insights into how financial and operational information relates to the equity valuation process for integrated international oil and gas companies. This is particularly useful in the application of accounting-based valuation models. Our study should be of interest to oil companies, equity analysts and oil and gas investors.