Energy, Risk & Competitive Advantage

#### Foreword

In early 2003 when we first began to develop courses and perform consulting in the field of enterprise risk, Scott and I corresponded and then had the opportunity to work together, first in a training program for Petroleos de Venezuela in Puerto La Cruz, and later in London and Aberdeen. Over the years we've shared an interest in strategy and the portfolio effects of integrated corporate risks. Out of this mutual interest, we began to develop analytical tools and techniques that came out of other fields of study, but were perfectly well suited for application to operational risk problems. The accounting and financial services industry in the US had begun at that time to develop the COSO II Framework, and this, combined with the earlier released Turnbull Commission/Combined Code here in the UK, formed a conceptual basis for the then emerging discipline of Enterprise Risk Management. What the frameworks lacked however was a certain breadth of tools and specific application to the energy industry. Scott began to realize that it wasn't just the tools that were missing, but the very basis for sound decisions, *valid input data*. One night on the airplane together Scott began to describe to me how this fundamental basis for risk management seemed to be lost in the shuffle of the finger pointing that resulted from the Enron scandal and ensuing Sarbanes-Oxley legislation. Furthermore, he was resolved that evening to begin to compile the framework for what would now become an authoritative reference on the topic of Information *Integrity* for purposes of energy risk management. I am very glad to see this come to fruition precisely at a time when the stakeholders are demanding greater information due diligence, but don't have the tools that this book provides to truly follow through on those demands. Anyone from chief financial officer to bond rating analyst will benefit from this aid to "pulling back the corporate veil" of spurious external information.

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## Five Fundamentals for Reasonable Assurance

## Information integrity and corporate risk management—the two are inseparable

Corporate scandals, followed by increased regulation and corporate scrutiny over recent years, have created a new regulatory and competitive landscape for the energy industry. To deal with the challenges of this new environment, the first step is to take a fresh look at how well we understand the drivers of our future success, and ask some difficult questions: How confident are we about our market assumptions? Could they stand up to outside scrutiny by auditors and investors? Do we really understand the forces shaping our business over the coming years, or are we relying on old information, which may not even have been accurate when it was gathered? Are we comfortable that we have better information than our competitors to feed our forecasting models? What these questions have in common is a concern about the *integrity* or validity of information that supports our corporate-wide risk management.

Valid information is the backbone of any modeling effort. Whether it is for asset valuation, budgeting, or risk management, poor information yields poor analysis in any application. For example, an ad hoc system for gathering market intelligence yields poor forecasts and risk estimates, no matter how sophisticated the statistical techniques or how powerful the computing power. In this case, the quality of the model inputs is directly dependent upon the rigor of the market intelligence system. In today's new environment, if the market data gathering method is ad hoc,



Fig. 1-1. Two sources of petroleum product data

#### Criticality is key: understanding what is important as well as the sensitivity of market model inputs

As mentioned, one of the key issues is that of the quality of data. Another is an understanding of the relative sensitivity of each piece of data on the final analysis. Every piece of data on a particular topic may be helpful, but it is often not practical to update and validate everything. In this era of data overload, it is more important than ever to "keep the main things, the main things" and not spend critical time gathering and analyzing noncritical data.

To illustrate this point, a typical stochastic modeling program I have used to simulate small hydro-dominated electric system behavior for four to six years can require as many as 10,000 discrete pieces of data. Most of this data is required to allow the program to close on an optimal solution, and therefore it must be loaded into the model. Yet, with most of these data points, their individual significance to the outcome of the analysis is not very high. On the other hand, there are approximately 80–100 pieces (or at most, 1% of the total data set) of highly sensitive data. A 2%–3% change in this critical data truly influences the final results.

In this case, it is important to focus the market intelligence on getting this 1%-2% of significant data right, rather than trying to optimize the entire data set. However, to know which 1% of the data to focus upon is the key. The sensitivity analysis requires a model. To perform the analysis, the entire data set feeding this model first must be inventoried, organized into

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#### Poor information integrity in the energy industry: two examples of failing to pull back the curtain

**Price index scandals.** The electric and natural gas price index scandal of 2002 in the energy trading and marketing business, and the petroleum reserves scandal of 2004, are two examples of poor quality control of external information by third parties receiving information from energy companies.

In 2002, five companies, Dynegy, AEP, Williams, CMS, and El Paso, admitted to the Federal Energy Regulatory Commission (FERC) that their traders had provided false data in 2000 and 2001 to the Platts publications, *Inside FERC* and *Gas Daily*. These publications blindly accepted this data as valid and created and published "price indices" or price references upon which other gas and electricity traders based future trading decisions. Complicating the issue was the specter of Enron and its intentionally fraudulent behavior, which at times used its own electronic trading platform, EnronOnline, and its actual trading activities to misrepresent and manipulate the gas and electric prices in California. There were three natural consequences of this false price index scandal. First, many companies improperly valued their forward contracts and other price sensitive instruments that relied on this information. Price transparency and liquidity underpin the theoretical basis for many market risk control and valuation models, from *value at risk* to the *Black-Scholes option valuation*. Because the assumption of a minimum level of liquidity and transparency was bogus, the valuations themselves were questionable. Second, today's spot prices in part determine tomorrow's prices-thus bogus reporting affected the next day's trading activity, and markets were manipulated. Finally, confidence in the entire gas trading system was undermined. No one believed what they saw on the screen was representative of the market fundamentals, and there was a breakdown in the trust in the efficiency of the markets. In short, unreliable information created a crisis of confidence in electric and gas company trading operations.<sup>3</sup>

It can be concluded from the FERC findings that the poor internal processes at natural gas companies and Platts regarding the reliability of external information allowed criminal behavior to flourish. As a result, Californians paid more for electricity and natural gas. The result of the FERC investigation, the ensuing criminal charges, and the history of careless data validation is that Platts and the industry have developed standardized procedures and best practices for this area of external data validation. These have been further codified by an industry group called the Committee of Chief Risk Officers (CCRO) in their February 2003 white paper, *Best Practices for Energy Price Indices*, which the FERC endorses.<sup>4</sup>

# Competitive Advantage: Part II of the *Why* behind Information Integrity

The flip side of value destruction is value creation. The key to creating value is to have a sustained competitive advantage. In effect, just as value destruction is the T (for threats) in a SWOT analysis, value creation is the O (for opportunities). But how are opportunities created, and what exactly are the characteristics of sustained competitive advantage? To answer this, it is helpful to consider what one leading management expert has said about creating value.

In his seminal work published in the 1980s, management author Michael Porter stated that there five forces defining the attractiveness of an industry. Porter further described a successful strategy for an industry participant as resulting in lower costs and/or enhanced differentiation leading to competitive advantage. Furthermore, Porter proposed effective use of information technology as a strategic vehicle for securing this competitive advantage by the following:

- · Fortifying the value chain of the company with information content
- Optimizing the linkages between "value activities"

Porter's thesis as described in a July 1985 article in the *Harvard Business* Review is diagrammatically summarized in figure 2-3.<sup>12</sup>



Fig. 2-3. Porter's five forces and competitive advantage

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# Best practices and emerging risk standards: COSO, EFQM, and the CCRO

The reincarnation of risk as a truly comprehensive and strategic corporate discipline requires new standards, tools, techniques, and methodologies. Consequently, since 2002, three industry-sponsored organizations have moved to the forefront in the establishment of these standards: The Committee of Sponsoring Organizations of the Treadway Commission (COSO), the European Foundation for Quality Management (EFQM), and the Committee of Chief Risk Officers (CCRO). Strictly speaking, it could be argued that they are not really stakeholders—they have no ownership role, no legal claims, and no regulatory authority. Instead, they provide information and guidelines for the other stakeholders to adhere to. However, a bit deeper look into the background behind each of these groups would reveal one curious commonality: they all represent corporate management's thoughts on how risk management should be self-regulated. Therefore, the following is a discussion of what each of these corporate management representatives feels about the importance of validated external information.

Committee of Sponsoring Organizations of the Treadway **Commission (COSO).** The COSO Enterprise Risk Management—Integrated Framework and Application Techniques was published in September 2004. This document has incorporated all the major steps of the risk management process and thus is a good representative of incorporating a new focus with a traditional process. Its perspective is that of U.S. financial and strategic risk management and regulatory compliance, and its pedigree is from the fields of accounting, finance, and audit. For example, the major contributors in its formation were the American Institute of Certified Public Accountants, the Institute of Management Accountants, the Institute of Internal Auditors, the American Accounting Association, the Financial Executives International, PricewaterhouseCoopers, and Protiviti. Because its contributors were accountants, its financial and compliance focus leads to a general weakness in the measurement of operational risk. Even so, in the United States, the COSO ERM framework is the most widely accepted approach for enterprise risk management.

The framework is divided into eight elements:

- 1. Internal environment
- 2. Objective setting
- 3. Event identification



Fig. 3-4. Phase of external information integrity and associated COSO ERM activity

### Discovery

With ERM implementation, the question of where to begin sometimes arises because, as with any new or unfamiliar activity, it is not always apparent exactly where to start. When considering external information integrity within the context of enterprise risk, other questions arise, including: Should we immediately start gathering information? If so, what information should we gather, and why? Should we call a meeting? If so, what will we discuss? The information integrity discovery phase attempts to answer some of these questions with an approach that is both introspective as well as outward looking in nature. As with the first steps of the COSO ERM framework, the discovery step in the EII process considers activities associated with knowing yourself and knowing your environment. Throughout this chapter, we will profile various tools and techniques needed to effectively implement the discovery phase of EII.