

The theory and art of asset valuation: Building a case for change

Applying to the oil and gas industry what finance has learned

SPE Workshop Banff, Alberta, Canada 15-17 Sept 2003

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Workshop Objectives

For several years, many executives and managers in the upstream petroleum industry have been looking for better processes to generate and evaluate alternative proposals for the creation and management of assets. As a result of this overall effort, many have come to believe that a better understanding of potential asset value, its components and determinants, is necessary if they are to be able to make better decisions and create more value for their organisations.

The Society of Petroleum Engineers (SPE) had two technical fora, in July 2000 and 2002, that dealt in part with issues of project evaluation. Participants in these fora requested a workshop on topics in “advanced” economic analysis, including probabilistic DCF analysis, decision tree analysis, and real options analysis.

The SPE responded to part of that request by asking me to organise a workshop, which gathered together a small group of executives, managers and technical experts who focus on valuation issues in the industry, with the following structure.

- 1) Workshop participants explored what steps might be taken next by organisations in the industry to improve the part of the overall asset evaluation process that has to do with the estimation of asset value under different alternatives for asset management
- 2) To achieve this, there were plenary sessions to bring participants up to date on the latest developments in, and insights about, current and potential methods for value estimation. There was also hands-on small group work in using these tools.
- 3) Workshop participants discussed the software, consulting, training and other infrastructure needs of the industry if various types of changes are to be facilitated.
- 4) The workshop was designed to help participants to determine:
 - a) if there is a case to be made either for change, or for putting resources into exploring possible changes, in the industry, in their own organisations, or among their customers; and, if so,
 - b) what that change is, or which possible changes should be explored, and how to make the case in the best way possible.

By "value", we meant the price at which the asset would be sold/bought in a free and deep market for the asset. Such markets involve the trade of economic resources over time. This is why lessons from finance come into play.

The workshop focussed on potential advances in value estimation based on:

- 1) improvements in the DCF methods currently used; and
- 2) the "no transactions costs" approximation for price estimation in financial markets, used by Black, Scholes and Merton, and the people who have followed them, to help transform financial markets since 1970. (We called this "market-based" valuation for short. Some people refer to this as "real options analysis", for reasons that were made clear at the workshop.)

Moreover, the focus was on asset and project valuation rather than corporate-level issues. Therefore, little time was spent on corporate governance and internal incentive structures, enterprise risk management or portfolio management. Nevertheless, these corporate issues formed a backdrop for the asset-level considerations.

Workshop Agenda: Summary

The first day of the workshop and part of the second morning provided background material needed for the discussion. The rest of the second day was spent in small teams in a case study (distributed with other materials before the workshop) using various methods to estimate the value of an asset or project. The third morning was a discussion of whether there was case to be made for change or to explore possible changes, and, if so, how to make it.

The small teams were carefully constructed to have the knowledge and experience needed to accomplish their task.

Steering Committee

David Laughton (University of Alberta), Chair

Steve Begg (University of Adelaide, 2000 Forum co-chair,
formerly with Landmark and BP)

Ellen Coopersmith (DecisionFrameworks, formerly with Conoco)

Mike Grandin (Fording Coal, Encana, formerly with Sceptre)

Frank Koch (ChevronTexaco)

Glen Koller (BP)

Steve Letros (Shell Canada)

Bob Ligon (Unocal, 2002 Forum chair)

Morten Lund (Statoil)

John Parsons (Charles River Associates)

Gardner Walkup, Jr. (Strategic Decisions Group, formerly with Chevron)

Tuesday 16 Sept 2003

6) 0800-0930 Preparing for the case study

Review of value estimation methods
Modelling economic uncertainty,
using oil and gas price uncertainty as an example
Learning models of geological and
project-level technical uncertainty

7) 0945-1745 Small group case study

Wednesday 17 Sept 2003

8) 0900-1145 The case for change & implementation

Is there a compelling story for change,
or for exploring possible changes?

If so,

What is your desired implementation end state?

What is the story for change?

When, where, by/to whom, how should story be told?

How can I practically implement this "back at the ranch"?

Doing, presenting, commitment to action, follow through

Simple take-aways for quick improvements

What infrastructure support is needed for change?

How will it get done?

(role of OPCOs, service companies, others)

Participant Qualifications

Preference was given to potential participants who:

- 1) were responsible for determining the valuation methods that are to be used in their organisations, especially if they had past or current experience in managing a programme to introduce new techniques of probabilistic economic analysis;
- 2) were internal valuation experts in their organisations, especially if they were using probabilistic economic analysis methods in that capacity; or
- 3) had demonstrable leading-edge expertise as consultants in probabilistic economic analysis for clients in the industry.

Some Representative Comments by Workshop Participants

I came away with a much more clear understanding of market-based valuation and a better way to 'show' the value of legacy assets.

I obtained a better understanding of some of the theory underlying market-based valuation and how it differs from that commonly used in traditional valuation approaches.

I learned a great deal. This was a very worthwhile conference.

The meeting provided a clarification of different valuation techniques. Market-based valuation is a significant advance but there remain issues of communication with senior management. David Laughton is exceptionally knowledgeable.

Of the many SPE activities I have helped to organise, the valuation workshop led by David Laughton is the one that I have enjoyed the most. For a change, I actually got as much as, if not more than, I gave. Some of the concepts we discussed are inherently difficult. There is no way around it. It takes several exposures over a period of time for them to sink in. But it is definitely worth the time and effort.