

Chapter 1 : Real options valuation - Wikipedia

project can recoup the original investments into a project. Assumes that returns from investment continues after payback period e profit that can be expected from investments.

Types of real option[edit] Simple Examples Investment This simple example shows the relevance of the real option to delay investment and wait for further information, and is adapted from "Investment Example". Consider a firm that has the option to invest in a new factory. It can invest this year or next year. If the firm invests this year, it has an income stream earlier. But, if it invests next year, the firm obtains further information about the state of the economy, which can prevent it from investing with losses. The firm knows its discounted cash flows if it invests this year: If it invests next year, the discounted cash flows are 6M with a The investment cost is 4M. If the firm invests next year, the present value of the investment cost is 3. Following the net present value rule for investment, the firm should invest this year because the discounted cash flows 5M are greater than the investment costs 4M by 1M. Yet, if the firm waits for next year, it only invests if discounted cash flows do not decrease. If, they grow to 6M, then the firm invests. This implies that the firm invests next year with a Thus the value to invest next year is 1. Given that the value to invest next year exceeds the value to invest this year, the firm should wait for further information to prevent losses. This simple example shows how the net present value may lead the firm to take unnecessary risk, which could be prevented by real options valuation. Staged Investment Staged investments are quite often in the pharmaceutical, mineral, and oil industries. In this example, it is studied a staged investment abroad in which a firm decides whether to open one or two stores in a foreign country. This is adapted from "Staged Investment Example". The firm does not know how well its stores are accepted in a foreign country. If their stores have high demand, the discounted cash flows per store is 10M. If their stores have low demand, the discounted cash flows per store is 5M. The investment cost per store is 8M. Should the firm invest in one store, two stores, or not invest? The net present value suggests the firm should not invest: But is it the best alternative? Following real options valuation, it is not: The value to open one store this year is 7. Thus the value of the real option to invest in one store, wait a year, and invest next year is 0. Given this, the firm should opt by opening one store. This simple example shows that a negative net present value does not imply that the firm should not invest. Real options are also commonly applied to stock valuation - see Business valuation Option pricing approaches - as well as to various other "Applications" referenced below. Here the project is built with capacity in excess of the expected level of output so that it can produce at higher rate if needed. A project with the option to expand will cost more to establish, the excess being the option premium , but is worth more than the same without the possibility of expansion. This is equivalent to a call option. The project is engineered such that output can be contracted in future should conditions turn out to be unfavourable. Forgoing these future expenditures constitutes option exercise. This is the equivalent to a put option , and again, the excess upfront expenditure is the option premium. Option to expand or contract: Here the project is designed such that its operation can be dynamically turned on and off. Management may shut down part or all of the operation when conditions are unfavourable a put option , and may restart operations when conditions improve a call option. A flexible manufacturing system FMS is a good example of this type of option. This option is also known as a Switching option. Options relating to project life and timing[edit] Where there is uncertainty as to when, and how, business or other conditions will eventuate, flexibility as to the timing of the relevant project s is valuable, and constitutes optionality. Initiation or deferment options: Here management has flexibility as to when to start a project. For example, in natural resource exploration a firm can delay mining a deposit until market conditions are favorable. This constitutes an American styled call option. Management may have the option to cease a project during its life, and, possibly, to realise its salvage value. Here, when the present value of the remaining cash flows falls below the liquidation value, the asset may be sold, and this act is effectively the exercising of a put option. This option is also known as a Termination option. Abandonment options are American styled. This option is related to the initiation option above, although entails flexibility as to the timing of more than one inter-related projects: Here, observing the outcomes relating to the first project, the

firm can resolve some of the uncertainty relating to the venture overall. Once resolved, management has the option to proceed or not with the development of the other projects. If taken in parallel, management would have already spent the resources and the value of the option not to spend them is lost. The sequencing of projects is an important issue in corporate strategy. Related here is also the notion of Intraproject vs. This flexibility constitutes optionality. The option to produce different outputs from the same facility is known as an output mix option or product flexibility. These options are particularly valuable in industries where demand is volatile or where quantities demanded in total for a particular good are typically low, and management would wish to change to a different product quickly if required. For example, a farmer will value the option to switch between various feed sources, preferring to use the cheapest acceptable alternative. An electric utility, for example, may have the option to switch between various fuel sources to produce electricity, and therefore a flexible plant, although more expensive may actually be more valuable. Management may have the option to change the output rate per unit of time or to change the total length of production run time, for example in response to market conditions. These options are also known as Intensity options. Valuation[edit] Given the above, it is clear that there is an analogy between real options and financial options, [11] and we would therefore expect options-based modelling and analysis to be applied here. At the same time, it is nevertheless important to understand why the more standard valuation techniques may not be applicable for ROV. Here, only the expected cash flows are considered, and the "flexibility" to alter corporate strategy in view of actual market realizations is "ignored"; see below as well as Valuing flexibility under Corporate finance. The NPV framework implicitly assumes that management is "passive" with regard to their Capital Investment once committed. Some analysts account for this uncertainty by adjusting the discount rate, e. Real options consider each and every scenario and indicate the best corporate action in any of these contingent events. The contingent nature of future profits in real option models is captured by employing the techniques developed for financial options in the literature on contingent claims analysis. Here the approach, known as risk-neutral valuation, consists in adjusting the probability distribution for risk consideration, while discounting at the risk-free rate. This technique is also known as the certainty-equivalent or martingale approach, and uses a risk-neutral measure. For technical considerations here, see below. An application of Real Options Valuation in the Philippine banking industry exhibited that increased levels of income volatility may adversely affect option values on the loan portfolio, when the presence of information asymmetry is considered. In this case, increased volatility may limit the value of an option. Conceptually, valuing a real option looks at the premium between inflows and outlays for a particular project. Inputs to the value of a real option time, discount rates, volatility, cash inflows and outflows are each affected by the terms of business, and external environmental factors that a project exists in. Terms of business as information regarding ownership, data collection costs, and patents, are formed in relation to political, environmental, socio-cultural, technological, environmental and legal factors that affect an industry. Just as terms of business are affected by external environmental factors, these same circumstances affect the volatility of returns, as well as the discount rate as firm or project specific risk. Furthermore, the external environmental influences that affect an industry affect projections on expected inflows and outlays. As part of a project, the dividend equates to any income which could be derived from real assets and paid to the owner. These reduce the appreciation of the asset. In general, management would proceed i. As above, examples include the time to expiry of a patent, or of the mineral rights for a new mine. See Option time value. Note though that given the flexibility related to timing as described, caution must be applied here. Option style and option exercise.

Chapter 2 : Valuing Capital Investment Projects » Case Solution

Valuing Capital Investment Projects 1. Growth Enterprises, Inc. (GEI) has \$40 million that it can invest in any or all of the four capital investment projects, which have cash flows as shown in Table 1 below.

These projects tend to be large scale and more complex than usual transactions. Including milestone and final evaluation stages in the capital project plan gives the project manager or sponsor an opportunity to assess whether predetermined targets related to costs, time and quality have been achieved. The Intellectual House capital project developed by the University of Washington provides an example of a project purpose. Quality Capital project evaluations include a quality assessment. Project managers use a number of techniques to assess quality. As an example, Six Sigma is a quality control technique used by companies to achieve and assess quality standards. Sigma is a Greek letter used in mathematics to represent a standard deviation or variance. A Six Sigma evaluation for a capital project can assess for waste and poor production outputs or the quality performance of teams and suppliers. Lessons learned are used for planning subsequent capital projects. Timescales Capital project timescales include an estimated duration for each stage of the project with precise deadlines. Capital projects tend to be long-term endeavors, generally from one to five years. Project evaluation includes assessing necessary project modifications. On energy sector capital projects, for example, the bulk of project activity comprises brownfield modifications that can last for several months. Among the project management techniques used to manage project schedules are PERT diagrams, Gantt charts and the critical path method. Developed by the U. Navy in the s, the Program Evaluation and Review Technique, or PERT, diagram is a variation of the Gantt chart used to organize and schedule project events and milestones on complex projects. The critical path method, also called critical path analysis, is another project scheduling technique used to develop the minimum time needed to complete a project. Budgets Capital project evaluations include comparing projected budgets against actual budget costs. This entails reviewing costs such as those associated with labor expenses, equipment, supplies and other general operating costs. Additionally, capital budgeting techniques -- used to assess alternative investments option -- can be an effective tool in evaluating large-scale investments. For example, the capital budgeting payback approach involves calculating how many years it will take to recover initial investment outlays. Another capital budgeting approach calculates the average rate of return on a given capital investment.

Chapter 3 : An Introduction To Corporate Valuation Methods

Valuation analysis is used to evaluate the potential merits of an investment or to objectively assess the value of a business or asset. Valuation analysis is one of the core duties of a.

But calculating the true value of any project Lean Six Sigma or otherwise with respect to its impact on margin has always been challenging, mainly due to the ambiguity of turning notions into dollar values. For instance, it is clear that training employees will improve expertise and productivity, but how does that translate to bottom-line savings or revenue growth? Return on investment ROI is a key calculation in answering these questions, as well as showing the project value and its impact on the margin. Depending on the industry, there are multiple interpretations of ROI. Typically, it is used in determining whether a project will yield a positive payback and have value for the business. Why is ROI Important? ROI turns the subjective into the objective, which can often turn uncertainty into support. Many times, stakeholders want to see what the dollar value is to them if they are to support a particular project. Without an ROI, that is very difficult to do. It can uncover additional benefits – The process of calculating ROI forces practitioners to investigate benefits that might not have seemed obvious at project inception. Financial value and project cost. Calculating value can sometimes be complicated based on the uncertainty of assigning actual dollars to a proposed outcome. The trick is breaking down the value into presently known components and then defining those components. It forces practitioners to define what the success factors look like at the end of the project and then break down those success factors into specific numbers. The first is a project that will reduce process cycle-time of a particular product by 10 percent. They then calculated the project values by reducing the cycle time by 10 percent, from 13 hours to Therefore, the project value is: Consider another example, in this case focused on revenue growth support. The company in the first case now has customers lined up, and needs to increase capacity. However, because the project team reduced process cycle time by 10 percent, the company can increase output by the same amount. Calculating the value of this improvement project requires a change in the value formula from above. The final cost reduction example is slightly more complex. Assuming that quality has slipped a bit since the company increased its output to units per year, they are now considering an improvement project to reduce returned products by 25 percent. The project value is now: Project cost is calculated by determining two variables: Work decomposition over time and cost of the work. Work Decomposition Over Time The trick to calculating an accurate project cost is to break down the tasks as finely as possible over time. Listing the work tasks in chronological order is not necessary, but has proven to be a helpful technique in ensuring no work is missed.

Chapter 4 : Evaluation of Capital Investment Projects | Finance Case Study

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View Notes - Valuing Capital Investment Projects excel from FINANCE at Northeastern University. Project A TypeofCashFlow Year0 Year1 Year2 Investment \$(10,) Revenue \$21, OperatingExpe.

Chapter 6 : Calculating ROI to Realize Project Value

Valuing Capital Investment Projects A collection of problems that introduces students to the application of discounted cash flow analysis in the evaluation of capital budgeting problems.

Chapter 7 : Introduction To Project Analysis And Valuation

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Valuing Capital Investment Projects Hbs Essay examples Words | 12 Pages CASE 2: VALUING CAPITAL INVESTMENT PROJECTS CORPORATE FINANCE GROUP Y Growth Enterprises, Inc When valuing any project, the free cash flows must be determined in order to be able to successfully implement any method of capital budgeting.