POSITIONS VACANT

NOMINATIONS ARE SOUGHT FOR THE POSITIONS OF TREASURER AND SECRETARY

ELECTIONS ARE TO BE HELD TO REPLACE RETIRING BOARD MEMBERS CARLOS SORENTINO, IAN BLAYDEN AND PHIL THOMAS. ALL ARE ELIGIBLE FOR RE-ELECTION

ANNUAL GENERAL MEETING - 2019

The 2019 Annual General Meeting is scheduled for March, 2019, date to be advised.

CHAIRMAN’S REPORT - AIMVA ACTIVITIES

Report on attending IVSC-WAVO Conference 25 June 2018 Singapore

The International Valuation Standards Council (IVSC) and the World Association of Valuation Organisations (WAVO) hosted the Inaugural IVSC-WAVO Global Valuation Conference in Singapore.

The conference heard 35 presentations from speakers presenting various tools and methodologies to manage the valuation and appraisals process. For example, one firm in China presented how 22,000 employees conduct 8 million valuations a year on residential properties (one per day per employee for 363 days assuming they are all valuers!) While real estate valuations predominated, some of the other topics included:

- Financial Instruments Valuation Under the HKFRS in Hong Kong
- Valuation Standards and Professional Ethics
- Financial Instruments Valuation in Real Estate Investment Structures
- A Selection of Valuation Principles Extracted from recent Court Decisions (Australian)
- The Practicing of GIS in a Mass Appraisal Project

The conference was attended by about 150 attendees and they came from Singapore, Hong Kong, China, UK, Australia and USA.

The use of artificial intelligence (AI) in decision making was interesting where due to the large volume of properties to be valued in Germany they used AI as a primary decision tool to reduce the workload of the valuer, by setting up a number of rules in a data dictionary that each appraisal referred to as it was being processed. The key task seemed to be comparison of a number of properties and changing the “index” for differences.

Discussions were held with the IVSC representatives and they learned about AIMVA and discussed how we could assist with the extractive industries guidelines within IVSC, and we will advance this topic with them in London later this year.
The final presentation of the conference came from Cao Zhong, Shanghai Orient Appraisal Co., Ltd – *China Appraisal on One Belt, Communication on One Road*, where she attempted to demonstrate how the Chinese negotiating culture was different to the western culture and direct confrontation doesn’t get you anywhere in the first instance and be sure who you are negotiating with as probably someone behind the scenes is going to agree or disagree on the valuation. The Chinese government calls the initiative *"a bid to enhance regional connectivity and embrace a brighter future"*, while critics call it a push by China to take a larger role in global affairs with a China-centred trading network.

From an European perspective the new Basel Accord of December 2017 (Basel III) stipulates that (for property) “*The valuation must be appraised independently using prudently conservative valuation criteria.*” And “*the valuation must exclude expectations on price increases*”. There was much discussion on whether shareholders were being disadvantaged (less business opportunities) by being conservative.

**BIBLIOGRAPHY**

**THE BUSINESS VALUATION JOURNAL**


The Business Valuation Journal has been created to provide a forum for discussion and to foster progress in the field of business valuation. The Journal can be downloaded free of charge from the OIV ([www.fondazioneoiv.it](http://www.fondazioneoiv.it)) and the IVSC-International Valuation Standard Council ([www.ivsc.org](http://www.ivsc.org)) websites.

The first edition of the Journal includes two articles of interest to Valuers

1. **Implied Cost of Capital: How to Calculate It and How to Use It, and**

2. **Bank Valuation Using Multiples in US and Europe: An Historical Perspective**


**COMPOUND INTEREST CORRECTED: THE IMAGINATIVE MATHEMATICS OF THE FINANCIAL FUTURE IN EARLY MODERN ENGLAND**

*By William Deringer, OSIRIS 33 (2018)*

[https://www.journals.uchicago.edu/doi/pdfplus/10.1086/699236](https://www.journals.uchicago.edu/doi/pdfplus/10.1086/699236)

A very interesting article, “*Compound Interest Corrected: The Imaginative Mathematics of the Financial Future in Early Modern England,*” was published in the last issue of OSIRIS describing the evolution of the concept of the future value of money in 17th Century England.

The abstract reads:

> What is money in the future worth today? In the seventeenth century, questions about the “present value” of future wealth became matters of practical concern, as businesspeople and governments deployed future-oriented financial technologies like mortgages, bonds, and annuities. Those questions also attracted the attention of mathematicians. This essay examines the excursions two English mathematicians, the indefatigable mathematical gossip John Collins (1625–83) and the lesser-known Thomas Watkins (fl. 1710s–20s), made into the mathematics of financial time. In capitalist practice today, present-value problems are invariably dealt with using a single technique, compound-interest discounting, which has become deeply embedded in commercial, governmental, and legal infrastructures. Yet, for early modern thinkers, the question of how best to calculate the financial future was an open question. Both Collins and Watkins explored imaginative alternatives to what would become the compound-interest orthodoxy. With help from his network of correspondents, Collins explored simple-interest discounting, which provoked thorny mathematical questions about
harmonic series and hyperbolic curves; Watkins crafted multiple mathematical techniques for “correcting” the compound-interest approach to the financial future. Though both projects proved abortive, examining those forgone futures enables us to examine the development of a key element of capitalistic rationality before it became “black-boxed.”

**DISCOUNT RATES - THE CAPITAL ASSET PRICING MODEL**

By Carlos M.R. Sorentino, February 2019

Discounting in the valuation of mineral assets [i]

**Income Approach** methods are used often in the evaluation of mineral assets to appraise the income that an asset will generate over its remaining useful life. [ii]

Given two similar rewards, people show a preference for one that arrives sooner rather than later. Some practitioners are said to discount the value of the later reward by a factor that increases with the length of the delay. This process is traditionally modelled in the form of exponential discounting, a time-consistent model of discounting.

Two commonly used methods that fall under this approach are income capitalisation, where an all risks yield is applied to a fixed income stream, or discounted cash flow where the cash flows for future periods are discounted to a present value.

Both methods require the selection of an appropriate Rate of Discount “a rate of return used to convert a monetary sum, payable or receivable in the future into present value.” [iii] The Rate of Discount reflects “the return that market participants would desire for an investment.” [iv] In economic terms, the Rate of Discount is that rate which equates future and current consumption in financial terms, that is to say, it is the marginal opportunity cost of capital. The Rate of Discount indicates how consumption levels are connected across time: if an investor forgoes one unit of consumption in any given period in order to increase the capital stock, this will increase the amount available for consumption in the next period by 1 + Rate of Discount. [v]

These definitions suggest the Rate of Discount is effectively the return that an investor would expect to receive on some other typical proposal of equal risk, that is to say, the opportunity cost of the project relative to other investments. The concept of opportunity cost is that the discount rate used must reflect the profitability of the best alternative investment opportunity, in other words the rate of return that is being sacrificed by choosing this project rather than that another.

At the onset, it must be noted that there is no single rate of return that is appropriate for every project.

The discount rate used to evaluate a project should reflect:

- The cost of the capital, which is unique to the business concerned;
- The risk of the project to the business: the benefit of money received now is certain whereas the benefit of money to be received next year is uncertain and therefore there is a risk with any investment and that risk tends to grow with time.

[1] Income Approach
[2] Discounted cash flow
[3] Rate of Discount
The opportunity cost of that capital because money received now can be 'put to work' to earn a return so that, in a year's time it will have accumulated in value.

One of the most commonly used methods to choose a rate of discount is the Capital Assets Pricing Model (CAPM).

**The Capital Assets Pricing Model**

The *Capital Asset Pricing Model* formulated by William Sharpe \(^{vi}\) and John Lintner \(^{vii}\) are the first asset pricing models built from first principles about risk attitudes and investment opportunities that offer clear and testable predictions about risk and return. The CAPM is widely used in applications such as estimating the cost of equity capital for firms and evaluating the performance of managed portfolios. \(^{viii}\)

It provides simple and logical predictions about how to measure risk and about the relation between expected return and risk.

The CAPM calculates the expected return, \(R_e\), of a capital asset as

\[
R_e = R_f + \beta (R_m - R_f),
\]

where

- \(R_e\) = the expected return of the asset, the cost of equity;
- \(R_f\) = the risk free rate of interest, such as interest paid by government bonds;
- \(R_m\) = the expected return of a market portfolio;
- \(R_m - R_f\) = is the risk premium of the asset measured against the market variability; and
- \(\beta\) = is the sensitivity of the expected excess asset returns to the expected excess market returns, or

\[
\beta = 1 + \frac{\text{Covariance}(R_e, R_m)}{\text{Variance}(R_m)}
\]

The Australia Stock Exchange publishes indexes that measure the performance of the stocks traded in the market. For example, the *All Ordinary Index* contains nearly all ordinary shares listed on the ASX. The market capitalization of the companies included in these indexes amounts to over 95% of the value of all shares listed on the ASX, thus, it is an accurate representation of the value, \(R_m\), of a diversified portfolio in this market.

Similarly, the ASX also compiles sectoral indexes. The *Metals and Mining Index* is comprised of companies that are classified as being in the Metals and Mining industry \(^{ix}\) which includes producers of aluminium, gold, steel, precious metals and minerals and also diversified metals and minerals. This Index allows a precise monitoring of the mining sector performance and offers a way to assess its returns on invested capital, \(R_e\), and can be used to calculate the desired rate of return.

For the twelve months until June 2014, the CAPM calculations for these indexes were:

- \(R_e\) = Average annual return of the Metals and Mining Index = 11.45%
- \(R_m\) = Average annual return of the All Ordinary Index = 9.15%
- \(R_f\) = Annual Yield of the 10 years bond issued by the Australian Commonwealth = 3.95%
- \([R_m - R_f]\) = Risk premium for the All Ordinary Index = 5.20%
- \([R_e - R_f]\) = Risk premium for the mining sector = 7.50%
- Covariance \((R_e, R_m)\) = 6.67
- Variance \((R_m)\) = 15.08
- \(\beta\) = Sensitivity of the Mining Index, \(R_e\) with respect to the risk free rate, \(R_f\) = 1.44

In other words, for a mining project valued in June 2014, the CAPM suggests to use a rate of discount of 11.45% per year.

It also suggests that mining investors desire a minimum rate or return that is 7.5% above the riskless yield.

This is the minimum premium investors demand to compensate for the risks they incur when participating in a mining venture in Australia at that time.

**Discount rates from CAPM. A critique**

The above sounds very precise and accurate.
Unfortunately, perhaps because of its simplicity, the empirical record of the CAPM is poor – poor enough to invalidate the way it is used in many applications. The model’s empirical problems may reflect true failings. [viii]

The CAPM assumes that all investors have the same expectations about the returns they want. However, seldom two investors have the same expectations about their future returns.

It also assumes that any investor cares only about the expected return and the volatility of their investments. Often it is the case that an investor will buy into a project taking into account other variables, as for example, the likelihood that a project will succeed and the expectation that the price of commodities produced by a prospect will increase over time.

Other assumption is that all the market participants have all the information available about an investment, thus assuming all investors have access to the same information available about a prospect. In fact, insiders, persons that have a better and more complete knowledge, is a widely accepted presumption in almost all markets.

The CAPM assumes that each investor is rational, risk-averse, and wants to maximize his expected utility, which is demonstrably not the case as many an agent takes into consideration other variables, some of which may not be quantifiable.

The CAPM assumptions imply that investors are homogenous and all have exactly the same expectations, that is to say, it oversimplifies the motivation of investors.

Another problem with CAPM is that the sensitivity varies continuously: the expected return of a capital asset is determined by reference to an index, for example the ASX All Ordinary Index, but that index itself changes each time a share is bought and sold, that is to say, the reference point changes continuously. In turn, this means that the CAPM expected return of an asset is not stable over time: for a period of four years ending on 28 July 2014, the sensitivity of the Australian Stock Exchange’s Mining Index averaged 1.42±0.21 but varied from a minimum of 0.92 to a maximum of 2.30, equivalent to a discount rate of 11.45±1.73%.

The CAPM also makes a basic assumption that there is a riskless rate of return, generally taken to mean the yield of a ‘safe’ investment such as long term government bonds. This begs the question what bond should be used as a reference. Today’s Bloomberg’s Rates & Bonds lists 10-Year Government Bond Yields that vary from 0.09% per year for Japan to 11.14% for Brazil, including Australia at 2.72% and United States at 2.95%: [x] Which one is the appropriate riskless rate?

The inconvenience is that this “riskless” rate includes sovereign risk, the rate of interest that investors want to invest in a particular country. For example, Argentina that is nowadays a well promoted mining destination for
lithium, has a 10 year bond yield of 19.9% per year. If, as in the example above, investors want an additional 7.5% to invest in a mining project, resource ventures in that part of the world should be discounted, at least in theory, at a rate of 27.4% per year. If one understands what this will do to the net present value of prospect, no investor will ever put a cent in that country, however, despite this, there are currently no less than 35 foreign companies mining or exploring in that nation.

Valuation is about expected cash flows and about required returns. Different investors may have different expected cash flows. One could find out an investor’s expected beta [or expected return] by asking him. However, it is impossible to determine the expected beta [or expected return] for the market as a whole, because it does not exist. The CAPM is, after all, just a model: a model is an opinion about how things behave but it is important to remember that it is not a fact, something that truly exists or happens, something that has actual existence; a true piece of information.

The CAPM attempts to model expectations about the future returns of an investment, that is to say, it is a forecast and here resides its weakness: by definition, the future is unknowable and hence any forecast is subject to uncertainty. Furthermore, a model that works well individually for a number of people may not work for all of the people together. [vi]

**A possible alternative representation of the Net Present Value**

It is a common place in statistics that a precise number is improbable while a probable range is imprecise. If an outcome is expressed as range – the NPV will be between 90 and 110 – this expression will be more probable that one affirming the NPV will be 95.6 exactly: the later statement has almost a null probability of ever been true.

In the example presented above, the beta of 1.44 for the mining project has a negligible probability of being the right rate of discount.

However, these observations allows a possible answer to the conundrum of choosing a rate of discount.

If the rate of discount as determined by the CAPM is normally distributed with a mean of 11.5% and a standard deviation of ±1.7%, then one could say that, during that period of time, 95% of the discount rates applicable to a mining project would have fallen in the range from a minimum of 8.1% to a maximum of 14.8% with an average of 11.5%.

This allows the investor to calculate the NPV of a mining project as a range of probable values, range that has a much greater certainty than a single ‘precise’ – but improbable - number.

Valuations are opinions and as such they have many elements of the subjectivity of the expert making the valuation. Nevertheless, the sound and prudent judgment based on a simple perception of the situation and the facts can provide the answer: it is known as common sense.

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[i] In this paper we refer to the valuation of mineral assets. However, these comments apply to any valuation that relies in the calculation of the Net Present Value of any asset.


[ix] Selected according to the Standard & Poor’s “Global Industry Classification Standard”, GICS, that categorizes companies into sectors and industries and provides seamless company, sector and industry comparisons across countries, regions, and globally.


[xi] “It is not true that whenever aggregate demand can be generated by a representative consumer, this representative consumer’s preferences have normative contents. It may even be the case that a positive representative consumer exists but that there is no social welfare function that leads to a normative representative consumer.” (Mas-Colell, Whinston and Green (1995), Microeconomic Theory, Oxford University Press. ISBN-13:9 780 195 073 409)