

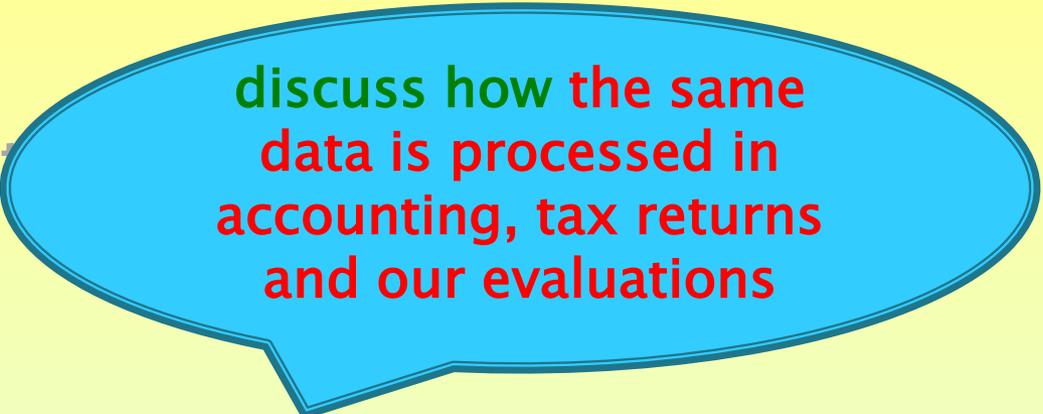
Teach Yourself: Economic Evaluation:

1 r: Accounting versus Tax versus Evaluations

The purpose of this module is to ...

Level 3: Decision making

Level 2: Evaluation



discuss how the same data is processed in accounting, tax returns and our evaluations

Level 1: Hands-on economic modelling

Same data in but different results out?

In a business or project the same input data is used to generate the: –

- accounting statements,
- tax returns and
- our economic evaluations.

Over the life of the business these three should be in general agreement.

Our economic evaluations should be intuitive, and transparent enough for anyone to understand them, but the accounting statements and tax returns can be baffling.

- some accounting and tax documents seem strange, even counter-intuitive, until you understand the reasoning underlying them
- some people misuse terminology.

This module is not an academic and expert comparison of the three, but what I have gleaned from being amongst it.

Which one is best?

One is not better than the other.

They have different purposes and are not competing for pre-eminence.

- ▶ **accounting statements** – are mostly backward looking and tell us how well the business is performing, how well it has been managed given past investments in the company and the wisdom of past decisions.
- ▶ **tax returns** – are mostly backward looking and compute how much of the company's revenue has to be given to the community (tax office) in accordance with the country and regional laws.
- ▶ **economic evaluations** – are forward looking and give a forecast (or an opinion) of how well the business/project might perform, how it might be best managed and how much it may be worth.

Who does the work?

accounting statements – are completed by qualified accountants using nationally and internationally established standards and practices.

tax returns – are completed by tax specialists/accountants adhering strictly to the rules set by legislation in each country.

economic evaluations – are done by anyone using any method they want! This is absolutely dreadful; but is the sad truth.

Anyone can set themselves up as an 'NPV specialist' or 'financial modeller' as they often wrongly call themselves, and churn out a result. But as we know, NPV is just the beginning of a proper economic evaluation.

- ▶ *The author presented a paper titled “Economic Evaluation: It is time we cleaned up the discipline” to the AusIMM in Melbourne in 2007 that helped kick-start this website.*
 - *“In broad terms the author has found the best evaluation practitioners have hands-on experience at an operating site and usually in production or in closely related technical disciplines. Unfortunately most people with a commercial background who have not worked themselves through site experience do not appreciate the subtleties of the business. As a consequence the areas they know well, such as tax, depreciation and accounting can be far too elaborate whilst many of their key drivers are far too coarse. They work the “80:20 rule” in reverse by putting 80% of their energy into the least important 20% of the model.*
 - *Soundly experienced evaluation specialists can open up someone else's Excel workbook and very quickly decide if it is by a broadly experienced professional or if it is a huge, convoluted, black and white tangle by someone with an office background. Hopefully this website will help them refocus.”*

What is the documentation?

- ▶ **accounting statements** use strict formats and are completed by following strict standards & procedures. In general terms they are fixed in form and very similar for all companies in any one country.
- ▶ **tax returns**, like accounting statements, follow strict rules & procedures set down in the laws for each country. There should be a high similarity between company tax returns in any one country.
- ▶ **economic evaluations** sadly lack the heritage of accounting and tax documentation and are completely free in form. This is good and bad.
 - *Very good in it allows each evaluation to be tailored effectively and efficiently for the specific business/project.*
 - *Very bad in that it allows people to create huge, unwieldy, convoluted, evaluations with no colour coding, no transparency, no recording of sources of data, no rigour and no auditing.*
 - *Some Accountants try to impose a standard workbook for economic evaluations across a company – I have seen too many! These people come from a background of standardisation and set formats and incorrectly believe it should be adopted for economic evaluations. These attempts at imposing conformity become disasters and reflect on the Accountant's lack of knowledge of how evaluations are best completed. They become huge sources of frustration by professionals forced to use them, have vast areas of redundant worksheets and in fact lead to errors (I have seen numerous major mistakes) when people try to adapt their inputs and logic to a standard sequence of rows. It is as inappropriate as the converse: of allowing free form in accounting statements.*

How do they interact?

- ▶ **Tax returns** probably are the most independent of the three although they may draw upon accounting results and even upon evaluation results as occasional inputs.
- ▶ **Accounting statements** run in parallel with the tax returns and actively use the data from the tax returns. There must be regular discussion and sharing between the accountants and tax specialists.
 - In many countries accounts and tax have different treatments for depreciation/ amortisation/ tax deductions of past capex. As a consequence the accounting balances and tax deduction balances are out of synchronization for extended periods. The accounts need to recognize this in dedicated rows.
 - Similarly the accounts need to recognize the timing differences between liabilities for tax versus actual cash payments.
- ▶ **Economic evaluation specialists** must have a strong and fruitful working relationships with these accountants and tax specialists. The evaluation has to be grounded in the correct tax treatments, use correct opening balances and use the corporate assumptions on the key inputs of price, exchange rate, discount rate, inflation, customers, etc.
 - Even the most experienced evaluation specialists need to regularly update their tax and accounting knowledge, learn how to handle new legislation and have regular informal discussions with their accountants.
 - This is particularly important when evaluating existing businesses, and especially when working on a potential acquisition. You must work closely with the tax specialists and accountants to clearly define the future tax structure of the business, the unused tax deductions and the ones that you can use, the opening balances of debtors, creditors, unpaid taxes, future commitments, leases, contracts, tax carry forward limitation, etc, etc.
- ▶ It is sensible, and in many companies mandatory, for the tax specialist to audit the tax computations in the evaluation model. Someone from Accounting should check through the model too! An evaluation model is not the private domain of the evaluation specialist but a corporate activity.

Key differences

	Accounting	Tax	Evaluations
General Perspective	Backward	← same	Forward
Professional Qualifications	Strict	← same	Nil
Practices	International /National	← same	Self imposed
Computations	Precise	← same	Fit-for-purpose
Currency	<i>Nominal</i>	← same	Usually Real
Recognise past expenditures	Yes	← same	Only to get unclaimed tax deductions, opening balances, cash liabilities, etc
Non-cash concepts	Yes	← same	Usually not - except to compute taxes
Matching revenue with its costs	Yes	← same	Usually not - except if warranted in final evaluations to compute taxes
Best practitioners	Accountants /Commercial Specialist	← same	People with hands-on experience in the operations who have hands-on training in evaluations

Examples of key differences – mining

	Accounting	Tax	Evaluations
Prestrip	Usually allocated against future production as something like “deferred stripping”	Some countries allow it to be deducted immediately while others require it to be deducted over time or production	Is included as a cash outflow when it occurs. It does not matter if it is included in the capex or in the opex but it must be computed correctly in the tax section of the economic model
Waste removal during production.	The long term waste to ore ratio is used to smooth costing, with some years in credit and others in debit.	Needs researching in legislation for that country.	As above
Rehabilitation & closure costs	Can be brought forward and smoothed across all production to end of life	As above	As above
Interest during construction	Included	Included	Excluded – it is part of financing so included in the discount rate.

“Capital expenditure” versus “operating costs”

Accounting, tax and engineers each have their own interpretations of “capital costs” and “operating costs”. Accountants may call one expenditure “capital” whilst tax and engineers call it an operating expense. Similarly engineers may call something a ‘capital cost’ whilst the others call it an “operating expense”. Tax specialists and accountants may talk of “expensing” a cost whereas we may call it an “operating costs”

It does not matter! Just accept however it is given to you.

When doing an economic evaluation it does not matter if a cost is termed “capex” or “opex” and whether it goes in one or other of these two cash-streams. All that matters is that it is expressed as cash spent with the correct timing and that it is treated correctly in the tax section.

Pre-stripping of a mine may be in the engineer’s estimate of capex and in the accountant’s table of capex, but in Australia it would be in the “expenses” or opex for tax. It could be shown in either the capex or the opex in our evaluation model.

Capex and “*Depreciation*”

In evaluation models italics can be used for nominal terms and vertical font for real terms.

There is a huge difference in how capital expenditure is handled by different types of specialists in a business. In broad terms: –

- ▶ **Engineers** building a plant/project make their cost estimates in real terms *and then convert them to nominal terms. They usually focus on and report when money is committed to each purchase and/or to each contract. The tracking of when the cash is actually paid out comes second.*
 - So when you receive a capital estimate from an engineer or estimator check if the money is real or *nominal* and if the timing is of commitments or of actual cash payments. Never assume!
- ▶ **Evaluation specialists**, like ourselves, usually work in real terms and focus on when future capital expenditure will be actually paid out as cash.
- ▶ **Accountants** follow both of the above in nominal terms and make sure the company has the cash available to make the sequences of payments.
- ▶ *But when preparing the accounts, they look at past capital expenditure and allocate it against the production/sales that it has made possible. This is called ‘depreciation and amortisation’.*
- ▶ **Tax specialists** look at past capital and allocate it against the income it helps produce using a methodology specified by the country’s tax laws. Some countries use a logical method similar to accounting; in fact some are identical. But many countries use sets of rules that do not properly match income with past capex. Many use percentages or years as the base for computation. Australia has a long, dreadful history of creating and changing rules for political/economic reasons that has left pages of rules for calculations. By contrast, Canada allows most capex to be deducted before paying any tax.
 - I am a little pedantic in calling these ‘tax deductions for capex’ rather than ‘tax depreciation’

These concepts are discussed in this website’s modules on capex and tax.

Accounting: Capex and “Depreciation”

Accounting normally is rational in the way it matches past capex with the production/sales that it helps create. This module does not pretend to be expert in accounting but can illustrate three of the possible methods: –

- ▶ ***Over units of sales/production:** A mine has 120 000 tonnes of contained copper left to produce over the next few years. Recent and past capex that has not yet been deducted (in the accounts) and which will last the remaining life of mine totals \$6 million. The company may decide to deduct $\$6\text{M}/120\ 000 = \50 per tonne of copper sold.*
- ▶ ***Over time:** A plant invests \$24 000 on a new pumping system that should last 6 years. The company may decide to deduct $\$24\ 000/6$ years = \$4 000 per annum.*
- ▶ ***By rate:** A company installs a new computer system at a cost of \$36 000. In its accounts the company may decide to depreciate/amortise this at 33% per annum = \$12 000 per annum.*

(In this country the methods to compute the deductions for tax for each of these three examples may be similar or entirely different.)

Remember that accounting works in nominal terms, and so the use of italics on this sheet, whereas evaluations usually compute in real terms.

Accounting depreciation/amortisation: nominal and real terms.

Accounts are computed in nominal terms.

In the illustration below new facilities costing \$2 000 are expected to have a life of five years. The company decides the most sensible method is to spread the accounting depreciation/amortisation evenly over the five years → \$400 per annum.

These amounts are in nominal dollars and so their 'real terms' values decrease by compounding inflation each year, as illustrated below: –

		Total	Year 1	Year 2	Year 3	Year 4	Year 5
<i>Accounting depreciation</i>	<i>\$ nominal</i>	<i>2000</i>	<i>400</i>	<i>400</i>	<i>400</i>	<i>400</i>	<i>400</i>
Equivalent in Real Terms	\$ Real	1895	396	388	379	370	360

- ▶ So in real terms the value of the accounting depreciation is eroded by inflation by \$105.
- ▶ When we look at tax deductions in the same way it does impact our evaluation.

Tax: Capex and Deductions

Tax looks at past capital expenditure, and the country's tax legislation specifies how it is to be deducted from sales revenue. Calculations and reporting are in nominal terms.

This is discussed in the Module on Tax in this Website.

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