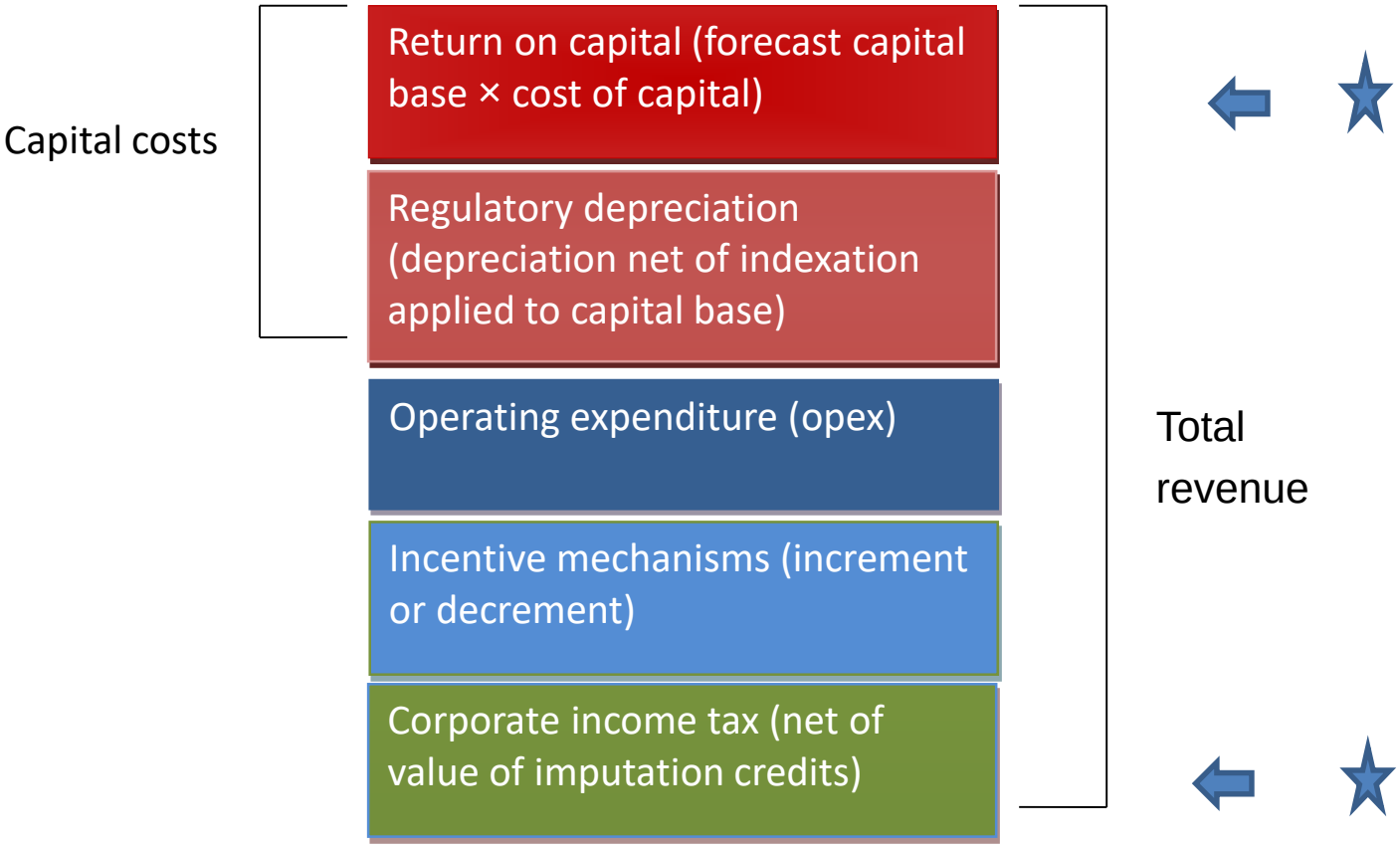
WACC – overview of our framework, the economics and related law

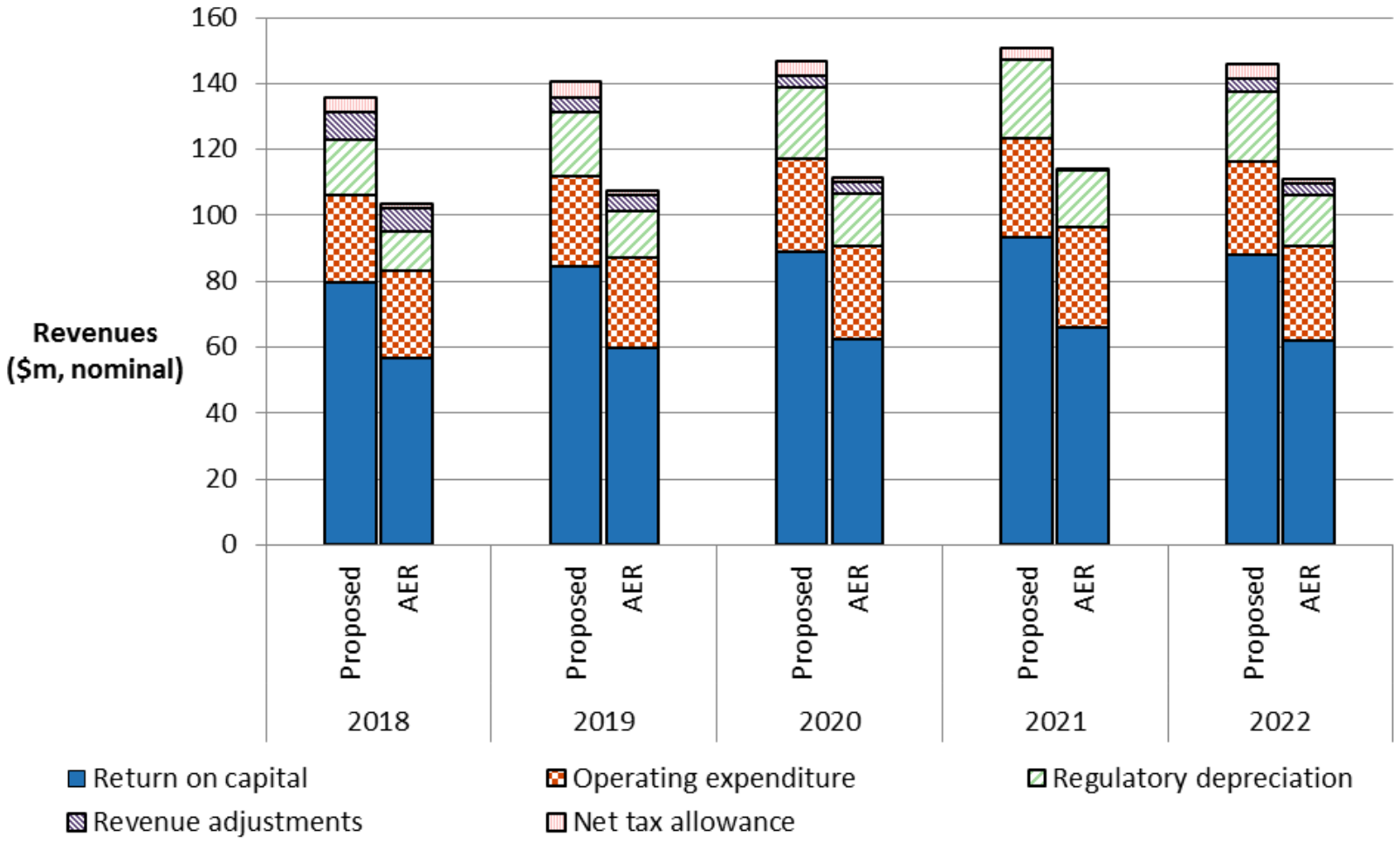
The building blocks approach for determining total revenue



AER's draft decision on APA's smoothed total revenue for the 2018-22 access arrangement period ($ million, nominal)

Building block	2018	2019	2020	2021	2022	Total
Return on capital	56.7	59.7	62.4	66.0	65.8	310.5
Regulatory depreciation	11.6	14.2	15.8	19.5	17.0	78.1
Operating expenditure	26.6	27.3	28.0	29.8	30.8	142.6
Revenue adjustments	7.1	4.7	3.9	2.4	0.0	18.0
Net tax allowance	1.3	1.5	1.9	1.4	0.5	6.5
Building block revenue - unsmoothed	103.3	107.4	112.0	119.0	114.0	555.7
Building block revenue - smoothed	105.5	108.1	111.0	113.9	117.0	555.4
X factors	0.25%	–0.07%	–0.17%	–0.16%	–0.27%	n/a

AER's draft decision and APA's proposed building block revenue (unsmoothed) ($million, nominal)



Rate of return (cost of capital)

The building block approach

Return on capital (forecast capital base × cost of capital)

- The allowed rate of return provides a service provider a return on capital to service the interest on its loans and give a return on equity to investors

Legislation – defines what is ‘correct’

- The AER’s functions are defined in the national electricity and gas law and rules as is what is to be approved in a reset.
- While there is some discretion, the AER should follow the law and the rules and if we don’t we can be overturned (on judicial review)
- Law takes precedence to the rules. Rules therefore must be interpreted consistent with the law
- Key elements of the law are the NEO/NGO and RPPs
- The rules define how we must estimate the RoR

National electricity objective

- The objective of this Law is to promote efficient investment in, and **efficient operation and use** of, electricity services for the long term interests of consumers of electricity with respect to—
- (a) price, quality, safety, reliability and security of supply of electricity; and
- (b) the reliability, safety and security of the national electricity system.

Revenue and pricing principles

(2) A regulated network service provider should be provided with a reasonable **opportunity** to recover at least the efficient costs the operator incurs in—

(a) providing direct control network services; and

(b) complying with a regulatory obligation or requirement or making a regulatory payment.

(3) A regulated network service provider should be provided with **effective incentives** in order to promote economic efficiency with respect to direct control network services the operator provides. The economic efficiency that should be promoted includes—

(a) efficient investment in a distribution system or transmission system with which the operator provides direct control network services; and

(b) the efficient provision of electricity network services; and

(c) the efficient use of the distribution system or transmission system with which the operator provides direct control network services.

Revenue and pricing principles (cont)

(5) A price or charge for the provision of a direct control network service should allow for **a return commensurate with the regulatory and commercial risks involved** in providing the direct control network service to which that price or charge relates.

(6) Regard should be had to the **economic costs and risks of the potential for under and over investment** by a regulated network service provider in, as the case requires, a distribution system or transmission system with which the operator provides direct control network services.

Setting the Allowed Rate of Return – NER 6.5.2

(a) The return on capital for each *regulatory year* **must** be calculated by applying a rate of return for the relevant *Distribution Network Service Provider* for that *regulatory year* that is determined in accordance with this clause 6.5.2

(b) The *allowed rate of return* **is** to be determined such that it achieves the *allowed rate of return objective*.

(c) The *allowed rate of return objective* is that the rate of return for a *Distribution Network Service Provider* **is to be commensurate with the efficient financing costs of a benchmark efficient entity** with a similar degree of risk as that which applies to the *Distribution Network Service Provider* in respect of the provision of *standard control services* (the *allowed rate of return objective*).

Setting the Allowed Rate of Return (cont)

(d) Subject to paragraph (b), the *allowed rate of return* for a *regulatory year* must be:

(1) a **weighted average** of the return on equity for the *regulatory control period* in which that *regulatory year* occurs (as estimated under paragraph (f)) and the return on debt for that *regulatory year* (as estimated under paragraph (h)); and

(2) **determined on a nominal vanilla basis** that is consistent with the estimate of the value of imputation credits referred to in clause 6.5.3.

Setting the Allowed Rate of Return (cont)

(e) In determining the *allowed rate of return*, **regard must be had to**:

(1) relevant estimation methods, financial models, market data and other evidence;

(2) the desirability of using an approach that leads to the consistent application of any estimates of financial parameters that are relevant to the estimates of, and that are common to, the return on equity and the return on debt; and

(3) any interrelationships between estimates of financial parameters that are relevant to the estimates of the return on equity and the return on debt.

Setting the Allowed Rate of Return (cont)

(f) The return on equity for a *regulatory control period* **must be** estimated such that it contributes to the achievement of the *allowed rate of return objective*.

(g) In estimating the return on equity under paragraph (f), **regard must be had to** the prevailing conditions in the market for equity funds.

(h) The return on debt for a *regulatory year* **must be estimated such that** it contributes to the achievement of the *allowed rate of return objective*.

Setting the Allowed Rate of Return (cont)

(i) The return on debt may be estimated using a methodology which results **in either**:

(1) the return on debt for each *regulatory year* in the *regulatory control period* being the same; or

(2) the return on debt (and consequently the *allowed rate of return*) being, or potentially being, different for different *regulatory years* in the *regulatory control period*.

Setting the Allowed Rate of Return (cont)

(j) Subject to paragraph (h), the methodology adopted to estimate the return on debt **may, without limitation**, be designed to result in the return on debt reflecting:

(1) the return that would be required by debt investors in a benchmark efficient entity if it raised debt at the time or shortly before the making of the distribution determination for the *regulatory control period*;

(2) the average return that would have been required by debt investors in a benchmark efficient entity if it raised debt over an historical period prior to the commencement of a *regulatory year* in the *regulatory control period*; or

(3) **some combination of the returns referred to in subparagraphs (1) and (2).**

Setting the Allowed Rate of Return (cont)

(k) In estimating the return on debt under paragraph (h), **regard must be had to** the following factors:

(1) the desirability of minimising any difference between the return on debt and the return on debt of a benchmark efficient entity referred to in the *allowed rate of return objective*;

(2) the interrelationship between the return on equity and the return on debt;

(3) the incentives that the return on debt may provide in relation to capital expenditure over the *regulatory control period*, including as to the timing of any capital expenditure; and

(4) any impacts (including in relation to the costs of servicing debt across *regulatory control periods*) on a benchmark efficient entity referred to in the *allowed rate of return objective* that could arise as a result of changing the methodology that is used to estimate the return on debt from one *regulatory control period* to the next.

Setting the Allowed Rate of Return (cont)

(l) If the return on debt is to be estimated using a methodology of the type referred to in paragraph (i)(2) then a resulting change to the *Distribution Network Service Provider's annual revenue requirement* **must be effected through the automatic application of a formula that is specified in the distribution determination.**

Bottom line on what we do

- The las and rules give the AER lots of discretion but you must follow them
- Overall law objectives are most important (efficient investment and use of infrastructure)
- Important in decisions to:
  - Be clear on what you do and why
  - Show it is economically correct (or at least not economically wrong)
  - Show what you do is consistent with the law
- Worth noting just being correct is not enough (as we saw in the NSW/Ausgrid merits review), your reasoning and explanation need to be economically correct and legally persuasive.

Rate of return (Set a nominal "vanilla" WACC)

$$WACC = \frac{E}{V} * R_e + \frac{D}{V} * R_d$$

R_e= post corporate tax cost of (or required return on) equity

R_d=pre corporate tax cost of (or required return on) debt

E= market value of the firm's equity

D= market value of the firm's debt

V=E+D= total market of the firm's financing (equity and debt)

E/V= percentage of financing that is equity

D/V= percentage of financing that is debt

Also provide a tax allowance less the value of imputation credits

Model and Components

1. Sharpe-Linter Capital Asset Pricing Model
   a) Risk Free Rate (currently use 10 Year CGS)
   b) Equity Beta (currently use 0.7)
   c) Market Risk Premium (currently use 6.5%)

2. AER uses a variety of evidence to arrive at value estimates.

3. Only Risk Free Rate has changed regularly

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Risk Free Rate

- 20 day averaging period of 10 year CGS yield
- Averaging period chosen in advance to be as close to start of regulatory period
- Drives most of the change in ROE estimates

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Equity Beta

- AER uses historical data and recent reports to estimate value of Beta
- Based on data from regulated assets of Australian companies
- Has remained at 0.7 since 2013 rate of return guideline

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Market Risk Premium

- Return on the market above the risk free rate
- AER uses largely historical data to form a point estimate
- Other inputs such as DGM, other regulators and market variables are used to make sure the MRP makes sense
- Has remained at 6.5% since 2013 guideline

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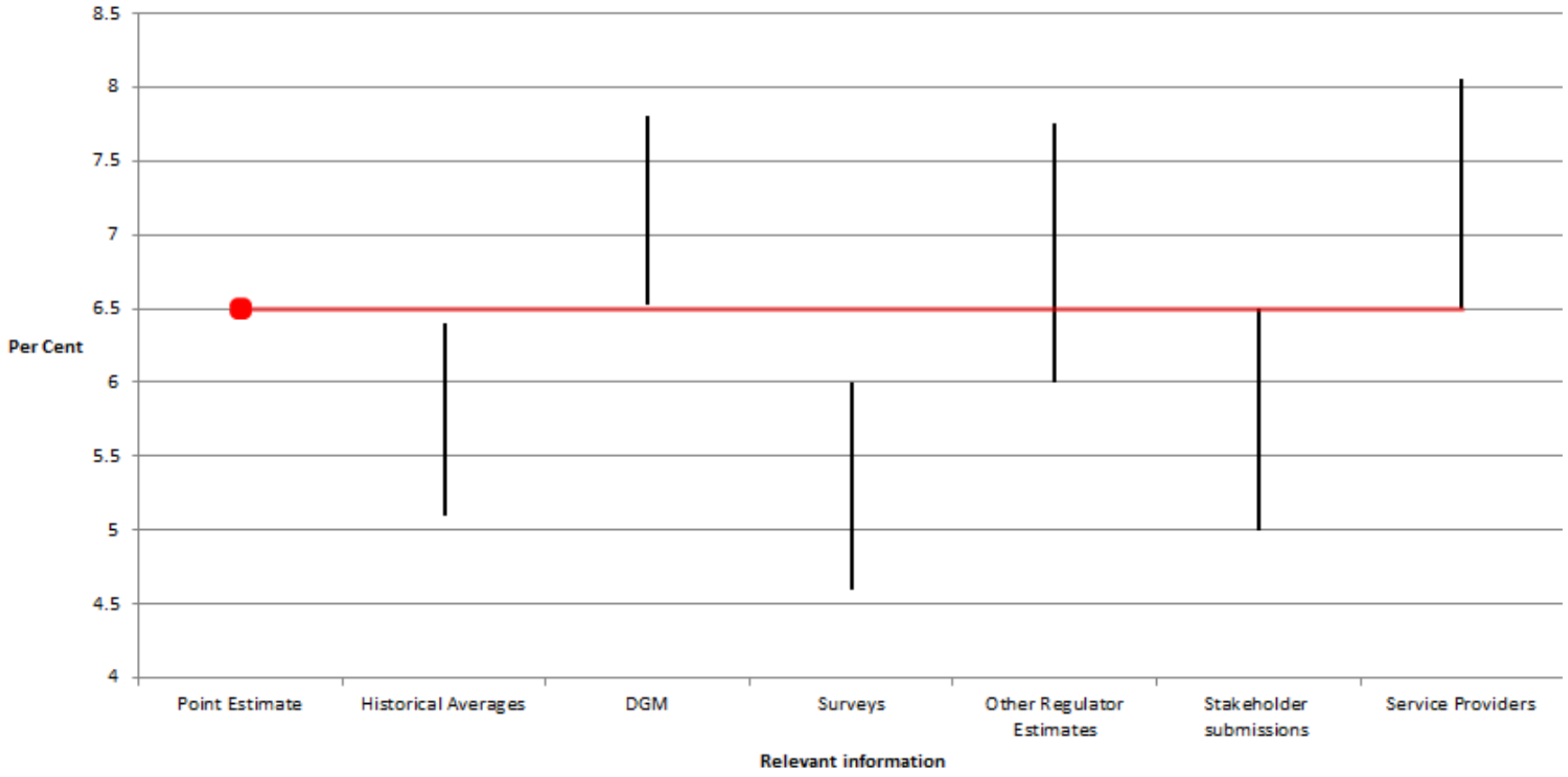
Market Risk Premium



SL CAPM

Return on Equity =

(Market Risk Premium * Beta) + Risk Free Rate

(6.5% * 0.7) + 2.6% = 7.2%

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Return on debt

Return on debt approach

- **On the day approach**: the prevailing cost of debt as close as possible to the start of the regulatory period
- **Trailing average approach**: an average of the cost of debt over 10 years (which is annually updated)
- The AER's approach: a gradual transition from the "on the day" approach to the "trailing average" by updating 10 per cent of the debt portfolio over 10 years
- Services providers' approach frequently proposed: adopt the trailing average approach without a transition (just results in a transfer)

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Return on debt approach

- 10 year term
- BBB+ credit rating
- Averaging period between 10 business days and 12 months in length before the start of each regulatory period, over which the observed rates are averaged to estimate the return on debt

Third party data series

- The AER adopted a simple average of :
  - the 10 year estimate from the non-financial corporate BBB rated data series published by the RBA (the RBA curve), and
  - the 10 year yield estimate from the Australian corporate BBB rated Bloomberg Valuation Service (BVAL) data series published by Bloomberg (the BVAL curve)
- Adjustments are made to the RBA and BVAL curves so that rates are consistent with the AER's 10 year benchmark debt term and can be applied across the dates of a service provider's averaging periods.

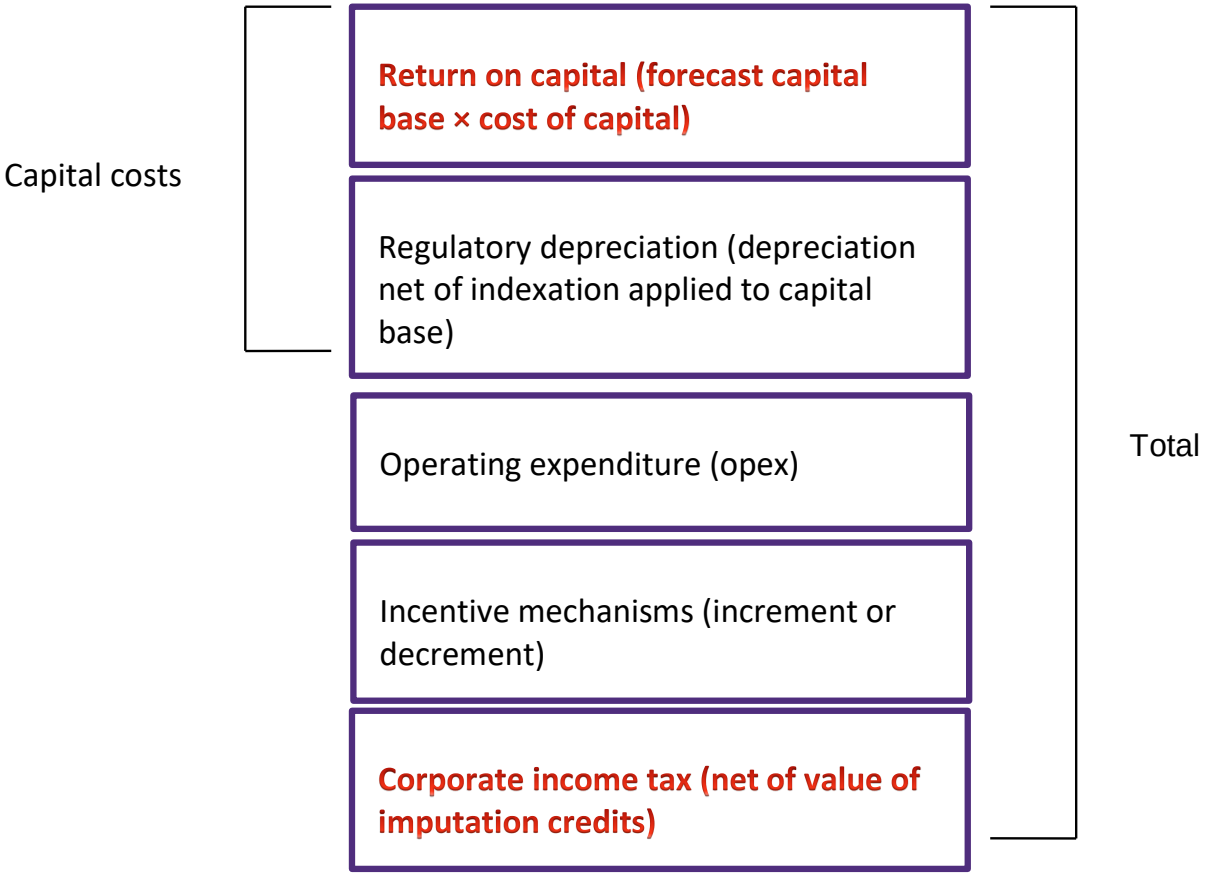
Value of imputation credits:

Gamma γ

Value of imputation credits (gamma)

- Under the Australian imputation tax system, eligible investors can receive an imputation credit for income tax paid at the company level to offset their Australian income tax liabilities
- Proportion of company tax returned to investors through the utilisation of imputation credits
- The product of two sub-parameters: the “distribution rate” and the “utilisation rate”
  - Distribution rate: the proportion of imputation credits generated that is distributed to investors (approach: cumulative payout ratio approach)
  - Utilisation rate: the utilisation value to investors in the market per dollar of imputation credits distributed (approach: equity ownership approach, tax statistics, implied market value studies….)
- The AER: 0.4 VS most businesses:0.25

How does Gamma affect the total revenue requirement ?



How does Gamma affect the total revenue requirement ?

1. Return on capital

- Imputation credits are a benefit to investors in addition to dividends and capital gains from owning shares
- When determining the return on equity, the Market Risk Premium (MRP) should be adjusted for the effect of imputation credits

How does Gamma affect the total revenue requirement ?

2.The corporate tax building block

- Taxation is one of the expenses of a service provider
- The value of the imputation credits reduce a service provider's tax liability by γ(gamma) dollars for each dollar of expected company tax payable
- The cost of corporate income tax building block takes the following form:

$$\boldsymbol{ETC_t = (ETI_t \times r_t)(1 - \gamma)}$$

where:

- $(ETI_t \times r_t)$ is an estimate of the benchmark efficient entity's tax liability.
- γ is the value of imputation credits.