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RISK FREE RETURN METHOD

For: Tax Working Group

From: Robert McLeod

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I have been asked to set out an explanation of the risk-free return method (RFRM) for taxing returns to risk from certain asset classes, as considered by the 2001 Tax Review (the McLeod Review).

Risk Free Return Method

1. The return on a financial asset for a period is calculated as (a) the sum of the period change in its market value plus the period cash flow divided by (b) the opening market value of the asset.
2. Returns can either be expected (ex ante or future) returns or actual (ex post or historical) returns.
3. The expected return on an asset can be divided between (a) the riskless rate and (b) a risk premium.
4. The riskless rate of return is the return on an asset that promises the same sure return in every eventuality.
5. Riskless rates of return are often approximated by those paid by the government on its borrowing. Other borrowers have to promise a premium over the government rate in order to entice lenders away from lending to the government.
6. Investors have differing personal risk appetites and valuations. The market risk premium is set by the marginal investor and issuer where there is alignment between personal and market values.
7. Using the example of a fair toss, assume a person is offered a bet that for heads he gets \$1m but for tails he pays \$1m. The expected value of the toss is nil. If the bet is taxed at 50% it becomes a \$500k bet with an expected value of nil. The tax has no effect on the taxpayer. The expected value is the same as the personal value of a risk neutral person. Because the dominant risk profile of investors is risk averse, most people are not indifferent between taking this bet and not betting. A risk averse person would have to be paid a risk premium to accept the bet (meaning it would otherwise have a negative value to that person). The bet might have to be altered to say, heads you get \$1.1m and tails you pay \$1m. The expected value of this bet is \$50k, but the market price of the bet will be 0.
8. If an investor can invest \$100 in the government for say a return of 3%, a non-government issuer may have to promise a risk premium of say 2% (total 5%) to attract that same \$100. Given that both securities have a market value of \$100 and the only two things differentiating them are (a) the differences in risk and (b) the premium to compensate for that difference in risk, it follows that the market value of those two things is nil (100-100).
9. To further develop this example, assume the following:
 - a. a flat tax rate on all taxpayers of 50%;

- b. a taxpayer holds two bonds. First, a government bond with a market value of \$9,000 bearing a coupon of 3%. Secondly, a corporate bond with a market value of \$1,000 bearing a coupon of 5%;
- c. the taxpayer has funded both bonds by way of equity of \$10,000;
- d. the tax system currently does not tax returns to risk.

10. The taxpayer's expected return and tax calculations are as follows:

Bonds	Principal	Return %	Pre-tax	Tax rate	Tax	Post-tax
		0.03	30	0.5	15	15
		0.02	20			20
Corporate	1000	0.05	50		15	35
Government	9000	0.03	270	0.5	135	135
	10000		320		150	170

11. The taxpayer's expected return on the corporate bond is 5%, 2 percentage points of which is compensation for the added risk over and above the government bond (which is the risk premium or return to risk). The remaining 3% expected return is the safe return to non-risk taking (sometime referred to as the return to riskless time). From an efficiency point of view, we can show that the government is economically *indifferent* to taxing the return to risk of 2% (being \$20 of the taxpayer's expected income).

12. Assume the government changes the tax system to impose a tax on risk. The calculation most people make assumes that the taxpayer doesn't change its bond portfolio, in which case, expected pre-tax income will be \$320 and expected post tax income will be \$160 (320×0.5), viz:

Bonds	Principal	Return %	Pre-tax	Tax rate	Tax	Post-tax
		0.03	30	0.5	15	15
		0.02	20	0.5	10	10
Corporate	1000	0.05	50		25	25
Government	9000	0.03	270	0.5	135	135
	10000		320		160	160

13. However, by the government taxing the risky return it actually decreases the riskiness of the taxpayer's risky bond because the government now also shares in the downside risks of the risky return to the extent of the tax rate. If the taxpayer prefers its original riskier/return position it can achieve that by grossing up its risky assets by a factor of 2 ($1/(1-0.5)$) from \$1,000 to \$2,000 and selling \$1,000 of corporate bonds, giving an expected pre-tax return of \$340 and an expected post-tax return of \$170, viz:

Bonds	Principal	Return %	Pre-tax	Tax rate	Tax	Post-tax
		0.03	60	0.5	30	30
		0.02	40	0.5	20	20
Corporate	2000	0.05	100		50	50
Government	8000	0.03	240	0.5	120	120
	10000		340		170	170

14. The risk/return portfolio in para 13 in a system of fully taxing returns to risk reinstates the taxpayer's precise risk/return position depicted in para 10 in a system of tax exempting returns to risk.
15. The government has higher tax revenue of \$20 under para 13 than para 10 but as stated at para 10, it also has increased its own risk as part of the change. The market value of the increased tax and the increased risk zeroes out to a nil market value.
16. Like the taxpayer, the government can also restore its original position by portfolio adjustment. It can also achieve exposure to the risky return by direct investment in risky assets funded by an issuance of government stock rather than by complicating the income tax system.
17. The above points can be further explained by reference to the above examples. The safe bonds have an expected return of 3% and a market value of \$1,000. The risky bonds have to offer an additional expected return of 2% (total 5%) in order to compensate an investor for the added risk of not acquiring the government bond. The difference in the expected returns of the two bonds is the risk premium of 2% whereas the difference in their market values is nil, meaning that the market value of the risk premium is also nil. The risk premium is the source of the governments' additional expected tax revenue. Others are making this same point when they refer to a capital gains tax increasing the volatility and riskiness of the government taxes.
18. The standard economic definition of income is Haig Simons. From an efficiency viewpoint, taxing that definition of income is the same as taxing the risk-free return on the market value of assets irrespective of actual returns, given that the only difference between them is tax on the risk premium which has zero market value. The Haig Simon system raises greater expected revenue since it taxes the risky component of returns whose expected value is positive (although this difference in expected tax revenue disappears once the economy engages in portfolio adjustment).
19. When considering the implications of the above analysis for a realised capital gains tax in New Zealand, the point is that to the extent that exempt capital gains are a return to risk, there is no efficiency benefit in taxing them. Furthermore, to the extent there is full portfolio adjustment in the economy, there will also be no revenue from taxing them.
20. In practice there will be various assets where full taxation is desirable, namely where the return to the asset is dominated by imputed returns, like an owner-occupied home, or where the asset return is dominated by an expected capital gain, such as a gold bar.
21. To illustrate the above point, take an asset such as rented residential property. It is not unusual for the rent income to be less than the riskless rate of return because the market price of the property impounds an expected capital gain. To illustrate, assume that the certain cash coupon on the land is 2%, the riskless rate of return is 3% and the expected rate of return is 8%. From this we can calculate that the risk premium is 5%. The current income tax system would tax only 2%, which is 1% less than the riskless rate of return. Obviously either an ex ante or Haig Simon's taxation would get us closer to efficient taxation.

22. The McLeod Review tried to identify specific assets that were systematically undertaxed and to address those with specific measures such as the RFRM. It identified equity in rental and owner-occupied houses as material examples. Having done that, the final question was whether a comprehensive capital gains tax was warranted. The practical capital gains tax option for countries is a realised capital gains tax with its concurrent lock-in and avoidance effects. By the time we reach this residual realm of untaxed capital gains (having regard to the many targeted measures introduced over the years), we are deep in risk premia country. Our question for the McLeod Review, which to my mind will be the same for the 2018 Tax Working Group, is whether trying to tax these remaining capital gains with a comprehensive capital gains tax would pass a marginal cost benefit test.

Questions and Answers

During the McLeod Review we worked through some anticipated Questions and Answers and these are repeated below:

1. We tax risk premia elsewhere so why not here?

We are indifferent to taxing risk premia from an efficiency viewpoint. Taxing it is neither good nor bad per se, but if you get no benefit from taxing it in under an idealised capital gains tax, why would you be keen to incur the economic costs of a realised capital gains tax? If there is flexible portfolio adjustment in the economy there would also be no revenue collected from taxing risk premia.

2. What about economic rents that we currently do not tax?

It would be important to know precisely what these are and if they are not taxed whether they should be, according to standard criteria, and if so whether a “rifle shot” mechanism (such as RFRM) is more appropriate than a comprehensive realised capital gains tax “shotgun”. An RFRM based on market value would impose tax on rents because rents would be capitalised into the asset’s market price upon which the RFRM would be calculated.

3. Why do we see realised capital gains taxes in other countries but not in NZ and why didn’t risk premia analysis prevent the spread of capital gains taxes?

Haig Simons is the major tax economic benchmark, which has been around for many years. Capital gains tax systems have also been around for many years. Tax economic analysis of RFRM and risk premia have not been part of the standard tax tools of tax policy for as long. Although not widely applied in tax policy, the relevant framework is well settled in the field of corporate finance and the CAPM.

4. Are there not systematic returns on assets that are not currently taxed in NZ?

Yes there are. However, their presence does not necessarily justify a comprehensive realised capital gains tax but may justify a specific measure depending on the asset and context.

5. What if a realised capital gains tax generates significant tax revenue?

Research would be required to determine what that tax base was picking up. Specific targeted measures may be still be superior. If that tax revenue is purely the expected value of risk premia, then the observation is irrelevant to tax policy because the government can access that revenue in ways that do not require it to incur the economic costs of a realised capital gains tax. This latter argument is reinforced by the adjustments that would be made by the public and private sectors to reinstate their pre-tax change portfolios.