Available online at www.sciencedirect.com
SCIENCE DIRECT®
Pacific-Basin Finance Journal 12 (2004) 291–310
PACIFIC-BASIN FINANCE JOURNAL
www.elsevier.com/locate/econbase

Tax-adjusted market risk premiums in New Zealand: 1931–2002

Martin Lally[a,*], Alastair Marsden[b]

[a] *School of Economics and Finance, Victoria University of Wellington, P.O. Box 600, Wellington, New Zealand*
[b] *Department of Accounting and Finance, University of Auckland, Auckland, New Zealand*

Received 17 October 2002; accepted 2 July 2003

Available online 11 December 2003

Abstract

This paper documents historical returns to equities and long-term government bonds, bond yields and inflation rates in New Zealand over the period 1931–2002. Personal tax rates on various types of investment income are also estimated. This data is used to estimate the market risk premiums in two forms of the capital asset pricing model (CAPM). In particular, the market risk premium in the standard CAPM is estimated using the Ibbotson [Ibbotson Associates, 2000. Stocks, bonds, bills and inflation: 2000 year book] methodology, yielding an estimate of 0.058 relative to long-term government bond returns and 0.055 relative to bond yields. In addition, in respect of the tax-adjusted version of the CAPM [Cliffe and Marsden, Pac. Account. Rev. 4 (1992) 1; Lally, Pac. Account. Rev. 4 (1992) 31] that is now widely used in New Zealand, the market risk premium is estimated using parallel methodology, yielding estimates of 0.074 relative to bond returns and 0.072 relative to bond yields.

JEL classification: G12
Keywords: Equity returns; Bond returns; Market risk premium; Equity risk premium

1. Introduction

The market risk premium is a parameter appearing in all versions of the capital asset pricing model (CAPM) and is equal to the excess of the expected return on the market portfolio of risky assets over the return on the risk-free asset (subject to tax adjustments in some versions). The parameter is of considerable practical importance to investors in

* Corresponding author. Tel.: +64-4-463-5998; fax: +64-4-463-5014.
E-mail address: martin.lally@vuw.ac.nz (M. Lally).

0927-538X/$ - see front matter © 2003 Elsevier B.V. All rights reserved.
doi:10.1016/j.pacfin.2003.07.003

their portfolio allocation decisions, and for estimation of a company's cost of equity capital under the widely used CAPM. The latter is significant in the valuation of companies, valuation of real investment projects and setting of fair rates of return for regulated firms.

The parameter has been estimated in a variety of ways, in a variety of markets and for various versions of the CAPM. The seminal work is that of Ibbotson and Sinquefield (1976), who estimate it for the standard version of the CAPM (Sharpe, 1964; Lintner, 1965; Mossin, 1966) in the US. They assume that the parameter is constant over time and therefore estimate it by averaging the ex-post outcomes over a long time period, i.e., by determining the excess of the actual market return for a year over the risk-free rate at the beginning of the year, and then averaging this margin over the period of study. Recent such estimates for the US, using data from 1926 to 1999, are between 0.080 and 0.095 (Ibbotson Associates, 2000). In respect of other markets, Dimson et al. (2002, Table 4) have estimated the premiums in the standard CAPM for 16 developed countries over the period 1900–2001, yielding results from 0.039 (Switzerland) to 0.100 (Japan) with an average of 0.054. This set does not include New Zealand. The only published estimates for New Zealand of the Ibbotson type are those of Chay et al. (1993, 1995), covering the period 1931–1994 and yielding an estimate of 0.065.[1]

The objectives of this study are as follows. First, we seek to update the work of Chay et al., to cover the period 1931–2002. Second, we seek an Ibbotson type estimate of the market risk premium in the tax-adjusted version of the CAPM that is widely used in New Zealand (Cliffe and Marsden, 1992; Lally, 1992). Unlike the standard version of the CAPM, this version acknowledges differential personal taxation of interest, dividends and capital gains.[2] The latter is favoured by the preferential tax treatment of dividends arising from the dividend imputation system in New Zealand, and also by the preferential tax treatment of capital gains arising from various exemptions and deferral of payment until realization. Furthermore, Lally and van Zijl (2003) show that, in the presence of differential taxation of sources of personal income, the use of the standard version of the CAPM can significantly mis-estimate the cost of equity capital. As far as we are aware, there is no published study in New Zealand that estimates the tax-adjusted market risk premium by the Ibbotson methodology.[3] Our results should therefore be of considerable interest to academics, investors, corporates and regulators.

The rest of this paper is structured as follows. Section 2 describes the process for estimating the market risk premium in the standard form of the CAPM, using data from the period 1931 to 2002. Section 3 then extends this to the tax-adjusted version of the CAPM.

[1] These three studies referred to here utilize varying periods, and therefore the results are not comparable. We mention them to illustrate the extent of other work in this area.

[2] This form of the CAPM extends Brennan (1970) to allow for dividend imputation. The model is widely used by NZ companies (such as Transpower and Telecom), practitioners, The Treasury (1997), The Ministry of Economic Development, and has recently been adopted by the Commerce Commission (2002).

[3] PricewaterhouseCoopers (2002) in an unpublished study estimated the tax-adjusted market risk premium to be 0.075 in New Zealand over the period 1925–2002. However, they do not fully disclose details of their methodology, and also simply assume that shareholders are always taxed on interest at the top marginal ordinary rate.