

Chapter 9

Simple Valuation of Compounded Deferred Tax Assets Using a Binomial Algorithm

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ABSTRACT

Deferred tax asset (DTA) is a tax/accounting concept that refers to an asset that may be used to reduce future tax liabilities of the holder. In a company's balance, it usually refers to situations where it has either overpaid taxes, paid taxes in advance, or has carry-over of losses (the latter being the most common situation). In fact, accounting and tax losses may be used to shield future profits from taxation, through tax loss carry-forwards. The purpose of this chapter is to propose a precise and conceptually sound approach to value DTAs. For that purpose, making use of an adapted binomial CRR (Cox, Ross, and Rubinstein) algorithm, the authors derive a precise way to value DTAs. This way, the DTAs are valued in a similar way of the binomial options pricing model, and the subjectivity of its evaluation is greatly reduced. The authors show that with the proposed evaluation techniques, the DTA's expected value will be much lower than the values normally used in today's practice, and the bank's financial analysis will lead to much more sound and realistic results.

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INTRODUCTION

The tax return of a company is based on its accounting financial statements. To provide comparable information, financial statements are prepared according to the International Financial Reporting Standards (IFRS), issued by the International Accounting Standards Board (IASB). The IASB was formed in 2001 to replace the International Accounting Standards Committee that issued International Accounting Standards (IAS). Since the previously issued IASs remain effective, we have that the main body of standards that are used worldwide by several countries are comprised of IFRSs and IASs. The companies' income, depicted by the IFRSs and IASs (referred to simply by the Generally Accepted Accounting Principles GAAP) are their accounting profits, but these may be (and are) different than the taxable profit, since the taxable profit is calculated as a function of the tax law inherent to each country. The number of factors that lead to differences between tax and accounting returns is huge and varies from country to country. One of those factors is of relevance to the present work – the deferral of taxes.

The relationship of DTAs with the creditworthiness of a company as already deserved some work from academic community. The effects of book-tax differences on a firm's credit risk were analysed in (Crabtree & Maher 2009), (Ayers et al. 2010), (Edwards 2011) and (Gallemore 2011); all agreeing that great amounts of deferred taxes were associated with higher risks and lower earnings quality, resulting in a decline of creditworthiness. Additionally, studies of the impact of DTAs on credit ratings led to the conclusion that deferred tax positions are substantial for many firms (between 5% and 10% of all assets according to (Poterba et al 2011)).

Under normal circumstances, a company's DTAs usually originate in the carry-over of losses (though it can also arise from overpaying some taxes). The corresponding rights are registered in the balance sheet as assets, although in (Amir and Sougiannis 1999) it also argued that DTA may have implications for the perception of the firm as a going concern (dubbed as the information effect), since if the DTA arose from past operating losses, future losses would be likely to incur; this means that future liabilities could be more than likely, and thus such "assets" should be regarded with great suspicion).

These assets may be hard to value, since they are time-limited and may never be used at all. Their value is contingent on the future earnings of the company, and they can be used to shield these future profits from taxation – IAS 12 states that "a DTA should be recognised for all deductible temporary differences, to the extent that it is probable that taxable profit will be available against which the deductible temporary difference can be utilised". Since corporate income taxation works on an annual basis, the shielding opportunities occur once a year. This is equivalent to saying that we are faced with a compound European option (or an annual Bermuda option)

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