BS2551 Money Banking and Finance

Company Valuation

More recently Ohlson (1990) has developed a model of valuation which gives a role to the book value of assets.This is important for a number of reasons:

1) In the Fama-French models of security pricing the book to market ratio plays an important role;

2) The framework for reporting the performance of companies adopted by most accounting
regulators (such as FASB, IASC and ASB) is heavily related to assets and liabilities, rather than earnings.

$$Pt = bt + R\text{-}1.xat+1 + R\text{-}2.xat+2 + R\text{-}3.xat+3\ R\text{-}4.xat+4 \ldots\ldots \quad (1)$$

Where Pt is the price of the asset, bt is the book value of assets, R is the discount factor and xat's represent excess earnings constructed from a typical asset pricing model, such as the CAPP.

1. Information dynamics

I - RESIDUAL INCOME AS A RANDOM WALK

Different writers use different assumptions about the information dynamics. However, a popular
one is that abnormal returns follow a random walk:

xat+1 = xat + vt+1

This is an optimistic assumption, since economic intuition suggests that excess returns are eventually eliminated, whereas a random walk is a non stationary series. If abnormal returns are specified as a random walk there is no tendency for them to go to zero over time. However, the specification is attractive because it gives simple mathematical solutions; one of its properties is that, at time t, the expected residual income for all future periods is the current value, xat. That is:

Et[xat+j] = xa

t for j = 1,2,3 ....

From equation (1), this gives the expected price as:

Pt = bt + R-1.xat+1 + R-2.xat+2 + R-3.xat+3 R-4.xa
t+4 ..... Equation (1)

Pt = bt + R-1.xat + R-2.xat + R-3.xat R-4.xat ....

= bt + xat / Rf (the residual can be summed as a geometric series)

$= bt + [xt / Rf] - bt\text{-}1$
$= [xt/ Rf] + [bt - bt\text{-}1]$ Equation (2)

This equation is the value of the company in the Ohlson model when residual income is a random walk; we shall refer to it as Ohlson-RW. It gives the price of company as the discounted current earnings + the change in book value from the previous period.

The first term in Ohlson-RW is the value of the company from its existing assets.

Therefore the second term of Ohlson-RW, the change in book value (bt - bt-1), can be seen as an estimate of value from future assets, since both valuation equations are derived from the discounted dividend model.

In fact this result is quite informative. Recall that equation 2 is an optimistic version of Ohlson,
since abnormal profits do not tend to zero.