

## Addition to 8<sup>th</sup> & Prior Editions of Exam FM/2 Manual – “Cost of Carry”

In past FM/2 exams, there have been questions on the “cost of carry”, which is covered by McDonald (page 141 of the 2<sup>nd</sup> edition) but not by the 8<sup>th</sup> and prior editions of ASM’s Exam FM/2 manual. (This topic is covered in the 9<sup>th</sup> and later editions.)

The following item on the “cost of carry” has been added to the end of section 18c (“Pricing a Forward Contract”) of the 9<sup>th</sup> edition:

### Cost of Carry

Recall the forward price formula for a stock index which pays continuous dividends:  $F_{0,T} = S_0 e^{(r-\delta)T}$ . The difference between the risk-free rate and the dividend yield ( $r - \delta$ ) is called the *cost of carry*, and it represents the net cost of financing the position in the asset.

Consider an example (where we let  $r$  and  $\delta$  be effective annual rates, for simplicity and educational transparency). Suppose that the current price of a stock index is \$100, the risk-free rate of interest is 4.5%, and the stock index’s dividend yield is 2%. Suppose you want to purchase and own the index for one year, and you borrow \$100 at the risk-free rate in order to do so. With the borrowings, you purchase the index, and will owe \$104.50 at the end of the year, i.e., you will pay interest of \$4.50. Partially offsetting that interest charge is the \$2.00 in dividends at the end of the year. The difference, \$2.50, represents the net cost of financing, or carrying, the asset for the year.

In the opposite situation, where you short the stock index and invest the short proceeds at the risk-free rate – and thus owe the lender any dividends paid on the index during the short sale period – the  $\delta$  is referred to as the *lease rate*, which is paid to the lender of the asset.

Thus, another way of referring to the cost of carry is: the interest rate at which the asset is carried, minus the lease rate on the asset.