

EXAM FM QUESTIONS OF THE WEEK

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Week of March 3/08

Based on the current term structure of interest rates we have the following values today for increasing perpetuities-immediate.

Increasing perpetuity-immediate: 168.8568

One-year deferred increasing perpetuity-immediate: 156.3195

Two-year deferred increasing perpetuity-immediate: 144.7256

Three-year deferred increasing perpetuity-immediate: 134.0051

Find the annual effective yield for a 2-year zero-coupon bond.

The solution can be found below.

Week of March 3/08 - Solution

The following time diagram indicates the series of payments and their pv's at time 0:

Series	PV at time 0	Time →	1	2	3	4	5	6	...
1	168.8568		1	2	3	4	5	6	
2	156.3195			1	2	3	4	5	
3	144.7256				1	2	3	4	
4	134.0051					1	2	3	

From the time diagram we see the following:

Series 1 minus Series 2 is a level perpetuity-immediate of 1 per year with pv 12.5373 ,

Series 2 minus Series 3 is a level one-year deferred perpetuity-immediate of 1 per year with pv 11.5939 , and

Series 3 minus Series 4 is a level one-year deferred perpetuity-immediate of 1 per year with pv 10.7205 .

Then (Series 2 minus Series 3) minus (Series 3 minus Series 4)

is the pv of a single payment at time 2. This pv is

$$156.3195 - 144.7256 - (144.7256 - 134.0051) = .8734 = \frac{1}{(1+j)^2}$$

where j is the annual effective yield for a 2-year zero-coupon bond.

Solving for j results in $j = .070$.