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**Assignment of: Financial Risk Management**

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**Question 1:**

**Answer:**

We will solve this question with the help of this formula:

Value of discount bond = $\frac{paymnet at maturity}{(1+market interest rate)n}$

|  |
| --- |
| Interest rate One year pure Discount Bond Five years pure Discount Bond |
| 8% 2037.03 = $\frac{2200}{1.08}$ $\frac{3221.02}{\left(1.08\right)^{5}}$ 2192.21 = $\frac{3221.02}{1.4693}$ |
| 10% 2,000 = $\frac{2200}{1.1}$ $\frac{3221.02}{\left(1.1\right)^{5}}$ 2,000.01 = $\frac{3221.02}{1.6105}$  |
| 12% 1964.28 = $\frac{2200}{1.12}$ $\frac{3221.02}{\left(1.12\right)^{5}}$ 1827.73 = $\frac{3221.02}{1.7623}$ |

**Question 2:**

**Part: A**

**Answer:**

The long duration bonds are more risky than short duration bonds. Because whenever when interest rate fluctuate, it effects on long duration bonds more than short duration.

There is a greater probability that interest rates will rise (and thus negatively affect a bond's market price) within a longer time period than within a shorter period. As a result, investors who buy long-term bonds but then attempt to sell them before maturity may be faced with a deeply discounted market price when they want to sell their bonds. With short-term bonds, this risk is not as significant because interest rates are less likely to substantially change in the short term. Short-term bonds are also easier to hold until maturity.

Long-term bonds have a greater duration than short-term bonds. Duration measures the sensitivity of a bond's price to changes in interest rates. For instance, a bond with a duration of 2.0 will lose $2 for every 1% increase in rates. Because of this, a given interest rate change will have a greater effect on long-term bonds than on short-term bonds. This concept of duration can be difficult to conceptualize but just think of it as the length of time that your bond will be affected by an interest rate change.

 Let’s understand it with the help of example: suppose interest rates rise today by 0.25%. A bond with only one coupon payment left until maturity will be underpaying the investor by 0.25% for only one coupon payment. On the other hand, a bond with 20 coupon payments left will be underpaying the investor for a much longer period. This difference in remaining payments will cause a greater drop in a long-term bond's price than it will in a short-term bond's price when interest rates rise.

So thus the prices of risky bonds fluctuate more than less risky bonds.

**Question 2:**

**Part: B**

**Answer:**

You are long in the cash market. So for engaging in a risk minimizing hedge you should take a short position in the futures market. Concerning the number of contracts:

 So here we will use this formula for finding the risk minimizing contracts.

NḞ = $\frac{QS}{QF}$ $\frac{△S}{△F}$

 NḞ = (1500/200) (0.70/1.0)

 NḞ = 7.5 X 0.7

 NḞ = 5.25

So by using this formula we found that the risk minimizing contracts are 5.25

Note: It is important here that we are assuming that the relationship between the change in the spot price and changes in the future price will remain the same (i.e., at 0.70 to 1.00) over the time period we are hedging.

**Question 3:**

**Answer:**

**Duration = 5 year**

**Coupon bond = 1%**

**Step 1:**

**Year Payment present value of payment by discounting at 1%**

**1 $ 1 $ 0.9900**

**2 1 0.980**

**3 1 0.97059**

**4 1 0.96098**

**5 101 96.098**

**Step: 2**

**Year Payment Present Value of payment Relative Value=**$\frac{present value of payment}{value of bond}$

**1 $ 1 $ 0.9900 $ 0.9900/100 = 0.0099**

**2 1 0.980 0.0098**

**3 1 0.97059 0.0097059**

**4 1 0.96098 0.0096098**

**5 101 96.098 0.96098**

 **$100 1.0**

**Step: 3**

**Year Relative Value Year x Relative Value**

**1 0.0099 0.0099**

**2 0.0098 0.0196**

**3 0.0097059 0.0291177**

**4 0.0096098 0.0384392**

**5 0.96098 4.8049**

 **4.9019**

**The affective maturity of 5 years 1% bond is 4.9019 years.**

**Question 4:**

**Part: A**

**Answer:**

In the expert system the credit decision is left to be taken by branch lending officer. The branch lending officer grand credit on the basis of his expertise, subjective judgment and weighting other certain key factors. Despite of major short comings banks are still using it because the branch lending officer of that specific area is well aware of his customers and the area, and he better can evaluate the riskiness of the credit to be granted.

Example: Allied Bank using Expert System to grant credit in which their credit risk officer after evaluating each and everything grant the loan.

**Question 4:**

**Part: B**

**Answer:**

Standardize Rating approach weight the loan secured by mortgages on residential property at 35% because a residential property occupied by the browser or on rent is easy to be acquired in response of failure of credit return but on the contrary the commercial property has been a recurring cause of troubled asset in banking industry over the past few decades , the Basel Committee holds to the view that mortgages on commercial real estate do not, in principle, justify other than a 100% weighting of the loans secured and it’s very difficult for banks to vacate commercial properties so their risk is weighted 100% by Basel committee.

**Question 4:**

**Part: C**

**Answer:**

It is not suitable. Because his problem is not of the price, his problem is of the weather and the weather is systematic risk and we can’t control systematic risk. And we can’t hedge the weather through future contract. So that is uncontrollable.

For example: If he hedge crops through contract and after the weather damage his all crops, so then what he would do with contract. Because exchange will see that he got contract and then came on side from contract then exchange will take him in black list.

So if weather create significant uncertainty about volume of the crops, then future contracts are not appropriate in this condition. And he may face more problem with future contract plus weather as the prices are expected to rise in weather is bad.

So for every time of problems future contract is not appropriate.

**The End.**