Time value of money essay

Finance

1. In two to three paragraphs, explain why the concept of present value is so important for corporate finance and is often the very first topic taught in any finance class. Answer: Concept of present value basically means that the money received today is worth more than the same sum received in the future i. e. Money has a time value therefore money that is to be received in the future needs to be discounted at the present value using the appropriate discount or interest rate.

This is an important concept in finance. If a capital investment is to be justified, it needs to earn at least a minimum amount of profit, so the return compensates the investor for both the amount invested and also the length of time before the profits are made. Another reason why the future income needs to be discounted at the present value is the impact of inflation.

In most recent years prices have been seen rising as a result of inflation. Therefore funds received today will buy more than the same amount a year later, as prices will have risen in the meantime. The funds are subject to a loss of purchasing power over time. 2. Calculation of Future Value: Formula for the calculation of Future Value is: FV = PV × (1 + i) t Where FV is the future value after t periodsPV is the present or initial value.

i is the rate of interest per period. t is the time in years Using this formula in the question: a) $500 if invested for five years at a 5% interest rate FV = PV × (1 + i) t FV = 500 × (1 + 0. 05) 5 FV = 500 × 1. 276 FV = $ 638 b) $700 if invested for three years at a 2% interest rate FV = PV × (1 + i) t FV = 700 × (1 + 0. 02) 3 FV = 700 × 1. 061 FV = $ 742. 7 c) $1200 if invested

for seven years at an 11% interest rate FV = PV × (1 + i) t FV = 1200 × (1 + 0. 11) 7 FV = 1200 × 2.

076 FV = $ 2491. 2 d) $400 if invested for ten years with a 0% interest rate Since the rate of Interest is 0%, the future value will be equal to the present value i. e. $ 400 3. Calculation of Present Value: Formula for the calculation of Present Value is: PV = FV ÷ (1 + i) t Where PV is the present or initial valueFV is the future value after t periodsi is the rate of interest per period. t is the time in years Using this formula in the question: a) $2400 to be received three years from now with a 4% discount rate PV = FV ÷ (1 + i) t PV = 2, 400 ÷ (1 + 0. 04) 3 PV = 2, 400 ÷ 1. 125 PV = $ 2, 133.

33 b) $900 to be received five years from now with a 10% interest rate PV = FV ÷ (1 + i) t PV = 900 ÷ (1 + 0. 1) 5 PV = 900 ÷ 1. 610 PV = $ 559 c) $1150 to received two years from now with a 24% interest rate PV = FV ÷ (1 + i) t PV = 1, 150 ÷ (1 + 0. 24) 2 PV = 1, 150 ÷ 1. 538 PV = $ 747. 72 d) $45, 000 to be received eight years from now with a 7% interest rate PV = FV ÷ (1 + i) t PV = $ 45, 000 ÷ (1 + 0. 07) 8 PV = $ 45, 000 ÷ 1.

718 PV = $ 26, 193 4. Suppose you are to receive a stream of annual payments (also called an `annuity`) of $7000 every year for three years starting this year. The discount rate is 6%. What is the present value of these three payments? Answer: The formula for Present Value of Annuity is: PV = Payment per Period × (1 – (1 + i)-t)i Where PV is the present of the annuityi is the rate of interest per period. t is the time in yearsThis formula changes if the first payment is to be received immediately. The new formula

would be: PV = Payment per Period × (1 + (1 – (1 + i)-(t – 1)))i Using this formula in the question: PV = Payment per Period × (1 + (1 – (1 + i)-(t – 1)))i PV = 7, 000 × (1 + (1 – (1 + 0. 06)-(3-1)))0.

06PV = 7, 000 × (1 + (1 – (1. 06)-2))0. 06 PV = 7, 000 × (1 + (1 – (1. 06)-2))0. 06 PV = 7, 000 × (1 + 1.

833) PV = 7, 000 × 2. 833 PV = $ 19, 831 5. Suppose you are to receive a payment of $4000 every year for three years. You are depositing these payments in a bank account that pays 3% interest. Given these three payments and this interest rate, how much will be in your bank account in three years? Answer: Year 1Payment Received 4, 000Interest Earned at 3% 120Total after 1 Year 4, 120 Year 2Payment Received 4, 000Total at the start of Year 2 8, 120Interest Earned at 3% 243. 6Total after 2 Years 8363. 6 Year 3Payment Received 4, 000Total at the start of Year 3 12, 363.

6Interest Earned at 3% 370. 9Total after 3 Years 12, 734. 5 12, 734. 5 will be the total amount in the bank account after 3 years. References Shauna Carther. (2008) Understanding The Time Value Of Money.

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