

# Fixed Income HW1

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$$1. \text{ price} = \sum_{i=1}^{25 \times 2} \frac{50}{(1+1\%)^i} + \frac{1000}{(1+1\%)^{50}} \approx 2567.84$$

$$2. \text{ perpetuity} = \frac{6.25}{3.5\%} = 178.57$$

$$3. \text{ FV} = 1,000,000 \times (1 + \frac{4\%}{12})^{120} + \sum_{i=0}^{119} 14000 \times (1 + \frac{4\%}{12})^i$$

$$= 3,552,329.95$$

$$4. D = \$10 \quad r = 12\% \quad g = 3\%$$

$$\text{price} = \frac{D}{r-g} = \$111.11$$

5. Present value of first 5 cash flows.

$$\text{PVGA} = \frac{1000}{r-g} \left[ 1 - \frac{(1+g)^N}{(1+r)^N} \right] = 5477.02$$

Present value of following 25 cash flows.

$$\text{PVA} = \frac{1000 \times 1.1^5}{r} \left[ 1 - \frac{1}{(1+r)^{25}} \right] / (1+r)^5$$

$$= 22349.03$$

$$\text{Total present value} = 5477.02 + 22349.03 = 27826.05$$

$$6. \text{ value} = \frac{10,000}{r} \left( 1 - \frac{1}{(1+r)^{25}} \right) / (1+r)^{20}$$

$$= 96412.38$$

$$7. 893.22 = \sum_{i=1}^{20} \frac{60}{(1+r)^i} + \frac{1000}{(1+r)^{20}}$$

$$r = 7\%$$