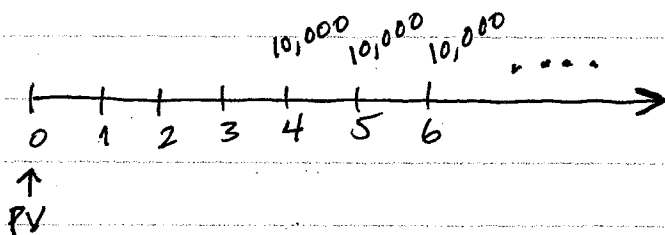


Mathematical Theory of Interest  
 Exercise from class, Monday, April 6, 2015 Spring '15



$$\begin{aligned}
 \text{a) } PV &= 10,000 \cdot {}_3|a_{\overline{\infty}|0.05} && (= 10,000 \cdot {}_4\ddot{a}_{\overline{\infty}|0.5}) \\
 &= \frac{10,000}{0.05} \left( \frac{1}{1.05^3} \right) \\
 &\approx \$172,767.52
 \end{aligned}$$

In this case, the deferred perpetuity is worth more than a payment of \$160,000 immediately.

$$\begin{aligned}
 \text{b) } PV &= 10,000 \cdot {}_3|a_{\overline{\infty}|0.06} && (= 10,000 \cdot {}_4\ddot{a}_{\overline{\infty}|0.06}) \\
 &= \frac{10,000}{0.06} \left( \frac{1}{1.06^3} \right) \\
 &\approx \$139,936.55
 \end{aligned}$$

In this case, \$160,000 immediately has greater present value.

c) Sidney should also consider how much she needs the money now, the difference in tax liability, reliability of the financial institution which would be paying the perpetuity, her life expectancy, ...