Teaching and Educational note

Revealing money's time value

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Abstract

Few accounting concepts are as challenging as valuation and the time value of money. Few are as powerful or useful. Measurement and valuation issues are central to the study of accounting, and developing students' understanding of basic valuation concepts like the time value of money is critical. The purpose of this paper is to provide instructional resources to help build students' valuation skills by revealing the (1) power, (2) concepts, and (3) application of the time value of money and basic valuation concepts. Three tools are presented. The first reveals the evolution and impact of financial markets like the bond market and their requisite need for mathematics and the time value of money. The exercise uses a video accompanied with questions that are intended to act as a "hook" to capture student interest in lending and the time value of money. The second tool reveals concepts of bond financing, valuation and the time value of money. It begins with familiar time-value-of-money concepts and logically progresses. Each step uses intuition from prior steps to methodically build concepts in a discovery-learning process. The steps ignore bond terminology until the intuition between cash flows, interest rates, and purchase prices has been established. The third tool has students apply time-value-of-money and valuation concepts to plan and account for personal retirement assets. The exercise demonstrates the applicable usefulness and practical value of the time value of money and basic valuation skills. It can spark use of these concepts to empower fiscal responsibility and self-sufficiency. In sum, the article provides a small arsenal of exercises for delivering time value of money and valuation material. The exercises can be used collectively or individually depending on instructor preference and course parameters.

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1. Introduction

Measurement of assets and liabilities, such as bonds, is an important part of accounting. The Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) have standardized ‘fair value’ accounting and valuation measurements (Rapoport, 2011). A move toward a ‘fair value’ accounting model requires practitioner valuation and measurement skills. To prepare for the profession, young accounting students need to build strong valuation and time-value-of-money skills to measure and account for assets and liabilities, such as bonds.

In spite of the importance of measurement and valuation techniques, instructors and students often find time-value-of-money concepts challenging to teach (Dempsey, 2003) and learn (Schadler & Wertheim, 1995). Many introductory (e.g., Harrison, Horngren, & Thomas, 2010) and intermediate (e.g., Kieso, Weygandt, & Warfield, 2010) accounting texts include bond valuation and time-value-of-money material. Dempsey (2003), however, posits that traditional approaches inherently hinder understanding. Instead, he advocates use of intuition and uses mathematical formulas to convey time-value-of-money's intuitive concepts. This article extends Dempsey’s (2003) work and the appeals to intuition by presenting a small arsenal of three exercises intended to stimulate interest, intuition, and insight into the usefulness and practicality of basic valuation concepts like the time-value-of-money.

The three exercises reveal (1) the importance and power, (2) concepts, and (3) applications of the time value of money and valuation ideas. The first exercise attempts to spark student interest in time-value-of-money and valuation material by using a video on money’s role in history to show why the time value of money is important. History’s events needed capital markets, such as the bond market, to provide the required money to fund activities. Operations in these markets required valuation mathematics such as the time value of money. Therefore, time-value-of-money mathematics played an important role in enabling capital markets, such as the bond market, and, as a result, history’s events. Revealing the importance of the time value of money is intended to help motivate student interest.

The second exercise is intended to help instructors think about how they present valuation concepts. It uses discovery learning techniques to intuitively reveal concepts of bond financing and the time value of money. Beginning with familiar time-value-of-money concepts, it logically progresses with subsequent steps building on intuition gained from prior steps. The objective is to help students discover relationships between cash flows, interest rates, and investment values. The clutter of traditional bond terminology is intentionally withheld until these relationships have been established. This approach helps students focus attention on discovering the valuation relationships between cash flows, interest rates, and investment values.

The third exercise helps students realize the applicability and practicality of time value of money and valuation concepts. It is a retirement-planning exercise where students use the time value of money to value future retirement assets based on projected contributions and earnings rates. Students then use the time value of money to estimate future retirement distributions from projected retirement assets. The exercise helps students discover the usefulness of these time-value-of-money and valuation concepts.

The versatile exercises provide instructional resources to use in introductory and other accounting courses to help build important valuation and measurement skills. The resources are designed to help instructors fill instructional holes. Instructors can flexibly modify and use these exercises collectively or individually depending on instructor preference and course parameters.

The next sections present the three exercises and are followed by a conclusion.

2. Exercise 1: Revealing the power of the time value of money

2.1. Objective and use

The purpose of this exercise is to spark student interest in learning valuation skills such as the time value of money by showing the importance of these skills in history and in the operation of financial markets. The exercise uses a video on money's role in history as a “hook” to capture student attention.
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