

ACCOUNTING EDUCATION: PERPETUATING THE OBSOLETE

Sheldon Smith
Utah Valley State College

Rich Henage
Utah Valley State College

Steve Johnson
Utah Valley State College

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When handheld calculators capable of performing logarithmic and trigonometric functions became widely available in the 1970s, few could foresee the far-reaching effects this development would have on the way the world performs its calculations. The explosive growth of the calculator market forced the largest producer of slide rules to abandon the product line in 1975 (Redin, 2000). Despite the demise of the slide rule, educators in math, science and engineering fought the trend. Many educators did not quit teaching the slide rule until it became impossible for students to gain access to the outdated relics in the late 1970s.

A similar outcome affected business and accounting. Prior to the introduction of the financial calculator, time value of money (TVM) calculations were often performed by using any of a myriad of hard-bound books of interest tables. By the late 1970s, none of these books were available on the market.

Unlike professors of math, science, and engineering, who were forced to watch the availability of the old slide-rule technology dry up, finance and accounting academics found that they could side-step the trend by continuing to publish limited TVM tables as appendices of their textbooks. While these tables are insufficient to handle the wide variety of interest rates and time periods needed for “real-world” financial problems, the tables were sufficient for textbook authors to produce a limited set of TVM homework problems and test questions for which answers could be sought in the tables. The facts that (1) financial calculators are faster and more accurate than tables, and (2) no business students end up in careers requiring them to have a mastery of TVM tables, have had little effect on the way TVM is taught in college and university accounting courses. The way time value of money concepts are taught in accounting is consistent with the findings of the Bedford Committee report (AAA, 1986) and a recent study by Albrecht

and Sack (AAA, 2000) that accounting education has not kept pace with the changes that are occurring in the business world. Why do many accounting textbooks and college accounting courses still focus on the use of tables when calculators are more accurate, quicker, and widely available? Why is there seemingly such a reluctance to change from tables to calculators? Why do accounting teachers insist on teaching TVM concepts with tables when the students will never again use tables once they start their careers? Two possible explanations are a reluctance to change teaching methods and the CPA exam methodology.

Reluctance to change

With almost any pedagogical tool, there is inertia against change. Simple, rational reasons given for improved methods, even when supported by empirical research, are not necessarily adequate for overcoming the inertia. Teaching a concept the way it was learned is typical. Sometimes, professors only know how to teach concepts the way they learned them. Reluctance to learn new technology and apply it in the classroom is often present. Professors who have allowed technology to get ahead of them may be unable to use financial calculators; these teachers will certainly not be anxious to attempt to use them in the classroom without a strong external factor motivating their change.

Time value of money concepts are taught in both financial and managerial accounting courses in connection with accounting for investments, debt securities, pensions, leases, and capital budgeting. These concepts can be taught using mathematical formulas, present/future value tables, calculators, and/or spreadsheets. Assuming that the time value of money is taught mainly from the textbook, one may conclude that accounting instructors teach this fundamental concept using primarily the time value of money tables. In addition, instructors might possibly introduce how the factors in the tables are derived using the mathematical formulas.

Unfortunately, these are not the tools used by accountants in the business world to perform calculations using the time value of money. In a review of fifteen intermediate and cost accounting textbooks, only half of the textbooks reviewed contain any instruction on the use of financial calculators, and the coverage is generally very brief. This may be due in part to the fact that the different financial calculators each require different keystrokes in performing the same calculations. However, unless accounting instructors are taking the time to go outside of the textbook to teach or require the use of financial calculators in class, students are not likely to learn the required skills they will need in the business world.

Stice (2003), a co-author of an intermediate financial accounting textbook, gave his opinion that TVM concepts are not high on the priority list of topics that sell intermediate textbooks. Ultimately, this topic receives very little attention. It is likely that the majority of instructors today use the present/future value tables to teach time value of money, and removing the tables would not be well received by instructors.

The challenge of diversity in using financial calculators in a classroom where the students have different financial calculators is lessened if computer spreadsheets are used in applying time value of money concepts as there are only a couple of spreadsheet programs that are commonly used. It seems reasonable for textbook authors to illustrate the use of Microsoft Excel in solving time value of money problems in their textbooks.¹

From a pedagogical viewpoint and even despite the diversity in financial calculators used today, it may be easier to use calculators than spreadsheets in teaching TVM applications in accounting classes for the following reasons: (1) junior-level intermediate financial accounting

¹In fact, the computer-based CPA exam on-line tutorial shows a spreadsheet program that seems to function similar to Excel, so it appears that those developing the new CPA exam agree that Excel is fairly standard in use whereas the multiple financial calculators available are not.

classes and managerial accounting classes may have few in-class computer applications, thus making it likely that these classes are not scheduled to be taught in computer labs where students will have use of computer spreadsheets during the class period, (2) even if the classes are scheduled in classrooms where the teacher has access to a computer and projector, this does not allow hands-on learning of the principles, (3) testing environments for accounting classes are not likely equipped with available computers and spreadsheet software in many cases, whereas financial calculators could be allowed in a testing environment, (4) financial calculators can be required of the students and used in any classroom with no additional technology resource requirements for the particular classroom where the class is held.

CPA Exam

Whether it is a driver of the continued use of TVM tables or simply a justification for the existing inertia against change, the CPA exam likely plays a role in how TVM concepts are taught in accounting classes. Even though financial calculators have been in common use for over 25 years, candidates sitting for the CPA exam have never yet been allowed to use them. The calculators currently in use for the CPA exam have no financial functions.

Most accounting academics agree with the Accounting Education Change Commission that “accounting programs should not focus primarily on preparation for professional examinations” (AECC, Position Statement No. One, 4). If the methods used on the CPA exam do not reflect what a successful professional must know, perhaps the exam should be changed. In fact, the CPA exam has changed to include simulations - “relational case studies that will test candidates’ accounting knowledge and skills using real life work-related situations

(http://www.cpa-exam.org/cpa/computer_faqs_2.html, accessed 3/26/03).

An earlier version of the CPA Computer-Based Examination FAQs indicated that “CPA

candidates are expected to know how to use common spreadsheet and word processing functions, including writing formulae for spreadsheets. They must also have the ability to use a financial calculator or a spreadsheet to perform standard financial calculations” (http://www.cpa-exam.org/cpa/computer_faqs_2.html, accessed 3/26/03). However, a more recent version of that on-line document has replaced the word “financial” with “four-function” (http://www.cpa-exam.org/cpa/computer_faqs_2.html, accessed 10/31/03). Thus, it appears that the previous consideration to incorporate a financial calculator was dropped. Gregory Johnson, the AICPA Director of the CPA Examination said that “The financial calculator was not implemented because there was no standard type that everyone would be familiar with” (Johnson, 2003).

TVM tables are also provided as an on-line resource for the computer-based CPA exam for those simulations that may require TVM calculations (http://www.cpa-exam.org/cpa/computer_faqs_2.html, accessed 3/26/03). Thus, CPA exam candidates will be able to choose whether to use the on-line spreadsheet or the TVM tables and on-line calculator to perform TVM calculations where required. This implies that the scope of TVM calculations required in the simulations will need to be restricted because of the limitations on the listing of interest rates and number of periods provided in the on-line TVM tables, limiting the amount of “real life work-related situations” in the exam. Since the CPA exam will still allow the use of TVM tables, it is unclear whether or not the new computer-based CPA exam will drive any changes in the way TVM applications are taught in textbooks and in classrooms.

Textbooks will evolve over time, but the present/future value tables may not disappear soon. Stice (2003) indicated that the CPA exam does not factor much in how TVM concepts are covered in the intermediate textbook he co-authored. However, he did say that if those administering the CPA exam immediately implemented a rule that no tables would be allowed,

this would bring about more rapid change in the accounting textbooks. Finally, when asked if it would be easier or harder to write textbook material covering the time value of money with calculators rather than present/future value tables, Stice said that covering the material with calculators would be much easier.

Conclusion

It seems that a pedagogical change away from tables is long overdue. The AICPA could play a significant role in inspiring this change by eliminating the use of time value tables from all exams. This change could be made soon as one of the ongoing improvements to the computer-based exam to make it more up to date and relevant to entrance into the accounting profession. In accomplishing this change, it would be important that the AICPA work with the academic community in making the change. Textbook authors should be given details regarding future exam requirements at the earliest possible time so educators can use teaching methods that best reflect professional and exam requirements.

While teaching TVM concepts with calculators has some challenges, if the AICPA and the academic community were to embrace the idea that the concept of TVM tables is outdated, the obstacles could be surmounted. The focus of textbooks and ancillary materials would begin changing from tables to calculators and computers. Financial calculators could be provided for the CPA exam. Hewlett Packard, Texas Instruments, and Sharp would likely be willing to provide either electronic, on-line versions or hand-held models at the testing sites as a means of insuring that their financial calculators would still have a market among accounting students and professionals. Accounting students would obtain and master the use of financial calculators early in their academic careers and would also learn how to use spreadsheets to perform TVM calculations. The change to financial calculators and computer spreadsheets is not only

inevitable, but seriously past due.

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