NOTE

1. The applications shown in this article were downloaded from the app store. The Texas Instruments emulator appears as the "BA II Plus(tm) Financial Calculator (Texas Instruments)." The Hewlett Packard emulator appears as the"10BII Calc Financial Calculator (Ernest Brock)." The latter is now available in a combination pack- iPhone and iPad versions in one, for the same price of $5.99, called the "Hewlett Packard 10B II Calc HD". The combination version boasts HD graphics (which the iPad can take advantage of) and new worksheets with interactive graphs. The combination version was not included in our observations in this article.

Jose Gutierrez is an Assistant Professor of Finance, and Robert Stretcher is a Professor of Finance at Sam Houston State University.

Creating a Capital Budgeting Analysis Model in Excel

Jessica Collins, Robert Irons, and Robert Weigand

The reference document for this article is available on the Journal's website, www.jfcr.org/jitf.html. The reference document is a detailed, step-by-step guide to the model described infra.

We develop an exercise that guides students through the creation of a capital budgeting analysis model using Microsoft Excel. A capital budget is a pro forma forecast of the revenues, expenses, profits and after-tax free cash flows a new corporate investment is expected to generate. The analysis typically culminates with the calculation and interpretation of project evaluation criteria such as net present value (NPV), internal rate of return (IRR), modified internal rate of return (MIRR), payback period (PB) and discounted payback period (DPB). We also provide the following resources for instructors: 1.) spreadsheet templates, 2.) a fully-functioning spreadsheet answer key, and 3.) a detailed teaching manual with step-by-step instructions that, at the instructor's discretion, may be distributed to students so the exercise can be completed as a tutorial.

The use of applied exercises that feature experiential learning and emphasize the creation of outputs that meet real-world standards are becoming increasingly important as business schools work to overcome their reputation for "… graduating students who are ill-equipped to wrangle with complex, unquantifiable issues — in other words, the stuff of management" (Bennis and O'Toole, 2005). The National Survey of Student Engagement, a joint venture of the Carnegie Foundation and the Pew Charitable Trust, identified several best practices likely to enhance student engagement in business education. Among these are an emphasis on active and collaborative learning, increased student interaction with faculty members, and other "enriching educational experiences" (Burbridge, 2005). Our exercise is designed to address these issues. It allows students to engage in an experiential learning activity that provides them with an additional perspective on key finance concepts and calculations while developing their spreadsheet modeling skills.

OVERVIEW OF THE SPREADSHEET MODEL

In the model, students create a spreadsheet that calculates the annual after-tax cash flows and NPV, PB, DPB, IRR and MIRR for a 5 to 10-year capital investment project. The model requires students to calculate these metrics manually, rather than using the Excel functions. As part of the analysis, students are required to learn how to use Excel's Solver tool to calculate the project's IRR and MIRR. Students are also instructed to use Excel's Goal Seek and Scenario Manager tools for what-if analysis of the assigned capital budgeting problem. User-specified input data includes the initial investment, the expected first-year change in revenues, expenses and cannibalization, and the expected average annual growth rate (percentage change) of these items over the life of the project. The model permits flexibility in specifying project parameters such as project and depreciable life, choice of depreciation method, and the ability to model the change in revenues, expenses and cannibalization on a year-by-year basis.

The model is structured so that the analysis inputs, assumptions, calculations and criteria for evaluating projects are communicated to the end user in a professional and efficient manner. Students are provided with numerous tips and hints on how to add professional touches to their spreadsheets.

REFERENCES

Bennis, Warren G., and James O'Toole. "How Business Schools Lost Their Way." Harvard Business Review (May 2005).

Bouton, C., and R.Y. Garth (editors). Learning in Groups. New Directions for Teaching and Learning Series, No. 14. San Francisco, CA: Jossey-Bass Publishers (1983).

Burbridge, John. R. "Business Schools and the Concept of Student Engagement." Decision Line (March 2005), 15-17.

Burnett, J. "Using a Competitive Bid Problem to Teach Capital Budgeting." Journal of Applied Finance Fall/Winter (1995), 80-84.

Coleman, W. "Role-Playing as an Instructional Aid." Journal of Educational Psychology 39 (1948), 427-435.

Collier, G. The Arrangement of Peer Group Learning: Syndicate Methods in Higher Education. Guildford, England: Society for Research in Higher Education, (1983).

Grinyer, J., C. Sinclair, and D. Ibrahim. "Management Objectives in Capital Budgeting." Journal of Applied Finance Fall/Winter (1999), 12-22.

Johnson, D. W., and R. T. Johnson. Learning Together and Alone: Cooperation, Competition and Individualization. Englewood Cliffs, N.J.: Prentice-Hall, (1975).

Katzenback, J. R., and D. K. Smith. The Wisdom of Teams: Creating the High-Performance Organization. New York, N.Y.: HarperBusiness, (1993).

McKeachie, W. (with chapters by N. Chism, R. Menges, M. Svinicki and C. E. Weinstein), Teaching Tips: Strategies, Research, and Theory for College and University Teachers, 9th ed. Lexington, MA: D.C. Heth and Co., (1994).

Michaelsen, L. K. "Team Learning: Making a Case for the Small-Group Option." In K. W. Prichard and R. M. Sawyer, Editors, Handbook of College Teaching: Theory and Applications. Westport, CT: Greenwood Press, 139-153, (1994).

Keaton, M. Experiential Learning: Rationale, Characteristics, and Assessment. San Francisco, CA: Jossey-Bass, (1976).

National Survey of Student Engagement, http://www.indiana.edu/~nsse/html/origins.htm

Rich, S. "Student Performance — Does Effort Matter?" Journal of Applied Finance 16, 120-133.

Shaftel, J. and T. Shaftel. "Educational Assessment and the AACSB." Issues in Accounting Education 22 (2007), 215-232.

Stulz, R. "What's Wrong with Modern Capital Budgeting?" Journal of Applied Finance Fall/Winter (1999), 7-11.

Taggart, R. "Spreadsheet Exercises for Linking Financial Statements, Valuation, and Capital Budgeting." Journal of Applied Finance Spring/Summer (1999), 102-110.

Jessica Collins is an MBA student at Washburn University. Robert Irons is an Assistant Professor of Finance and Statistics at Dominican University. Robert Weigand is a Professor of Finance and Business Strategy at Washburn University.