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Combining Theory and Application: Rethinking Finance Education

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Abstract

Business schools are being held increasingly accountable to measure the learning of their students, while articles criticize the poor preparation of business schools of their graduates. The creation of courses that satisfy both theoretical and experiential learning is increasingly important. We discuss a Financial Modeling course and a Student-Managed Investment Fund that are designed to increase 1) critical thinking and problem-solving abilities, 2) communication skills, 3) teamwork, and 4) premium quantitative skills. Frequent communication with employers results in revisions to the courses as the market place demands. The market appears willing to pay a premium of $20,000 per year for student-managed investment fund (SMIF) graduates relative to general finance or financial services graduates.

Keywords: Experiential Learning, Student-Managed Investment Fund, Financial Modeling, Critical Thinking, Communication Skills

1. Introduction

Are business schools doing enough to equip students with the skills they will need to transform them into a well-rounded individual? These and other questions have been asked by business educators for decades. Employers often lament the notable absence of skills by business graduates. Bennis and O'Toole (2005) state that MBA programs don't instill useful skills in students, fail to prepare leaders, and don't teach the norms of ethical behavior. Datar, Cullen, and Garvin (2010) raise similar points by stating that business schools place excessive emphasis on quantitative and theoretical analysis. In turn, this has resulted in academic wizards of numbers rather than leaders of business. At an increasingly disturbing rate, more and more companies are dissatisfied with new graduate hires. According to Woods (2009), 70 percent of employers say that university students need to do more the prepare themselves to be effective in the workplace. In Michigan, Amos (2006) finds that only slightly more than half of businesses are satisfied with the quality of employees coming out of educational institutions. Nationwide, Levit reports that 58 percent of business decisions makers, recruiters, and students gave recent graduates a letter grade of C or lower on their preparedness for their first jobs, and 74 percent thought that the lack of preparedness has an impact on the economic challenges facing the U.S. In response, companies have thoughtfully developed their own intensive training programs that overcome the deficiencies they see in the academic product, lest they be unable to fill open positions as the workforce ages (Curtis, 2012). Furthermore, many companies may become very deliberate in where they do not recruit because of repeated unsuccessful experiences at particular institutions.

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Ghannadian (2013) compares the skills identified as relevant by employers with those currently taught by BBA and MBA programs at the top 25 business schools as listed on the 2011 Bloomberg *Businessweek* ranking. For BBA programs, the top three skills employers identify as important are leadership, business writing, and business speaking. For MBA programs, these skills are ranked 1, 4, and 5, respectively, with business ethics and social responsibility at spots 2 and 3.

Accordingly, these skills are also taught in the top 25 business schools. Interestingly, two items listed on the list identified by employers as important that are NOT taught in the top 25 business schools are problem solving and teamwork. Indeed, problem solving, or the ability to think critically, is a skills that appears to be more and more absent from the business classroom and has generated some discussion in recent years(AACSB International, 2012).This also aligns with the findings by Holtzman and Kraft (2010), who, in an employer survey, find that employers would like graduates with strong writing, computing, and quantitative analysis skills. These lacking skills beckon us to search for a solution. For example,one may suggest that institutions of higher learning engage in a continuing dialogue with industry about their needs(Ghannadian, 2013; Curtis, 2012). But perhaps the most impactful study is the one commissioned by Bentley University in 2014. Among the recommendations to prepare students better for the work place are early exposures to work and career planning, training in soft skills like communication and problem-solving, partnerships between businesses and schools to provide real-world experience, and experiential learning that reflects modern workplaces. Accompanying this increasing alignment of employer demands and business school offerings is the push by accrediting bodies such as AACSB toward increased outcome measurement through the Assurance of Learning section of its accreditation standards. While this push is noble, it is not yet evident whether it actually achieves the desired outcome. Implemented in 2003, the Assurance of Learning standards were requiring accredited business schools to demonstrate achievement of learning goals specified by program. This was done to promote greater accountability of business schools and to result in more globally applicable accreditation through the flexibility afforded business schools as to how learning objectives are met. More recently, AACSB has updated its standards and provides more specific guidance. Specifically, AACSB would like schools to use assurance of learning to assure external constituents (such as potential students, trustees, public officials, supporters, and accrediting organizations) that the school strives to achieve its goals. Moreover, assurance of learning should also assist faculty members to improve programs and courses. Ultimately, AACSB is concerned with program-level measurement of outcomes, not a course-level focus (AACSB International, 2013). In practice, however, there is often little enforcement of outcome measurement, and all too often, desired outcomes trickle down from the program level to the course level and are stated in syllabi without any substantive change in course content in order to satisfy the accrediting agency. As a result, outcomes are often not improved. If they are, the improvements tend to be concentrated in theoretical learning.

As a result of these two developments, there is both an increasing emphasis on theoretical learning through AACSB Assurance of Learning outcome measurement and an emphasis on skills sought by employers. Finance is a discipline that is *both* highly theoretical and highly applied. It is impossible to teach finance theory without real world application; this would create no value to an important customer, the employer. Nor is it possible to teach real world application without theory; this would turn Finance Departments across the country into trade schools. The future of higher education requires innovation in better preparing students for the workplace. Finance students that are marketable know the descriptive information and theories, but they also have practical experience in applying that information in decision-making. In summary, it appears that business schools are not doing enough to satisfy the demand by employers for certain skills, such as critical thinking, problem solving, communication, and teamwork; that there is an increasing demand for measurable academic outcomes by accrediting bodies such as AACSB that demonstrate theoretical learning; and that there is a need for increased collaboration between business schools and employers and experiential learning.

The discipline of finance is therefore fertile ground for an environment in which it is very possible to develop courses that promote a thorough understanding of theory, yet they also prepare students for the workplace and give them the practical tools needed post-graduation. Indeed, finance is an applied discipline that prepares students to make decisions as professional business people. Different theories and models have been developed that give direction to enhance firm value. Although most of the traditional finance courses provide a structure for effective decision-making, the practical aspects for most students are not immediate. For example, it is unlikely that graduating finance students will be making multimillion dollar lease-buy decisions at UPS.

Nor will they be pricing IPOs at Goldman Sachs, or forming the dividend policy at Sherwin Williams, or modifying the capital structure at Duke Energy. Although they have received information in their academic program about how these types of decisions are made, the practical reality is that they will not be confronted with those issues, at least not for a long time in their careers. The purpose of this article is to discuss two linked courses, a Student-Managed Investment Fund (SMIF) and Financial Modeling, that combine the theoretical and practical aspects of finance in unique approaches at a regional southern university.

These courses are unique in their design, the selection of students, course preparation, and course conduct. Both of these courses bridge the gap between the theory of the classroom and the practice of the corporate world, and prepare students for the transition from the textbook to the business. Additionally, both courses involve close ties with the business community with a constant feedback loop to increase the quality of the course. A constant feedback loop is important, as the overall purpose of any academic program should be not only to provide needed skills, but also to provide the framework that enables students to acquire these skills. It is in this niche that real learning takes place and where students are provided with an environment that forces them to confront the problems they will likely deal with in the real world and equips them with the intellectual capacity to tackle not only these but other problems they will ultimately encounter. This is particularly important given the rate of change in the economy. In fact, according to Woodbury University (2006), the pace of change makes it impossible to imagine that the skills required in the workplace will remain the same in the 21st century. In the context of student-managed investment funds, Macy (2010) has already pointed out that employers seek graduates with higher-order skills and communication skills. The remainder of this article is organized as follows. Section II discusses the Financial Modeling course; the SMIF is described in Section III. Section IV presents the results of a statistical test for the salaries of a small sample of students that were enrolled in the SMIF versus a sample of general finance and financial services students that did not participate in the SMIF. Section V discusses some strengths and weaknesses of the SMIF relative to other SMIFs and concludes.

2. Designing a Financial Modeling Course to Satisfy Stakeholders

Much has been written about the usefulness of financial modeling in finance. Recently, improved financial models have been proposed to improve the modeling of financial crisis (Tularam and Subramanian, 2013; Lin and Hashimoto, 2011; Pollitt and Barker, 2009), exchange rates (Tweneboah, 2009; Allegret and Sand-zantman, 2009), credit cycle risk (Guertler and Heithecker, 2006) and many other areas. However, we are not aware of any study that addresses the structure of a Financial Modeling course to improve not only students' financial modeling ability but also students' critical thinking and communication skills. Moreover, the structure of a Financial Modeling course can be designed with the input from industry. The following discussion will provide insight into such a Financial Modeling course at a regional southern university.

2.1 Course Purpose

The course was initially designed with the goal to overcome graduates' lacking excel skills. At career fairs, in business meetings, and in other venues, it became clear that students, in the eyes of our employers, did not possess the excel skills necessary to start entry positions at such firms as Merrill Lynch, Wells Fargo, Deutsche Bank, and others. Consequently, several alumni, at that time mostly in analyst positions, were contacted to obtain both a list of topics that should be covered in such a course and a book recommendation that would be the most useful to convey the needed information. These meetings often took place casually, in the context of conferences, or in formal meetings. Some alumni even provided excel training materials they had been given during their beginning days on the job. The book most commonly recommended by alumni was Simon Benninga's *Financial Modeling*, now in its fourth edition, but even individual functions were included in the course content. A secondary goal of the course was to increase students' problem-solving abilities, critical thinking skills, and oral communication skills. It is with these goals in mind that students are selected for the course every year, which is discussed next.

2.2 The Application Process

Students are selected for the course, which is currently offered every Fall semester, on the basis of an application and interviews with the professor. Students are initially invited to apply via an email sent to the finance student undergraduate population.

Numerous interview questions are designed to elicit the ability to work independently. Moreover, applicants have to provide both excel and writing samples to assess their current knowledge level of excel. Additionally, students are given a basic capital budgeting problem during the interview and asked to solve it while the interviewer takes a break. Interview questions are also designed to determine how students obtain information they need to complete a given project, which is important given the nature of the assignments (see below). Overall, the application and interview are designed to assess 1) the ability to work independently, 2) the ability to obtain information over and above the classroom, and 3) the overall quality of the applicant's work.

The application itself also assesses what area the students ultimately hope to work in, which aids in the assignment of students to specific projects. Students are typically informed of the outcome at the very end of the spring semester. The summer is then spent completing the Bloomberg certification process. The actual course usually takes place in the fall semester. Exhibit 1 shows an application for this course from a past semester. The course was offered for the first time in the Spring 2012 semester on an experimental basis and as a Special Topics course. At that time, enrollment in the course was capped at six students. In the Fall of 2013, ten students were allowed in the course. Ten students have been admitted to the course for the Fall 2014 semester.

Exhibit 1: An Application for Financial Modeling at a Regional Southern University

FIN 4931 – Financial Modeling
Fall 2013 Application

Name: _____ Phone Number: _____
ID-number: _____Email address: _____
I am a (highlight or circle): Junior Senior
Expected graduation date: _____
In what area of finance do you ultimately hope to work?

_____
Rate your knowledge of excel on a scale of 1-10 (1 = know nothing about excel, 10 = know everything about excel):

_____
In this course, each student will be expected to give frequent presentations to the class to illustrate certain functions in excel. On a scale of 1-10, rate your presentation ability (1 = no skills at all, 10 = best presenter on the planet):

_____
With which are you more comfortable (highlight or circle one):
Written communication Oral communication
What aspects of excel (i.e., functions or broad areas) do you hope to learn in this course?
How many courses are you planning on taking in the Spring Semester of 2012? _____
Are you currently employed (highlight or circle one)? Yes, full time Yes, part time No
I own a laptop. (Y / N)
I have either Excel 2007 or Excel 2010 installed on my laptop. (Y / N)
In the Spring of 2012, only six students will be selected for this course. In addition to the application, the professor will schedule an interview with you. This interview should last about 30 minutes. Please indicate which day(s) of the week and which time would be most convenient for you by circling or highlighting the day(s) and am or pm.

M		T		W		R		F	
AM	PM	AM	PM	AM	PM	AM	PM	AM	PM

Applications will be accepted until Friday, April 5, 2013 at 5pm. Please email your application to XXXXXXXXX. You will be informed of the decision by email by Friday, April 12, 2013.

2.3 Course Structure

To address increased problem-solving and critical-thinking abilities, students in the course are required to complete Bloomberg certifications in the areas of equity analysis, fixed income analysis, commodities, and currencies. The university at which the course is taught has a Bloomberg terminal. These certifications have to be completed prior to the beginning date of the course so that students are ready to use Bloomberg for their various assignments. Students in the course are then required to complete their assignments using data of their choice obtained from Bloomberg. If students decide to use data other than from Bloomberg, they have to make a case why this data is more useful. Each assignment in the course has to be presented to the entire class, and students have an average of five to seven presentations throughout the semester.

Topics in the course include both hardcore modeling topics, such as financial statement modeling, and, initially, some basic functions and excel skills. Every student is assigned a mix of relatively easy, medium, and harder modeling tasks. As possible, each student has a presentation roughly every two weeks. The presentations by the students count for 40 percent of the course grade. Due to the high level of students in the course, presentations in the class are typically highly interactive. Students are encouraged to ask questions during the presentation and provide suggestions as to how the models could be further improved. In fact, participation and suggestions for improvement account for 30 percent of the course grade.

In the upcoming semester, students will have to formally critique the work of others, which is something that students are inherently uncomfortable with, but which not only fosters critical thinking but also resembles a post-graduation work environment. In addition to the modeling assignment, students may also have to present some information on the underlying topic. Students are informed that the course is about financial *modeling*, not about finance per se. This means that students are responsible for ensuring that the other students understand the underlying topic in question. For example, if the current topic is bond portfolio immunization, then the presenter has to ensure that the audience understands and communicate this topic to others in the course prior to presenting the actual model s/he developed. When the course was first taught, several of the students in the course inquired whether they could model something other than the assigned presentations. Consequently, during its second offering, the course was modified to account for five assigned presentations and a "personal presentation," which can be any topic of the students' choice, but which has to be approved by the professor. This aspect further added to the problem-solving and critical thinking abilities, as it involves students' applications of course material directly to an area of professional interest. The course meets Fridays from 10am to 12:45pm. To allow everyone adequate time to prepare for the presentations, students with the assignments will have to post their spreadsheets on the course website by Wednesdays at 5pm. Again, this requirement is intended to provide students with a sense of deadlines that their colleagues depend on. Since others are graded on the critique they provide, it would be a disservice to them to provide the spreadsheets late. Perhaps surprisingly, this has not yet been an issue in the course, but the authors suspect that peer pressure rather than professor pressure would result in at least close to on-time postings of material. A schedule of presentations for the Fall 2013 semester is presented in Table 1. In the table, the numerical values indicate the students that are presenting. Notice that each student presents with several partners. In the past, partners have been assigned randomly. In the upcoming semester, partners will be assigned on the basis of personality profiles assessed using the Big Five PersonalityTest at

http://www.outofservice.com/bigfive/.

Students will therefore have to work with a variety of partners throughout the semester, which is intended to promote teamwork and expose students to a variety of working styles. This not only improves teamwork, but it also forces students to communicate more effectively. Students in each team of two are given the option to 1) work independently on the project (i.e., each student presents the topic independently), 2) complete part of the project, with the partner completing the remainder, or 3) work together on one cohesive project. Almost exclusively, students will decide to work together on the project. Irrespective of the format chosen, both students have to participate in the presentation. A typical presentation will last 25 minutes to half an hour, followed by 15 minutes of discussion.

Table 1: Financial Modeling Schedule of Presentations for the fall 2013 Semester

Date	Topic 1	Topic 2	Topic 3
9/6	Pivot Tables (3,4)	Excel Functions (Ch. 33) (1,2)	
9/13	Data Tables (Ch. 30) (5,6)	User-Defined Functions with VBA (Ch. 36) (7,10)	
9/20	Macros and User Interaction (Ch. 38) (1,3)	Some Excel Hints (Ch. 35) (8,9)	Personal (4,2)
9/27	Using Array Functions and Formulas (Ch. 34) (7,6)	Charts and Graphs in Excel (P4) (2,9)	Personal (10,5)
10/4	Matrices (Ch. 31) (10,5)	Basic Financial Calculations (Ch. 1) (7,8)	Personal (1,3)
10/11	Information from the Web (Ch. 41 through page 1058) (2,6)	Calculating the Cost of Capital (Ch. 2) (4,9)	
10/18	Financial Statement Modeling (Ch. 3) (1,7)	Building a Financial Model (Ch. 4) (5,3)	
10/25	Conducting an Event Study (Ch. 14) (6,4)	Option Contingency Graphs and Strategies (Ch. 16) (8,5)	
11/1	Generating Normally Distributed Random Numbers (Generating Random Numbers – Ch. 29) (8,1)	Price Call and Put Options, With a Focus on Implied Volatility (Ch. 19 (pp. 509-524) (10,2)	Personal (7,9)
11/8	Real Options (Ch. 24) (4,10)	Model the Current Treasury Yield Curve (Ch. 27) (3,6)	
11/15	Bootstrapping (Ch. 15 pp. 404-417) (9,1)	Estimate Betas for the 30 Stocks in the Dow Jones Industrial Average (Ch. 11) (8,4)	Retirement Planning Using Monte Carlo Methods (Ch. 22) (5,7)
11/22	Bond Immunization Strategy (Ch. 26) (10,9)	Duration of a Bond with Uneven Payments (Ch. 25) (2,3)	Personal (6,8)

In addition to these graded items, students also have a midterm and a final exam. These exams are take-home and are integrating information from each half of the semester. Specifically, the midterm exam focuses on building a financial model. Ultimately, students value a firm using free cash flows. In order to illustrate the calculations, students have to use a variety of tools covered early in the course, such as pivot tables and macros. The final exam focuses on options, yield curves and bond immunization, and involves some Monte Carlo simulation and bootstrapping. Informal polling from students indicates average times to complete these exams of about 20 hours.

2.4 Future Additions to the Course

As the Financial Modeling course is currently offered, it provides students with in-depth knowledge of financial theories they have to model. For example, students have to model valuation of companies using actual data. Therefore, students are forced to apply often abstract valuation concepts, such as bond valuation and capital budgeting, to actual data. Moreover, they have to do so in an excel framework. In that sense, this course combines theory and practical application with the Excel® and Bloomberg tools that are used beyond the classroom. In addition, the course provides students with problem-solving and critical thinking skills (choosing data, deciding on their own project, deciding on the mode of delivery with their partner), with oral communication skills (presentations to peers), and with teamwork (working with a partner). Moreover, the topics in the course were chosen to reflect skills employers desire of graduates. Thus, this Financial Modeling course successfully engages students on both a theoretical and a career-oriented level. When leaving this course, students have become proficient at modeling complex financial theories and real-world applications. Moreover, and perhaps even more importantly, they have come to realize how much they have yet to learn. Working in a rotating team structure provides the students not only with necessary teamwork experience, but also encourages them to communicate effectively with one another and to decide on the most appropriate format of delivery.

Since the course has so far been offered only twice, the students in the course are just now entering the job market. It is therefore difficult to assess whether these students' salaries or entries into the job market will be different from "regular" finance students. However, anecdotal evidence from both employers and students suggests that these students will ultimately place in good positions. For instance, one of the students in the course has recently obtained a position on Wall Street. Employers at this university's Finance Career Day comment favorably to both professors and Career Management Center staff about the skills students obtain in this course. One possible future addition to the course that would strengthen the ties with the business community further is the direct involvement of professionals in the course. For example, it may be possible to have companies provide projects which students will then have to work on using the theories covered in class.

We are currently working on recruiting companies to involve in such a project. Lastly, Financial Modeling ties in very nicely with yet another course that combines theory and practice using the ultimate measuring stick in finance – real money. Our university also has a student-managed investment fund which manages money that is part of the university Endowment. In the Fall of 2013 and in the Fall of 2014, approximately 80 percent of the students in Financial Modeling have been or will be in this student-managed fund and vice versa, and the professors consult each other on the selection of students for the two courses.

3. The Ultimate Theory and Application Course: A Student-Managed Investment Fund

A student managed investment fund (SMIF) is an effective academic program that bridges the gap between the theory of the classroom and the practice of the corporate world, and prepares students for the transition from the textbook to the business. Over the last ten years, many universities have acknowledged the benefits of the practical preparation that SMIFs provide and have aggressively integrated them into the business program. Recently, an ever-increasing amount of literature has sprung from this increase in funds, with suggested guidelines on how to set up, run, and manage these funds (Macy, 2010; Bowers and Lavin,2012; Ammermann et al., 2011). At most universities, these SMIFs supplement investment courses, and the very large majority of SMIFs have close faculty involvement to provide oversight and structure to student activities (Lawrence, 2008). Most funds are designed to enhance students' understanding of the securities markets and securities analysis and selection. Normally, SMIFs focus on learning goals centered on security analysis, teamwork, communication skills, and decision-making skills (Clinebell, 2013; Macy, 2010). The structure of these funds ranges from informal extracurricular investment clubs to formal classes (Clinebell, 2013). The SMIF at this regional Southern university was developed 13 years ago and has produced 150 portfolio managers and investment analysts, most of who are working in careers managing money. What follows is a description of the program that prepared them, followed by a discussion of some strengths and weaknesses of this fund relative to the funds mentioned in the literature above.

3.1 Client Relationship and Implications

Most SMIFs are unique programs on their campus. They are not a game or a simulation but involve real money. Consequently, a SMIF has a client, typically the Investment Committee of the Foundation, that oversees the Endowment. The SMIF is accountable to the client and prepares performance reports, just like professional money managers who are responsible for the rest of the endowment. Furthermore, the performance of the SMIF is judged against a benchmark established by the client. The benchmark could be the same one that the professionals are measured against, or it could be something more appropriate for the management philosophy of the SMIF. At this university, the benchmark for the SMIF is a weighted average of the Morgan Stanley All Country World Index (MS ACWI) and the Barclay's Global Aggregate Bond Index (BGABI).

Benchmark = .70 (MS ACWI) + .30 (BGABI)

This bench is a variant of the measure for the professionals who also have an alternative assets component. Since the size of the student fund is not large enough to meaningfully incorporate alternative assets, it does not make sense to have that asset class in the benchmark. The students become very conditioned to keep their eyes on the benchmark and to manage the portfolio in light of the bench because that is against what their performance is judged. The benchmark implies a level of risk, and the students quickly recognize that an understanding of that risk influences the composition of the portfolio. For example, a benchmark consisting of a small cap index should produce a management style and risk exposures different from one that includes a large cap index. As the portfolio is a real time exercise involving real money with a real client that has a certain risk appetite, students quickly learn the importance of risk management and its impact on the value of the portfolio. A textbook reading about risk does not make nearly the same impression.

3.2 Composition of the Class

The SMIF is open to both undergraduate finance majors and MBA students. Similar to the Financial Modeling course discussed in Section II, candidates apply in March and are interviewed, just like for a real job. They must provide samples of their writing because an analyst must be a good communicator. The program spans both the Fall and Spring semesters with the same students. The optimal size of the class is 12 students and there is no target mix between undergrads and MBAs.

The composition of the accepted class is based solely on the quality of the pool of applicants. We have had as few as nine students and as many as 13 in the program. Undergraduate participants receive six credits that count toward the finance major, and the prerequisite is Investments. MBAs also receive six credits, but they count toward general electives. Students are informed of their admission in April so that they can begin preparing for the Fall. As with Financial Modeling, their biggest preparation is working toward Bloomberg Certification during the summer in the trading room. They are given an orientation before the summer begins and then they work at their convenience on the Bloomberg modules. By the time the Fall starts and the next edition of the SMIF launches, they are very familiar with navigating the Bloomberg database, which makes them highly marketable.

3.3 Branding the Program

In order to emphasize the professional expectations of the program, the SMIF developed a brand, just like what professionally-managed funds exhibit. The fund is real, it involves real money and is accountable to a real client. Although it is students that are managing the money, the SMIF is more than an academic exercise and more than a traditional class. Consequently, the program has a distinct name. For purposes of this article, it is called the Financial Group (FG). This is what appears on the student's resume and it gives a more accurate representation of their involvement. It is not a club or a classroom assignment, but it is a professional organization with a client. We also designed a logo and each year logoed shirts are distributed to the members of FG, further reinforcing that it is not a typical class.

3.4 Student Responsibilities

Everything in the program is conducted in a professional way. An Agenda is established for each meeting and Minutes are recorded. Exhibit 2 provides a sample Agenda of a typical weekly meeting. A two-thirds majority agreement is required to change the composition of the portfolio. For example, if ten students are in the class, then seven would have to be in agreement to change the composition of the fund.

A high degree of analytical thinking is required when changing the composition of the fund. Given that real money is involved, the students experience real accountability. Given the requirements to change the position, teamwork and effective communication are also required. Each student becomes expert in a few areas and the Officer and Specialty assignments are designed to move the student into a deeper understanding of their role in the group. A description of the Officer positions is below.

3.4.1 Accountant

The Accountant maintains the official books for FG, prepares month-end and quarter-end reports, and records each of the transactions and other financial activities of the Fund. In addition, the FG Accountant works closely with the Accountants of the Foundation in auditing and liaison capacities. The Accountant also maintains the discretionary budget which represents 0.75 percent of assets under management as of each July 31. This money is spent throughout the year on shirts, databases, CFA lunches and dinners, gifts to speakers, travel.

3.4.2 Alumni Relations Director

The Alumni Relations Director is responsible for communication with past FG alumni updating on performance, employment and anything interesting related to FG.

Exhibit 2: Typical Meeting Agenda

AGENDA
February 20, 2014
1.Call Meeting to Order
2.Approval of Minutes, February 13, 2014
3.Announcements
4. North American Briefings:

- Political – Clark
- North America Economic – Davy, Varshney
- Fixed Income – Davy, Varshney

5. Regional Reviews

- Oceania – Pierpont
- Latin America - Saavedra

- Europe – Grande
- Asia – Steiner
- Africa – Green

6. Technical Analysis of Markets – Ibraheem
7. Green/Event Driven Government : FSLR – Davy, Varshney
8. Small Cap/Insider: SNSS – Steiner, Clark
9. Reviews of Existing Portfolio Positions
10. Other Business
11. Look Ahead to February 27, 2014
12. Adjourn Meeting

3.4.3 Economists (five different Economists: North America, Latin America, Asia, Europe, Oceania)

Each Economist in FG specializes in a different geographic sector; North America, Europe, Latin America, Asia or Oceania. They establish the degree of international diversification and provide weekly updates of their respective region's economic condition. The Chief Economist covers the North American economy, tracks short-term and long-term interest rates and coordinates the economic reports generated by the team. The Economists, most notably the one covering North America, also make recommendations about relative weightings between equity and fixed income allocations. The other Economists make recommendations about the degree of equity exposure in their respective geographic sector.

3.4.4 Operations Manager

The Operations Manager is responsible for preparing and distributing the Minutes of each meeting. This position also requires for the maintenance of the Blackboard site. The Operations Manager also maintains the physical facilities of the trading room under the control of FG.

3.4.5 Photographer

The Photographer is responsible for documenting on film special events and speakers for the website and the Annual Report.

3.4.6 Political Analyst

The Political Analyst covers elections, regulations, deliberations by Congress, and any other political events or issues that can impact on the value of the Fund.

3.4.7 Special Projects Coordinator

The responsibility of the Special Projects Coordinator is to handle a wide range of issues that may arise throughout the year which are pertinent to the operation of FG. During the year, the Special Projects Coordinator may maintain the updating of the FG Playbook for the use of future FG members, writing thank-you letters to guests, maintaining the FG bulletin board in the business school, and selecting gifts.

3.4.8 Statistician

The Statistician compiles continuous descriptive statistical information about the Fund that the team ultimately integrates into the management of the portfolio. These measures include various return calculations, individual and portfolio betas, individual and portfolio P/E ratios, asset and sector allocations, value/growth and market capitalization exposures, and comparative performance measures. The Statistician is also trained in the *Black Diamond Advent Performance Software*. Exposure to different databases and software in finance is definitely one of the items in line with the Bentley University study recommendation of increased experiential learning and ties to the business community.

3.4.9 Technician

The Technician provides a technical opinion about every new security presented by the Analysts in order to provide additional insight into the timing of transactions. The process involves the examination of past price movements in order to forecast future price movements.

In addition, the Technician provides technical updates on existing positions as conditions and expectations change. In managing the portfolio, all of the Analysts integrate both fundamental and technical information into the decision-making process. Recommendations of entry and exit strategies, essential for an actively-managed portfolio, are also part of the responsibilities. Every proposed position receives a Technical opinion, and then the Analysts bringing the position to vote determine how much to weigh that opinion.

3.4.10 Webmaster

The Webmaster provides the regular maintenance of the internet web page for FG in order to keep it current. This includes posting announcements that would be of interest to the campus and business communities, and disclosing monthly and quarterly performance results. The website also serves as an effective medium for communicating with prospective candidates for future editions of FG, and alums. In addition to the Officer position, each student is assigned a Specialty Play position. These plays drive the composition of the portfolio and, ultimately, the alpha of the fund. The ten specializations are below:

- Small Cap / Neglected securities plays (no or little analyst coverage, market cap $1B and less)
- Commodity Plays
- Value plays
- Foreign plays
- Event-Driven plays – macro government/Fed announcements
- Event-Driven plays – non-government - everything else (weather, political, management change, etc.)
- Technical plays
- Insider Buying or Selling plays
- Green Plays
- Fixed Income picks /plays

The process of bringing recommendations to the class for Fund consideration is as follows:

1. A specialist screens candidates and narrows the field to one.
2. The specialist determines who among the other specialists makes the most sense to partner with, given the pick, and to perform a thorough analysis before bringing it to the class.

For example, the Event-Driven Non-Government Specialist believes an opportunity exists should the U.S. become involved in Russia in a military way. A Small Cap Defense stock has been identified. This Specialist approaches the Small Cap / Neglected Specialist to partner in the analysis, and if they both agree the pick is worthy, they both proceed in performing the due diligence a convincing recommendation requires. Perhaps on the next round, the Event-Driven Non-Government Specialist believes an opportunity exists from an impending tropical storm. A generator manufacturer is identified. The Specialist approaches the Value Specialist and together they proceed with a thorough analysis. Through this new process, a Specialist has opportunity to work with several partners rather than just one for the whole term. This process requires in-depth analytical thinking as well as teamwork. Moreover, the individual particpants have to decide on the partner that would make the most sense. Once again, this combines relevant theory (in this case valuation) with real-world application (working in teams and deciding on the best partner.

3.5 Course Ramifications

By the time the course comes to completion in the Spring, most students have experienced a metamorphosis whereby they are much different from when they started in the Fall. First, they are much more confident in understanding the interactions of the economy, politics and the markets. They are also able to perform a thorough analysis, from screening companies to convincingly describing their risks, rewards, and valuation. Furthermore, through weekly presentations, they become very good writers and speakers of finance. Even shy students in the Fall become much more comfortable speaking in public as the course progresses. They also learn how to work on intensive research on their own, with a partner and within a larger group. Overall, exiting students become very competent in doing financial research on the various databases and then writing about and speaking about their conclusions and opinions. And they learn how to respectfully defend their positions in lively question and answer sessions. Students also learn about being accountable to a client.

Through periodic reports and a Spring annual report luncheon where their performance is presented, they become very aware that it is not their own money that they are managing, but it is someone else's money whose risk and expectations might be very different from their own. The combination of developing the quantitative and communications skills in a laboratory of managing real money with a real client produces a highly marketable professional who is deeply grounded in valuation theory.

4. Testing for Value – Does Participation in the SMIF Pay Off?

While it is nice to discuss the strength of our program, the ultimate test of whether a college course or program is successful is whether graduates from that program are able to garner higher salaries in their jobs vis-à-vis those that did not participate in the program. Unfortunately, the Career Management Center (CMC) of the university has only recently begun keeping track of its graduates and starting salaries, and the data shared with the Career Management Center is often self-reported. Consequently, few of the SMIF participants are included in this database. As a result, we emailed a very brief survey to the 140 former participants in the SMIF[4] to assess the students' current and starting salaries. We received responses from twelve former participants. Even these former students were rather reluctant to share this information and were adamant about their anonymity. The data provided by the CMC contains full-time employment data for 42 finance and financial services students placed between 2010 and 2014.These students were exclusively placed with financial institutions. After eliminating students that were also in the SMIF and students with incomplete data, a final sample of 38 students remained. The 13 students responding to the salary survey graduated between 2006 and 2014 and included seven undergraduate and five MBA students.

Summary salary information for these general finance students and SMIF graduates is provided in Table 2. As shown in the table, the 38 general finance and financial services majors in the sample earned, on average, $37,171 dollars when entering the workforce, ranging from a low of $15,829 to a high of $54,000, with a standard deviation of $9,773.[5] The 13 SMIF graduates earned an average of $57,615, with a low of $35,000, a high of $90,000, and a standard deviation of $17,939. The proximity of the average figures to the medians is an indication that the average is not driven by a few extreme outliers. These results are significant at least at the 5% level in all cases. Interestingly, the difference between undergraduate SMIF graduates and graduate SMIF graduates is not statistically significant, indicating that employers are willing to pay the same amount for a graduate of the program irrespective of their class level. The bottom part of Table 2 tests whether a significant difference between the average starting salaries earned by general finance and financial services students and SMIF graduates exists. The results are very revealing! Students participating in the SMIF earn, on average, over $20,000 more than the run of the mill finance student. Thus, if we consider this a representative sample of general finance students and SMIF students at this university, the premium paid for participating in the SMIF is about $20,000 per year in starting salaries.[6]

[4]The Financial Modeling course has only been taught three times. Moreover, due to the significant overlap, only ten students in this course did not also participate in the SMIF.

[5]According to the Florida Department of Education, the average annual earnings for 2011-12 graduates from this university were $39,620 and $43,156 for finance and financial services majors, respectively. This data is not broken down further and includes, of course, the SMIF participants. Moreover, this data only captures students that are employed in the State of Florida.

[6]It is also interesting to note that the average of the current salaries earned by former SMIF students is $117,200, more than double the salary they started with. While this information is not available for general finance students, it at least indicates that SMIF graduates keep advancing their careers.

Table 2: Salary Information for General Finance and SMIF Graduates at a Regional Southern University

	General Finance and Financial Services (N = 38)	Undergraduate SMIF Graduates (N = 8)	Graduate SMIF Graduates (N = 5)	Total SMIF Graduates (N = 13)
Minimum Starting Salary	$15,828.80	$35,000.00	$42,000.00	$35,000.00
Maximum Starting Salary	$54,000.00	$90,000.00	$90,000.00	$90,000.00
Average Starting Salary	$37,171.73	$57,187.50	$58,300.00	$57,615.38
Median Starting Salary	$35,006.40	$60,000.00	$55,000.00	$55,000.00
Standard Deviation	$9,773.18	$18,098.81	$19,778.78	$17,938.73
	Total SMIF Graduates – General Finance	**Undergraduate SMIF Graduates – General Finance**	**Graduate SMIF Graduates – General Finance**	
Difference in Average Salaries	$20,443.65	$20,015.77	$21,128.27	
p-Value of Salary Difference	0.07%	0.82%	3.72%	

While these numbers are impressive, it is also noteworthy that our faculty keep very close relationships with these alumni. As a result, we know that three former participants in the SMIF are currently in finance Ph.D. programs and that fifteen SMIF graduates are currently working on Wall Street. This means that more than ten percent of graduates from this program are able to compete in the fiercest job competition for finance graduates across the nation successfully.

5. Discussion

This program exhibits several strengths relative to other SMIFs. First is the combination of concurrent Financial Modeling and Investment Fund participation. The two courses overlap by approximately 80%.[7] As pointed out by Ammermann et al. (2011), students at one particular SMIF were always encouraged to use analytical discipline and long-range thinking to counterbalance speculative tendencies. Combining Financial Modeling skills directly with the SMIF further fuels this analytical approach and enhance critical thinking and communications skills by having the students develop models they communicate to the class. This provides a natural application to the SMIF. Another advantage of the SMIF described here relative to most other funds is that there is no faculty panel advising the students. Although it may be argued that more faculty members would also provide more guidance, this approach ensures that the students feel in charge of the funds being managed and appreciate the fiduciary responsibility they bear. The decision to buy or sell a security is theirs alone.[8] As may be guessed, access to Bloomberg and other software is another big advantage of this SMIF, since this is the software used by the pros. Other funds, such as the one discussed by Ammermann et al. (2011) point out the need for publicly available data such as through finance.yahoo.com. Our SMIF uses data from sources that are not publicly available and allows for a higher level of analysis. Students of our SMIF also enjoy the advantage of a discretionary budget, which we did not see discussed anywhere in the SMIF literature. Although subtle, this is a professional aspect of the SMIF that most funds are not exposed to. The discretionary budget is 75 basis points of assets under management and is used to purchase additional data (such as Morningstar or Investors' Business Daily), to participate in CFA lunches, and to attend events such as the R.I.S.E. or G.A.M.E. symposia. All this makes students realize that they are part of a much larger community that extends beyond the classroom.

[7] 100% overlap is not possible, since Financial Modeling is currently only available on the undergraduate level, while the SMIF allows both graduate and undergraduate students to apply.

[8] The professor of the SMIF does have veto power, which he only exercises if either 1) students break the rules of the fund and/or 2) they did not perform their due diligence in making on a buy/sell decision.

Another advantage of this SMIF relative to others is that most other funds do not offer students the experience of specialized positions. Most other funds have categories of general equity or perhaps small equity. The structure of specialized positions combinedwith the Specialty Play positions forces students to interact. For example, if the event-driven government play specialist is considering an event in Europe, s/he would also involve the European Economist. This allows students to mimic the "real world" experience of having to seek out specialists with the information they are searching for in their firm and to work with multiple people over time. A very interesting indirect advantage springs from the fact that, if students are not selected for the course, they cannot take the course; it is a competitive process. Students are very aware of the competitive nature of both Financial Modeling and the SMIF. Consequently, students strive to perform well in courses they are expected to take prior to enrolling, such as Financial Management and Investments. This helps to raise the level of the average finance student at this university. In case students do not make the cut, we offer a variety of other high-quality electives students can choose from that are open to everyone. One weakness of this SMIF was also pointed out by Ammermann et al. (2011): our SMIF ceases operations for the summer months. Before leaving for the summer, students transition from an active management style to a passive style with risk management by implement trailing stops for their positions. If the market declines, these stops are triggered over the summer, the resulting cash will sit in the account without being reinvested for several months. If the market turns upward, this could result in a significant opportunity cost.

Yet another disadvantage of the SMIF being discussed is also an advantage: the ability of graduate MBA students to participate in the course. Most MBA students have full-time jobs and are part-time students. Consequently, they may not have the time necessary to participate in the SMIF. This results in the interviewing process being especially important for these students to make sure they are committed to the course if they are selected. In summary, both Financial Modeling and our Student-Managed Investment Fund increase student knowledge in key theoretical areas. In the case of Financial Modeling, students are expected to model various financial theories, such as the Capital Asset Pricing Model and the Black-Scholes Option Pricing Model. In the SMIF, students obtain deep theoretical knowledge of valuation and portfolio management. Both courses are designed to drastically increase 1) critical thinking and problem-solving abilities, 2) oral and/or written communication, and 3) teamwork. These are three areas that have been identified in the literature as lacking from current graduates by employers. Additionally, students in these courses are equipped with premium analytical and quantitative skills, another skill often identified by employers as lacking in graduates. Frequent communication takes place with employers to assess the quality of our product and results in revisions to the courses as the market place changes and/or needs become clearer. Both of these courses illustrate that it is possible to combine deep theoretical knowledge with the skills desired by the workplace.

Business schools are being held increasingly accountable to measure the learning of their students via AACSB guidelines. In addition, both academic and popular press articles lament the poor preparation by business schools of their graduates. Studies such as the ones by Bentley University and Woodbury University are issuing calls to action. These pressures create an environment in which it is increasingly necessary to develop innovative courses and links to industry that satisfy both theoretical and applied and experiential learning. The approach discussed here is one way in which to increase not only this learning, but also students' ability to think critically and communicate effectively. Based on our brief statistical analysis, it appears that the market believes SMIF graduates possess these skills, since it is willing to reward students participating in this program handsomely.

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