Student managed fund (SMF) at the University of Connecticut

History, purpose, performance and the future

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Abstract

Purpose – The purpose of this paper is to present a review of the student managed investment fund at the School of Business, University of Connecticut.

Design/methodology/approach – The authors trace the history and growth of the fund and identify the special features and dimensions that have contributed to its success.

Findings – The operation of the fund is a constantly evolving program and the authors discuss the important changes and improvements made in the program since its inception in the early 2000s in response to growth in the number of finance majors, new career opportunities in the field of investments and most importantly, the strength of capital markets and the development of new instruments in the capital markets. The authors also discuss the common features of over 300 student funds in the USA. The authors close with a discussion of the limitations and constraints the fund advisors at, and possibly, at other schools, face in the management and administration of the fund, and also what developments and adjustments the authors expect to see in these funds in the future.

Originality/value – The authors combine extensive analyses of fund history and performance. The authors also provide some suggestions for the future direction and priorities for student funds.

Keywords Students, Financial markets, Financial investment, Financial performance

Paper type Research paper

1. Introduction

Over the last two decades, we have witnessed phenomenal growth in the number of student managed investment funds (SMIF) in business schools across the USA. Furthermore, the trend has "gone international" with funds appearing in several international business schools. Nearly all of these programs have one overarching objective – to provide the opportunity to (mainly) finance students to manage real money as an important component of experiential learning. SMIFs allow students to combine all aspects of research, analysis and valuation of financial assets, and rudimentary risk management through diversification of their portfolios in a real-life environment. Most SMIF programs have the following commonalities: they include formal courses offered through a full academic year; they involve the management of a fund created from donations from alumni or endowments from a university foundation; regular interactions and presentations to alumni and practitioners from the financial industry are a regular occurrence; and students prepare analyst reports and annual performance reports for submission to their advisory board and sponsors. SMIFs usually attract the most accomplished students from the Finance major. The academic excellence experienced in the program coupled with the training and experience gained from managing funds through the SMIF, help these students receive the most competitive jobs in the financial industry upon graduation. At UConn, as in most other

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schools with an SMIF, the SMIF has evolved into one of the most successful experiential learning programs offered by business schools.

One objective of this paper is to trace the history of the student managed fund (SMF) at the School of Business, University of Connecticut[1]. The SMF program was founded at UConn in 2000 and saw its first year of operation in the academic year 2002–2003. Since then, several hundred undergraduate and graduate students have graduated from the program. From an initial investment of $750,000, the size of the fund has grown to over $4.5m. Originally started with two groups of students (one undergraduate and one graduate), our current program has four student groups, three undergraduate and one graduate for the 2018–2019 academic year. We also discuss other objectives of our program, we describe the source of the program's capital, and we set out the role of the UConn Foundation – the client– the Investment Advisory Board (IAB) comprised of mainly successful alums in the financial industry, the faculty advisors and the administrative support staff.

The main goal of the program is to provide hands-on experience of the highest quality to our students and thus improve the reputation of the UConn School of Business in the broader financial community. An important benefit to the students is the career opportunities provided by the program in the highly competitive financial industry[2]. The benefits to the school are equally significant – the program has helped in the recruitment of talented students[3], has attracted several prominent alumni many of whom serve on the IAB, teach SMF classes, advise students at their strategy meetings, attend presentations, help with placements on a regular basis, and have historically made donations to the university endowment Fund and also to the annual SMF budget. Overall, the SMF has been one of the most enduring and successful experiential learning programs in the history of the school[4].

Although the education of our students is one of the main goals of the SMIF, the performance of the "funds under management" is an important criterion for measuring the success of the program. To this end, we have analyzed the performance of our teams over the year in which they constructed their portfolios (the "construction year or period"). In addition, as the students are charged with creating successful investment portfolios over a ten-year horizon, we have constructed an innovative benchmark (the "SMF benchmark"©) with which we can measure team's subsequent portfolio.

The remainder of this paper is organized in the following fashion. In the next section, we provide an overview of the global SMIF landscape. In Section 3, we present a review of the literature on SMIFs. In Section 4, we discuss the various aspects of the UConn SMF including its evolution, structure and the benefits we believe it brings to students and the school. In Section 5, we discuss the performance of the SMF, with some observations on our investment strategy and the SMF's performance. We also consider how the investment strategy and performance differed between undergraduate and graduate teams. In Section 6, we highlight some important differences between the UConn SMF and other SMIF programs. In the final section, we conclude with some observations on how we believe the SMIF programs can collaborate with each other and the financial industry, for more comprehensive education and training of students in investment management, and with the added benefit of broader career opportunities.

2. The SMIF landscape

Currently, there are more than 300 SMIF programs in USA business schools. Indeed, for all practical purposes, these funds have become an integral part of the curriculum and experiential programs at business schools. While individual funds vary in size and other dimensions, nearly all funds have certain common features: first, the objective of nearly all funds is to educate students in the art of security selection and portfolio management, and to prepare them for careers in the financial industry. Second, the funds are donated by alumni and usually carved out of endowments at the university foundation. Third, the funds are usually managed for a full academic year and are then rolled over for the next group of students. Fourth, some programs are designed for undergraduate students, while many programs include both undergraduate and graduate students. Fifth, students are selected through a competitive process including formal applications and personal interviews. Sixth, students are required to take specially designed courses with a focus on valuation models and portfolio construction. Seventh, students have regular strategy meetings where they discuss investment strategies and make investment decisions, which are then voted on by the entire team. Eighth, most funds have specific faculty that act as advisors and mentors, but investment and allocation decisions are made by students. Ninth, students have access to and receive training in various software and data sources such as Bloomberg, Value Line, Morningstar, S&P Net Advantage. Tenth, performance is measured on a semester and annual basis against appropriate market indices. Eleventh, funds often require students to make presentations to the foundation as well as advisors and other professionals. Twelfth, at the end of the academic year, positions are liquidated, and funds are often "parked" during the Summer in a market index fund. Thirteenth, while students make all investment decisions, for many funds the actual trading is executed by the foundation personnel or the faculty advisor. Fourteenth, SMIF students regularly participate in various national competitions on security selection and portfolio optimization.

We attribute the growth of the SMIF phenomenon to a number of factors. First, the equity markets in the USA have enjoyed significant growth in the past two decades. This has created new jobs and opportunities in the financial industry. Accordingly, the number of finance majors in business school programs has grown significantly and schools have developed programs like SMIF in response to train and prepare students for these opportunities. Second, with the growth of the market and the number of finance majors, competition for the top jobs has increased, so schools have developed unique programs, with emphasis on experiential learning to identify and differentiate the specially gifted students. Third, the collapse of the global financial markets in 2008–2009 focused attention on the limitation of classroom instruction in dealing with the real-life problems in the capital markets, particularly the uncertainties that impact asset values. Fourth, given the rapid development of new and innovative financial products, many SMIFs are now focusing on more advanced and complicated investment strategies. Fifth, leadership, effective communication and professionalism are important soft skills students must acquire to be ready for the job market. The need to work with a group of high-performance classmates, and regular interaction with advisors and professionals provide the students the perfect opportunity to acquire these skills. Finally, while it is easy to identify the advantages and benefits of SMIF for students, the program has important benefits for the educational institution also. These benefits include enhanced visibility and reputation of the institution, the attraction of better students, fostering of closer interaction and contact with industry practitioners and alumni, offering improved placements for graduates, and enhancing the opportunity for fundraising.

Most of the major state business schools have SMIF programs, and these were among the early pioneers in the growing field of SMIF programs. A recent phenomenon is the growth of these programs in regional schools. Many of these schools are located in areas that are not easily accessible from major population and business centers. For these schools in small university towns, programs like SMIF provide a good platform for engaging alumni and donors to return to campus and interact with students, faculty and the administration. Such interactions raise the profile of the institution, enhance placement opportunities and improve fundraising activities.

Based on our long years of experience with the UConn SMF program, we must acknowledge some of the limitations and constraints we have faced. First, a frequent source of frustration with the student managers is the one-year nature of the program. This is at odds with the Foundation Prospectus requiring a long-term perspective in their investment decisions, as the positions are liquidated every May at the end of the academic year. Students can feel frustration in building an investment portfolio with a ten-year horizon, but only seeing results over the year of construction[5]. A possible solution to this problem would require active management of the SMF throughout the year. However, after consultation with the Foundation board and other stakeholders, it was decided that the fund must be managed by students, and not by faculty or a money manager. This would be difficult to achieve for the solution posited earlier, as the SMF would require active management during the Summer. In addition, starting new students with a clean slate is seen as a benefit, as they do not inherit the previous group's portfolio, although they have full information on the previous positions.

A second limitation is that, unlike many existing funds in the SMIF landscape, the UConn SMF does not allow investment in derivatives and alternative assets. There are a number of reasons for this – educating students in the analysis of companies is the core skill we believe our students should understand. Furthermore students may not be ready to fully understand the special risks associated with these proposed more complex securities in the time available. However, such investments are currently under active consideration within the UConn SMF.

A third limitation is that students rarely invest in fixed income assets, although they are allowed to invest up to 20 percent of the funds in this asset class. This is a drawback given that the fixed income market is significantly larger than the equity market, and insurance companies in Hartford invest heavily in fixed income. It is believed that a fund of our size cannot economically invest in this market.

3. Literature review

3.1 History and design of SMIFs

Several studies have examined the history and structure of SMIFs. Lawrence (1990) notes that Gannon University's SMIF, founded in 1952, is the longest actively managed student fund. The University of Arkansas at Fayetteville and the University of Wisconsin at Madison formed the next wave of programs in 1971. Lawrence (2008) examines the growth of SMIFs across the globe finding that the number of SMIFs has increased to 314 worldwide at the time of writing. The author concluded that the SMIF reshapes investment education and that the financial industry tends to favor students who have participated in a fund. Bruce and Greene (2014) cataloged 338 SMIFs; 41 percent of the fund programs were reserved for undergraduate students. A total of 32 percent for graduate students, and 27 percent allowed for blended teams. Peng *et al.* (2009) survey 35 universities operating SMIFs in the USA and show that SMIFs favor the *Wall Street Journal* and Value Line database, use similar asset-allocation strategies and evaluate equity return by CAPM and DCF models. Macy (2010) examines how to design a successful SMIF and evaluates its role in finance programs, arguing that SMIFs improve finance programs when leaders restructure the curriculum to accommodate SMIF, set scholarships to stimulate students and connect students with alumni.

Recent studies show innovations in SMIF. Melton and Mackey (2010) introduce a creative methodology to combine SMIF with undergraduate finance curriculum and the application of real-time financial analysis platforms like SDS MarketWatch to manage a portfolio, pointing out that a proper setting, curriculum targets and a real-time platform contribute to the success of SMIF. Livingston and Glassman (2009) describe an uncommon fixed-income SMIF managing a peer-to-peer (P2P) loan portfolio in the Prosper Marketplace electronic platform. They argue that this kind of fund could be far smaller than the equity-based fund, and Prosper could allow significantly small finance programs to provide students with the opportunity to participate in these forms of SMIF. Livingston and Crosby (2017) present the seven-year performance of an uncommon SMIF focusing on P2P loans, showing potentially consistent high returns and values of active management, but warn that P2P market is no longer friendly and beneficial since institutional investors have engaged in this market and default has risen.

3.2 Investment strategies of SMIFs

Neely and Cooley (2004) report on a survey of 124 instructors who are part of the Association of Student Managed Investment Programs and the 61 responses they received. A total of 90 percent of the responding SMIFs had an investment policy, and 93 percent of the SMIFs invested in US equities. Almost all responding funds engaged in stock picking, and there was a 50/50 split between top-down and bottom-up analysis. Sometimes, investment policy can be quite variable within a SMIF program. Wahl (2000) reports that the student managers at the University of British Columbia SMIF get to pick their investment philosophy each year. At the other end of the spectrum, Strout (2005) discusses the case of University of Wisconsin-Madison students who manage \$41m of the University System's endowment, with \$20m set for Treasury securities, \$11m for Treasury Inflation Protected Securities, \$10m for fixed income, and a target return of 6 percent return.

Many studies have focused on developing a quantitative investment strategy to help students create portfolios. Ammermann *et al.* (2011) utilize a synthetic protective-put equity-strategy with a momentum-based style-rotation approach to assist students in building a quantitative portfolio. They suggest a persistent outperformance of the S&P 500 index and that the program generates a higher return at lower risk. Donaldson *et al.* (2011) convert numerous accounting metrics into standardized *Z*-scores and aggregate them into a single score to sort stocks in S&P 500 by sectors to construct a portfolio; they find that this method offers a broad stock-picking practice that helps students select stocks and create a diversified portfolio. Bowers and Lavin (2012) evaluate a model developed by the SMIF Coyote Capital Management at the University of South Dakota and find that the model achieves 81 percent recommendation accuracy during 2004–2006 and 66 percent accuracy during 2007–2009. The authors conclude that this valuation tool can improve the decision-making process, but students should combine it with other analyses to select stocks. Saunders (2014) illustrates how to utilize covered calls and protective put strategies for an SMIF and assesses the return of these strategies, finding that students successfully merge theory with practice and improve SMIF's returns. Hughen and Lung (2018) present the benefits of option strategies in managing the risk of equity positions around earnings announcements and show that students could professionally mitigate risk by using collar strategy and analyzing earnings drift.

Other scholars have analyzed socially responsible investment strategies. Clinebell (2013) examines the role and growth of socially responsible investing in the SMIF phenomena and finds that such a strategy makes students consider social issues when they screen stocks and enhances their security analysis. Saunders (2015) introduces the experience of shareholder engagement by an SMIF at Anderson University and demonstrates that students can engage in real-life shareholder advocacy via socially responsible investing. These studies imply that quantitative strategies should be combined with other strategies to help students make investment decisions.

3.3 SMIFs and educational efficacy

With well-designed training and active participation in the SMIF, students gain precious experience in investment activities and improve their professional skills. Lawrence (1994) finds that the majority of SMIF participants are required to register in a course on investment or portfolio management. The idea is to enable students to apply the theories they have learned in the classroom. Kahl (1998) studies the course structure and educational benefits of the SMIF of The University of Akron, showing that in a highly-structured course, students can integrate technology skills and communication skills to manage real-money and cultivate business insights for their future careers. Caldwell and Dolvin (2012) explore the performance of SMIF and herding behavior which undermines the decision making of students, finding that students need sufficient time to discuss each recommended trade in a meeting and more education about behavioral finance to overcome herding bias. Luthy and Hafele (2013) evaluate four student-managed portfolios and find that students marginally beat the S&P 500 and SMIFs provide thorough investment education to students and improve their soft skills as well as their analytical abilities. Daugherty and Vang (2015) test the possible one-year risk-adjusted returns of Aristotle Fund, an SMIF at the Opus College of Business at The University of St. Thomas, and find that students invest more professionally as the academic year progresses and that employers tend to hire students who have engaged in an SMIF.

4. UConn's student managed fund (SMF)

4.1 The evolution of the SMF

The UConn SMF was founded in 2000, by the finance department and alumni, with an allocation of $750,000 from the UConn Foundation. The first version of the SMF Prospectus was published on February 8, 2000, after extensive research on the SMIFs existing at that time. In 2001, the SMF became stewards of UConn Foundation endowment assets of $750,000 evenly split between an undergraduate and graduate team. The IAB was formed; several of the initial members are still active participants. In 2002, stop/loss programs were implemented to incorporate a disciplined approach to investing, in the absence of a formal procedure for selection and analysis of securities, the fund incurred heavy losses when the market crashed with the dot.com bubble. The crash forced a more disciplined approach to investment – formal classes and curriculum were developed for SMF participants. In 2003, the Steering Committee was formed to develop and implement best practices for the SMF. Finally, between 2004 and 2006 a mix of private donors and the foundation added additional capital to the funds.

Since 2008, students have had to prepare a final report at the end of the SMF program year both for the overall performance of their portfolio as well as for their individual stocks. In 2009, the IAB proposed and UConn Foundation Investment Committee approved changing the investment policy to include a maximum of 20 percent fixed-income securities[6]. Starting the same year, SMF undergraduate students received scholarships for their participation in the SMF. From 2010, all SMF participants received a significant stipend for their participation in the SMF. By 2018, the investment portfolios have reached over $4.5m, and the number of teams has grown from two to four. The growing student awareness of the existence of the SMF through countless information sessions and other recruitment efforts, the reputation of the supporting courses and the growth of the undergraduate finance program have all contributed to that increase.

4.2 The objectives of SMF

The SMF was established to offer participating students an opportunity to gain valuable hands-on experience in security research, valuation of risky assets, asset allocation and portfolio management. The educational experience and the performance of the portfolios are the primary objectives. The UConn Foundation evaluates the performance of the SMF in comparison to the S&P500 Index for equity securities and the Barclays Capital US Aggregate Bond Index for fixed income assets. In addition to rates of return, metrics reported by the student teams include volatility, value-at-risk, alpha and its decomposition into selection and allocation effects, Sharpe and Treynor ratios. However, the SMF does not presume that the students will be able to beat the market on a consistent basis. Instead, SMF focuses on delivering high-quality, practical education to students, improving the marketability of students in the industry and enhancing reputation to attract more talented students. Further, it aims to help students interact with alumni, give alumni the opportunity to participate in the School of Business's programs and help the School of Business's fundraising activities.

4.3 The structure of the SMF

The SMF operates under the auspices of the UConn Foundation, the SMF IAB and faculty advisors and staff from the Department of Finance at the School of Business. Initially beginning with two teams, the 2018–2019 will field three undergraduate and one graduate student team, representing approximately 40 students in the program for the upcoming year.

The UConn Foundation is the main source of funds invested by the SMF. In addition to the benefits to the students explained below, the prospectus states that "the UConn Foundation […] should gain additional publicity and opportunities for foundation and funding advancement, and will receive additional management and analysis services. Additionally, the Foundation will receive management services at no management fee cost, a considerable savings over other traditional management arrangements."

The IAB, according to the prospectus, "was set up for oversight of the student-managed fund […] The main charge of the Board will be to (1) receive monthly reports from the students; (2) receive the two consolidated reports at the end of Spring and Fall semesters for review, and provide feedback; (3) participate in the selection of asset classes and allocation within these classes, and recommend any rebalancing, if necessary; (4) identify the benchmarks for performance evaluation within each class and the overall portfolio."

The program is administered using a blend of faculty, alumni and practitioner advisors. The support from these participants includes the provision of courses and workshops (explained below) on investment analysis and tools. Additionally, each team is guided by an advisor during each of one to two weekly team meetings, when team members make pitches and decide on their investment. Administrative support on recruitment, regular communication with students and IAB members, and scheduling and management of all SMF events is provided during the year. Most IAB members serve as mentors to individual student managers.

4.4 The general principles of the SMF

The UConn Foundation has a long-term investment mandate for the SMF Program. The SMF should invest at least 80 percent in domestic equities (including common and preferred stocks of domestic firms, REITs and American Depository Receipts) and no more than 20 percent in domestic fixed income securities (US treasury and industrial bonds and bond indices traded as ETFs). In certain circumstances, it may be appropriate to invest in cash and money market assets, according to efficient allocation procedures. However, such allocation must not exceed 10 percent of the total value of the portfolio. Any changes in asset allocation must be brought to the attention of the Foundation in writing and formally approved by the Foundation before the strategy is implemented. Moreover, margin, short sales and options contracts are prohibited by the UConn Foundation. The investment principles of the SMF include growth investing, value investing, asset allocation and individual market sector allocations and socially responsible investing. Growth investing directs students to invest in the leading company in a specific industry with sufficient cash flow and internal investment opportunities. Value investing instructs students to buy an undervalued stock based on fundamental analysis. Asset allocation emphasizes the broad allocation across investment classes determined by the balance between the risk, return and correlation among assets. Individual market sector allocations recommend that allocation in any individual sector of the economy be limited to a maximum of 10 percent of invested funds. Corporate social responsibility (CSR) score is considered; investment is made in a business only if a majority of its CSR scores are above industry average along at least four SR dimensions.

Main data sources used by students include the Bloomberg platform, Morningstar Direct, Value Line Investment Survey, S&P Net Advantage, corporate websites and annual reports, filings and earnings calls. Workshops on valuation, performance attribution, analytical and quantitative tools are provided to support the SMF decision-making process, along with faculty advising and registration in the courses described below. A one-page report containing at a minimum a business description, an industry analysis, an investment thesis, risk and performance analysis, social responsibility business and industry scores is submitted with any buy order. A stock pitch must be approved by at least 70 percent of the team before an order can be issued. All orders are executed by faculty advisors. Portfolio composition, performance and analysis are presented at the end of every semester to the IAB and the UConn Foundation.

4.5 The specific requirements and strategy of the SMF

The SMF requires students to take courses on security valuation and portfolio management to merge theory with practice. The undergraduate teams take a course on Advanced Issues in Security Valuation in the fall semester and another on Advanced Issues in Asset Allocation and Portfolio Management in the Spring semester. Similarly, the graduate team takes a course on Valuation of Financial Assets in the fall semester and another on Advanced Valuation and Portfolio Management in the Spring semester. The graduate courses include the workshops described above.

In terms of strategy, the graduate SMF teams tends to favor a top-down approach where each manager picks the best stocks for a specific sector, while the undergraduate SMF focuses on a bottom-up approach with a value-driven analysis on individual companies. These investment styles are discussed in detail in the classes all SMF participants are required to take. Within every sector, each graduate manager seeks to identify and present the best stocks to the group. Further, some graduate managers have employed sector-based ETFs to gain their sector exposure before selecting individual stocks. In the undergraduate SMF bottom-up approach, managers focus on not only sector allocation but also on the analysis and evaluation of individual companies using a value-driven approach. The managers are broken into groups of two or three students, with each money management team analyzing the companies within two or three of their assigned S&P sectors. The difference in strategy between the two groups of students could stem from differences in the Finance course material to which they have been exposed prior to their SMF tenure, their backgrounds academic, professional and cultural.

At the end of each academic year, the SMF assets are placed in an S&P 500 Exchange Traded Fund. Every fall, a new cohort of students systematically sell out of the ETF and buy into specific securities, and at the end of every Spring semester, the position is liquidated. The Foundation uses the S&P 500 Index as the benchmark to evaluate SMF performance, and student managers view as success outperforming the benchmark (even if total return is minimal or negative), provided they adhere to their mandate.

4.6 The benefits of the SMF

The discipline and thought process the SMF managers use in arriving at an investment strategy is an excellent learning experience and a significant strength of the UConn SMF programs' experiential learning dimension. The rigorous process assists the students in developing clear and concise ways of expressing their investing methodology and has allowed many of the groups to realize success.

The SMF provides students with the networking opportunity to attend high-level IAB member events. Although only based on anecdotal evidence, many of our students have achieved highly compensated positions within the finance industry since participating in the SMF. Further, the SMF fosters connections with alumni in the industry and converts them into current and future supporters and employers.

The SMF also encourages students to participate in investment competitions to enhance its prominence. Notably, members of the 2016 graduate SMF program participated in the Quinnipiac Global Asset Management Education Forum (Q-GAME) in New York City, where they competed with over 1,200 students from 140 other colleges and universities. The Q-Game conference included a Student Managed Portfolio competition in which members of the SMF graduate team won first place in the Graduate Portfolio Growth Division. Also, members of both SMF teams have competed in the CFA Institute Research Challenge Case Competition, a global competition that provides university students with hands-on mentoring and intensive training in financial analysis. Students work in teams to research and analyze a publicly traded company and write a research report on their assigned company with a buy, sell, or hold recommendation. The competition involves tens of thousands of students from over 800 universities in more than 55 countries. The success of many of our students in these external competitions must surely be enhanced by SMF participation.

4.7 Feedback on the SMF

The SMF is required to actively seek feedback on its operations as part of its agreement with the IAB and the Foundation and has received both positive and negative feedback and insightful advice from alumni, advisors and other professionals. They comment that the SMF experience develops rigorous analytical skills in research, financial modeling and equity valuation that are reflected in presentations and Q&A sessions. When asked if the SMF was helpful to him, Michael Pehota, an alumnus, replied "Absolutely, I learned advanced modeling and valuation skills as well as the ability to think at a deeper level." Many stated that SMF helped to prepare them for their current role as well as providing professional development in general. To quote Tom Marshella, Head of Moody's Corporate Finance ratings business for the Americas, "all of our UConn hires have favorably distinguished themselves with strong performance and have demonstrated above average career progression and organizational visibility. The practical and case experience from SMF participation has obviously provided a strong analytic foundation and has served as a Springboard for quicker on the job learning and career advancement."

On the other hand, past participants suggested that the SMF get started earlier each academic year, and instruct students in hands-on investment courses as soon as possible. As alumnus Pehota puts it, a suggested improvement is to "create a pre-SMF class to educate students about basic valuation modeling and understanding of investments."

As noted by Kevin Edwards, a former Director of Finance at UConn Foundation who has been closely involved with the SMF since inception: "Having witnessed the SMF program from inception, it has been clear from the beginning the quality of students has always been strong, and the desire and passion of students, faculty, administration, UConn Foundation, and Advisory Board members have also been significant. The strength and commitment of all involved has been critical to the success and growth of the SMF to the benefit of each subsequent student manager group and the Business School. Aside from the analytical, modelling and portfolio construction skills, the students have also gained skills in effectively communicating their ideas through the formal presentations, and learning to prepare and think critically on their feet in order to answer difficult questions from their board and client. Additionally, the students clearly come away with a great understanding of how to successfully work in a team dynamic. Perhaps one of the greatest lessons the students have expressed over the years is that of fear as they discover again and again that managing client money, where the client needs them to be successful investors, is very different from managing their own money or participating in a simulation. The students come away with a much deeper respect of the markets and process. The most telling consistent remark made by IAB and UConn Foundation Investment Committee members is that the students' presentations and abilities improve every year. This speaks to the continual drive to improve the program and of course to the ever improving quality of the students who make it into the SMF."

5. SMF – performance analysis

5.1 Background

As noted above in the history of UConn's SMF, the fund has operated since the 2002–2003 academic year. This section investigates historical performance of the funds on an annual basis by team and the performance of the entire program over this period. The data on each year's fund composition used in the following analysis were obtained from the final reports and presentations prepared by the teams (henceforth "Final Reports"). We explain the final reports we used and any limitations in this collection process in Table I. Where final reports exist, if possible, we took actual equity positions from the SMF team's final report. For some years, the actual shares owned for each equity position was not recorded in the final report. In some of these cases, the final report records the percentage of the overall fund invested in each equity position. In these cases, it is simple to reconstruct the shares owned in each stock. In a small number of teams, neither the number of shares nor relative percentage is available. For these situations, we have assumed an equal percentage ownership in each equity position[7].

	Graduate team		Undergraduate team	
Academic year	Number of stock positions	Ownership data available	Number of stock positions	Ownership data available
2003	14	Shares	19	None
2004	19	Shares	10	None
2005	30	Shares	16	Shares
2006	25	None	20	Shares
2007	24	None	17	Shares
2008	19	Shares	21	Shares
2009	18	None	9	None
2010	22	Shares	16	Relative percentage investment
2011	No final report		14	Relative percentage investment
2012	28	Shares	16	Shares
2013	No final report		No final report	
2014	26	Shares	17	Shares
2015	12	Shares	13	Shares
2016	31	Shares	14	Shares
2017	17	Shares	19	Shares
2018	No final report		17[a]	Shares

Notes: In this table, the year refers to the year the final reports were issued. As an example, the 2003 undergraduate team is the team that worked in the 2002–2003 academic year. The Number of Positions refers to the number of equity positions in the final portfolio. Data Available refers to data available in the final report. Shares refers to final reports that record share positions. Relative Percentage Investment refers to final reports that state the relative dollar investment in each equity position – this can be converted into share data. If no information on relative positions is available, then the data available is None. [a]In 2018, two undergraduate teams were managed. The average position in each team was 17

Table I. Final reports used and limitations in the collection process

5.2 Performance of teams during the year of construction

In subsequent tables, we describe the actual performance of each SMF team during the year of construction of their portfolio. Annualized values have been included as each team's period of operation can differ by over two months depending on activity at UConn and availability of the advisory board and thus, actual performance can be misleading when compared across years. It is worth noting that throughout the year of portfolio construction, students are tasked with constructing portfolios that are "Value" in style or have "defensible Growth" strategies and use a ten-year investment horizon. As noted in Section 3, at the end of each construction year the portfolios are liquidated and readied for the next year's team.

In Tables II and III, the data show that, on average, the graduate SMF teams underperformed the S&P 500 benchmark by approximately 70 bps. The teams' average CAPM β measured using the weighted average of the teams stock βs was 0.95. The β value being close to the markets value of 1.00 reflects the fact that each team made investments throughout their year of portfolio construction, and when waiting for investment, the team's capital was predominantly invested in the S&P 500 tracking ETF, SPY. The undergraduate teams exhibit a similar pattern as their graduate counterparts – slight underperformance of the S&P 500 during the year of portfolio construction, and a β below the market reflecting the value nature of the teams' investment philosophy.

5.3 Performance over ten-year horizon

In this section, we use each team's final equity portfolio and measure the performance over the subsequent ten years, where possible. As per the UConn Foundation's requirements, teams are expected to be fully invested at the time of their final reports. Full investment, however, is not always achieved and nearly all teams report investments in either cash or the S&P 500 tracking ETF, SPY in their final portfolio. For the following analysis, we have assigned the equity portion of the portfolio as the "portfolio under analysis"[8]. As the team is meant to be fully invested, in the analysis below, we have only used the equity part of the team's portfolio.

We have "rolled forward" each team's portfolio for ten years for teams from academic years 2003–2004 through 2007–2008, and through to 2018 for teams from 2008–2009

Table II. Results of the graduate team's performance in the year of construction

		Over formation period		Annualized		
Year	Team	Fund (%)	S&P 500 (%)	Fund (%)	S&P 500 (%)	β
2003	Graduate	7.3	6.5	14.3	12.7	N/R
2004	Graduate	11.3	12.0	23.5	24.9	1.01
2005	Graduate	4.8	2.9	8.4	5.1	1.01
2006	Graduate	3.6	3.2	10.3	9.2	0.93
2007	Graduate	13.9	11.6	32.9	27.1	0.87
2008	Graduate	−11.9	−12.5	−28.6	−30.0	1.31
2009	Graduate	Not recovered				
2010	Graduate	2.4	3.6	7.2	11.2	0.83
2011	Graduate	Not recovered				
2012	Graduate	16.0	24.0	29.0	44.7	0.79
2013	Graduate	Not recovered				
2014	Graduate	9.93	11.19	23.9	27.1	0.92
2015	Graduate	5.92	6.26	13.9	14.7	1.03
2016	Graduate	5.97	4.04	16.7	11.1	0.81
2017	Graduate	8.16	9.50	15.1	17.7	N/R
2018	Graduate	Not recovered				
	Average	6.4	6.9	13.9	14.6	0.95

Note: N/R or "Not Recovered" means that the data cannot be found or reconstructed from records available

Year	Team	Over formation period Fund (%)	S&P 500 (%)	Annualized Fund (%)	S&P 500 (%)	β
2003	Undergraduate	17.0	8.4	33.7	16.0	1.00
2004	Undergraduate	15.4	11.1	35.3	24.8	0.83
2005	Undergraduate	2.5	5.1	4.6	9.3	0.85
2006	Undergraduate	4.0	4.8	11.0	13.4	0.71
2007	Undergraduate	9.4	11.0	21.6	25.6	0.99
2008	Undergraduate	−7.9	−12.5	−15.9	−24.5	0.77
2009	Undergraduate	Not recovered				
2010	Undergraduate	5.5	3.6	17.5	11.2	0.74
2011	Undergraduate	24.0	22.1	53.8	49.1	0.84
2012	Undergraduate	3.5	21.1	9.2	63.0	1.00
2013	Undergraduate	Not recovered				
2014	Undergraduate	10.5	11.2	24.4	26.0	0.97
2015	Undergraduate	5.8	6.4	13.6	15.0	1.03
2016	Undergraduate	7.3	8.0	12.8	14.0	N/R
2017	Undergraduate	11.1	10.1	19.8	17.9	N/R
2018	Undergraduate Team 1	7.7	4.8	14.7	9.1	N/R
2018	Undergraduate Team 2	7.1	4.6	15.5	10.0	N/R
	Average	8.2	8.0	18.1	18.7	0.88

Note: N/R or "Not Recovered" means that the data cannot be found or reconstructed from records available

Table III. Results of the undergraduate team's performance in the year of construction

through 2006–2017. For the equity positions, we accessed monthly data from the WRDS CRSP database. For dividends paid during any month, the dividend was reinvested back into the paying stock using the month-end stock price as the basis for calculating the increase in shares owned[9]. In cases where a stock is delisted for any reason, we reinvested the proceeds, if any, into the remaining stocks in the portfolio using the month-end value of the remaining equities as the basis for apportioning the proceeds.

In Table IV, we describe the performance of the 12 teams that have completed ten-year timespans. Results of teams that have not yet completed ten years, teams from 2008–2009 onwards, are set out in Table V. The results for the completed years are impressive. For the completed 12 teams, the annual spread between the SMF team's and the S&P 500 mean return is 185 bps. Of the 12 teams, 10 teams outperformed the S&P 500. Described in terms of "dollars invested," on average $1 invested in the UConn SMF completed teams grew to $2.52 over the subsequent ten years on average, compared to the S&P 500 value of $2.10. On average, the volatility of the completed SMF funds was 15.0 percent measured as annual standard deviation, compared to 14.9 percent for the market. The average β measured using monthly returns over the completed ten-year period is 0.91 – this is indicative of the "Value" nature of our investment style. The data for the unfinished teams are less conclusive. There is no difference between the SMF performance on average and the performance of the S&P 500.

5.4 The SMF benchmark©

The monthly returns of the UConn SMF funds can be used to create an "SMIF Benchmark." As an example, for the year ended May 2004 only two funds have "active" ten-year periods – the undergraduate and graduate teams from the academic year 2003–2004. The average of these two funds can be used to create the benchmark. If we continue into the year ended May 2005 four funds have "active" ten-year periods – the undergraduate and graduate teams from academic years 2003–2004 and 2004–2005. The average of these four funds can be used to create the benchmark for the year ended May 2005. As we progress, more teams become "active" – for example, in the year ended May 2009, we had twelve funds with active ten-year periods. Figure 1 demonstrates how $1 invested in the UConn SMF benchmark

Year	Team	$1 invested – value in 10 years SMF	S&P 500	Annual return SMF (%)	S&P 500 (%)	Diff. (bps)	SD SMF (%)	S&P 500 (%)	β
2003	Undergraduate	$ 2.44	$ 1.97	9.35	7.47	233 bps	12.5	14.5	0.76
2003	Graduate	2.55	2.06	9.80	7.47	232	13.9	14.5	0.85
2004	Undergraduate	2.85	2.09	11.04	7.66	338	15.7	14.7	0.89
2004	Graduate	3.13	2.09	12.09	7.66	444	15.2	14.7	0.95
2005	Undergraduate	1.90	2.16	6.62	8.03	−141	15.2	14.7	0.89
2005	Graduate	2.12	2.16	7.79	8.03	−24	16.7	14.7	1.05
2006	Undergraduate	2.91	2.02	11.29	7.30	399	14.8	15.2	0.93
2006	Graduate	2.25	2.02	8.43	7.30	114	13.7	15.2	0.83
2007	Undergraduate	2.06	1.94	7.48	6.85	63	15.0	15.2	0.93
2007	Graduate	2.16	1.94	7.98	6.85	113	15.5	15.2	0.97
2008	Undergraduate	2.76	2.38	10.68	9.04	163	16.7	15.0	1.05
2008	Graduate	3.08	2.38	11.92	9.04	287	14.6	15.0	0.78
	Average	2.52	2.10	9.54	7.73	185	15.0	14.9	0.91

Notes: The data in this and Table V were constructed by using closing equity portfolios, as set out in team's final reports. These portfolios were "rolled-forward" for the ten-year investment horizon. For dividends paid during any month, the dividend was reinvested back into the paying stock using the month-end stock price as the basis for calculating the increase in shares owned. In cases where a stock is delisted for any reason, we reinvested the proceeds, if any, into the remaining stocks in the portfolio using the month-end value of the remaining equities as the basis for apportioning the proceeds

Table IV. Subsequent performance of completed years

Year	Team	$1 invested – value at May 31, 2008 SMF	S&P 500	Annual return SMF (%)	S&P 500 (%)	Diff. (bps)	SD SMF (%)	S&P 500 (%)	β
2009	Undergraduate	$ 3.28	$ 3.51	14.10	14.98	−51bps	12.1	12.0	0.92
2009	Graduate	2.43	3.51	10.35	14.98	−463	11.1	12.0	0.81
2010	Undergraduate	2.59	2.91	12.64	14.30	−166	11.1	11.5	0.86
2010	Graduate	5.28	2.91	23.13	14.30	883	15.9	11.5	1.02
2011	Undergraduate	2.59	2.32	14.57	12.75	182	10.8	11.0	0.90
2012	Undergraduate	2.18	2.33	13.89	15.12	−123	11.0	9.4	1.04
2012	Graduate	2.29	2.33	14.77	15.12	−35	10.1	9.4	1.01
2014	Undergraduate	1.42	1.52	9.09	11.09	−200	10.5	9.9	0.99
2014	Graduate	1.75	1.52	15.09	11.09	400	9.8	9.9	0.94
2015	Undergraduate	1.29	1.36	8.88	10.88	−200	9.4	10.3	0.81
2015	Graduate	1.56	1.36	15.87	10.88	499	13.1	10.3	0.97
2016	Undergraduate	1.48	1.34	21.84	15.89	595	7.9	7.3	0.96
2016	Graduate	1.28	1.34	13.13	15.89	−275	7.7	7.3	0.83
2017	Undergraduate	1.08	1.14	7.94	14.36	−642	10.0	8.6	1.07
2017	Graduate	1.12	1.14	12.04	14.36	−232	10.5	8.6	1.09
	Average	2.11	2.04	13.82	13.73	11	10.7	9.9	0.95

Notes: The data in this and Table IV were constructed by using closing equity portfolios, as set out in team's final reports. These portfolios were "rolled-forward" for the ten-year investment horizon if completed. For the teams above, performance is measured through to May 31, 2018. For dividends paid during any month, the dividend was reinvested back into the paying stock using the month-end stock price as the basis for calculating the increase in shares owned. In cases where a stock is delisted for any reason, we reinvested the proceeds, if any, into the remaining stocks in the portfolio using the month-end value of the remaining equities as the basis for apportioning the proceeds

Table V. Subsequent performance of incomplete years

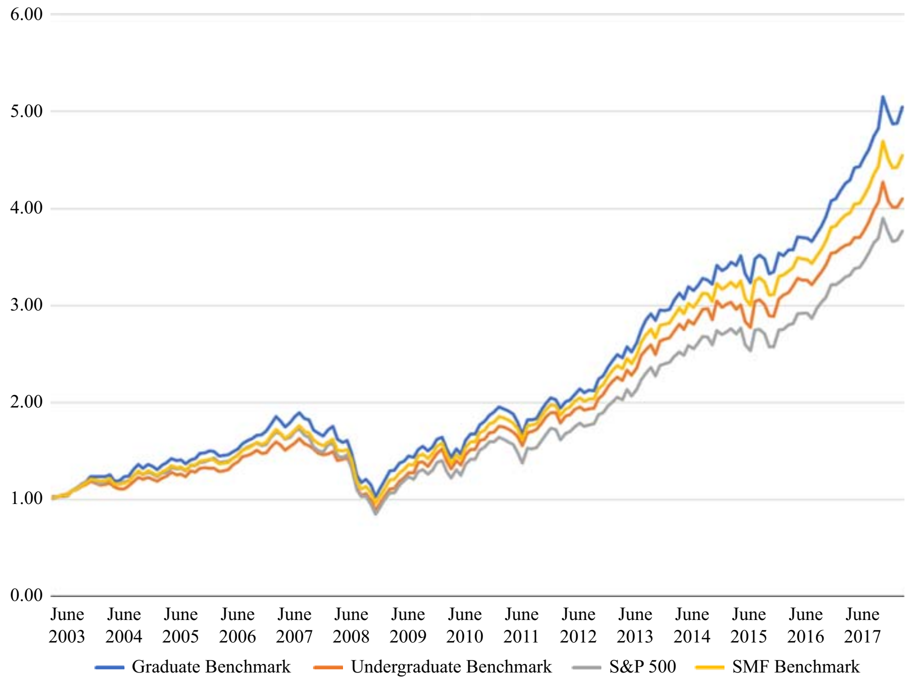

Figure 1.
Comparison of $1 invested in benchmarks and S&P 500 over life of SMIF

grows to $4.55 by May 31, 2018 compared to a dollar invested in the S&P 500 growing to $3.77 over the same period. To compare graduate vs undergraduate performance, a specific benchmark for both types was created.

Using the SMF Benchmark, we can now analyze the performance of the SMF program. In Table VI, we compare return verses risk for the SMF benchmark compared to the performance of the S&P 500 over the same period. The performance of the SMF benchmark has been calculated for the entire fund as well as the graduate and undergraduate components. Because of the crisis in the markets in 2008 and 2009, the performance of the SMF benchmark is also compared pre-2008 vs post-2008. To further understand the impact of this crisis, for the teams that selected their portfolios before the crisis the pre-2008 teams* category only measures the performance of the pre-2008 teams up to the year of the crisis, whereas, pre-2008 teams category measures the performance of the pre-2008 teams over their entire lives.

In Table VI, we illustrate the coefficient of variation of each team over the noted period. This approach illustrates the persistent outperformance of the SMF benchmark over all periods and across graduate and undergraduate components. Finally, using the SMF benchmark, we can estimate the β of the "UConn SMF benchmark Investment Style." Measuring β across all 15 years yields a value of 0.91. This is consistent across undergraduate and graduate teams. This value illustrates the true excess performance of the UConn SMF program – 120 bps of annual performance in excess of the return on the S&P 500, with a standard deviation of returns of 12.2 percent and a β of 0.91 compared to a market of 13.2 percent and 1.00.

6. Conclusion and looking forward

Since its inception as one the few major students managed investment funds, the UConn SMF has enjoyed steady growth both in the number of students and teams involved in the

	Graduate	Undergraduate	All SMIF	S&P 500
Mean return				
Pre-2008 teams	12.2%	10.7%	11.5%	10.2%
Pre-2008 teams*	10.5%	7.2%	8.8%	8.1%
Post-2008 teams	15.9%	16.3%	16.6%	15.8%
All Years	12.3%	12.9%	11.4%	10.2%
SD				
Pre-2008 teams	12.6%	12.5%	12.3%	13.2%
Pre-2008 teams*	9.8%	8.3%	8.8%	9.4%
Post-2008 teams	11.5%	11.7%	11.3%	12.0%
All Years	12.4%	12.3%	12.2%	13.2%
Coefficient of variation				
Pre-2008 teams	1.03	1.17	1.07	1.29
Pre-2008 teams*	0.93	1.15	0.99	1.16
Post-2008 teams	0.72	0.71	0.68	0.76
All years	1.01	0.96	1.06	1.29

Notes: This table compares the performance of the SMF benchmark during the pre- and post-2008 financial crisis, by graduate and undergraduate and in total. *The pre-2008 team performance shows the performance of incomplete years truncated at time of 2008-2009 financial crisis

Table VI.
Subsequent performance of incomplete years

program, and assets under investment, or net asset value. The number of teams has grown from two to four; the total number of students active in our program this year now exceeds 40; and the size of the portfolio exceeds $4.5m. Our analyses show that in most of the years, the SMF teams outperformed the S&P500 Index, and the projected long-term performance measured by the SMF benchmark is also superior. But, as we have observed, the main objective of the program is to train students in asset selection and portfolio management with a methodical, disciplined approach to investment, with special focus on process, philosophy and style. Another important dimension of the program is to inculcate the virtues of financial prudence, diligence, team-spirit, ethical behavior and professionalism. We attribute the success of the UConn program to five factors: participation by the most gifted students; adherence to process and procedure; guidance and mentoring by Foundation Investment Committee, and prominent alums in the financial industry; courses focused on applied asset valuation and portfolio construction tool and techniques and special workshops; and access to special data sources and stock report from Valueline, Morningstar, S&P Net Advantage, etc.

With the SMIF programs now established as a critical part of the Finance curriculum and experiential learning initiative in most business schools, it is instructive to contemplate the future of these programs. First, the older SMIF programs have mainly focused on US equity and have avoided more complicated instruments. While equity investment still remains the main type of investment held by SMIFs, with the rapid growth in the financial markets worldwide, it is only natural that SMIFs must incorporate hedge fund strategies, derivatives and various alternative investments, and new tools and techniques for risk management. Indeed, many SMIFs now allocate a specified portion of the funds to non-equity investments. We expect this trend to continue. Second, an important differentiator among programs is the extent of real-time data sources and software programs and students' access to and training in these resources. Currently, the use of these applied tools is limited by budget constraints. We expect schools to continue to invest in these resources. Third, while the programs have grown, to our knowledge, there is no study on the financial industry's perception of the SMIFs and the value they attach to the education and training students receive through these programs. A well-executed survey will help in this regard.

Finally, there are many national competitions across the country on security selection and asset management. However, these contests are organized by individual universities or organizations. A national organization of SMIFs where more schools can participate and student managers and advisors can interact and exchange ideas will provide a platform for improvement and collaboration.

Notes

1. We use the abbreviation SMIF to describe student funds in general, and SMF to refer to the UConn program. At UConn, the program has been referred to as SMF from its inception.
2. We reach this conclusion based on feedback from our alumni and through and the placements from the program over the last two decades.
3. Over the years, many prospective students have told us that they considered UConn mainly for the SMF program.
4. The UConn School of Business has managed many experiential learning programs over its life. These include an OPIM program sponsored by GE – Edgelab; an entrepreneurship program funded by the State of Connecticut – The Innovation Accelerator, anda program geared towards finance – The Financial Accelerator.
5. We have developed an innovative method to project the long-term performance of the portfolio each year. We report the results of that analysis later in the paper.
6. Students have not yet invested in fixed income because interest rates remaining persistently low after the 2008 financial crisis.
7. Although ambiguous, the equal percentage assumption is a good approximation as most teams invest in a relatively tight range – for example, a representative team will own approximately 15–20 equity positions, and invest 4.0–7.0 percent in each.
8. For example, the undergraduate 2004 team had a final portfolio of $232,674. This consisted of equity positions of $227,621, a position in the S&P 500 ETF of $1,142, and cash of $3,911.
9. For example, the undergraduate team of 2016 owned 1,275 shares of Apple. The first dividend paid after the date of the final report was 57 cents paid on August 11, 2016. Using the stock price at the end of the month in which the dividend was paid, $106.17 on August 31, 2016, we increased the number of shares to reflect this reinvested dividend. In the case of the August 11, 2016 dividend, the adjusted number of shares is $1{,}275 \times (1 + 0.57/106.17) = 1{,}281.85$ shares.

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