

Student-Managed Investment Funds: An Exploratory Study of a Model That Works

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Student Managed Investment Funds (SMIF), an experiential approach to learning about portfolio theory and practice, are increasingly prevalent in financial education in business schools (Boughton & Jackson, 2019). However, there is very little empirical evidence regarding the determinants of SMIF financial performance. Following a review of the literature, this paper presents an exploratory study of Gonzaga University's SMIF model and results compared to nineteen other schools in a regional competition. The results suggest that SMIFs using a class structure and spanning more than one semester outperform those that do not. Implications for future SMIF research and practice are discussed.

Keywords: student-managed investment funds, financial performance, exploratory study

INTRODUCTION

The first student-managed investment fund (SMIF) was launched in 1952 at Gannon University (Lawrence, 1994). Today there are over 400 SMIFs worldwide (Lawrence, 2008; Kubik, 2018; Boughton & Jackson, 2019). Although there are many variations, the SMIF is an experiential approach to finance education that engages students in hands-on investment portfolio evaluation and decision making with real money. While there is a considerable body of literature on the key elements of SMIFs, there is relatively little research on SMIF performance, particularly studies that compare different SMIF models. In this paper, we present a brief review of the literature on SMIFs. Then we examine the performance outcomes of SMIFs across twenty business schools participating in D.A. Davidson's Student Investment Program. One school, Gonzaga University, has consistently out-performed the others in this group as measured by average annual return and the risk-adjusted Sharpe ratio for trailing 1-, 3-, and 5-year periods. We describe the content and process of Gonzaga's SMIF and draw some tentative conclusions about why it has achieved this high level of performance over time. We close the paper with some recommendations for future research and practice on SMIFs.

LITERATURE REVIEW

Lawrence (1994; 2008) has conducted two extensive surveys to determine the prevalence and major components of SMIFs. His 2008 study identified 314 SMIFs worldwide, although the vast majority were

in the United States and Canada; nearly all of them were within business schools (Lawrence, 2008). Further, his study noted that the number of SMIFs and the size of the funds they managed grew rapidly in the 1990s and 2000s as the sources of investment funds has expanded to include individual donors, companies, foundations, and university endowments. Subsequent surveys by Kubik (2018) and Boughton & Jackson (2019) tend to validate these characteristics, although these authors indicate that the number of SMIFs in the US and Canada alone now exceeds 400. Following are some of the key components and considerations of SMIFs identified in the surveys cited above.

Funding Sources and Structure

Lawrence (2008) reported that individual alumni or private donors fund most SMIFs; twenty-eight percent are funded by a portion of the university's endowment funds. Other sources of funding include companies interested in financial education such as the Tennessee Valley Authority and brokerage firms such as D.A. Davidson and the Stern Agee Group. SMIFs vary widely in terms of the size of funds managed, with an average of \$1.4 million for US programs. Regardless of the source of funds, about 62% of SMIFs are constructed as part of the university endowment. Most of the rest are structured as separate entities such as a non-profit or limited liability corporation. The majority (about 58%) of SMIFs have advisory boards including investment professionals, alumni and faculty. In addition, Boughton & Jackson (2019) found that most (92%) of SMIFs had been in existence for over five years.

Student Participation

About seventy percent of SMIFs in the US are structured as part of a course or courses, usually in finance. Students can earn anywhere from one to twelve credits over one, two or three semesters or more (Lawrence, 2008). Kubik (2018) found that 70% of SMIFs involved undergraduates. Most course based SMIFs control the level of student participation based on academic major, grade point average, application, and/or interview. SMIFs that are not part of a formal course are offered as a co-curricular activity within the university such as a student club. The average size of an SMIF in the US is 29 students. In nearly all SMIFs (90%), students are responsible for making the investment decisions, although most programs have a policy that gives a faculty member or advisory board veto power in cases where a decision is ill advised. In the remaining programs, advisory boards and/or a faculty member shared in or made the final investment decisions (Lawrence, 2008).

Faculty and Professional Involvement

With few exceptions, faculty members are directly involved with SMIFs either as instructors or advisors. Increasingly, local investment professionals are also closely involved, serving as adjunct instructors, advisors or directors of the SMIF program (Lawrence, 2008). Boughton & Jackson (2019) reported that faculty advisors of class based SMIFs generally received compensation and/or release time while faculty advisors for co-curricular SMIFs did not.

Investment Activity

According to Lawrence (2008), twenty-eight percent of SMIFs surveyed had more than one fund, each with different objectives (e.g., growth, value, income, mixed). Of those with a single fund, most focused on a blend of outcomes, while 23% focused on value, and 10% emphasized growth. Thirty-seven percent of funds used a bottom-up investment strategy and 27% used a top-down strategy, followed by 11% with a buy-and-hold strategy. The remaining funds used a combination of these strategies to make investment decisions. Due to the increasing size of the average portfolio, ninety-two percent of universities have established formal written investment guidelines that govern such issues as the fund's structure, level of diversification, use (or not) of hedge funds, distribution of gains/losses, and other fiduciary and legal considerations (Gradisher, Kahl, Clinebell, & Stevens, 2016). There is also a growing trend towards schools adopting socially responsible investing guidelines (Clinebell, 2013; Saunders, 2015; Daugherty & Vang, 2015).

SMIFs vs. Professionally Managed Funds

The essential purpose of SMIFs is to provide a realistic learning experience for students who want to become professional portfolio managers or to learn about individual wealth management. This hands-on approach to portfolio management provides an opportunity for students to connect theory with practice, resulting in a deep learning experience. However, along with these benefits, there are also several constraints with student portfolios. For example, SMIFs generally have faculty and industry advisors who have more or less control over the investment choices made, depending on the policies adopted by the school (Charlton, Earl, & Stevens, 2015). Students participating in the SMIF also have limited time horizons and less ability to respond quickly to market conditions, compared to professional managers, due to the constraints of university course schedules and calendars. In addition, students do not have the same consequences (rewards and punishments) based on portfolio performance when compared to professional managers. Moreover, Caldwell & Dovin (2012) suggested that there is a tendency towards the bias called “herding” behavior (i.e., following the crowd), in SMIFs due to the social dynamics of the classroom.

Learning and Performance Outcomes

As noted previously, SMIFs tend to emphasize learning outcomes rather than financial return outcomes when evaluating performance. There is strong evidence that experiential methods of education produce superior learning outcomes when compared to traditional lecture approaches (Kolb, 1984; National Research Council, 2000; Kitchens, Means & Tan, 2015). However, there is scant empirical evidence directly related to the learning outcomes of SMIFs. In one study, Daughtery & Vang (2015) found that MBA students in a two-semester class demonstrated an increasing ability to evaluate and select higher performing stocks over the course of the academic year. They attributed this increased ability to the educational components of the course in which students learn about the mechanics of sound investment decisions along with working together to analyze, evaluate and discuss the pros and cons of various investment decisions. They hypothesized that the greater awareness and insight gained through class discussions reduces the tendency towards “herding” behavior. With respect to non-financial performance outcomes, eighty-one percent of SMIF directors surveyed by Lawrence (2008) reported that their students were better educated in portfolio management than students who did not participate in the SMIF program. In addition, faculty members indicated that students with SMIF experience had more job opportunities and were more highly valued by employers in a competitive job environment. Boughton & Jackson (2019) similarly reported that SMIF advisors believed that: 1) the hands-on education gave students more opportunities for internships and employment, 2) the SMIF brought positive visibility to the school and university, and 3) the program helped develop valued relationships with alumni and professionals in the community.

There is not much empirical research on the financial performance of SMIFs; the evidence that does exist is mixed (Mansfield, 2002; Lawrence, 2008; Mallett, Belcher, & Boyd, 2010; Krueger, 2011; Boughton & Jackson, 2019; Haddad, Redman, & Gullett, 2019). Lawrence (2008) reported that in 2006 sixty-six (about 23%) of US-based SMIFs distributed cash totaling \$1.9 million to support academic programs, an average of about \$29,000 per school. The acclaimed Roland George Investments Program at Stetson University reported that it produced positive returns in 23 out of 29 years, averaging a yearly annual return of over 7% (Mallett, *et al.*, 2009). A study of the Tennessee Valley Authority program showed that half of the twenty-six participating schools had returns exceeding the S&P 500 average return, a standard benchmark of performance (Mansfield, 2002). Another study of the long-term performance of the TVA Investment Challenge Program reported that the twenty-five schools in the competition averaged a 6.7% return over twenty years while the S&P 500 benchmark averaged 6.5% (Haddad, *et al.*, 2019). However, a study of the Spellman Portfolio program at the University of Wisconsin-La Crosse found that the SMIF produced returns below the S&P benchmark (Krueger, 2011). An interesting feature of the Spellman program is that the students conducted the research on investments and made recommendations to an advisory board of investment professionals, who then made the investment decisions.

Of course, one factor that boosts returns for SMIFs is that they generally have a lower cost/expense structure than professionally managed funds. Faculty, advisor and other overhead costs are not factored into

net fund returns. On the downside, as noted earlier, SMIF performance outcomes may be negatively affected by constraints in the academic environment including, lack of a long-term investment period, frequent student turnover, rigid course schedules and requirements, inconsistent investment philosophies, and “herding” behavior (Mallett, *et al.*, 2010; Daughtery & Vang, 2015; Boughton & Jackson, 2019). Given the paucity of research on financial outcomes of SMIFs, several authors have pointed to the need for more systematic research across different models (Boughton & Jackson, 2019; Holzhauer, Krause, Russell, Harrell, & Bandopadhyaya, 2019).

THE GONZAGA UNIVERSITY SMIF PROGRAM

Background and History

D. A. Davidson and Company (DADCO), a regional West Coast brokerage wealth management firm, has been a sponsor for college and university SMIF programs for many years. Beginning with Montana State University in 1985, the program has expanded to 20 institutions in the west and mid-west regions of the United States. DADCO’s annual funding is a modest \$50,000 grant to each of the 20 schools. Beginning each September 1st and ending August 31st of the following year, students are assisted by a faculty member or advisor at each participating school along with a representative from DADCO’s local office in constructing a small equity investment portfolio. Programs whose portfolio balance exceeds \$52,000 at the end of August each year divide its residual with DADCO allowing each college/ university group to retain approximately one-half of the net gain. The program set up by D. A. Davidson has each college/school manage a portfolio on an ongoing basis. However, on the last trading day of August of each year the balance is reset to \$50,000. The new fall semester class assumes responsibility for the portfolio, modifying the equity holdings as decided after review of all equities under consideration.

Components of Gonzaga’s SMIF Model

Gonzaga University’s School of Business Administration (SBA) was added to DADCO’s cadre of schools in 2001. The SBA created an elective undergraduate class specifically to accommodate the guidelines of the DADCO investment challenge. The aim was to create a course for building a portfolio of equities and fixed income investments. Gonzaga’s SMIF was designed by a senior faculty member in finance who has also taught the course for most of its history.

DADCO does not have a specified investment policy statement (IPS). The professor develops an IPS during the course for a hypothetical client. Based on the IPS, the student due diligence is restricted to firms that have a history of proven earnings. The IPS always requires the firms under consideration to have a history of growth over time or be value companies whose price appears to be less than their proven performance strength. The course includes both top-down and bottom-up investment approaches. Beginning with the first semester of the three-semester class, students examine the broad economic and other factors that affect investment strategies and performance. During the summer and second semester, students conduct extensive analysis of individual companies to determine those best suited for inclusion in the SMIF portfolio. The third semester is reserved for management of the portfolio including changes to the holdings.

The course at Gonzaga consists of three one-credit hour semester classes (total of 3 credits). Each enrolled student is committed to registering for the class in a cohort spanning three consecutive semesters (1.5 years) beginning in the spring semester of the junior year. The requirements for enrollment are junior standing, minimum 3.0/4.0 GPA, and an academic concentration in Finance, Economics or Accounting. The average cohort size is eleven students.

In the first semester class, students study the investment theories and models upon which portfolio construction and management are founded. Topics studied include investment policy, diversification, market efficiencies, screening, balance and revision, international investments, equities and fixed income investments among others. During the summer, between their junior and senior years, each enrolled student works from a case of a hypothetical client seeking investment assistance and management. Each student selects and conducts due diligence on a handful of self-selected firms which fit the investment objectives

of the mock client. From this “deep dive”, the student then selects the three most promising firms to be presented to the class and considered for inclusion in a constructed portfolio.

During the fall semester (the students’ second semester in the course), students introduce their three selected companies over the semester with a detailed presentation on each firm they have offered for consideration. The presentations include a thorough analysis of the firm, its industry, history, products and development, competitive comparisons, and financial analysis (including income, balance sheets, cash flow, dividends) supporting their recommendations. Class dialogue, including questions regarding each firm, follows each presentation. Each student builds and maintains a log of the companies introduced for consideration. Throughout the semester, updates on each company are offered. This includes quarterly financials, M&A activity, product development, management changes, litigation and other activities.

Once all of the firms have been presented, the class is broken into 4 – 5 smaller teams. Each team schedules time away from class to review the companies (usually 30-35 companies). Using notes from their logs, they arrive at, in rank order, the companies from most to least promising. Each small team presents their preferences in highest to lowest order with consideration on industry and diversification. Once all small team analyses on the companies are completed, the class, acting as an investment team, compares and discusses the selections of each small team. At this stage, diversification of the portfolio becomes a critical factor. By individual vote, those companies that receive the largest votes are prioritized for inclusion. Firms receiving a low number of votes are eliminated from further consideration. Once the final number of diversified firms is selected, the class balances the portfolio by the dollar and number of shares weights for each firm in the new portfolio and proceeds to invest. It is important to note that the students have the final say in which firms are included in the portfolio. The professor, however, will “weigh in” on companies that do not fit the Investment Policy Statement. This process, near the end of the fall semester, culminates in conformance to the IPS for the hypothetical client that will be used until it is revised again in the following fall semester.

When the new portfolio is constructed, students are empowered to manage the portfolio through their spring (and final) semester. Buy and sell decisions may take place when deemed necessary by the class. At the end of the spring semester when class members graduate, the management responsibility of the portfolio reverts to the professor through the summer into the fall semester until a modified portfolio is developed.

PERFORMANCE RESULTS

Historically, the Gonzaga University SMIF classes have performed well, often in the upper decile of the 20 participating schools. Remarkably, during the five-year period from August 31, 2013 through August 31, 2018, Gonzaga outperformed all schools on measures of compound annual growth and the Sharpe ratio on five-year, three-year and one-year rolling averages (see Table 1). In addition, Gonzaga outperformed the S&P benchmarks on all of these measures with the exception of the 5-year Sharpe ratio (S&P 500 - 1.42 vs Gonzaga – 1.41). This sustained record of long-term performance gives rise to the question – why?

TABLE 1
DADCO SMIF COMPETITION RESULTS (AUG 2013-AUG 2018)

School	Structure	Duration	Credit Hours	Time Duration	5Yr Growth	3Yr Growth	1Yr Growth	5Yr Sharpe	3Yr Sharpe	1Yr Sharpe
			Semester		Percentage	Percentage	Percentage			
			Equivalent							
Gonzaga	Class	3 sem	3	1.5 years	18.1	23.6	50.4	1.41	1.79	2.88
A	Class	1 quarter	2.67	10 weeks	12.8	6.9	3.7	0.91	0.57	0.30
B	Club				12.3	19.0	36.0	0.91	1.28	1.99
C	Class	2 sem	3	1 year	12.1	10.7	22.6	0.75	0.70	1.25
D	Club				11.8	13.6	15.0	0.85	0.96	1.05
E	Class	1 sem	3	16 weeks	10.4	12.6	23.9	0.86	0.96	1.68
F	Class	3 quarters	4	1 year	9.3	10.2	20.1	0.85	0.99	2.06
G	Club				9.0	12.1	25.2	0.53	0.68	1.74
H	Club				7.0	4.2	13.8	0.46	0.30	1.39
I	Class	1 sem	3	16 weeks	3.0	7.2	8.5	0.40	1.05	1.28
J	Class (Grad)	2 sem	6	1 year	2.9	7.3	11.3	0.23	0.53	1.06
K	Class (MBA)	1 quarter	2.67	10 weeks	2.4	3.5	-0.9	0.20	0.24	-0.15
L	Class	1 sem	3	16 weeks	2.1	7.8	23.6	0.18	0.51	1.63
M	Club				1.7	3.7	29.0	0.16	0.28	1.74
N	Class	2 sem	4	1 year	1.5	0.5	6.7	0.15	0.02	0.55
O	Club				0.6	10.5	21.2	0.08	0.79	1.48
P	Class	2 sem	6	1 year	-0.9	3.7	9.0	-0.08	0.37	0.95
Q	Club				-1.1	1.9	14.3	-0.17	0.19	1.15
R	Club				-3.3	4.0	16.0	-0.17	0.28	0.74
S	Club				-7.0	4.7	26.3	-0.33	0.29	1.88
AVERAGE					5.2	8.4	18.8	0.41	0.64	1.33
S&P 500					14.5	16.1	19.7	1.42	1.56	1.87

To answer this question, we conducted an exploratory analysis of the course descriptions and other information about each of the twenty SMIFs in the DADCO competition. It was no surprise that schools varied widely in terms of their program structure and approach. Eleven of the SMIFs were based on formal classes that ranged in credit hours and semesters. One of these SMIFs was an MBA course, one was a Masters of Investment Management course; all others were structured at the undergraduate level. Nine of the SMIFs were co-curricular student clubs, with no formal class component.

While it is difficult to conduct rigorous statistical analysis due to the small sample size, we examined the various schools and performance results based on three primary variables: structure of the SMIF (course or club), duration of the course (semesters/quarters), and number of credit hours.

**TABLE 2
SMIF STRUCTURE (CLUBS VS COURSES)**

School	Duration	Credit Hours	Time Duration	5 Yr Growth	3 Yr Growth	1 Yr Growth	5 Yr Sharpe	3 Yr Sharpe	1 Yr Sharpe
		Semester		Percentage	Percentage	Percentage			
		Equivalent							
Courses									
Gonzaga	3 sem	3	1.5 years	18.1	23.6	50.4	1.41	1.79	2.88
A	1 quarter	2.67	10 weeks	12.8	6.9	3.7	0.91	0.57	0.30
C	2 sem	3	1 year	12.1	10.7	22.6	0.75	0.70	1.25
E	1 sem	3	16 weeks	10.4	12.6	23.9	0.86	0.96	1.68
F	3 quarters	4	1 year	9.3	10.2	20.1	0.85	0.99	2.06
I	1 sem	3	16 weeks	3.0	7.2	8.5	0.40	1.05	1.28
J	2 sem	6	1 year	2.9	7.3	11.3	0.23	0.53	1.06
K	1 quarter	2.67	10 weeks	2.4	3.5	-0.9	0.20	0.24	-0.15
L	1 sem	3	16 weeks	2.1	7.8	23.6	0.18	0.51	1.63
N	2 sem	4	1 year	1.5	0.5	6.7	0.15	0.02	0.55
P	2 sem	6	1 year	-0.9	3.7	9.0	-0.08	0.37	0.95
AVERAGE				6.7	8.5	16.3	0.53	0.70	1.23
S&P 500				14.5	16.1	19.7	1.42	1.56	1.87
Clubs									
B				12.3	19.0	36.0	0.91	1.28	1.99
D				11.8	13.6	15.0	0.85	0.96	1.05
G				9.0	12.1	25.2	0.53	0.68	1.74
H				7.0	4.2	13.8	0.46	0.30	1.39
M				1.7	3.7	29.0	0.16	0.28	1.74
O				0.6	10.5	21.2	0.08	0.79	1.48
Q				-1.1	1.9	14.3	-0.17	0.19	1.15
R				-3.3	4.0	16.0	-0.17	0.28	0.74
S				-7.0	4.7	26.3	-0.33	0.29	1.88
AVERAGE				3.4	8.2	21.9	0.26	0.56	1.46
S&P 500				14.5	16.1	19.7	1.42	1.56	1.87

As shown in Table 2, SMIFs with a course structure outperformed those with a club structure on average annual growth on 5-year (6.7% vs 3.4%) and 3-year (8.5% vs 8.2%) rolling averages. Clubs outperformed classes on 1-year (21.9% vs 16.3%) annual growth. With respect to the Sharpe ratio, courses outperformed clubs on 5-year (.53 vs .26) and 3-year (.70 vs .56) ratios. Clubs outperformed courses on the 1-year ratio (1.46 vs 1.23).

**TABLE 3
DURATION (SEMESTERS/QUARTERS)**

School	Duration	Credit Hours	Time Duration	5 Yr Growth	3 Yr Growth	1 Yr Growth	5 Yr Sharpe	3 Yr Sharpe	1 Yr Sharpe
		Semester		Percentage	Percentage	Percentage			
		Equivalent							
More Than One Semester									
Gonzaga	3 sem	3	1.5 years	18.1	23.6	50.4	1.41	1.79	2.88
C	2 sem	3	1 year	12.1	10.7	22.6	0.75	0.70	1.25
F	3 quarters	4	1 year	9.3	10.2	20.1	0.85	0.99	2.06
J	2 sem	6	1 year	2.9	7.3	11.3	0.23	0.53	1.06
N	2 sem	4	1 year	1.5	0.5	6.7	0.15	0.02	0.55
P	2 sem	6	1 year	-0.9	3.7	9.0	-0.08	0.37	0.95
AVERAGE				7.2	9.3	20.0	0.55	0.73	1.46
S&P 500				14.5	16.1	19.7	1.42	1.56	1.87
One Semester or Less									
A	1 quarter	2.67	10 weeks	12.8	6.9	3.7	0.91	0.57	0.30
E	1 sem	3	16 weeks	10.4	12.6	23.9	0.86	0.96	1.68
I	1 sem	3	16 weeks	3.0	7.2	8.5	0.40	1.05	1.28
K	1 quarter	2.67	10 weeks	2.4	3.5	-0.9	0.20	0.24	-0.15
L	1 sem	3	16 weeks	2.1	7.8	23.6	0.18	0.51	1.63
AVERAGE				6.1	7.6	11.8	0.51	0.67	0.95
S&P 500				14.5	16.1	19.7	1.42	1.56	1.87

For those SMIFs that used a class structure, Table 3 shows the impact of the number of semesters/quarters. Courses that spanned more than one semester outperformed courses that were one semester or less on all annual growth averages: 5-year (7.2 vs. 6.1), 3-year (9.3 vs. 7.6) and 1-year (20.0 vs. 11.8). With respect to the Sharpe ratio, courses covering more than one semester outperformed those of one semester or less on all three indices: 5-year (.55 vs. .51), 3-year (.73 vs. .67), and 1-year (1.46 vs. .95).

**TABLE 4
TOTAL CREDIT HOURS**

School	Duration	Credit Hours	Time Duration	5 Yr Growth	3 Yr Growth	1 Yr Growth	5 Yr Sharpe	3 Yr Sharpe	1 Yr Sharpe
		Semester		Percentage	Percentage	Percentage			
		Equivalent							
More Than Three Credit Hours									
F	3 quarters	4	1 year	9.3	10.2	20.1	0.85	0.99	2.06
J	2 sem	6	1 year	2.9	7.3	11.3	0.23	0.53	1.06
N	2 sem	4	1 year	1.5	0.5	6.7	0.15	0.02	0.55
P	2 sem	6	1 year	-0.9	3.7	9.0	-0.08	0.37	0.95
AVERAGE				3.2	5.4	11.8	0.29	0.48	1.16
S&P 500				14.5	16.1	19.7	1.42	1.56	1.87
Three Credit Hours or Less									
Gonzaga	3 sem	3	1.5 years	18.1	23.6	50.4	1.41	1.79	2.88
A	1 quarter	2.67	10 weeks	12.8	6.9	3.7	0.91	0.57	0.30
C	2 sem	3	1 year	12.1	10.7	22.6	0.75	0.70	1.25
E	1 sem	3	16 weeks	10.4	12.6	23.9	0.86	0.96	1.68
I	1 sem	3	16 weeks	3.0	7.2	8.5	0.40	1.05	1.28
K	1 quarter	2.67	10 weeks	2.4	3.5	-0.9	0.20	0.24	-0.15
L	1 sem	3	16 weeks	2.1	7.8	23.6	0.18	0.51	1.63
AVERAGE				8.7	10.3	18.8	0.67	0.83	1.27
S&P 500				14.5	16.1	19.7	1.42	1.56	1.87

Next, we analyzed the impact of number of credit hours on SMIF performance. As Table 4 shows, SMIFs with three credits or less outperformed SMIFs with more than three credits on all annual growth measures: 5-year (8.7 vs 3.2), 3-year (10.3 vs 5.4) and 1-year (18.8 vs 11.8). Likewise, SMIFs with three credits or less outperformed those with more than three credits on all Sharpe ratio indices: 5-year (.67 vs .29), 3-year (.83 vs .48) and 1-year (1.27 vs 1.16). These findings are interesting in light of the previous results indicating that courses with more than one semester outperform those with one semester or less. Further analysis shows that two schools (Gonzaga and School C) required three credits, but the duration of the course spanned two semesters (and one year) in the case of School C and three semesters (and a year and a half) for Gonzaga. Both of these two schools had above average performance across average annual growth and Sharpe ratio measures. From these results, it appears that the duration of the class is a more important determinant of performance than the number of credit hours.

To summarize some learning outcomes from the course, Table 5 presents a representative sample of student comments. These comments indicate that students valued learning about a comprehensive array of investment theories and approaches along with the opportunity to apply them in thorough analysis and research on selected companies. They also remarked on the insights gained and personal growth that occurred through presentations and discussions with their teams and the class. It is also apparent that these students felt confident and prepared for their future careers in finance based on the experience in the class.

TABLE 5
REPRESENTATIVE STUDENT COMMENTS

“Participating as a student in the BFIN 429 class gave me the exclusive opportunity and experience of learning how to build and manage a stock portfolio. First, I obtained a wealth of knowledge in the following areas: understanding the market, utilizing different types of investments, utilizing different investment strategies, the importance of diversification, risk management strategies, the dangers and advantages of risk and return trade off, a manager’s responsibility and primary duties, and many more. Second, I was able to have the experience of doing my own due diligence in the stock market when researching and choosing the three companies which I then recommended as great contributors to the performance of our overall portfolio. Also, I had the opportunity to learn and grow through the experience of pitching stock in front of my classmates who would then ask questions and critique my opinion. Third, I gained the real-life experience of building a portfolio through making the final decisions with my investment team (class) about which specific stocks we would agree on including in our portfolio. Finally, through participation in the BFIN 429 class, I became more experienced in managing a portfolio as I closely monitored the specific stocks included in our portfolio and the overall market performance in general.”

“Reflecting on the last 3 semesters of BFIN 429, I would say that the biggest takeaways for me were two-fold:

1) I learned the value of time. Throughout the class, I obtained a substantial amount of knowledge in learning how to form an opinion, both effectively and efficiently, and subsequently 'pitching' my opinion in a manner that was both timely and universally understood. In other words, I would often dig through a tremendous amount of financial information on a company and its securities, only then to pitch the truly necessary findings in a 5-10-minute presentation to my peers. I appreciated the conciseness of the class, and I felt challenged in properly navigating a world's worth of information in a class that primarily met once a week.

2) I learned the value of opportunity. Repeatedly, we saw our economy fall, only then to rise back again stronger than before. To the contrarian, the "downturns" and "recessions" of both a single business and/or of the greater economy promote the opportunity for new growth and new developments. I appreciated learning how to find the unseen benefit or "silver lining" in the story of a company, and I have since applied this mantra to my life in many ways - now more so than ever.”

“It is no doubt that your class has helped me after college. Currently, I am in training to be a Financial Advisor at a firm. The experience and knowledge from Portfolio Management created an excellent base for my start in the financial industry. I've proved this by passing the SIE, Series 7, and Series 6 on my first try. Of course, I did extensive studying for these exams separately, but BFIN 429 put me a in a great position to start.

As well, my firm is currently teaching us proper ways to build portfolios for our future clients. BFIN 429 has given me a leg up among other peers in the class. It has allowed me to have a firm grasp the information being taught and advance at a greater speed.”

DISCUSSION OF RESULTS

Overall, the results of this exploratory analysis suggest that SMIF performance is enhanced by a class (rather than club) structure and a class duration that spans more than one semester. It also appears that the

duration of the class, rather than the number of class credit hours, may be a more important determinant of performance results. With respect to the class structure, one can assume that the students would be exposed to a more disciplined and thorough grounding in portfolio management theory and concepts than they would in a club structure. In addition, the class pedagogy would likely include more structured assignments, discussion, and accountability (through assignments, exams, and grading); these elements may not be present in the club structure. A class structure would also likely involve more consistency, continuity, and frequency of meetings in comparison to clubs due to the structure of the course schedule. The student comments in Table 5 appear to validate these conclusions.

The finding that SMIF courses spanning more than one semester outperform those that do not is not surprising. Devoting more time to portfolio management theory and concept development provides a better foundation for making sound investment decisions. As Daugherty & Vang (2015) discovered, students made better investment decisions over time based on continued learning and application of sound investment principles. With the Gonzaga model, students spend the entire first semester studying a top-down approach to investments and portfolio management. They then apply a bottom-up approach as they investigate individual companies through the summer and into the second semester. Also in the second semester, Gonzaga students, following the IPS for the hypothetical client, vet potential portfolio changes through individual analyses and presentations, team and class discussions and a final class voting process. Once investment decisions are made, Gonzaga students continue to monitor the portfolio and make adjustments during the third semester of the course. All of this provides the students with greater opportunity to apply and integrate the theory with hands on practice. This thorough process also serves to mitigate some of the common challenges with SMIFs including, lack of a long-term investment period, frequent student turnover, inconsistent investment philosophies, and “herding” behavior (Mallett, *et al.*, 2010; Daugherty & Vang, 2015; Boughton & Jackson, 2019).

It is surprising and somewhat counter intuitive that three credit courses outperformed courses with more than three credits. One possible explanation for this finding is that two of the 3-credit hour courses in our sample spanned more than one semester. Both of these schools exhibited well above average performance on annual returns and the Sharpe ratios. Gonzaga’s course extends over three semesters (one credit hour per semester) and covers a year and a half, a longer duration than any SMIF in the sample. School C’s course spans two semesters (1.5 credits per semester) over one year. These two courses undoubtedly skewed the results with respect to credit hours. Although certainly not definitive, this outcome suggests that the duration of the course may be more important to SMIF performance than the actual number of credit hours due to the factors discussed in the previous paragraph.

What remains to be explained is Gonzaga’s consistent high performance over the 5-year period from August 31, 2013 through August 31, 2018, when its SMIF outperformed all other schools in the DADCO competition on every performance indicator (see Table 1). Moreover, Gonzaga’s performance exceeded the S&P benchmarks (except the 1-year Sharpe ratio) across all measures and was the only school in the sample to do so. Our exploratory analysis suggests that Gonzaga’s SMIF performance can be explained in part by the fact that it is structured as a class that spans more than one semester; it was the only class in our sample that covered three semesters over one and a half years. As noted, this structure and amount of time allows for more thorough grounding in portfolio management theory, more careful discussion and vetting of individual companies, more opportunity to apply theory to hands on decision making on investment decisions, and the ability to adjust the portfolio using a consistent investment philosophy. There are other elements of the Gonzaga model that could also contribute to performance. These include: 1) enrollment requirements (junior standing, minimum 3.0 GPA, Finance, Economics or Accounting concentration); 2) the student cohort commits to taking all three credits over 1.5 years (thus, allowing for continuity and consistency of membership over time); 3) small class size; 4) both top-down and bottom-up investment approaches used; 5) stock selection philosophy (value and growth history); 6) thorough vetting of companies (by individual, team and class levels); and 7) passion and teaching ability of the tenure-track faculty instructor. While these factors likely contributed to Gonzaga’s performance, we did not include them in our analysis since we did not collect any comparable data from the other schools in the DADCO competition.

Of course, the exploratory nature of this study precludes any firm conclusions. It is possible that the differences between groups are due to error, luck or other factors. The small sample size and lack of random assignment to groups prohibits meaningful statistical analysis. The following section presents some directions for future research on SMIF performance.

IMPLICATIONS FOR FUTURE RESEARCH AND PRACTICE

There is clearly a need for more controlled studies of the determinants of SMIF performance, both in terms of learning and financial outcomes. Previous studies provide some evidence that SMIFs lead to deeper learning of portfolio management concepts than traditional classes due to the hands-on, experiential nature of the experience (Daughtery & Vang, 2015). This outcome is consistent with evidence that experiential methods of education produce superior learning outcomes when compared to traditional lecture approaches (National Research Council, 2000). In addition, surveys of SMIF instructors suggest that students who have experience in SMIFs are perceived as being more valued by prospective employers (Lawrence, 2008; Boughton & Jackson, 2019). More thorough examination is necessary to understand the particular elements of SMIF structure and pedagogy that contribute most to learning outcomes. Such studies should include an examination of SMIF learning goals, pedagogical approach, and assurance of learning measures that AACSB accredited schools are required to use.

Similarly, more work is needed to identify the determinants of SMIF financial performance. While there is some previous research that suggests SMIFs produce positive investment returns, it is difficult to draw firm conclusions since the structure and pedagogy of the SMIFs varied across studies (Mansfield, 2002; Lawrence, 2008; Mallett, *et al.*, 2010; Krueger, 2011; Boughton & Jackson, 2019; Haddad, *et al.*, 2019). There are a number of variables that potentially can contribute to SMIF performance: SMIF structure, duration, pedagogy, undergraduate/graduate level, student selection criteria, investment philosophy, and instructor quality, among others. Experimental and longitudinal research designs should be used to determine the impact of these variables on SMIF performance. It would also be useful to examine the relationship between learning outcomes and financial performance. As Boughton & Jackson (2018; 2019) have called for, a national or international database of SMIF information would provide a means for accessing and analyzing larger data sets to identify important determinants of learning outcomes and financial performance.

From a practice perspective, it is clear that the SMIF is an increasingly prevalent addition to the business school curriculum (Lawrence, 2008; Kubik, 2018; Boughton & Jackson, 2019). SMIFs offer students hands-on experience that potentially leads to deeper learning of investment principles and greater opportunities in the job market. The results of our exploratory study suggest that the course structure may be more conducive to learning and performance than the club structure because it allows for more intentional integration of theory and practice. The duration of the class is also important because it provides more time for learning and application of concepts, and more thorough discussion, vetting, monitoring, and adjustment of investment decisions. A longer (multi-semester course) also provides for a more consistent application of a particular investment philosophy and practice over time. As noted earlier, these design elements can help to mitigate some of the typical problems associated with SMIFs (Mallett, *et al.*, 2010; Daughtery & Vang, 2015; Boughton & Jackson, 2019). Here again, the SMIF Consortium proposed by Boughton & Jackson (2018) could be a helpful means for sharing best practices.

In summary, the SMIF is a popular approach to finance education that is here to stay. The numbers and types of SMIFs continue to expand globally. At the same time, there is a need for more systematic assessment of SMIF educational and financial outcomes. This paper presented an exploratory study of Gonzaga University's model and results compared to nineteen other SMIFs in the DADCO competition from August 2013 to August 2018. Gonzaga's SMIF outperformed all other SMIFs on all measures of annual investment growth and the Sharpe ratio over this five-year period. While the exploratory nature of this study prohibits firm conclusions, the results suggest that SMIFs that use a class structure and span more than one semester with the same cohort, outperform those that do not. Certainly, more systematic research is needed identify the causal factors that determine SMIF educational and financial performance outcomes.

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