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Discipline-Based Short-Term Study Away Programs: A Survey and Guide Based on Experiences from Students, Professionals, and Faculty

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Offerings of field-based experiential learning programs, particularly short-term study abroad and domestic study away programs, have risen recently. Student budget and time constraints limit access to long-term study abroad programs, thus, driving demand to shorter term programs. The literature demonstrates that short-term study abroad programs provide benefits for participating students comparable to long-term programs. The literature, however, is rather mute when it comes to discipline-based domestic study away programs as well as the opinions from and potential benefits to business professionals. We address this gap in the literature by discussing the formation and structure for programs of such type. We present survey results from participating students, hosts/presenters and other non-participating professionals accentuating the programs' benefits; however, statistically significant differences between participating and non-participating professionals emerge. We further elaborate on our findings and experience by offering a "best practices" guide for such programs and discuss issues such as weighing program costs against program length and the potential underrepresentation of minority students. Finally, we provide a guide on what to do if extraordinary circumstances, such as the COVID-19 pandemic, occur that may jeopardize the program.

Keywords: Experiential learning, study abroad, study away

Introduction

The changing global business environment demands more from business school graduates than just theoretical knowledge. Business schools must implement innovative and active curricula. Turos and Strange (2018, p. 96) state: "*...in an increasingly complex world economy, employers also expect skills that are particularly applicable in the global marketplace*." The Association to Advance Collegiate Schools of Business (AACSB) has called for business schools to focus on experiential learning through extracurricular activities exposing students "to business and management in both local and diverse global contexts" (AACSB, 2023) in its updated accreditation standards.

To enhance student learning, faculty members incorporate distinct types of activities into their curricula. Over time, business schools have increased the offerings of study abroad programs and the popularity of these programs has grown as well. These experiential learning engagements

benefit students through networking, cultural exploration, and personal/professional transformation. Existing literature addresses benefits of long-term study abroad courses; however, many students cannot commit the time and/or financial resources such programs require.

Business schools have responded by offering short-term study abroad programs: defined as programs with a length of one to eight weeks (e.g., Carley & Tudor, 2006; Danko, Goldberg, & Bachelder, 2018). Students find short-term study abroad programs more convenient due to their affordability and shorter duration (Duke, 2000; McMurtrie, 2005; Carley & Tudor, 2006; Carley, Stuart, & Dailey, 2011; Ramakrishna, Sarkar, & Vijayaraman, 2016; Interis, Rezek, Bloom, & Campbell, 2018).

"Study away" programs recognize that domestic experiences also provide value by exposing students to different behaviors and cultures (Sobania & Braskamp, 2009). They resemble study abroad courses but are traditionally domestically based. Such programs are easier to organize, less expensive, and often extend over even shorter periods of time. Furthermore, faculty-led domestic study away learning experiences can be built on existing community relationships (Sobania & Braskamp, 2009) and faculty networks. Accordingly, they provide opportunities for a more personalized experience through the involvement of local alumni who may serve as hosts and/or speakers. Finally, parents and students may view domestic trips as a safer option. Little research has been undertaken that provides a guide to developing and implementing a discipline-based domestic study away program and outlining its benefits, however. In the latter case, the literature is especially scant regarding the perceived benefits to professionals who participate and/or hire students who participated in such programs.

This research provides three main contributions to the literature. First, we examine the benefits of the authors' 6-day study away program to Wall Street in New York City. We survey participating students, participating hosts/presenters, and other professionals (Employers/HR Representatives) to gauge perceived student benefits. In the Appendix (Exhibit 2), we present the main findings from these surveys. Second, we provide a description of the domestic study away program structure and discussion of best practices derived from the surveys and the instructors' own experiences. Faculty members may find this guide useful in crafting their own domestic, faculty-led, study away programs in their discipline. Additionally, we include a best practices check list in the Appendix (Exhibit 3). Finally, we address the question of what to do when extraordinary events, e.g., the COVID-19 pandemic, impair the program's normal operation.

Consistent with the literature on study abroad programs, our research provides evidence that student participation in domestic study away programs is viewed as extremely valuable and enhances their professional and personal development and, hence, provides an alternative to studying abroad. Further, our study demonstrates that, while both hosts and professionals have a positive opinion about such programs, professionals who participated in the program (hosts) have a more favorable opinion. This suggests that these programs provide not only an excellent opportunity for students but also positively influence the attitude of participating firms and, thus, increase participating students' overall chances in the domestic job market.

Next, we review literature related to study abroad/study away types of experiential learning and present our research question. We provide an overview of the general structure of the presented short-term study away program after the literature review. Then, we present our methods and data and analyze our results. Lastly, we provide a "best practices" guide for a successful study away program and then provide concluding remarks.

Literature Review

A growing literature documents the benefits of experiential learning regarding students' career development (e.g., Hart-Seibert & Davenport-Sypher, 1989; Baker-Loges & Duckworth, 1991). Experiential learning activities can be classroom-based or field-based, as defined by Lewis and Williams (1994). Classroom experiences focus mainly on games, case studies and simulations. Field-based experiential learning includes internships, practicums, cooperative education, study abroad, and foreign exchange programs (e.g., Lewis & Williams, 1994; Cantor, 1995). These experiences are more immersive in nature and may or may not be located near the home institution. Regardless of the classification, the overall objective is to enhance student learning in a specific area or discipline, enrich personal and professional development, and positively influence career outcomes. The program we discuss situates within the field-based experiential learning activity area.

Existing research describes study abroad as learning while experiencing abroad (e.g., Abrams, 1979) or as "educational travels overseas" (Stone & Petrick, 2013, p. 741). According to Hill and Iyer (2010), studying abroad serves to enhance personal growth and exposure to other cultures while providing academic credit. Numerous articles confirm the potential benefits of these programs within the experiential learning environment. For example, study abroad programs improve students' cultural/global understanding and competencies (e.g., Chieffo & Griffiths, 2004; Kitsantas, 2004; Sutton & Rubin, 2004; Clarke, Bilitski-Flaherty, Wright, & McMillan, 2009), increase students' cultural sensitivity (Olson & Lalley, 2012), expand their world views (Dwyer, 2004; Carley & Tudor, 2006), enhance self-confidence (Bachner & Zeutschel, 2009), lead to higher academic performance (Ingraham & Peterson, 2004; Miller-Perrin & Thompson, 2010; Cardwell, 2020), and produce transformative experiences and learning (Werry, 2008; Rowan-Kenyon & Niehaus, 2011) as well as personal growth and development (Chieffo & Griffiths, 2004). Further, findings by Turos and Strange (2018) suggest that college graduates with study abroad experiences receive some preference by potential employers in the recruitment process. Finally, Paige, Fry, Stallman, Josić, and Jon (2009) document that study abroad provides undergraduate students with one of the most essential experiences they will have during their time in college. Wright and Larsen (2012, p. 140) conclude that the study abroad represents "…*one of the most enjoyed and cherished*…" experiences by college students.

The literature distinguishes between traditional study abroad, which includes foreign exchange programs or programs that last at least one semester to one year (e.g., Carley & Tudor, 2006; Nyaupane, Paris, & Teye, 2011; Wright & Larson, 2012) and short-term study abroad programs, which last from a few weeks to roughly a summer (e.g., Carley & Tudor, 2006; Danko et al., 2018). Some studies seem to suggest that longer study abroad programs dominate the short-term programs in providing benefits (e.g., Dwyer, 2004; Bachner & Zeutschel, 2009; Norris & Gillespie, 2008) due to their higher levels of immersion.

Nevertheless, short-term study abroad programs have become one of the fastest growing study abroad experiences (Chow & Bhandari, 2011; Danko et al., 2018). The literature acknowledges that they provide value similar to long-term programs (e.g., Lewis & Niesenbaum, 2005a; 2005b; Zamastil-Vondrova, 2005; Carley & Tudor, 2006; Stone & Petrick, 2013). For example, participating students feel that it provided them with a meaningful academic experience and benefitted their careers (Hylton-Meier & Drummond-Smith, 2016). Relative to most long-term foreign exchange programs, on which students embark individually, short-term study abroad programs are usually led by home university faculty members, allowing for a more personal and

tailored experience with more control over the course objective and content (Womble, De'Armond, & Babb, 2014). Additionally, short-term trips remove obstacles students of long-term study abroad programs face such as leaving friends and family for a long-time period and language barriers, (Interis et al., 2018) as well as time commitment and financial constraints (Nyaupane et al., 2011). Varela (2017) concludes that cost keeps participation in long-term study abroad programs low, while the lower cost seems to be among the main advantages of short-term travel programs (Harris, Belanger, Loch, Murray, & Urbaczewski, 2011; Duke, 2000). Students participating in a long-term study abroad program usually travel individually, whereas students of short-term trips travel in groups allowing them to benefit from economies of scale. Harris et al. (2011), however, note students suffer more acutely from jet lag and find less free time to explore on their own with short-term programs.

Despite the emphasis on a more global curriculum and increased funding for long-term study away programs by governments and universities, the high program costs as well as exogeneous events have made short-term, domestic, faculty-led, study away trips an attractive alternative to traditional study abroad programs. As pointed out by Sobania and Braskamp (2009), the United States is a "global nation" with highly diverse areas that allow for a cross-cultural experience, hence, elevating the value of logistically simpler and cheaper domestic short-term study away programs. Moreover, these programs are better suited to build on relationships with professional communities and faculty networks (Sobania & Braskamp, 2009). Yet, the literature is scarce when it comes to studies that guide faculty members in developing these programs and addressing their main benefits. Our study discusses and answers questions related to one such program that takes a group of finance and economics students to Wall Street in New York City, while immersing them in the city's diverse culture. We survey participating students regarding the value and benefit of the program, especially in comparison to other experiential learning experiences, as well as their professional development. While most studies stop here, we also survey participating and non-participating professionals. Hence, we provide more detailed insight into the perceived benefits and value of a short-term domestic study away program, contrasting between the views of participating professionals and non-participating professionals. Moreover, we derive a "best practices" guide from the survey results and faculty experiences.

Our Short-Term Study Away Program

Our program's objective is to expose students to the center of the global financial industry: New York City. The program entails both on-campus and travel components.

The On-Campus (Lecture) Component

The on-campus element takes place prior to traveling to NYC and includes four afternoon meetings. The first session is administrative: reviewing the itinerary and signing paperwork. With an emphasis on teambuilding throughout the course, subsequent sessions focus on finance topics not included in regularly offered courses and on improving technical skills (Excel assignments). In addition to classroom assignments, we require submission of a guided book review (student choice from a pre-selected list), submission of firm questions (two questions from each student), and a group oral presentation (10 minutes per group) on one or two assigned firms to be visited while in NYC. In addition, students receive grades based on their behavior and participation during

firm visits in New York. Finally, following the conclusion of the travel component, students must submit a final report in which they assess the entire program experience and each firm visit.

The Travel Component

During the 6-day trip to NYC, students commute via subway to meet and interact each day with professionals of two to three different financial firms. Students visit banks, private equity, wealth management, and financial services firms as well as financial technology firms along with stops at organizations like the Federal Reserve Bank of New York, and the New York Stock Exchange (NYSE). In addition, students participate in mandatory social activities designed to enhance the learning experience. Many of these events include alumni and allow for networking opportunities in a more relaxed atmosphere, such as our annual Harbor Cruise, Yankees' game, etc. We provide an example itinerary from of one of our trips in the Appendix (Exhibit 1).

Methods and Data

Surveys—Instruments and Administration

To analyze the value of the study away program, we survey students from our NYC-based immersion course, which launched in 2015. We completed five iterations with 113 students prior to the 2020 pandemic. Beginning in 2020, the program shifted to a virtual experience through 2022. While other studies have analyzed how students value experiential learning engagements, this study adds to the literature by surveying professionals who participated in the firm/organization visits as hosts and/or presenters. Also, we survey professionals, such as managers and human resource representatives (Employers/HR Representatives) from a variety of companies who did not participate in the program.

We conduct our survey electronically and collect responses anonymously via Qualtrics. The surveys are comprised of Likert-scale and numerical-scale questions. The student survey questions focus on general perceived benefit regarding personal and professional development from the program. In addition, we include specific open-ended questions and acquire demographic information about each student.

The hosts and professionals (Employers/HR Representatives) surveys focus on information similar to that in the student survey. In addition, we collect demographic information as well as general information about their employers.

Further, we also ask hosts about their personal motivation to participate in such programs, as well as their firms' willingness to allow them to participate. Finally, our survey of non-participating professionals focuses on the relevance of these types of experiential learning activities in their recruitment process.

Links to the specific Qualtrics survey were sent to the appropriate individuals based on their type of participation in the program. We sent initial emails to our list of program participants and industry professionals in late January/early February of 2020. We sent a reminder email in May/June of 2020. Survey respondents could omit questions they preferred not to answer.

Data Sample

Due to COVID-19, the program in 2020 became a virtual program. Thus, we include only the 113 students who participated from 2015 to 2019 in the survey. Of that group, 34 completed the survey. Similarly, we survey 115 employers with a relationship to our finance department that did not participate in the program. Of those professionals, 15 responded. Finally, we survey all program hosts. Of those, 11 responded.

Survey Responses and Results

Below, we analyze the opinions of students and professionals with respect to study away experiences. We report the main results of the surveys in the Appendix (Exhibit 2).

Program Alumni Survey Results

Demographics

In Table 1, we provide the demographics of participating students. Each year, 22 to 24 students participate in the program (Panel A). The number of students who responded across the five trips is roughly uniformly distributed with more responses coming from the last two trips (9 students each) and three responses from the 2017 trip. The percentage of students responding from each trip is highest for 2018 (40.9%) and lowest for 2017 (13.6%).

Of the student participants, 61.8% are seniors, 32.4% are juniors, and two students are graduate students (5.9%), as reported in Panel B. In Panel C, survey results show that a majority of students (52.9%) have a GPA greater than 3.5, while only 11.8% have a GPA under 3.0, indicating that students who participate in the program are usually those with higher academic performance. We note that most students major in finance (71.9%) and economics (15.6%), consistent with the focus of the program (Panel D).

In Panel E, we report student demographics (gender, age, nationality, and race) as well as home state, hometown population, and household income. Our results show that one-third of the students are female. Most students are between 21 and 23 years old (88.2%) when participating in the program, are Caucasian (80.56%), and are U.S. citizens (97%). Participating students are primarily Georgian (the home state of the university) and hail from hometowns with a population of 10,000 to 100,000 (62.1%). Only three students (8.33%) are African-American, and one is Asian (2.78%). None of the responding students identified as Hispanic. The ratio of male versus female as well as Caucasian versus minority students who responded to the survey mirrors the actual distribution of participating students well, indicating the survey is a good representation of the actual population; however, the demographics show that the number of minority students is lower in the study away program, compared to the distribution in the finance program, which may suggest a lack of diversity. Respondents (58.9%) indicate that the household income of their parents is above $100,000, while 23.5% report it is less than $100,000, and 17.6% preferred not to answer/do not know. We do not directly report income distribution by race, but some indicators show that the household income of minority students participating in the program is lower compared to non-minority students. Thus, program-related costs may explain minority student underrepresentation. Program administrators should consider these issues and analyze the availability of program-specific scholarships.

Table 1
Wall Street Program Alumni Demographics

Panel A:	2015	2016	2017	2018	2019		
Students who participated in the program	23	22	22	22	24		
Students who participated in the survey	7	6	3	9	9		
Percent distribution across the program	20.6%	17.6%	8.8%	26.5%	26.5%		
Percent of students participating in survey by program year	30.4%	27.3%	13.6%	40.9%	37.5%		

Panel B:	Junior	Senior	Graduate				
What was your classification the semester you participated in the Wall Street program?	11	21	2				
	32.4%	61.8%	5.9%				

Panel C:	4.00	3.75–3.99	3.50–3.74	3.25–3.49	3.00–3.24	2.75–2.99	< 2.5
What was your cumulative GPA the semester you participated in the Wall Street program?	2	6	10	6	6	4	0
	5.9%	17.6%	29.4%	17.6%	17.6%	11.8%	0.0%

Panel D:	Finance	ECON	ACCT	IS	MGMT	Spanish	MBA
Degree Program(s) – Major #1 (32)	23 (71.9%)	5 (15.6%)	1 (3.1%)	2 (6.25%)	1 (3.1%)	0	0
Degree Program(s) – Major #2 (4)	1 (3.1%)	1 (3.2%)				1 (3.1%)	1 (3.1%)

Panel E:

Gender	Male	Female					
	23 (67.6%)	11 (32.4%)					

Age	18-20	21-23	24-30				
Age at Response	0	12 (35.3%)	22				
Age at Wall Street Program	2 (5.9%)	30 (88.2%)	2 (5.9%)				

Nationality	U.S. Born	Non US-Born					
	32 (97%)	1 (3%)					

Home state	GA	TX					
	28	1					

Race	Native American	Asian	African America	Caucasian	Hispanic or Latino	Pacific Islander	No Answer
	2 (5.56%)	1 (2.78%)	3 (8.33%)	29 (80.56%)	0	0	1 (2.78%)

Population of hometown	< 5,000	5,001 to 10,000	10,001 to 20,000	20,001 to 50,000	50,001 to 100,000	100,000 <	
	4 (13.8%)	4 (13.8%)	4 (13.8%)	10 (34.5%)	4 (13.8%)	3 (10.3%)	

Household Income Parents	< 50,000	50,001 to 75,000	75,001 to 100,000	100,001 to 150,000	150,001 to 225,000	225,000 <	No Answer
	1 (2.9%)	4 (11.8%)	3 (8.8%)	5 (14.7%)	11 (32.4%)	4 (11.8%)	6 (17.6%)

Panel F:	Yes	No					
Have you participated in other study abroad/study away programs in college for course credit?	4 (11.8%)	30 (88.2%)					
Have you participated in other experiential learning programs in college for course credit?	**Yes** 22 (64.7%)	**No** 12 (35.3%)					

Panel G:	Yes	No					
Currently Employed	29 (85.3%)	5 (14.7%)					
How many full-time employees does your employer have currently?	< 50	51 to 100	101 to 500	501 to 1,000	1,001 to 10,000	10,000 <	
	7 (30.4%)	1 (4.3%)	2 (8.7%)	0	10 (43.5%)	3 (13%)	

This table provides the demographics of individual students (alumni) who participated in the Wall Street program.

Most students report they were not involved in previous study abroad programs (88.2%) but had exposure to other experiential learning experiences (see Panel F). This may suggest study away programs serve as an alternative to study abroad programs for some students who are interested in experiential learning activities and traveling but not necessarily abroad. Finally, as reported in Panel G, student respondents indicate they have a job (85.3%), with more than 56% of them holding positions at large companies (1,000 employees or more), while 30.4% hold jobs at small companies (50 employees or less).

Survey Questions

In Table 2, we provide the answers to student-directed questions regarding program value. The list of the questions is included. We base the statistical tests of our survey results on a one-tail, one-sample z-test testing if the sample mean is greater than three (neutral, similar, neither disagree nor agree). Generally, the results show overwhelming evidence that students view the program as very valuable for them (Question #1), that it ranks much better than other experiential learning experiences with which they are familiar (Question #2), that it enhances their ability to attain internship and job opportunities (Question #3), and that it is helpful during their interviewing and job search processes (Questions #4–#5). While all responses indicate that students value the NYC program experience, answers regarding the impact of the program on their internship and job interview experiences are less favorable. Finally, students agree that the program is valuable with respect to personal and professional development (Questions #6–#7). These survey results, in combination with the fact that most students hold positions and job titles closely related to their majors, indicate that the program has a significant positive impact on students' professional careers.

Table 2
Student Responses to Questions Addressing the Wall Street Program Value

	1	2	3	4	5	N	Std	Mean	z-value	
1. Overall, how valuable is the Wall Street program for students?	0	0	0	4	30	34	0.33	4.88	33.56	***
2. How would you rank the Wall Street program versus other experiential learning experiences with which you are familiar?	0	0	0	14	20	34	0.50	4.59	18.54	***
3. The Wall Street experience enhanced my ability to attain internship or job interviews.	1	0	6	13	14	34	0.93	4.15	7.23	***
4. The Wall Street experience enhanced my internship or job interview questions/discussions.	1	0	6	6	21	34	0.98	4.35	8.04	***
5. The Wall Street experience enhanced my internship or job interview outcomes.	1	0	8	9	16	34	0.99	4.15	6.76	***
6. Looking back, the Wall Street experience was valuable in my personal development.	0	0	1	4	29	34	0.46	4.82	23.18	***
7. Looking back, the Wall Street experience was valuable in my professional development.	0	0	0	8	26	34	0.43	4.76	23.90	***

Note: A 5-point Likert scale is used for each of the questions. The responses to the questions allowed for the following answers: Question 1: 1. Not valuable at all, 2. Not very valuable, 3. Neutral, 4. Somewhat valuable, 5. Very valuable; Question 2: Much worse, 2. Worse, 3. Similar, 4. Better, 5. Much better; Question 3 to 7: Do not agree, Disagree somewhat, 3. Neither disagree nor agree, 4. Agree somewhat, 5. Agree. The statistical tests are based on a one-tail, one-sample z-test testing if the sample mean is greater than three (neutral, similar, or neither disagree nor agree). * significant at the 1% level, ** significant at the 5% level, *** significant at the 10% level.

Finally, to assess the students' opinions about the program, we ask them the following four open ended questions (Questions #8 - #11):

> *What was the most valuable experience during the Wall Street program?*
> *Which part of the Wall Street program had the most lasting impression on you?*
> *What was the least valuable experience during the Wall Street program?*
> *What would you change about the program?*

Students stress the networking opportunities and speaking directly with successful university alumni and professionals, as well as the opportunity to visit and learn about major financial firms in New York, as the most valuable parts of the program. Additionally, students like the free time to explore the city with classmates and the "fun" events such as the harbor cruise, professional dinners, etc.

Most students state that there was no "least valuable experience" as every visit and event added to the experience. A very few mention a specific visit or event in which they were not particularly interested. In addition, some students (mostly non-finance majors) note the finance/investment-heavy lectures before the trip as their least favorite part. The majority of students state, however, that six days is too short for the number of firm visits as well as "fun" events and suggest extending the program by one or two days.

Program Hosts and Professionals Survey Results

<u>Demographics—Program Hosts</u>

In Table 3, we report the demographics of program hosts. We receive more survey responses from hosts participating in more recent program offerings (Panel A). In Panel B, we present some general demographics. Host responses, in Panel C, indicate that most (93.6%) did not participate in a study abroad/study away program themselves as students but did participate in other experiential learning programs while in college. Finally, results show that 72.7% of hosts have participated as hosts in experiential learning programs, like our NYC program, for other universities and institutions. Hosts also report that they work for large companies with more than 10,000 employees (Panel D). Although not reported in Table 3, we find that hosts hold higher-level positions such as vice president, director, analyst, broker, etc.

<u>Motivation to Participate—Program Hosts</u>

We also ask hosts about their motivation to participate in the program. The majority state that they participate because they enjoy mentoring young professionals. Others mention the promotional aspect of the event, building relationships, giving back, and identifying potential new hires. Further, most hosts state that it is not difficult to convince their supervisors to participate in the program (81.8%). The main concerns raised by the hosts with respect to their participation in the program were:
1. Potential chance of job disruption,
2. Monetary and scheduling concerns, and
3. Difficulty coordinating the participation of multiple groups by the hosts' firms.

Table 3
Table 3
Wall Street Program Hosts Demographics

Panel A:

Host participation year	2015	2016	2017	2018	2019	
	2	4	3	5	6	

Number of times hosts have participated	1	2	3	4		
	3	2	0	4		

Panel B:

Gender	Male	Female					
	8 (72.7%)	3 (27.3%)					
Age	21-23	24-30	31-35	36-40	41-50	51-60	61 +
	1 (10%)	3 (30%)	1 (10%)	1 (10%)	0	3 (30%)	1 (10%)
Nationality	U.S.						
	10						
Race	Native American	Asian	African America	Caucasian	Hispanic or Latino	Pacific Islander	No Answer
			1 (11.11%)	8 (88.9%)			
Home State	GA	MA	MO	NJ	NY		
	2 (22.2%)	1 (11.1%)	1 (11.1%)	1 (11.1%)	4 (44.4%)		
Annual Income	< 50,000	50,000 to 75,000	75,001 to 100,000	100,001 to 150,000	150,001 to 225,000	225,000 <	No Answer
	0	2 (20%)	0	2 (20%)	0	2 (20%)	4 (40%)

Panel C:

	Yes	No				
Have you participated in other study abroad/study away programs in college for course credit?	4 (36.4%)	7 (63.6%)				
Have you participated in other experiential learning programs in college for course credit?	Yes	No				
	7 (63.6%)	4 (36.4%)				
Have you participated as a host in any other experiential learning programs like the Wall Street program?	Yes	No				
	8 (72.7%)	3 (27.3%)				

Panel D:

How many full-time employees does your employer have currently?	< 10,000	10,001 to 20,000	20,001 to 30,000	30,001 - 40,000	40,001 to 50,000	50,001 <
	0	3 (37.5%)	2 (25%)	1 (12.5%)	1 (12.5%)	1 (12.5%)

This table provides the demographics of individual professionals (hosts) who participated in the Wall Street program.

Finally, we include an open-ended response to allow the hosts to share their opinions and impressions of the program. The responses are overwhelmingly positive, as demonstrated by the comments below:

1. "*More students need to get away from the campus nest and investigate the real world.*"
2. "*An invaluable experience everyone should have!*"
3. "*I studied abroad for a full year, and it was the most important year of my life determining the path of my personal and professional life.*"
4. "*Very valuable as it gives the students an opportunity to see what life is really like working in finance in NYC.*"

The responses show a very positive attitude of the hosts toward the program with them seeing it as a vehicle to give back. Their responses also demonstrate that they are concerned about the potential of the program interrupting their and their firms' daily routine, and difficulty regarding the overall scheduling of the visit. Faculty members organizing these trips need to be aware of these challenges and stress these points to the students during pre-travel meetings as their professional behavior during firm visits matters a great deal.

Demographics—Professionals

We present the demographics of professionals (Employers/HR Representatives) who did not participate in the Wall Street program in Table 4. In Panel A, we report the general demographics of the professionals. Like the hosts, most of the professionals hold higher-level positions such as CEOs, vice presidents, owners, directors, financial advisors, project managers, financial institution specialists, etc. Respondents report (Panel B) that (80%) they did not participate in a study abroad/study away program themselves as students but did participate in other experiential learning programs while in college.

Table 4
Professionals (Employers/HR Representatives) Demographics

Panel A:							
Gender	**Male**	**Female**					
	11 (78.6%)	3 (21.4%)					
Age	**21-23**	**24-30**	**31-35**	**36-40**	**41-50**	**51-60**	**61 +**
	0	3 (21.4%)	1 (7.1%)	4 (28.6%)	2 (14.3%)	2 (14.3%)	2 (14.3%)
				57.1%			42.9%
Nationality	**U.S.**	**Non-U.S.**					
	12 (85.7%)	2 (14.3%)					
Race	**Native American**	**Asian**	**African America**	**Caucasian**	**Hispanic or Latino**	**Pacific Islander**	**No Answer**
	0	0	2 (15.4%)	11 (84.6%)	0	0	0
Home State	**AL**	**GA**	**IL**	**NJ**	**WV**		
	1 (9.1%)	7 (63.6%)	1 (9.1%)	1 (9.1%)	1 (9.1%)		
Annual Income	**< 50,000**	**50,000 to 75,000**	**75,001 to 100,000**	**100,001 to 150,000**	**150,001 to 225,000**	**225,000 <**	**No Answer**
	0	1 (7.1%)	2 (14.3%)	4 (12.6%)	1 (7.1%)	4 (28.6%)	2 (14.3%)
Panel B:							
Have you participated in other study abroad/study away programs in college for course credit?	**Yes**	**No**					
	3 (20%)	12 (80%)					
Have you participated in other experiential learning programs in college for course credit?	**Yes**	**No**					
	8 (53.3%)	7 (46.7%)					
Panel C:							
How many full-time employees does your employer have currently?	**< 50**	**51 to 100**	**101 to 500**	**501 to 1,000**	**1,001 to 10,000**	**10,001 to 20,000**	**20,000 <**
	5 (33.3%)	0	2 (13.3%)	0	4 (26.7%)	2 (13.3%)	2 (13.3%)

This table provides the demographics of professionals (Employers/HR Representatives) who did not participate in the Wall Street program.

Overall, our results suggest that the general demographics of the professionals closely follow the demographics of the program hosts; however, while many of the hosts come from home states close to New York, most of the professionals come from Georgia (63.6%). Moreover, program hosts predominantly work for large companies with more than 10,000 employees, but 46.7% of the professionals work for companies with less than 500 employees (see Panel C).

Survey Questions—Program Hosts and Professionals

In Table 5, we report the results from the questions asked of hosts and professionals (Employers/HR Representatives) regarding the value of the program. We include the complete list of questions in Table 5 as well. We base the statistical tests of each individual question on a one-tail, one-sample z-test testing if the sample mean is greater than three (neutral, similar, or neither disagree nor agree). The results provide statistically significant evidence that both hosts and professionals view the NYC program as a valuable experience for students (Question #1). Additionally, both groups rank the program as better than similar experiential learning experiences with which they are familiar (Question #2). Both groups also agree that study abroad and study away programs provide, in general, a valuable experience for potential new hires and that they impact their interviews as well as the interview outcome in a positive way (Questions #3–#6). We find, however, that respondent answers regarding the positive impact of such programs on the interview outcome are the least favorable, especially for the professionals (Employers/HR Representatives). Program hosts and the professionals do agree that such programs have a positive impact on the personal and professional development of potential new hires (Questions #7–#8).

Table 5
Hosts and Professionals (Employers/HR Representatives) Response to Questions Addressing the Wall Street Program Value

		1	2	3	4	5	Mean	Std	z-test	p-value	t-test	p-value
1. Overall, how valuable do you think a program such as the Wall Street program is for students?	Host	0	0	1	0	10	4.82	0.60	10.00	0.00	1.42	0.17
	Employers & HR	0	0	1	6	8	4.47	0.64	8.88	0.00		
2. How would you rank the Wall Street program versus other experiential learning experiences with which you are familiar?	Host	0	0	2	7	2	4.00	0.63	5.24	0.00	**2.44**	**0.02**
	Employers & HR	0	0	7	5	0	3.42	0.51	5.24	0.00		
3. Study abroad/study away type experiences are valuable for potential new hires (interns/full-time placement).	Host	0	0	0	4	7	4.64	0.50	10.76	0.00	1.47	0.16
	Employers & HR	1	1	0	6	7	4.13	1.19	3.70	0.00		

Question	Group	1	2	3	4	5	Mean	SD	z	p	t	p
4. Potential new hire (interns/full-time placement) interviews are positively influenced by study abroad/study away type experiences of the potential new hire.	Host	0	0	1	3	7	4.55	0.69	7.45	0.00	**1.91**	**0.07**
	Employers & HR	0	1	3	7	4	3.93	0.88	4.09	0.00		
5. Potential new hire (interns/full-time placement) interview questions/discussions are positively influenced by study abroad/study away type experiences of the potential new hire.	Host	0	0	1	2	8	4.64	0.67	8.05	0.00	1.50	0.15
	Employers & HR	0	0	3	6	6	4.20	0.77	6.00	0.00		
6. Internship/full-time placement interview outcomes can be positively influenced by interviewee study abroad/study away type experiences.	Host	0	0	2	2	7	4.45	0.82	5.88	0.00	**1.70**	**0.10**
	Employers & HR	2	0	3	5	5	3.73	1.33	2.11	0.01		
7. Study abroad/study away type experiences are valuable in the personal development of potential new hires.	Host	0	0	0	1	10	4.91	0.30	21.00	0.00	**1.96**	**0.07**
	Employers & HR	1	0	3	1	10	4.27	1.22	4.01	0.00		
8. Study abroad/study type experiences positively influence the professional development of potential new hires.	Host	1	0	0	0	10	4.64	1.21	4.50	0.00	1.50	0.15
	Employers & HR	1	1	1	7	5	3.93	1.16	3.11	0.00		

Note: A 5-point Likert scale is used for each of the questions. The responses to the questions allowed for the following answers: Question 1: 1. Not valuable at all, 2. Not very valuable, 3. Neutral, 4. Somewhat valuable, 5. Very valuable; Question 2: Much worse, 2. Worse, 3. Similar, 4. Better, 5. Much better; Questions 3 to 8: Do not agree, Disagree somewhat, 3. Neither disagree nor agree, 4. Agree somewhat, 5. Agree. The statistical tests of each individual question (Hosts as well as Employers/HR) are based on a one-tail, one-sample z-test testing if the sample mean is greater than three (neutral, similar, neither disagree nor agree). A two-sample t-test in combination with a Levene's test of equal variance, is used to test if statistically significant differences exist between those who participated in the Wall Street program (Hosts) compared to other professionals (Employers/HR Representatives).

Using a two-sample t-test in combination with Levene's test of equal variance, we test for statistically significant differences between those who participated in the program as hosts and other professionals who were not involved in the program. We report these results in the last two columns of Table 5. Our findings indicate that statistically significant differences exist between the two groups. For example, hosts who participated in the program, when compared to those professionals (Employers/HR Representatives) who did not, deem the program more valuable than other similar experiential learning programs. Moreover, those involved in the program as hosts put a higher value on experiences like study abroad/study away with respect to their impact on, and the outcome of, interviews of potential new hires (Questions #4–#6). Finally, program hosts view study abroad/study away programs as more valuable than other professionals regarding the impact of such programs on the personal development of potential new hires.

Best Practices

In summary, our survey shows that study away programs, like our Wall Street program, are viewed by students and professionals as extremely valuable experiences enhancing professional and personal development of students who participate (See also Exhibit 2, Panels A and B, in the Appendix). We find that, although both hosts and professionals have a positive opinion about such programs, professionals who participated (hosts) have a more favorable opinion (see Exhibit 2, Panel B, Point 6). This may suggest that study away programs not only provide excellent opportunities for students but also influence the attitudes of companies involved in those programs. The latter may provide an additional channel through which such programs enhance job placement opportunities for students. Participating companies may view such experiences more favorably on student résumés compared to those professionals who have not participated in such programs. The positive impact of a discipline-specific program on students' professional careers is further stressed by the fact that most alumni of the program hold positions and job titles closely related to their majors. Accordingly, creating study away programs with discipline-specific company visits may increase students' overall chances in the job market.

Overall, our study shows that domestic, short-term, study away programs offer a valuable alternative to study abroad; hence, a list of best practices might be welcome for faculty members wanting to develop similar programs. Accordingly, we discuss our best practices, considering our findings from the survey and our own experiences running our discipline-specific domestic study away course in its traditional format. These tips may help minimize the shadow costs of study away/abroad to faculty, as described by Madden et al. (2019). We provide a summary check list of these best practice points in the Appendix (Exhibit 3).

We suggest faculty members (1) attend a similar program before establishing their own programs, (2) consult with experienced study abroad faculty members to obtain first-hand knowledge of the logistics such courses require, (3) require an interest form requesting basic information about the students, e.g., GPA, involvement in student organizations, etc., (4) require legal liability waiver forms, and (5) ask other faculty members about potential behavioral issues with students they do not know well. With respect to point (4), the institution's international programs/study abroad office or legal affairs office likely has forms faculty members may adapt for their courses. If demand exceeds supply, we recommend using points (3) and (5) to help select students who will best represent the institution and who will potentially benefit the most from the program.

Further, we strongly encourage faculty members to (6) specify an emergency meeting location for the travel component of the course, and (7) collect emergency contact information for participating students as well as any food/medical allergy information and maintain this information electronically.

We urge faculty members to (8) include alumni in the program, (9) contact alumni and other professionals early to ask about participating, and (10) prepare a back-up plan in case a host must cancel a visit on short notice. Our survey demonstrates how enthusiastic professionals, and especially alumni, are about participating in such activities (See Exhibit 2, Panel B, Points 1 to 6). To help identify potential alumni, faculty members should reach out to their university foundations and search other college/department alumni databases. Additionally, survey responses revealed that professionals are concerned about potential disruption and difficulty of scheduling (see Exhibit 2, Panel C). Therefore, we suggest contacting hosts with very general information about the travel dates about six months in advance and then confirming visit specifics with respect to the date, time, and duration shortly before traveling.

As found in Exhibit 1 of the Appendix, we recommend faculty members (11) provide a detailed itinerary prior to departure, and (12) ensure everyone understands flexibility is crucial and how schedule changes will be communicated. With regard to the itinerary, we advise including meeting times and locations, dress/attire requirements, any important information related to meeting hosts/participants, known information related to provided meals, etc., and student directives in the event one or more students is late or gets lost.

Additionally, we suggest (13) providing an outline of behavioral expectations while participating in visits and traveling (See Exhibit 4), and (14) arranging several pre-travel meetings so the group can bond and get to know one another. Appropriate behavior during visits and travel is critical as it is important students represent themselves and the institution well (see Exhibit 4 in the Appendix).

Further, we recommend (15) including fun, but compulsory, social/cultural events for the group as part of the course, and (16) inviting area alumni to participate in those activities. The survey indicated that students appreciated the fun events as well as the opportunity to explore the city by themselves. Furthermore, they value networking opportunities and speaking directly to alumni and professionals. These fun events help students bond, and inviting alumni enhances the networking opportunity for the participating students (See Exhibit 2, Panel A, Points 8 to 11).

We suggest faculty members (17) touch base with all visit hosts/facilitators about 7–10 days prior to traveling to confirm dates, times, and logistics. Some companies have multiple locations within the same city. Accordingly, we find it important to confirm the visit address. Further, faculty members should be sure to verify how to gain access to the facility. In our experience, a photo ID is required for most visits, and some may have specific dress codes (like the NYSE, for example) or prohibit visitors from bringing any oversized items (like backpacks) in the building.

During the initial planning process, we urge faculty members and administrators to (18) weigh the length of the program against the cost of the program, (19) be aware of diversity issues, e.g., underrepresentation of minority students or students from lower income households, and (20) consider providing some program-specific scholarships for students. Several students state in the survey that a 6-day/5-night format was too short for the program (See Exhibit 2, Point 12); however, extending the program increases the cost and, perhaps, limits the pool of students with the financial ability to participate. Aside from offering scholarships, the department/college could search for alumni and/or firms willing to sponsor the program to lower the cost for all students, which may permit more students to participate. The availability of sponsorships and scholarships

may allow for a slightly longer experience (higher cost) without deterring students from participating.

Lastly, we encourage faculty members to (21) develop quality promotional items for students as well as VIPs and alumni hosts. For alumni hosts, in particular, rekindling nostalgic memories of their own college days may inspire them to be more active with the program (department and/or college) and to help students with career development in the future.

Extraordinary Events/Circumstances—What to do

The COVID-19 pandemic highlighted the need for robust policies and procedures to address unexpected events. Particularly when the course is credit-based, it may not be feasible to simply cancel it because students still need to complete a learning experience to earn course credit.

The most critical element to navigating an extraordinary event is clear and timely communication. First, we recommend communicating with everyone involved (students, hosts, etc.) that you are aware of the issue(s) and will be back in touch soon with a solution. Second, we suggest faculty members and administrators brainstorm about possible solutions. When the pandemic officially closed things down, we pivoted to a virtual experience (after confirming that option with our scheduled hosts) but also gave students the option of deferring their participation to the following year or withdrawing altogether. Depending upon the student and program impacted, it may be possible for the student to switch to an alternate program.

Conclusion

Study abroad programs deliver a variety of enrichment opportunities for students. Nevertheless, such programs, while plentiful, are limited to students who have the financial resources and time to participate. Consequently, a shift toward short-term study abroad as well as domestic short-term study away programs has occurred. The latter increases the affordability for students due to lower program cost. Further, domestic study away programs are appealing for students and parents who perceive domestic trips as a safer alternative to studying abroad. While the literature has investigated the value and benefits of study abroad, not much is known about the value of domestic short-term study away programs, a void this study addresses. As such, we discuss the formation and structure of one such study away program.

We administer a survey to students and hosts who participate in the program as well as other professionals who were not part of the program. Our study provides new insight into the value of such programs, as it considers the opinion of other constituencies. The results provide overwhelming evidence that students perceive the program as very valuable and that it ranks higher compared to other experiential learning programs with which they are familiar. Moreover, students see the program as a vehicle to enhance their personal and professional development and that it is beneficial to their interviews and job searches. Notably, this view is shared by professionals. Interestingly, while both groups of professionals see the program as valuable for the students, those who actively participate view the experience more favorably than professionals who do not participate. The survey indicates that professionals are motivated to participate in such programs because they see it as a way to give back.

We not only discuss the structure and benefits associated with our study away program but provide a clear guide and comprehensive set of best practices for any faculty members interested in pursuing a similar experience for their students. Finally, challenges may arise jeopardizing the

success of the entire program. To this end, this paper provides a guide to "what to do" in case of extraordinary events, such as the COVID-19 pandemic.

References

AACSB. (2023). About us. https://www.aacsb.edu/about-us

Abrams, I. (1979). The impact of antioch education through experience abroad. *Alternative Higher Education*, *3*(3), 176–187.

Bachner, D., & Zeutschel, U. (2009). Long-term effects of international educational youth exchange. *Intercultural Education*, *20*, 45–58.

Baker-Loges, S., & Duckworth, C. (1991). Collegiate cooperative education: An old concept for modern education. *Journal of Studies in Technical Careers*, *13*(3), 253–260.

Cantor, J. A. (1995). Experiential learning in higher education. ASHE-ERIC Higher Education Report No. 7.

Cardwell, P. J. (2020). Does studying abroad help academic achievement? *European Journal of Higher Education*, *10*(2), 147–163.

Carley, S., & Tudor R. K. (2006). Assessing the impact of short-term study abroad. *Journal of Global Initiatives: Policy, Pedagogy, Perspective, 1*(2), 150–168.

Carley, S., Stuart, R., & Dailey, M. P. (2011). Short-term study abroad: An exploratory view of business. *Journal of Management Policy & Practice*, *2*(2), 44–53.

Chieffo, L., & Griffiths, L. (2004). Large-scale assessment of student attitudes after a short-term study abroad program. *Frontiers*, *10*(1), 165–177.

Clarke, I., Bilitski-Flaherty, T., Wright, N. D., & McMillan R. M. (2009). Student intercultural proficiency from study abroad programs. *Journal of Marketing Education, 31*(2), 173–181.

Chow, P., & Bhandari, R. (2011). *Open doors 2011 report on international educational exchange*. Institute of International Education.

Danko, D., Goldberg, S. R., & Bachelder, A. (2018). The amazing race: London an innovative active learning experience for study abroad. *Business Education Innovation Journal*, *10*(1), 25–35.

Duke, C. R. (2000). Study abroad learning activities: A synthesis and comparison. *Journal of Marketing Education, 22*(2), 155–165.

Dwyer, M. M. (2004). More is better: The impact of study abroad program duration. *Frontiers*, *10*(10), 151–164.

Harris, A. L., Belanger, F., Loch, K., Murray, M. C., & Urbaczewski, A. (2011). Study abroad as an education experience: Challenges, realizations, and lessons learned. *Communications of the Association for Information Systems*, *28*, Article 2.

Hart-Seibert. J., & Davenport-Sypher, B. (1989). *The importance of internships experience to undergraduate communication students*. Speech Communication Association 1989 Conference, San Francisco.

Hill, D. J., & Iyer, R. (2010). The moderating effect of coping on student satisfaction with a short study abroad program. *Journal for Advancement of Marketing Education*, *17*, 97–103.

Hylton-Meier H., & Drummond-Smith, D. (2016). Achieving globalization of AACSB accounting programs with faculty-led study abroad education. *Accounting Education*, *25*(1), 35–56.

Ingraham, E. C., & Peterson, D. L. (2004). Assessing the impact of study abroad on student learning at Michigan State University. *Frontiers*, *10*, 83–100.

Interis, M. G., Rezek, J., Bloom, K., & Campbell, A. (2018). Assessing the value of short-term study abroad programs to students. *Applied Economics*, *50*(17), 1919–1933.

Kitsantas, A. (2004). Studying abroad: The role of college students' goals on the development of cross-cultural skills and global understanding. *College Student Journal*, *38*(3), 441–452.

Lewis, T. L., & Niesenbaum, R. A. (2005a). The benefits of short-term study abroad. *Chronicle of Higher Education*, *51*(39), B20.

Lewis, T. L., & Niesenbaum, R. A. (2005b). Extending the stay: Using community-based research and service learning to enhance short-term study abroad. *Journal of Studies in International Education*, *9*(3), 251–264.

Lewis, L. H., & Williams, C. J. (1994). Experiential Learning: Past and present. *New Directions for Adult and Continuing Education*, 62, 5–16.

Madden, T. M., McMillan, A., & Madden, L. T. (2019). This is not a vacation: The shadow side of study abroad programs for faculty. *Journal of Management Education*, *43*(2), 185–199.

McMurtrie, B. (2005). Study-abroad numbers rise. *Chronicle of Higher Education*, *52*(13), A45.

Miller-Perrin, C., & Thompson, D. (2010). The development of vocational calling, identity, and faith in college students: A preliminary study of the impact of study abroad. *Frontiers*, *19*, 87–103.

Norris, E. M., & Gillespie, J. (2008). How study abroad shapes global careers: Evidence from the United States. *Journal of Studies in International Education*, *13*(3) 382–397.

Nyaupane, G. P., Paris, C. M., & Teye, V. (2011) Study abroad motivations, destination selection and re-trip attitude formation. *International Journal of Tourism Research*, *13*, 205–217.

Olson, J. E., & Lalley, K. (2012). Evaluating a short-term, first-year study abroad program for business and engineering undergraduates: Understanding the student learning experience. *Journal of Education for Business*, *87*, 325–332.

Paige, R. M., Fry, G., Stallman, W. E. M., Josić, J., & Jon, J-E. (2009). Study abroad for global engagement: The long-term impact of mobility experiences. *Intercultural Education*, *20*, 29–44.

Ramakrishna, H., Sarkar, A., & Vijayaraman, B. (2016). Factors affecting the design of short-term study-abroad programs: An exploratory study of two business schools. *Journal of Teaching in International Business*, *27*(2-3), 124–141.

Rowan-Kenyon, H. T., & Niehaus, E. K. (2011). One year later: The influence of short-term study abroad experiences on students. *Journal of Student Affairs Research and Practice*, *48*(2), 207–222.

Sobania, N., & Braskamp, L. A. (2009) Study abroad or study away: It's not merely semantics. *Peer Review*, *11*(4), 23–26.

Stone, M. J., & Petrick, J. F. (2013). The educational benefits of travel experience: A literature review. *Journal of Travel Research*, *52*(6), 731–744.

Sutton, R. C., & Rubin, D. L. (2004). The GLOSSARI project: Initial findings from a system-wide research initiative on study abroad learning outcomes. *Frontiers*, *10*(4), 65–82.

Turos, J. M., & Strange, C. C. (2018). Recruiter evaluation of candidates for employment: Does study abroad make a difference. *Journal of Employment Counseling*, *55*, 96–103.

Werry, M. (2008). Pedagogy of/as/and tourism: Or, shameful lessons. *Review of Education, Pedagogy, and Cultural Studies*, *30*(1), 14–42.

Womble, L., De'Armond, D., & Babb, J. (2014). A model for designing faculty-led study abroad programs in the business curriculum. *Academy of Educational Leadership Journal*, *18*(3), 93–110.

Wright, N. D., & Larsen, V. (2012). Every brick tells a story: Study abroad as an extraordinary experience. *Marketing Education Review*, *22*(2), 121–142.

Varela, O. E. (2017). Learning outcomes of study-abroad programs: A meta-analysis. *Academy of Management Learning & Education*, *16*(4), 531–561.

Zamastil-Vondrova, K. (2005). Good Faith or Hard Data? Justifying Short-Term Programs. *International Educator*, *14*(1), 44–49.

Appendix
Exhibit 1
Sample Itinerary

My University   Wall Street Immersion Course   Sample Student Itinerary

IMPORTANT – PLEASE NOTE
- The departure time is the **required** time if leaving from the hotel. We will meet in the Hotel Lobby for "hotel" departures.
- The arrival time is the **required** time if meeting at a particular location.
- If you are not present at the stated time, you will be left behind or left out of the visit and grade penalties as outlined in the syllabus will apply. We strongly suggest you arrive **AT LEAST** 5 minutes before the stated time.

Attire Definitions
- Casual Attire: Anything you're comfortable wearing (jeans, shorts, etc.—within reason, of course)
- Business Professional: Coat & Tie Required for Men; Jacket/Blazer Required for Ladies (Dress Slacks/Skirts/Dress)

Notable Items – Getting Around NYC: NYC Subway App &/or Google Maps

Monday, May 13   **Casual Attire

Arrive Our Hotel	123 Main St	
Meet in Hotel Lobby		
Depart to buy subway passes		4:45 pm
Depart for NYC Pizza		5:00 pm
NYC Pizza	101 Spring St	5:30 pm – 7:30 pm
Depart for Rockefeller Center		7:30 pm
Top of the Rock	30 Rockefeller Center	7:45 pm –

Rest of the evening free.

Tuesday, May 14   **Business Professional Attire

Depart Hotel for Firm Visit #1		9:15 am
Arrive at Visit #1	1200 1st Ave	9:45 am
Visit #1		10:00 am – 12:00 noon
Host: *Joe Parker (Alumnus: 2016 FINC, MoWS 2015)*		
Arrive The Palm (Tribeca)	206 West St.	12:30 pm
"Dean's Dinner-Lunch"		12:30 pm – 2:00 pm
Host: *Dean Smith (Dean, Parker College of Business)*		
Arrive at Firm Visit #2	100 Liberty	2:15 pm
Visit #2		2:30 pm – 5:00 pm
Arrive at St. John's University	101 Astor	5:30 pm – 6:30 pm
Dinner at The Bao	13 St Marks Place	6:30 pm – 8:00 pm
Host: *Dwight Moore (Member, Dean's Advisory Board)*		

Wednesday, May 15   **Business Professional Attire

Depart Hotel for Visit #3		9:25 am
Arrive at Visit #3	1979 Broadway	9:45 am
PIMCO Visit		10:00 am – 11:30 am
Host: *Pietro Diaz (Alumnus: 2017 FINC & ECON, MoWS 2015)*		
Arrive at Visit #4	370 3rd Ave	11:45 am
Visit #4		12 noon – 2:00 pm
Lunch – on your own		2 pm – 3:15 pm
Arrive at Visit #5	1122 1st St.	3:15 pm
Visit #5		3:15 pm – 5:00 pm
Host: *John Perkins (GSU Alumnus, Firm XYZ Sr. Vice President, Associate Resident Dir.)*		

Depart Hotel or Arrive on your own for NY Yankees		5:45 pm
NY Yankees Game	1 East 161st St	6:35 pm –
Casual Attire		

Thursday, May 16   **Business Professional Attire**

Depart Hotel for Visit #6		8:30 am
Arrive at Visit #6	500 LaFortune St.	8:45 am
Visit #6		9:00 am – 11:00 am
Host: Max Smith (Alumnus: 2008 FINC)		
Lunch – on your own		11:00 am – 1:15 pm
Arrive Visit #7	1198 Sheridan	1:15 pm
Visit #7		1:30 pm – 2:30 pm
Host: Caroline Crane (Alumna: 2016 HR)		
Arrive NYSE (Visit #8)	2 Broad St.	3:00 pm
NYSE Visit		3:15 pm – 4:30 pm
Hosts: Joe James, NYSE		
Dinner – on your own		
Depart Hotel or Arrive on your own for Harbor Cruise		6:00 pm
Harbor Cruise	Battery Park	7:00 pm – 9:00 pm
Clipper City Tall Ship (Slip #2)		
**Ships boards at 6:30 & departs at 7 pm (sharp)		
Casual Attire		

Friday, May 17   **Business Professional Attire**

Depart Hotel for FRBNY (Visit #9)		9:30 am
Arrive at FRBNY	44 Maiden Ln	9:40 am
FRBNY Visit		10:00 am – 11:30 am
Host: Tony Gross (Alumnus: 1997 SOC)		
Lunch – on your own		
Arrive at Visit #10	371 Lexington Ave	1:15 pm
Visit #10		1:30 pm – 3:00 pm
Depart Hotel or Arrive on your own for Freedom Tower		5:15 pm
Freedom Tower	285 Fulton St.	5:30 pm –
***Casual Attire**		

Saturday, May 18   **Casual Attire**

Meet in Hotel Lobby		
Depart for Farewell Breakfast		9:15 am
Breakfast at Bill's Bar & Burger	85 West St.	9:30 am – 11:00 am

Please keep the relative location of visits in mind – you will need to allow sufficient time to move from Lower Manhattan to Midtown Manhattan and vice versa.

Visits in Lower Manhattan	**Visits in Midtown Manhattan**	**Other/Things To Do**
• *Visit #2*	• *Visit #1*	• Final Reports Due on June 1st!
• *Visit #6*	• *Visit #3*	• http://www.tripadvisor.com/Attractions-g60763-Activities-New_York_City_New_York.html
• *Visit #7*	• *Visit #4*	
• *Visit #8*	• *Visit #5*	• http://nycdaytrip.com/
• *Visit #9*	• *Visit #10*	

Note: Company names and names of individuals have been changed or omitted to protect privacy.

Exhibit 2
Main Findings from Surveys in Tabular Form

Panel A: Main Findings from Program Alumni Survey
1   Minority students and low-income students might be underrepresented.
2   Students view the program as very valuable for them.
3   It ranks much better than other experiential learning experiences.
4   It enhances their ability to obtain internships and jobs.
5   It is helpful during interviews and job searches.
6   It is valuable when it comes to personal and professional development.
7   It has a positive impact on students' professional career.
8   It provides good networking opportunities for students.
9   Students are allowed to speak directly to successful professionals.
10 It provides insights into financial firms in New York.
11 The fun events provide bonding opportunities.
12 A 6-day/5-night trip is too short.
Panel B: Main Findings from Program Hosts and Professionals Survey
1   Professionals view the program as very valuable for students.
2   It provides valuable experiences for potential new hires.
3   It impacts interviews and their outcomes positively.
4   It has a positive impact on the personal and professional development of potential hires.
5   Professionals rank this program higher compared to other experiential learning experiences.
6   Overall, participating professionals (hosts) see the program as more valuable compared to non-participating professionals.
Panel C: Main Concerns of Participating Professionals (Hosts)
1   The potential chance of job disruption.
2   The potential monetary and scheduling issues.
3   The difficulty coordinating the participation of multiple groups.

Exhibit 3
Summary Check List of Short-term Domestic Study Away Best Practices

Point	Points to Consider for a Successful Study Away Program	Check
1	If possible, attend a similar program before establishing your own program.	
2	Consult with experienced study abroad faculty.	
3	Require application (interest) forms that provide basic information about the student.	
4	Require legal liability waiver forms from each student.	
5	Ask other faculty members about any potential behavior issues with students you do not know.	
6	Specify an emergency meeting location for the travel component of the course.	
7	Collect emergency contact information and any food/medical allergy information for each student.	
8	Include alumni in the program.	
9	Contact alumni and other professionals early to ask for participation.	
10	Prepare a back-up plan in case a host must cancel a visit on short notice.	
11	Provide a detailed itinerary prior to departure.	
12	Be flexible and ensure everyone is aware of how schedule changes will be communicated.	
13	Provide an outline of behavioral expectations while participating in visits and traveling.	
14	Ensure the group has several pre-travel meetings so they can bond and get to know one another.	
15	Include fun, but compulsory, social/cultural events for the group as part of the course.	
16	Invite area alumni to participate in some of the fun/social group activities scheduled.	
17	Touch base with all visit hosts/facilitators about 7 - 10 days prior to traveling to confirm dates, times, and logistics.	
18	Weigh the length of the program against the cost of the program.	
19	Be aware of diversity issues, e.g., underrepresentation of minority students or students from lower income households.	
20	If possible, provide some program-specific scholarships for students.	
21	Develop quality promotional items for students as well as VIPs and alumni hosts.	

Exhibit 4
Visit Behavior Guidelines

Wall Street Immersion Course
Student Behavior Guidelines for Firm Visits

Participation, professional attitude, and appearance are critical to this class. Participation refers to your attendance and participation in all activities in NYC. You are expected to ask questions of the speakers and to express your opinion in class. Learning is the primary objective of this class and trip. You have an obligation to acquire facts, knowledge, understanding, and wisdom (i.e., basic to advanced understanding and learning) and report them in your class assignments. ***You must ask questions during the visits!***

You are expected to comply with the dress code and conduct yourself as a responsible adult. Failure to do so will result in a significant reduction in the participation grade.

The following additional rules apply to the participation grade. You will forfeit one-half of your participation grade (first offense), or your entire participation grade (second offense) if you:
1. Are absent from one of the scheduled activities for a reason other than illness.
2. Are late for more than one visit. (Note: The first "late" offense is waived if it is due to possible delays in subway travel or transit problems in NYC.)
3. Make any statement or engage in activities that demonstrate a lack of respect or insensitivity toward any individual or group based on race, religion, gender, national origin, sexual orientation, or socioeconomic standing. This includes your fellow students as well as faculty and staff participating in this course.
4. Fall asleep during any of the visits or lectures.
5. A member of the hotel staff or other guest notifies us that you are in a room that has been identified as emanating excessive noise.
6. Have been found to have invited a person not associated with our program into the hotel/one of our hotel rooms.
7. Arrive inebriated or intoxicated (regardless of substance) to any visit. Abuse alcohol or other substance to the extent that it disrupts the experience of the other students, instructor, or chaperone or causes the hotel to look unfavorably upon our group.
8. Chew gum, wear baseball hats, play video games, or remove your shoes during any of the corporate or agency visits or presentations. Facial piercings other than modest earrings should be removed. Hair should be neatly groomed. Pease get a haircut before the trip, if necessary.
9. Act bored and/or inattentive on any of our visits. Show enthusiasm and interest at all times when we are on our visits! ☺

Dress Policy: Coats and ties for men and professional business attire for women are required on all corporate visits. There will be extensive walking – so wear comfortable shoes. You may want to take walking shoes and then put on dress shoes when we arrive at a location. Just bring a 'nice looking bag' to store your walking shoes. (Note: Your feet will hurt if you break in new shoes during the trip – so bring comfortable shoes to use when walking between company locations. We will be doing a lot of walking!)

An Integrative Approach to Teaching Introductory Finance

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Teaching introductory finance as a course required of all business majors is challenging because the pedagogy must benefit students for whom it will be the only finance course they take while being sufficiently rigorous to prepare finance majors for more advanced electives. We strive to overcome the difficulty of meeting these dual objectives by introducing finance concepts in a manner that links these ideas to, and extends them beyond, microeconomic theories with which students are already familiar. Our approach starts with rational decision-making and market equilibrium from microeconomics and introduces time and risk in finance together with market completeness and arbitrage in order to give students a foundational understanding of the goal of the firm and the concepts of value, price, and market efficiency.
Keywords: introductory finance, microeconomics, pedagogy, time, risk

Introduction

The introductory finance course at most business schools is typically taught from a corporate perspective and has statistics, microeconomics and accounting as prerequisites. But the corporate focus of most introductory texts emphasizes the accounting aspect and neglects the link between finance and the microeconomic theories on which it is based with the result that students often see finance as a new area of study rather than as an extension of microeconomics.

A second area of concern is that the introductory finance course is often a core class required for all business majors and is the only finance course many students will take. Teaching it thus presents special challenges: how does the instructor cover finance material for non-finance students so that the pedagogy reinforces economics principles in a way that students will retain essential ideas from both subjects going forward, while at the same time presenting material with sufficient rigor to finance majors who will later be exposed to advanced topics in electives?

This paper aims to improve the teaching effectiveness of introductory finance through an integrative approach. Our approach blends finance and microeconomics theories – which Association to Advance Collegiate Schools of Business (AACSB) guidelines encourage – without eschewing coverage of financial accounting to present students with a big picture of how the capital market works while emphasizing similarities and differences between finance and microeconomics. Our paper is motivated by our view that most textbooks on introductory finance are written with the general business student in mind. Consequently, they take a corporate perspective with emphasis on financial statements, financial ratios and how these can affect corporate decision-making. While the reliance on financial statements provides students with a specific business (corporate) context, it does not lay adequate emphasis on the rational decision

process or role of market forces in asset price formation. Our integrative approach aims to add a market perspective to the existing corporate perspective to achieve a balance between simplicity of exposition and depth of student understanding. Our goal is to improve knowledge retention for non-finance majors, while providing a theoretical framework for finance students into which future finance electives can fit.

Throughout the paper, we use the rational decision-making and market equilibrium paradigms that students have learned in microeconomics and transition to finance by augmenting the exposition with new concepts of time, risk, market completeness and arbitrage. The paper is organized as follows. We first review extant literature and then extend ideas from microeconomics (profit maximization, competitive markets, and allocative efficiency) to justify the logic of the firm's goal. We further link security valuation to familiar goods valuation, adding the time dimension and the risk premium. Next, we explain how to introduce the share price, market efficiency and Capital Asset Pricing Model (CAPM) in the integrative framework. Finally, we outline how we implement this integrative approach in our own teaching and assess student learning outcomes under this approach.

Literature Review

Finance is integrative and learning it requires basic economics and accounting concepts that can then be applied to the financial market (Terry, 2002; Payne & O'Malley, 2017). Schaffer and Calkins (1980) showed that students' performance in the introductory finance course is closely related to their completed course work in math, statistics, financial accounting, and economics. Borde et al. (1998) found that high performance in accounting prerequisites and a high prior overall GPA were significant factors to high performance in finance. Marcal and Roberts (2001) found the completion of a statistics prerequisite improved student performance in finance, all else equal. Terry (2002) found that accounting and statistics knowledge significantly affected performance in introductory finance.

Further, Grover et al. (2009) examined the amount of the knowledge obtained in the prerequisite courses of mathematics, financial accounting, and economics that was actually remembered by students when they started the introductory finance course. They found that the retention of the prerequisites' knowledge affected performance in the finance course significantly. Similar to the earlier literature, mathematics and accounting knowledge appeared to be more important than economics knowledge when all three prerequisites were included in the regression.

Overall, in the literature we examined, it appears that while the economics prerequisites play a positive role in the understanding of finance, this role is not statistically significant. One possible reason for this is the fact that most introductory finance texts focus on corporate aspects and emphasize the financial statements over microeconomics with the result that students who do well in accounting also do well in introductory finance. In a model without financial accounting, Pomykalski et al. (2008) found that the business students' performance in principles of economics and introduction to statistics contributed significantly to their senior cumulative GPA.

The literature above supports our view that because of the corporate perspective in the introductory course, accounting takes precedence over microeconomics. However, finance books written for a general audience, such as Schwartz et al. (2010), take more of an economics focus. For instance, chapter four presents simulations on equity trading from a microeconomics perspective and considers risk aversion, supply and demand curves, and inter-market competition.

Unfortunately, such linkage with microeconomics tends to be weak in introductory finance textbooks. The integrative methodology we introduce in this paper is an attempt to fill this gap.

Goal of the Firm

The first chapter in introductory finance textbooks usually stresses that share value maximization is the goal of a business firm. Students have already been exposed to profit maximization as a goal of the firm in microeconomics. In our discussion of the firm's goal, we emphasize the notion of economic profit that is based on cash flows and considers the opportunity cost of equity, as compared to accounting profit which is accrual based. We transition to the idea of equity value by introducing the concepts of time and risk (Coffman, 1983). Because formal models of risk, such as the CAPM, are covered later in the course, we take particular care in our introduction of risk at this early point. Our approach is intuitive rather than quantitative – students appreciate that human beings dislike uncertainty, are risk-averse, and, hence, seek compensation for risky outcomes by demanding a risk premium.

We want students to appreciate that the share value maximization goal of the firm and the utility maximization goal of the consumer in economics are consistent objectives. But consumers' preferences affect their utility and this allows us to focus on how shareholders' time and risk preferences affect the goal of the firm. We introduce students to the idea that, given complete and competitive financial markets, a firm's value-creating operations decisions should not be affected by shareholders' personal time and risk preferences in investment. This is Fisher's separation theorem whose underlying rationale we discuss. With complete and competitive financial markets, shareholders themselves can trade in the time and risk dimensions to construct a personal investment portfolio that meets their own preferences. Management's job is just to create new share value for company owners and thus relax their budget constraints for intertemporal consumption. This goal of the firm should be welcomed by all shareholders, regardless of their personal preferences, since it increases their wealth and, consequently, their utility.

Fisher's separation theorem also provides an opportunity to introduce students to the concept of market completeness. It constitutes the theoretical foundation of arbitrage, which plays a central role in neoclassical finance theories. We use examples to explain that complete markets require all future time points and all risks be tradable. We further explain that the lack of competitiveness leads to mispricing in various markets and the lack of completeness results in missing prices. Both contribute to market failure.

Some students find the goal of share value maximization at odds with the lofty goal of social wellbeing maximization. Other students are confounded by the inconsistency between the share value-oriented goal in finance and the corporate social responsibility (CSR) that other business courses emphasize. We address this, to a certain extent, with a theoretical framework that unifies different disciplines. Students have already learned in microeconomics that allocative efficiency, defined as surplus maximization, is achieved through the invisible hand in a competitive product market even though consumers and producers act in their own best interests. We explain to students that, with self-interested market participants, the scope of allocative efficiency extends to the whole economy when capital and labor markets are added as long as all markets are competitive and complete. This is essentially the first fundamental theorem of welfare economics.

Clarifying the meaning of allocative efficiency also prepares students for the subsequent topic of financial markets, as the objective of the financial system is to achieve allocative efficiency of capital. Once the goal of share value maximization is placed in the context of complete and

competitive markets, the unintended outcome of allocative efficiency is achieved through the market price system—Adam Smith's invisible hand. We further relax the market completeness and competitiveness assumptions and discuss how government, CSR and business ethics may fill the gaps left by market failure.

The discussion of the goal of the firm thus provides an excellent opportunity to integrate introductory finance and microeconomics with the CSR and business ethics concepts students encounter in other courses, while presenting them with an analysis and perspective they are unlikely to be exposed to in those courses.

Share Value

After share value maximization is established as the goal of the firm, the natural next question is what share value really is. Unlike the observable share price, share value is an investor's perception and thus, rather an elusive concept for many students. Once again, we leverage students' microeconomics knowledge to facilitate understanding. Students already know that the value of goods is determined not by the production cost of the goods but by the marginal utility of the goods to the evaluator and that this marginal utility is measured by the evaluator's willingness-to-pay. We point out that the nature of share value is similar to that of goods value. The major difference is that stocks, as well as other financial assets such as bonds, have only investment value and no consumption value. As a consequence, all the marginal utility derives from expected future cash flows and hence the investor needs to focus on cash flow estimation in stock valuation.

Willingness-to-pay is compared with the price of goods for the consumer to make a purchase decision. Based on the discussion of opportunity cost by Parkin (2016a, 2016b) and O'Donnell (2016), the price of goods measures opportunity cost in a "quantity" notion. For example, if the price of a concert ticket is $50, the consumer is denied the opportunity to buy other goods with this $50. Hence, the decision-making process compares the evaluator's willingness-to-pay with opportunity cost and estimates the net benefit of buying relative to not buying the goods.

After reviewing the decision-making process in consumer theory, we introduce the concept of security valuation by once again adding the time and risk dimensions to the decision space. Time and risk have significant implications for the opportunity cost of financial assets such as stocks. Compared with purchasing a $50 concert ticket for immediate consumption, buying a $50 stock is different in that it involves a longer holding period and significant cash flow uncertainty during the holding period. In the time dimension, the investor loses time value of money. Because the market price of exchanging between different time points is the risk-free interest rate, it measures the opportunity cost of decisions in the time dimension. In the risk dimension, the investor loses peace of mind because of the uncertainty of payoffs. The price or opportunity cost of exchanging between different risk levels is the market risk premium.

Once the future marginal benefits of a security are adjusted by a discount rate that captures the time- and risk-related opportunity costs and summed together, the result, called security value, becomes the marginal utility, measured in present dollars, of the security to the investor. It is also representative of the investor's willingness-to-pay for the security. Finally, the investor compares security value with its current price to make an investment decision, just as she compares the marginal utility of the concert ticket with the ticket price to make a consumption decision.

When the concept of security valuation is presented as an extension of goods valuation by adding time and risk, students find it more familiar and understandable. We introduce the concept of share value to students immediately after the goal of firm without using any mathematics. Later,

as we move to bond and stock valuation as well as the Net Present Value (NPV) method of capital budgeting, we bring it up again it to explain the economic intuition behind the math of valuation formulas. Another benefit of this approach is that it demonstrates to students the consistency between finance and microeconomics, and simultaneously highlights finance's distinctive focus on time and risk.

Share Price and Market Efficiency

Security price is an important concept in introductory finance. It is frequently used in the calculation of the yield on securities as well as past investment returns. It is also the key element to an understanding of security market equilibrium and market efficiency. Students typically find it difficult to understand the relationship between share price and share value. How does individual-level, subjective share value become the market-level, objective share price? Why is share price equal to share value the capital market equilibrium condition? Why is the efficient market hypothesis proposed only for the financial market but not for other markets such as product or labor? The answers to all these questions can be tied to microeconomic concepts to which students have already had exposure.

Regarding the aggregation of individual value perceptions into a single share price, we compare it with price formation in the product market. Just as consumers with different consumption preferences differ in their valuation of the same product, about the intrinsic value of the same security. In the product market, a non-negative difference between consumer's valuation and product production cost gives rise to the potential of exchange, and the final market price is determined by the competitive behavior of all producers and consumers. It is merchants' arbitrage in the product market that enforces a single price for the same product. While all introductory microeconomics textbooks elaborate that the equilibrium product price clears the market, a few (e.g., Mankiw, 2017) also mention that the price reflects the marginal consumer's valuation of the product. In the stock market, the share price is formed in a similar way and thus it reflects the share valuation of marginal investors.

It is worth further comparing microeconomics and finance in terms of price formation. In product markets, a consumer buys a product for its consumption value and her marginal utility derived by consuming the same product diminishes rapidly. The consumer stops buying once her marginal utility drops below the product's market price. As a result, an individual consumer's purchase size is rather small and her influence on the product price is negligible. In comparison, securities do not have consumption value and all their value lies in future cash flows. An investor's marginal utility is derived from investment profit and diminishes slowly, if at all, with the growth of personal wealth. Simply put, consumption of a product is satiable whereas desire for wealth is insatiable. When investors find stock market opportunities with attractive risk-adjusted returns, they are willing to invest in the pursuit of economic profit to the extent their capital allows. In contrast to the inconsequential price role played by individual consumers in the product market, those marginal investors with large amounts of capital under their control can significantly influence stock prices. They do not stop trading shares and thus influencing the share price until the share price equals their share valuation or they run out of capital.

While microeconomics introduces students to the concepts of short- and long-run profits in a competitive product market, it is rather vague about the speed at which the market moves from short-run to long-run equilibrium. As an extension from microeconomics, we highlight some differences in financial theories about equilibrium enforcing mechanisms. The first one is

arbitrage, defined as buying one security and simultaneously selling a close substitute to exploit their price difference. The risk-free and self-financing nature of arbitrage, coupled with an insatiable desire for wealth, allows smart investors to build a large position instantly to exploit profit opportunities. While arbitrage is not a phenomenon unique to the financial market, its force in the product market is considerably reduced by product branding, inaccessible distributional channels, substantial transportation and inventory costs, time lag between buy and sell, and the inability to short sell products.

In comparison, arbitrage in the financial market faces fewer impediments and thus is more powerful. Through arbitrage, a few marginal investors are able to correct the mispricing created by a large number of behavioral investors, making the security price as rational as the best investor in the market. Because arbitrage does not require many market participants to move in the same direction, it is a more efficient mechanism to restore market equilibrium than the demand and supply mechanism in the product market. This is why the Efficient Market Hypothesis (EMH), which emphasizes the speed for the market to move from disequilibrium to equilibrium, is more relevant to finance than microeconomics.

Capital Asset Pricing Model

CAPM is an important topic of introductory finance as it estimates the cost of capital for security valuation and capital budgeting. Textbooks typically avoid a rigorous derivation of the model, so students often have difficulty seeing the economic intuition although they can mechanically use the model to produce a return number. In particular, students may wonder why it is not the standalone risk, measured by return volatility, but systematic risk, driven by return correlation with the market portfolio, that determines a stock's required rate of return. This puzzle can be resolved by connecting to the concept of marginal analysis, which is one of a few principles highlighted in microeconomics. In fact, the CAPM is the application of marginal analysis to risk pricing. Many students have heard about the diamond-water paradox in microeconomics. A consumer's high valuation of diamonds comes not from the absolute usefulness of diamonds but from the additional utility it brings by interacting with the existing consumption bundle, which consists of enough water and other living necessities. Such interaction allows diamonds to satisfy the consumer's higher-level desire given that all base-level needs are already met by the existing consumption bundle. Likewise, an investor's valuation of risk depends not on the absolute riskiness of a security but on the additional risk it brings to the investor by interacting with her existing portfolio, which is already well-diversified. This interaction diversifies unsystematic risk away and results in a lower marginal risk contributed to the total portfolio than the standalone risk carried by the stock. The analogy between consumption bundles and investment portfolio and between marginal utility and additional risk help students relate the new finance theory to the old economics concept they know.

This marginal concept of risk also helps students to understand the assumptions of the CAPM. Marginal analysis assumes that decision-making is continuous or near continuous. The CAPM is no exception. It assumes that all assets are liquid and infinitely divisible, and so it is possible for investors to continuously adjust the weight of each asset in the investment portfolio to achieve the optimal risk-return tradeoff. This assumption allows the marginal analysis of risk. In case an asset is illiquid and lumpy, such as a private business, it is difficult, if not impossible, for an entrepreneur to adjust, let alone continuously adjust, her exposure to this asset. In this situation, the theoretical optimal risky portfolio does not obtain and the total risk of the private business is more relevant to

the entrepreneur than systematic risk. Thus the CAPM should not be directly used by business owners to estimate the cost of equity without a liquidity discount.

Course Design

In designing the course, we aim to achieve three goals. First, students need to know how to properly use the theories, models and formulas learned in the course for algorithmic calculations. We achieve this goal by using end-of-chapter problems in standard textbooks. Second, students should know how to apply these theories and formulas to real world situations. We achieve this goal through the use of case studies and project exercises with specific contexts. Lastly, students need to unify the many theories and formulas of the course into a coherent big picture, which can further be integrated with other business courses to form an even bigger picture about how business works and how the market functions. This third goal requires students to move beyond the technical details of models and formulas and achieve a deep understanding of the fundamental economic forces that give rise to the models. We achieve this last goal primarily through the integrative approach that is further elaborated below.

We implement the integrative approach in a five-credit hour, 10-week long quarter system, which has 240 minutes instruction time each week. On the first day of class, we survey students about their accounting and microeconomics background. A majority of students have learned consumer theory, firm theory, and partial equilibria in competitive and monopolistic product markets. They may not have been formally exposed to general equilibrium theory and welfare analysis in microeconomics, but most know that the market economy is efficient. Table 1 below summarizes the topics, schedule and concepts covered in our course design. For the concepts covered multiple times, we include coverage occurrence in parenthesis.

Table 1
Summary of Course Design

Topic	Schedule	Paper concepts covered (coverage occurrence)
Introduction & goal of firm	Week 1, 2	Review of financial statements Time dimension (1st time) & impatient investors Risk dimension (1st time) & risk averse investors Fisher's separation theorem Market completeness (1st time) Allocative efficiency (1st time) of the economy Concept of security value (1st time) without using math
Financial system	Week 2, 3	Allocative efficiency (2nd time) of the financial system EMH & price-value relationship Arbitrage (1st time) & market completeness (2nd time) Financial vs product market in terms of price efficiency
Time value of money	Week 4	Time dimension (2nd time) and risk-free interest rate Arbitrage (2nd time) to eliminate simple interest Math and formulas used from this point onward
Bond valuation	Week 5, 6	Security valuation (2nd time) with bond valuation formulas Arbitrage (3rd time) in Treasuries to equate price with value
Stock valuation	Week 6	Security valuation (3rd time) with stock valuation formulas Arbitrage (4th time) may be limited in stock market

Portfolio theory & CAPM	Week 7	Risk dimension (2nd time) and risk premium Marginal analysis in risk pricing
Capital budgeting & cost of capital	Week 8-10	N.A.

In this design, we introduce most fundamental concepts previously described in the first three weeks (i.e., the topics of goal of firm and financial system). This is the key stage of our course design. In this stage, we avoid using math and emphasize the linkage between finance and microeconomics to lay out a theoretical framework into which subsequent models and formulas will fit. Instead of starting from scratch, we extend the basic market framework students have learned in microeconomics by adding the new concepts of time, risk, market completeness and arbitrage.

We start the course by defining finance as a subject that studies the allocation of the scarce resource of capital over time and under uncertainty through a price system based on asset valuation. This definition resembles the definition of economics except that the focus is being placed on capital, time, risk, asset valuation, and the price-value relationship. By adding time and risk we modify the goal of the consumer from utility maximization to lifetime utility maximization under uncertainty, and change the goal of firm from profit maximization to share value maximization.

After presenting and discussing share value maximization as the goal of firm, we delve into a deeper understanding of share value. We start with how a consumer values goods for a purchase decision and ask students the difference between goods valuation and security valuation. We emphasize the importance of opportunity cost in rational decision-making process, and introduce the risk-free rate and risk premium—the prices of the time and risk—as the measures of opportunity cost in the time and risk dimensions of decision. Once these opportunity costs of money are accounted for, we conclude that the valuation result is the present value of a share and interpret it as the investor's immediate willingness-to-pay, similar to her valuation of goods for immediate consumption.

Next, we move to the topic of financial markets. Since students, through the study of the firm's goal, are now familiar with allocative efficiency at an economy-wide level, they are receptive to an understanding of the allocative efficiency of scarce capital as the goal of financial markets. We first review how the product market price aggregates consumers' valuations and how market competition drives down the product price over time until the economic profit becomes zero. We then explain how the security price aggregates the opinions of many different investors and how the force of arbitrage quickly moves the share price to make it equal to marginal investors' valuation, in line with the EMH.

Once the theoretical framework is established, we start to introduce various discounted cash flow models and the CAPM to students. In this later stage, we deepen students' understanding of the fundamental concepts introduced earlier by applying them to specific examples (e.g., use of arbitrage to explain why simple interest doesn't exist) and formulating them into mathematical equations. Because students have grasped these fundamental concepts, teaching formulas and models becomes easier as students see the economics behind the math. In fact, to many business students – especially non-finance majors, the difficulty of introductory finance lies not in absorbing the deep ideas in finance, but in being unable to see the economic rationale behind what they are being taught, including the math. The integrative approach we propose in this paper aims to alleviate this problem.

We primarily use our own lecture notes in the implementation of the proposed approach. However, this approach can be adapted to accommodate standard textbooks by making some adjustments. The most significant adjustment is to lay out the theoretical framework, as elaborated above, in the first a few weeks.

Besides using lectures and class discussions for the integrative approach, we also assign graded essays on some questions in order to measure student learning. These are the open-ended, interdisciplinary, "big think" questions to which McGoldrick and Garnett (2013) believe undergraduate students do not currently receive sufficient exposure. We make the following questions that are directly related to the topics we discuss in the paper.

- How does the financial market interact with the product and labor markets to allocate scare resources in the market economy?
- What is the value of a security? What is the price of a security? How are security value and price related to each other?
- How does the seemingly selfish goal of share value maximization benefit society at large? How can this goal be reconciled with social responsibility and ethics?
- What is opportunity cost? How is it measured? What role does opportunity cost play in decision making? As a scare resource, financial capital has an opportunity cost. What factors determine the opportunity cost of capital?
- What is marginal analysis? How is the concept of marginal analysis used to explain why only the systematic risk, not total risk, is priced by the capital market?

Writing short essays on these questions allows students to go beyond the technicalities of finance to develop a fundamental understanding about the market. Students have a whole term to think, research and answer these questions. In class, when we cover a concept related to a question, we refer to the question, summarize the key points, and encourage students to conduct additional research after class. Because some concepts are brought up multiple times throughout the course, students keep thinking over these concepts and growing their understanding over time. We ask students to write their ideas logically, clearly and concisely.

Learning Outcomes

We adopted the integrative approach in Autumn 2020 and Autumn 2021. We compare students' test grades of 2020 and 2021 with the grades in the two years immediately before the implementation of this approach. In these four years, the same instructor taught three back-to-back sections of introductory finance on Mondays, Wednesdays and Fridays in the autumn quarter. To have a larger sample, we combined the three sections of the same quarter into one sample. We introduced essays as part of student learning evaluation in 2020 and 2021. For a fair comparison of 2020 and 2021 with 2018 and 2019, when no essays were used, we remove the essay and homework parts and only compare the average test grade component. The tests in all these years were machine-graded multiple choice questions designed with similar levels of difficulty.

Table 2 presents the comparison results. It can be seen that both the mean and median percentage test grades of 2020 and 2021 are higher than those of 2018 and 2019, with even greater improvement in 2021. Although the improvement of 2020 relative to 2018 is statistically insignificant, the improvements of 2020 relative to 2019 and of 2021 relative to both 2018 and 2019 are significant.

Table 2
Student Test Grade Comparison

This table compares students' percentage test grades in years before and after the adoption of the integrative approach. *N* is the number of students included in the sample. *Mean* is the mean of student percentage grade in a year. *p-val of t test* is the *p* value of the t-test of the mean equality of a year before the adoption of the integrative approach (2018 or 2019) and a year after the adoption (2020 or 2021). *Median* is the median of student percentage grade in a year. *p-val of nonparametric* is the *p* value of the nonparametric test of the pre- vs. post-adoption years. To conduct the t-test and nonparametric test, we first test the variance equality of the groups. If their variances are not significantly different, then we use equal variance t-test as the t-test and Mann-Whitney test as the nonparametric test. If the variances of the two groups are significantly different, then we use unequal variance t-test as the t-test and Kolmogorov-Smirnov test as the nonparametric test.

Year	N	Mean	*p*-val of t test		Median	*p*-val of nonparametric	
			2018 vs yr	2019 vs yr		2018 vs yr	2019 vs yr
2018	121	77.0			77.5		
2019	131	73.7			75.0		
2020	97	78.2	0.511	0.013	81.0	0.555	0.034
2021	79	83.4	0.000	0.000	85.4	0.000	0.000

To further control for personal characteristics that may affect the comparison result, we regressed students' percentage test grades on a number of variables. *Integrate* is a binary variable denoting whether or not the student took introductory finance after the integrative approach was implemented. A significant positive coefficient on *Integrate* indicates an improvement in student test performance. *PreGPA* is the student's cumulative 4-scale GPA up to the quarter in which introductory finance was taken. *Fin* and *Acct* are dummy variables to indicate whether the student majors in Finance or Accounting, respectively. We include the *Acct* dummy, in addition to *Fin*, because over the years all instructors of the course have observed that accounting students tended to do well. We do not have an economics major in our business school. A preponderant majority of the students in our sample are juniors and seniors, and only a few are sophomores or in the fifth year of college. *Senior* is a binary variable that equals one if the student is a senior or in the fifth year. *Female* is gender variable denoting whether the student is female. *Intl* shows whether the student is an international student. *UMG* is equal to one if the student belongs to an underrepresented minority group. Regression results are presented in Table 3.

Table 3
Regression Analysis of Student Test Grade

This table reports the regression analysis of students' percentage test grades. The adjusted R^2 of the regression is 0.292. The sample size is 422. Relative to Table 2, six observations are lost due to the missing *PreGPA* data.

	Intercept	Integrate	PreGPA	Fin	Acct	Senior	Female	Intl	UMG
coeff	23.079	3.342	14.539	5.690	4.484	3.169	-1.449	2.516	-0.036
t-val	5.156	3.148	11.194	3.956	3.788	2.782	-1.408	1.148	-0.029
p-val	0.000	0.002	0.000	0.000	0.000	0.006	0.160	0.251	0.977

Table 3 shows that the coefficient of *Integrate* is positive at the 1% significance level. The integrative approach, on average, improves student test grade by 3.34%. This improvement is substantial given that being a finance or accounting major only increases the grade by 4-6% and that being a senior only heightens the grade by 3.17% relative to a junior. Unsurprisingly, the most

important explanatory variable of student test grade is *PreGPA*, with its coefficient of 14.54 being highly significant. Thus, if a student's prior GPA is 0.5 higher, then her test grade in introductory finance is, on average, more than 7% higher. The regression result shows that the gender, international, and minority variables do not significantly affect student test grades.

It is possible that COVID had a confounding effect on our results. In 2018 and 2019, all sections were taught in a traditional, in-person mode. Due to the COVID pandemic, the campus was closed from April 2020 to September 2021. Consequently, all sections in 2020 Autumn were taught in an online format, the first time the instructor taught in this modality. With the reopening of campus, the 2021 Autumn classes were taught in a hybrid mode combining in-person instruction with online delivery. We are unable to gauge how COVID affected the instructor's teaching effectiveness and students' test performance. But given the adversity faced by both the instructor and students during the period when the integrative approach was adopted, our test grade data indicate that this new approach produced encouraging results.

Another COVID-related concern in our results is that the pandemic increased the student dropout rate. With this attrition, there is the possibility of a "survivorship" effect in our sample if more diligent and better-performing students remain in the course. To rule out this possibility, we examined the student dropout in our sample period. In 2018, a total of 9 students (6.9% of students registered for the course) dropped out without taking all the three tests needed for our analysis. In 2019, 2020 and 2021, such dropouts are 4 (3.0%), 2 (2.0%) and 1 (1.3%), respectively. That is, the student dropout rate decreased, so we rule out a survivorship bias.

For AACSB evaluation purposes, our business school adopts a target goal of competency for all undergraduate core courses. For introductory finance, this goal is 75% of students achieve 80% or better of the overall course grade. Since the test grade constitutes the predominant proportion (66-85%) of the overall course grade, it is important to have enough students achieve the bar of 80% test grade. In our sample, 42.98% (52 out of 121) of the students reached this bar in 2018. 36.64% (48 out of 131), 52.58% (51 out of 97) and 73.42% (58 out of 79) of the students scored 80% or better in 2019, 2020 and 2021, respectively. Therefore, the percentage of high achievers increased after the implementation of the integrative approach.

Besides the test grade, we also examine student evaluations as an alternative measure of learning outcomes. The course instructor adopted online evaluations for 2018-21. The student response rate remained relatively stable over the years, with 41%, 51%, 48% and 48% for the four years. Relative to 2018, the average student evaluation (on a 5-scale) is increased by 0.5 in 2020 and 0.67 in 2021. Relative to 2019, such increase is 0.0 for 2020 and 0.17 for 2021. According to our anecdotal knowledge, there was campus-wide decrease in student evaluations following the pandemic-induced campus lockdown. With the implementation of the integrative approach, our introductory finance course did not experience a similar decrease. In addition to the final score of student evaluation, we also investigated sub-items that are most relevant to the integrative approach. Student evaluations of both the challenge and engagement index (CEI), and instructor contribution to the course improved over the sample years. In 2018-21, the average CEIs (on a 7-scale) are 5.0, 5.1, 5.17 and 5.47 respectively, and average instructor contribution scores (on a 5-scale) are 3.57, 3.80, 4.00 and 4.30 respectively. Overall, student evaluation data also indicate the improvement of learning outcomes.

Conclusion

Traditional approaches to introductory finance aim to teach students a theoretical framework that is unique to finance with the result that students tend to separate finance from the microeconomic foundations on which it is based. Absent the linkage with microeconomics, students often have difficulty understanding finance theories and formulas and tend to forget them soon after the course is over.

In this paper, we present an integrative approach that builds finance concepts upon the microeconomics knowledge with which students are already familiar. This approach presents finance as an extension of microeconomics and adds time, risk, market completeness, and arbitrage to the framework of market forces that encompass both finance and microeconomics. The approach highlights some distinctive features of finance such as the emphasis on arbitrage. The linkage to, and contrast with, the microeconomics foundation facilitates student understanding of finance concepts by anchoring them to already familiar economics and improves student knowledge retention by simplifying the many technical details into a unifying big picture.

References

Borde, S. F., Byrd, A. K., & Modani, N. K. (1998). Determinants of student performance in introductory corporate finance courses. *Journal of Financial Education*, 24(Fall): 23–30.

Coffman, R. (1983). Is profit maximization vs. value maximization also economics vs. finance? *Journal of Financial Education*, 12(Fall), 37-40.

Grover, G., Heck, J., & Heck, N. (2009). Pretest in an introductory finance course: Value added? *Journal of Education for Business*, 85(2), 64-67.

Mankiw, G., (2017). *Principles of microeconomics (8th edition)*. Thomson South-Western.

Marcal, L., & Roberts, W. (2001). Business statistics requirements and student performance in financial management. *Journal of Financial Education*, 27(Fall): 29–35.

McGoldrick, K., & Garnett, R. (2013). Big think: A model for critical inquiry in economics courses. *Journal of Economic Education*, 44(4), 389-398.

O'Donnell, R. (2016). Complexities in the examination of opportunity cost. *Journal of Economic Education*, 47(1), 26-31.

Parkin, M. (2016a). Opportunity cost: A reexamination. *Journal of Economic Education*, 47(1), 12-22.

Parkin, M. (2016b). Opportunity cost: A reply. *Journal of Economic Education*, 47(1), 35-39.

Payne, B. C., & O'Malley, T. C. (2017). Blind pretesting and student performance in an undergraduate corporate finance course. *Journal of Financial Education*, 43(1), 47–62.

Pomykalski, J. J., Dion, P., & Brock, J. L. (2008). A structural equation model for predicting business student performance. *Journal of Education for Business*, 83(3), 159–164.

Schaffer, B. F., & Calkins, D. O. (1980). An appraisal of prerequisites to business finance. *Journal of Financial Education*, 9(Fall), 51–55.

Schwartz, R. A., Sipress, G. M., & Weber, B. W. (2010). *Mastering the art of equity trading through simulation: The TraderEx course (1st edition)*. Wiley.

Terry, A. (2002). Student performance in the introductory corporate finance course. *Journal of Financial Education*, 28(Fall/Winter), 28–41.

The Big Short as a Pedagogic Illustration of the 2007-2009 Mortgage Crisis

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We present the use of the popular film, The Big Short, as a pedagogical case in financial markets and institutions. The film dramatizes actual persons and events during the 2006-2010 United States subprime mortgage crisis that coincided with and contributed to the United States recession of 2007-2009. The film, when viewed by students in the context of a course and in tandem with a standard textbook, provides visual illustrations of financial markets, instruments, institutions, and regulators. Additionally, the film presents questions in general business conduct, business ethics, and public policy. We provide questions about topics common to an introductory financial markets and institutions course matched to corresponding scenes in the film. The questions when dramatized via the film's dialogue and mise-en-scène can prompt in-class discussions and/or student research assignments.

Keywords: Mortgage crisis, Big Short, film pedagogy, business ethics, public policy

The Great Recession of the late 2000s and early 2010s massively influenced global equity, debt, and real asset markets. In the United States, between October 2007 and June 2009, the Dow Jones Industrial Average lost more than half of its value. Home prices dropped by 19%, bond indexes by 12%. In the real sector, unemployment doubled from 4.7% to 9.5%, GDP declined for six consecutive quarters, and industrial production dropped 17%. It was generally not until late 2010 that the indices were at their pre-2008 levels.

The United States housing bubble/subprime mortgage crisis of 2006-2010 both coincided with and deepened the recession. Between 2007Q4 and 2010Q1 the single-family home delinquency rate more than tripled from 3.05% to 11.53%, not returning to its 2007 level until 2010. Bank loan quality suffered, with foreclosure rates rising from 0.58% in 2005 to 2.23% and not returning to prior levels until 2017. In response, the United States Government undertook the Troubled Asset Relief Program (TARP), buying $426.4 billion of "toxic assets" from large US financial institutions. The United States Government also enacted the Dodd-Frank Wall Street Reform and Consumer Protection Act, which reorganized the various government agencies charged with financial regulatory oversight and broadened the scope of government regulation of the financial industry.

The events of the housing bubble/subprime mortgage crisis provide many good and bad examples of types and uses of various financial products and instruments. The traditional 2020 university student would have been about 8-10 years old during the mortgage crisis. While these students might be able to remember some of the terms (e.g., subprime, bubble, bailout, etc.) from watching or hearing the news, unless the student's family was among those experiencing job or home loss, the memories will likely be abstract at best. We present the use of the popular film *The Big Short*, released by Paramount Pictures in 2015, as a teaching case that dramatically illustrates

actual events from the period, providing students with a visual media touchstone to the era. Events and scenes from the film also can prompt class discussions and serve as topics for student research assignments.

The remainder of this paper proceeds as follows: We provide a brief review of literature supporting the use of visual media as a teaching tool for general and financial topics. Next, we summarize the characters and events of the film, *The Big Short*. We then present our use of the film, including a structured set of discussion questions and teaching notes indexed to particular scenes and times in the film.

Film as a Pedagogy Tool

Film has long been used as an effective supplement to verbal and textual information in teaching students who may be visual learners (Jenkins, 1968). Best practice in education and training suggests that optimal results obtain when the teaching medium matches the learner's learning style. Fleming and Mills (1992) identify three major learning styles and categorize students as auditory (listening—responds well to lectures), visual (pictures—responds best to visual image stimuli), or tactile (hands-on—responds to role-play, practice problems, and experiential learning) learners.

Present traditional-age university students tend to self-identify as visual learners; thus they would be expected to respond more favorably to more image-medium information than text alone (Maal, 2004; Morrison, Sweeney, & Heffernan 2003). Sloan, Daane and Giesen (2004), from a sample of undergraduates majoring in elementary education majors, find that seventy-two percent of the students have a significant inclination toward visual learning, even though it may not be their primary learning style.

Film's images can be an effective tool for teaching visual learners. Seminal pedagogical work also supports combining film with print media information sources to produce significant marginal educational benefits when compared to either of these media alone. These educational benefits include increased rate of learning (Jenkins, 1968), increased long-term recall (Baggett, 1979; Pang & Levin, 1979), and improved student response and reception (Belden, 1992; Philpot & Oglesby, 2005). Film engages students by providing a visual presentation of real-world concepts that are often otherwise abstract, and this engagement fosters discussion (Belden, 1992). As Exhibit 1 shows, several cases have been published using film to teach various topics in finance theory, practice, ethics, and professional conduct.

Exhibit 1
Selected Published Popular Film-based Pedagogical Cases in Finance

Film (Date)	Case Authors (Date)	Finance Topic(s) Emphasized
Wall Street (1987)	Belden (1992); Dyl (1991)	Ethics, investment banking
Other People's Money (1991)	Chan, Weber, & Johnson (1995)	Acquisitions, governance, capital structure, social responsibility
Barbarians at the Gate (1993)	Nofsinger (1995); Peterson & Philpot (1997)	Mergers and acquisitions, governance, capital budgeting
It's a Wonderful Life (1946)	Philpot & Oglesby (2005)	Financial institutions history, management, and regulation
A Civil Action (1998)	Philpot (2009)	Professional conduct and standards in financial planning

We present *The Big Short* as a financial markets and institutions teaching tool and provide structured case questions for classroom use. Abbas, Satrio, and Annisya (2018) describe their use of *The Big Short* as a pedagogical case in teaching basic economic and financial market concepts. They present results from an experiment in which a lecture-only group and a film group took pre- and post-tests over the same material. While both groups show significant learning via a post-test, the film-experimental group's score improvement is greater than that of the lecture-control group. Abbas, Satrio, and Annisya present only their results—they provide no indication of exactly how they use the film, nor do they present specific points for discussion of financial and economic topics.

The Big Short

The Big Short (*TBS*) is based on its namesake 2010 novel by Michael Lewis and dramatizes actual events occurring 2007-2008 during the housing bubble/subprime mortgage crisis. The film pursues three concurrent plotlines, each following a trader or group of traders who profit from the crisis via collateralized debt obligations. Through extensive analysis, hedge fund manager Michael Burry (actor Christian Bale) discovers that the US housing market is unstable and will collapse under the weight of subprime borrowers who will not be able to make payments on their adjustable rate mortgage (ARM) loans. To capitalize, he creates a market in credit default swaps and buys these instruments from major banks and investment firms, effectively short-selling the US residential mortgage market. Shortly after and by mere chance, managers of two other hedge funds, Mark Baum (actor Steve Carell) of FrontPoint and Charlie Geller (actor John Magaro)/Jaime Shipley (actor Finn Wittrock) of Brownfield Capital learn of Burry's plan, verify its validity, and take similar positions as Burry.

Throughout the film, characters discuss many different types of financial instruments, markets, institutions, and trading techniques. Because much of the position-taking involves personal selling, the characters often explain to each other specifics of their various instruments and positions. This aids to the non-financial viewer (or introductory student), who might not have prerequisite knowledge to otherwise understand the film. Additionally, the characters frequently break the "fourth wall" and directly address the audience to explain their positions, their motives, and the industry; often these soliloquies add comic relief.

These effective short positions expose the main characters and their investors to very high levels of risk. While they are waiting for the market to collapse, their investment companies must pay expensive credit default swap premiums to their counterparty institutions. The positions become an expensive waiting game, during which the viewer learns some specifics of hedge fund operations and financial instrument valuation.

Eventually, the housing market collapses as expected and takes the residential mortgage loan and mortgage-backed security markets with it. The three hedge funds close their short positions, earning billions of dollars in profit. In its epilogue the film tacitly questions the desirability of earning such profits from other persons' (namely homeowners who defaulted on their loans) misfortune. The epilogue also provides a summary of the subsequent lives of the main characters and notes that there was no regulatory action taken against the industry. The film leaves the viewer to contemplate the prospect that in the end, common people pay for the excesses of the powerful. Upon its release, the film was a critical and commercial success.

Our Use of the Film

We use *TBS* to illustrate topics from introductory courses in financial markets, financial institutions, and money and banking. Sequences illustrate many topics commonly covered in these courses, including: financial institution management, various financial products and instruments, the housing and mortgage-backed securities markets, due diligence, bond rating, lending practices, government regulation, and fiduciary duty. Several sequences in *TBS* illustrate ethical and public policy issues. We use illustrative scenes from *TBS* to prompt classroom discussion and student research. Exhibit 2 contains running times and titles of course-relevant sequences in the film and discussion questions/teaching notes for classroom use.

Exhibit 2
Questions and Teaching Notes for The Big Short

Sequence 1. Running times: 0:00 – 9:24 Introduction	
Question 1:	What is a mortgage-backed security? What did mortgage-backed securities do for the housing market?
Notes:	A mortgage backed security (MBS) is a type of asset backed security (ABS) in which mortgage loans originated by the local banks are purchased and securitized by the third party (e.g. an investment bank) and subsequently sold to investors. The cash flows from the interest and principal payments on the loans are passed to MBS investors through the investment bank who now owns those mortgages. MBS allows the loan originators, often times local banks, to sell loans for cash so that they can issue more loans, earning origination fees. MBS had the positive effect of lowering mortgage rates, i.e. cost of borrowing, and making home ownership more accessible. However, when originating banks sell the loans, they also transfer the default risk. This gave banks incentives to drop lending standards and make bad loans
Question 2:	(5:15) "Housing is always stable." Is the housing market always stable? How much attention should investors pay to financial history?
Notes:	Since the 1960's (except for the 1990-1993 recession), US housing price indexes had steadily risen. Given this history, it would be easy to become complacent about the stability of housing prices. Regional housing bubble/busts have happened, for example in the Southwest during the 1980's oil and S&L bust. Financial history may help investors better understand market behavior. However, investors should be wary of the fact that future performance is unpredictable and independent of historic record.
Sequence 2. Running times: 19:03-25:59 Credit Default Swaps	
Question 1:	What is a credit default swap? What must happen in order for Burry to win?
Notes:	A credit default swap (CDS) is a derivative instrument in which two parties take opposite positions on the default risk of a loan. In the film, the home owner/borrowers' credit quality is the underlying asset of the CDS deal between Burry and Goldman. For Burry to win, the collective

	mortgage loan default rate must increase significantly to trigger a positive payoff—the higher the default rate, the bigger payoff for Burry.
Question 2:	What are full disclosure and due diligence and their roles in a primary market transaction?
Notes:	Full disclosure involves providing *all material information* about a business or financial product to the counterparty before the deal is completed. It is a requirement by the US Securities and Exchange Commission (SEC) governing all publicly offered securities. Due diligence is the research and analysis of a company or organization done in preparation for a business transaction, such as a corporate merger or purchase of securities. In a primary market transaction, the seller is obligated to fully disclose all relevant information about its product, and the buyer is expected to exercise due diligence before committing to the deal. In the film, Burry is the buyer and he approached the investment banks and, providing them a full-disclosure document, convinced them to sell him the CDS product. No evidence is shown that his counterparties did due diligence.
Question 3:	Goldman's managers tell Burry, "We'll take your money," and laugh after he leaves the room because they are certain they will "win" in the trade. Are there ethical concerns in selling a product when you fully "know" the product will fail?
Notes:	It is definitely unethical (and possibly fraudulent) to sell a product that the seller expects to fail. Goldman's managers may not see an ethical problem, given that Burry is known as a competent institutional investment manager, and that Burry is the one proposing the deal.
Sequence 3. Running times: 28.48-37:22 Tranches	
Question 1:	What is a tranche? What was the original purpose of tranches in CMOs?
Notes:	A tranche is a portion of the overall mortgage pool used in a CMO with certain features. CMOs can be split into tranches of varying loan default risk levels, or by order in which prepayments will be processed. Partitioning CMOs into tranches aligns product characteristics with investor needs and risk tolerance. For example, a CMO might have tranches in a pre-payment order as mortgagors prepay their loans. An investor who wants to be assured of a longer effective maturity would buy the tranche scheduled last for prepayment.
Question 2:	What do they mean by, "two simple questions?"
Notes:	The "two simple questions" Mark Baum asks his crew to find out are: 1) Is there a housing bubble? 2) If there is, how exposed are the banks? This scene immediately follows the sales pitch by Jered Vennett of Deutsche Bank on CDS. The answers to these two questions decide the actions taken by Baum's team.
Sequence 4. Running times: 42:53-43:94 Give Me My Money	
Question:	What is a hedge fund? Who invests in hedge funds? What are special risks in hedge funds?

Notes:	A hedge fund is an investment company that often employs a variety of financial instruments and strategies that are considered exotic and/or risky. Hedge funds can change their objectives and their strategies at any time. Hedge funds are offered only to institutional investors and to individual investors who meet SEC requirements for high income and net worth. Hedge funds are not offered to the public. Special risks in hedge funds include: 1) Illiquidity—most hedge funds require minimal initial lock-up period of one year, and can impose redemption restrictions at the discretion of fund managers; 2) High management fees— hedge funds normally charge a base fee that is much higher than that of mutual funds, plus a performance-based fee. "Two and twenty" is a typical hedge fund fee structure, which means clients pay 2% of the total asset under management, plus 20% of the gain as fees. 3) (Potentially) big losses—given the riskiness of the instruments and strategies often employed by hedge funds, investors may suffer big losses.

Sequence 5. Running times: 49:34-56:59 Ninja Loans	
Question:	What is a Ninja (sub-prime) loan? Why might bankers have incentives to pursue high risks in their lending portfolios?
Notes:	Ninja is an acronym of **n**o **i**ncome, **n**o **j**ob, no **a**ssets. Ninja (subprime) loans have very low underwriting standards, often requiring no down payment and allows borrowers with **n**o **i**ncome, **n**o **j**ob, and no **a**ssets to qualify. Multiple factors contributed to reckless lending behavior during that time period: 1. The active MBS market made it easy for originating banks to sell their loans and pass the default risk to others. 2. The Federal Deposit Insurance Corporation (FDIC) insurance protected depositors (banks' major source of funds) from loss, removing depositor incentive to monitor bank management. Without investor oversight, bank managers could take higher risks and know that the government would pay their losses. 3. Greed and herding mentality both contributed to reckless lending by banks—as early starters enjoy higher profit with lower lending standards, more banks follow suit—which led to the race on the downward spiral to collapse.

Sequence 6. Running times: 1:02:06 – 1:10:49 Bond Ratings	
Question 1:	What are bond ratings? Who are the major bond rating agencies?
Notes:	Bond ratings indicate a bond issue and issuer's creditworthiness. A high rating, AAA, means low risk of default and safe investing; as rating goes down from AAA to AA, BBB, etc., the likelihood of default increases. Bonds with higher ratings have higher prices and lower yields than bonds with lower ratings. Major bond rating agencies in the US include Standard & Poors (S&P), Moody's, and Fitch. These agencies' credit analysts

	research the bonds and their issuers and assign ratings. Investors rely heavily on bond ratings.
Question 2:	Who pays the fees for bond ratings? How might rating agency compensation affect bond rating assignments?
Notes:	The bond issuers pay to get their bonds rated. Issuers might cherry pick among the few rating agencies and use future business as leverage to pressure agencies for favorable ratings. This fee structure causes fundamental conflict of interests for the rating agencies. The agencies' mission is to assess objectively creditworthiness, maintaining their own business reputations. However, to attract business and maximize short-term profit, the agencies have incentive to inflate the ratings. After financial crisis of 2008, S&P agreed to pay nearly $1.4 billion dollars to settle lawsuits with the US Department of Justice on its role in the financial crisis.
Question 3:	What effect does a bond rating change have on a bond's price and yield?
Notes:	A bond rating change directly impacts bond price and yield: a downgrade, from AAA to BBB for instance, means higher default risk causing price decline and higher yield; an upgrade on the other hand, means lower default risk and lead to higher bond price and lower yield.
Sequence 7. Running times: 1:16:59 – 1:20:53 You Were Wrong	
Question 1:	What is the business judgment rule? How does it apply to money managers?
Notes:	The business judgment rule is a legal concept in corporate law area under the common law system. The rule posits that managers and directors in charge of the corporations must exercise judgment under uncertainty in making decisions for the business; as long as they act as a reasonable person would do, and in good faith for the best interest of the business given the circumstances, they are not legally liable for negative outcomes of their actions. Money managers are in the business of generating returns on clients' money entrusted to them. Money managers are expected to perform due diligence in client assessment and investment product analysis and to place investors in investments that appear suitable *ex ante*. A manager meeting these standards will be protected by the business judgment rule if the investment fails for unforeseen reasons.
Question 2:	What is an accredited investor? Why are hedge funds restricted to accredited investors?
Notes:	Accredited investors meet SEC requirements for income, wealth, and/or professional investing experience. Accredited investors are very wealthy individuals or institutional investors and are assumed to be sophisticated and/or able to absorb losses. Safety is the main reason for restricting access to hedge funds – accredited investors, given their wealth and knowledge, can presumably better sustain the volatile returns and possible big losses inherent in hedge funds compared to non-accredited investors.

Sequence 8. Running times: 1:20:53 – 1:29:48	Investing and Society
Question 1:	What considerations (if any) should investors and/or trader give to the macro effects of their positions?
Notes:	Trading is a way to express one's opinion about the valuation of assets with the objective of making a profit. Given the size of the US economy and its capital market, individual trades including large ones by institutional investors have very little macro effect. Therefore, it is unnecessary to consider the macro effect under normal conditions when there are no warning signs on the health of the economy and the market. During special times, such as that portrayed in the film, consideration about the macro effect may be taken among other factors. It would be a judgment call by the traders based on their personal values—all the main characters in the film made huge profits out of their positions as the worst financial crisis in recent decades hits the economy, but none felt genuine happiness about this outcome knowing that millions of ordinary people suffer from the market collapse. Their trades may seem to have contributed to the downfall of the financial market; but the situation would have gotten even worse before the inevitable market correction. At the core of the issue is that to prevent future bubbles, multitudes of institutional reforms and improvements on governance are needed, so that individual trades would not have substantial macro effects.
Question 2:	"I represent investors." Whom do financial middlemen represent? What conflicts of interest might arise?
Notes:	Generally speaking, financial middlemen, aka financial institutions, act as facilitators connecting people and entities with excess capital with those in need of capital, so that capital would be put into productive use for the growth of the economy. Depending on the job, financial middlemen may represent the investors, like the fund managers do; or, they may represent the issuers, as do underwriting investment bankers. The conflicts of interest might arise when financial middlemen's incentives, such as total compensation or *quid pro quo* among peers, are tied to factors other than their performance for their own clients. For example, a fund manager may get paid for trades he directs through a brokerage firm, or he may receive kickbacks for shares he buys from an underwriter. In big financial institutions where multiple divisions serve opposite sides of the market, the buy side may be under pressure from the upper management to support the sell side. Under such circumstances the integrity of the financial middlemen may be compromised.
Question 3:	"Society values me very much." Is there a relationship between compensation and contribution to society? Should there be?
Notes:	Because money is objective and easy to count, highly-compensated persons could extrapolate a social contribution from their wage, but actual contribution to society is a subjective metric and is very difficult to quantify.

	No doubt (and as reinforced by the COVID-19 pandemic), essential workers, teachers, and emergency responders contribute to society very much but are generally not highly-compensated. Wage compensation is determined by supply (scarcity of a skill set) and demand (marginal revenue product of labor) in the labor market. Social-based compensation sounds good but would be very difficult to implement.
Sequence 9. Running times: 1:49:30 – 1:59:02 Regular People Pay	
Question 1:	How might the "regular people" pay for the reckless actions of financial institutions? What has been the history of government financial bailouts since 1970?
Notes:	Government bailouts are financed by taxpayers' money, the bulk of which comes from middle-income taxpayers (regular people). Recent history of US government bailout includes: 1. Savings & Loans crisis of 1986–1995, when 1,043 out of 3,234 such entities failed; 2. Direct bailout of Bear Sterns and AIG in 2008; 3. Troubled Asset Relief Program (TARP) in 2008 to save the US banking system -- thousands of US banks would have failed without government bailout.
Question 2:	What does "too big to fail" mean? What is a "systemically important" financial institution?
Notes:	A "too big to fail" financial institution is one that the government will support when that firm is in financial distress. Such firms are very large and interconnected with many other firms. Their failure would have very widespread consequences. In the film, big banks and financial institutions were such entities in the 2008 financial crisis. A "systemically important" financial institution is a too big to fail firm whose failure could trigger a nationwide/global financial crisis and/or collapse the entire financial system. Since 2008, such firms are defined by statute and are subject to heightened regulatory attention. They must also have their own crisis contingency plans.

At 130 minutes total running time, *TBS* is a fairly long film that could present logistical problems in class. Instructors can assign students to watch the film outside of class via a streaming service or library, following up with in-class discussion. Alternatively, instructors can assign the discussion questions as an out-of-class research assignment. Instructors should note that *TBS* carries an MPAA "R" rating for pervasive use of profanity and two brief instances of female top-free nudity. Instructors should inform students about this content in advance, and it may be necessary to assign an alternative to students who would be inordinately offended.

Conclusion

The film, *The Big Short*, dramatizes many topics in an introductory financial institutions course within the context of the housing bubble/subprime mortgage crisis of the late 2000s. While other

faculty have proffered the film as a teaching medium and published evidence of its efficacy, they do not provide specific, structured teaching points. We provide a set of questions and teaching notes that can enhance the teaching use of *TBS*.

References

Abbas, M.H.I., Satrio, Y.D., & Annisya, A. (2018). Teaching economic crisis and stock market using a movie. *Advances in Social Sciences, Education and Humanities Research*, 313, 49-52.

Baggett, P. (1979). Structurally equivalent stories in movie and text and the effect of the medium on recall. *Journal of Verbal Learning and Verbal Behavior*, 18(3), 333-356.

Belden, S. (1992). A comment on "Wall Street: a case in ethics." *Financial Practice and Education* 2(1), 53-54.

Chan, K., Weber, M., & Johnson, M. (1995). Using Other People's Money in the classroom. *Financial Practice and Education*, 5(1), 123-127.

Dyl, E.A. (1991). Wall Street: a case in ethics. *Financial Practice and Education*, 1(1), 49-51.

Fleming, N. D., & Mills, C. (1992). Not another inventory, rather a catalyst for reflection. *To Improve the Academy*, 11, 137-146.

Jenkins, J.R. (1968). Effects of incidental cues and encoding strategies on paired-associate learning. *Journal of Educational Psychology*, 59(6), 410-412.

Maal, N. (2004). Learning via multi-sensory engagement. *Association Management*, 56, 61.

Morrison, M.A., Sweeney, A., & Heffernan, T. (2003). Learning styles of on-campus and off-campus students: the challenge for marketing educators. *Journal of Marketing Education*, 25, 207-217.

Nofsinger, J. R. (1995). Barbarians at the Gate: a capstone corporate finance project. *Financial Practice and Education*, 5(1), 118-122.

Pang, C. Y. & Levin, J. R. (1979). Pictures and children's story recall: some questions of durability. *Educational Communication and Technology*, 27(1), 39-44.

Peterson, C. A. & Philpot, J. (1997). A Supplement to "Barbarians at the Gate: a capstone corporate finance project." *Financial Practice and Education*, 7(2), 98-105.

Philpot, J. (2009). Teaching client relations and professional practice using A Civil Action. *Advances in Financial Education*, 7(1-2), 129-140.

Philpot, J. & Oglesby, R. (2005). It's a Wonderful Life: a case in financial institutions management and history. *Journal of Financial Education*, 31, 49-60.

Sloan, T., Daane, C. J., & Giesen, J. (2004). Learning styles of elementary preservice teachers. *College Student Journal*, 38, 494-500.

FINRA's Securities Industry Essentials Examination: Gateway to Securities Industry Careers

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Superior business schools provide a worthy education as they empower graduates to attain business goals. Apprising undergraduates of the Financial Industry Regulatory Authority's (FINRA) Securities Industry Essentials (SIE) Examination can enrich their education by showing the link between classroom topics and future employment. In addition, undergraduates could fuel their launch into business employment by passing the SIE Examination before graduation. Such mastery highlights a business undergraduate's assurance of learning and can certify the student's merit to securities industry employers. Moreover, this mastery also attests to the value of the business college to prospective applicants and to accreditors. Further, FINRA's SIE Examination covers practical knowledge and gives students a taste of that career. Undergraduates aiming for business professions might require proven comprehension of such knowledge.

This study is intended to reinforce business schools' and their faculties' use of said exam because it is an opportunity offered to a diverse group of students to step up in the world. This paper describes approaches for encouraging students to take the exam and ways to prepare students for passing the SIE exam. It presents the benefits to the student of passing the SIE as well as the advantages to the school and the faculty.

Key Words: Association to Advance Collegiate Schools of Business International (AACSB), business school undergraduates, Financial Industry Regulatory Authority (FINRA), North Carolina A&T State University, Securities and Exchange Commission (SEC), Securities Industry Essentials Examination (SIE), University of Colorado - Denver, University of Dallas, professional certification.

Introduction

The following ideas reflect the contemporary business schools' atmosphere – that in order to support themselves financially, students must gird themselves educationally to prepare for a successful job hunt. Students with better grades, intern experience, and family friends in hiring positions are tough to beat, but job-hunting students are finding that credentials help even the playing field. One credential that is available to undergraduates is the Securities Industry Essentials (SIE) Examination which is offered by the Financial Industry Regulatory Authority (FINRA).

There is an atmosphere of competitive pressure upon universities to woo prospective applicants. Colleges in the United States prove themselves to be more and more like corporations, fighting over division of the potential-student market-shares (Saunders, 2017). Bodies like the Association to Advance Collegiate Schools of Business International (AACSB) serve to relieve both pressures - for they signal to business students that their respective institutions' capacities are adequate to deliver the means whereby graduates (as entrepreneurs or employees) can earn their way in the world.

Business faculty could discover that facilitating their students' access to the SIE could be most meritorious. Robinson observed of 2020 America: "The belief has been general and urgent that the mass of people and their children can look forward to a future in which they must scramble for employment, a life-engrossing struggle in which success will depend on their making themselves useful to whatever industries emerge, contingent on their being competitive in the global labor market" (Robinson, 2020, p. 45). More than 3,000 U.S. universities and four-year colleges already award degrees preparatory to practically every single white-collar calling evincing sophistication above sheer routinization (Brint, 2018). America deploys resources to educate every college-prepared matriculant, and curricula to test the capacities of students across every skill level (Conard, 2016).

In all economic disciplines, the twenty-first century U.S. universities remain near the center of a hardly-precedented integration of knowledge (applied or pure) (North, 2005). Education at the tertiary level is fancied a sort of commercial investment-site industry (Alajoutsijarvi, et al., 2015). A major motivation of persons seeking formal education as a means of investment in their human capital (Mincer, 1993) is the augmentation of future income, to expand their wealth overall (Bryant and Zick, 2006).

Business Schools' Commercializing Environment

Assume a person who only regards formal education's monetary payoff. That person would invest in additional schooling if and only if the payoff exceeded or (at the margin) equaled the prospective, alternative investment payoffs. Consequently, the campuses' messages have long been directed toward prospective business school applicants as individual consumers, if not outright customers (Alajoutsijarvi et al., 2015). While business schools recognize governmentally assisted financing via student borrowing, college students overall incur debt to finance higher education as a bet for expanded employment opportunities (Daniel, 2015).

Historically, for many high-school graduates, a college degree constituted a do-or-die prospect (Bowles and DeCosta, 1971). Any accomplishment short of the bachelor's degree appeared, in the eyes of many, as nearly worthless (Jencks and Riesman, 1969). In a somewhat similar vein, twenty-first century college dropouts have lived during the days when the level of overall student loan indebtedness more than quintupled (between 2004 and 2017), to total in excess of the entirety of Americans' auto loan indebtedness plus the entirety of their credit card indebtedness (student debt having swelled while other kinds of personal debt saw some decrease) (Saunders, 2017). And college dropouts have felt caught in a bind because they are shouldering weighty loans but are devoid of the dividends which degrees might deliver (Hacker, 2006). For the diploma, not mere collegiate study, marks a sine qua non of major recompense for time spent on-campus.

Possibly, a simple yet constructive response to this incentives-environment is to equip students for the SIE exam while still undergraduates. Let them start on the road to a job and wealth while providing proof that the university accomplishes its mission and professors teach what is

important. According to the Securities and Exchange Commission's January 24, 2018, Release No. 34-82578: "FINRA developed the SIE examination in consultation with a committee of industry representatives and representatives of several other self-regulatory organizations (83 FR 4376)." The SIE examination content outline's structure of the exam section relates: "Much of the content on the SIE outline is based on common securities industry knowledge and general concepts. This knowledge is not based on any one rule or regulation" (FINRA 2018b). As Lowenstein recorded: "Business schools have become no different from any other profession in likewise experiencing their curriculum driven by tests for assessment or licensure in each specific field" (Lowenstein, 2013).

There are many opportunities within the finance industry. Fidelity, during 2020, reportedly called for another 4,000 employees nationally for positions in, e.g., customer service (for which undergraduates presumably qualify) and product development, and as Financial Advisors (Thomas, et al., 2020). A career as a Financial Advisor ranks at number 31 among the nation's 100 best jobs. Better yet, it ranks at number 22 among its top-paying jobs. Best of all, Financial Advisor ranks at number 6 among our country's best jobs in business (Financial Advisor Overview: 2020).

Respecting entry-level Personal Financial Advisors, the educational credential is ordinarily the bachelor's degree (Bureau of Labor Statistics, 2020). Relevantly to the SIE Exam, 58 percent of Personal Financial Advisors held positions in securities, commodity contracts, and other financial investing and associated endeavors (Bureau of Labor Statistics, 2020: #tab 3). Numerous Personal Financial Advisors hold a license to buy and sell financial products, e.g., stocks and bonds, directly (Bureau of Labor Statistics, 2020: #tab 2). Consequently, business schools' law or finance professors who apprise undergraduates of topics tied to the SIE Examination cannot but be advantageous to tomorrow's Personal Financial Advisors.

Reinforcing Ambitious Students

Standard I of the AACSB's 2020 Guiding Principles and Standards for Business Accreditation looks to each business college's: (1) mission; as well as its (2) continuously self-improving innovations in executing is mission; and its (3) visible dedication to affirmative social impact associated with its mission plus specification of its means toward attaining its impact (AACSB, 2020). Consistent with a need and desire to reinforce business college undergraduates' ability to pass professionally prepared examinations evidencing comprehension of a particular industry's entry-level knowledge (Swan, 2017), the SIE can also be used as a realistic reinforcement of teaching. Such tests can be seen as an attention-attracting backdrop to a professor's undertakings in the classroom. If students can pass the test, their securities industry rite of passage must reflect favorably on the institution.

For FINRA's Regulatory Notice 17-30 notes the Securities and Exchange Commission (SEC) had approved FINRA rules-revision creating a Securities Industry Essentials (SIE) exam, effective October 1, 2018 (FINRA, 2017). FINRA is a broker-dealer self-regulatory organization (SRO) some 3,700 members strong, overseen by the SEC (Schoeff, 2018). The SIE exam is the gateway to the respective "top-off" examinations toward registration as a representative via Series licensures including: 6, 7, 22, 57, 79, 82, 86/87 and 99 (FINRA 2018b). The SIE constitutes the first step into higher level licensure, like those calling for Series 7 licensure.

The SIE Examination

The SIE Exam (established in 2018 to measure a candidates' knowledge of the financial industry) is touted as "Your first step to a career in the securities industry" by the FINRA website. The one hour and 45-minute exam is composed of:

Sections	Percentage of Exam Questions	Number of Exam Questions
1) Knowledge of Capital Markets	16%	12
2) Understanding Products and Their Risk	44%	33
3) Understanding Trading, Customer Accounts and Prohibited Activities	31%	23
4) Overview of Regulatory Framework	9%	7
Total	**100%**	**75**

The finra.org website lists the following benefits of passing the exam:

- Ability to distinguish yourself from your peers who are seeking internships or jobs.
- Opportunity to jumpstart your career goals.
- Immediate notice of your pass/fail status with performance feedback if you fail.
- Increased marketability in financial services industry (https://www.finra.org/#/, December 22, 2022).

In 2018, FINRA changed its policy so that a candidate is no longer required to have actual brokerage employment experience to sit for the exam. Instead, the applicant must be 18 years of age and pay $60. Citizenship is not required. If you pass, it is good for four years. To take the exam, you can either schedule it at a Prometric test center or online. The overall pass rate was 82% in 2019 (Kaplan, Oct. 16, 2019) (viewed June 29, 2021).

The initial 75 questions presented by FINRA's SIE Practice Test signified that most of the exam is finance based but about ten percent relates to undergraduate business law coursework. The following are examples of practice questions:

- Which of the following stakeholders has first claim priority in a Chapter 11 proceeding?
    A) Equity holders
    B) Secured debt holders
    C) Unsecured debt holders
    D) Administrative claim holders

- Blue-sky laws are regulated by which of the following entities?
    A) SEC
    B) MSRB
    C) FINRA
    D) State securities regulators

- When a broker-dealer charges a commission on a securities transaction, it has acted as:
  - A) An agent
  - B) A principal
  - C) An underwriter
  - D) A market maker

- Which of the following statements is true about treasury stock?
  - A) It has voting rights.
  - B) It receives dividends.
  - C) It is issued stock that has been subsequently reacquired by the corporation.
  - D) It is authorized stock that has not been issued and is held in the corporation's treasury.

Professors of finance and other business-disciplines professionally touch repeatedly upon one or another matter encompassed by the four sections of the SIE.

Helping Students Prepare

The University of Dallas showcases its finance industry certifications-oriented offerings. It scheduled an on-campus, March 5 to May 7, 2020, SIE Certification Exam Prep Class in partnership with Salomon Exam Prep (Launch Your Career in Finance with SIE Certification, 2019). "Prior to the SIE, it was hard for people to break into the securities industry. It wasn't possible to take a securities licensing exam unless you had a job with a broker-dealer. Now, you don't have to be hired to be qualified: the doors to the security industry are wide open! Whether you are just starting out or launching a new career, the SIE certification shows you are serious about your future" (https://udallas.edu/cob/executive_education/sie/index.php, 2021).

The University of Colorado-Denver had a one credit Introduction to Investment Services Industry and Opportunities finance course for Saturday, Feb. 22, and Saturday, April 4, 2020. It aimed, not merely to address industry fundamentals, but to "connect you with an internship and job opportunities, and prepare you for the Securities Industry Essential [sic] (SIE) Exam, an entry-level exam that will give you an edge over the competition" (Ready to Start Your Career in Investment Services? 2019). Envision interdisciplinary teamwork fortifying business school students inclined toward the SIE Examination. Burney (2017, p. 40) finds: "…it's well-established that the ability to pass certification exams is enhanced by the recency of relevant coursework completion."

In Spring semester 2023, North Carolina A&T State University is offering a Special Topics, 3-credit-hour Finance course with the express intent of allowing students to earn course credit for preparing for the SIE exam. Students who elect to take the course must be business students who are also required to take (or have taken) Business Law. The finance course will be taught by a Certified Financial Planner.

Methods to Encourage Students to Take the SIE Exam

There are several ways to inform students about the SIE Exam:

1. One on one academic advisor discussion and encouragement.
2. Finance and business law faculty promoting the exam. They optionally could offer bonus
3. points for *taking* the exam and more bonus points for *passing* the SIE Exam.
4. Student organizations such as the Financial Management Association (FMA) could promote the exam among its members and possibly require taking/passing the SIE Exam as a condition for leadership positions within the student FMA chapter.
5. If your school has a Student Managed Investment Fund, students may be required to have taken/passed the SIE Exam as a condition for leadership positions.
6. There could be an annual on-campus professional presentation where securities industry professionals discuss the SIE Exam and encourage students to take the exam.
7. The college/department should have a designated SIE Coordinator (either department chair or person teaching finance courses) who serves as the contact person with up-to-date information about the SIE Exam and maintains data about student performance on the exam.
8. Posters regarding the SIE Exam (see FINRA's student outreach materials) could promote the exam along with contact information for the SIE Coordinator.
9. Student success on the exam could be publicized/recognized (e.g., on department/school website and/or newsletter) along with contact information for the SIE Coordinator and SIE Exam information.

Companies that recruit at the school for securities industry positions could be sources of funding for students needing financial assistance to take the SIE Exam. Students who earned good grades in the introductory finance class could receive "$60 scholarships" to take the SIE Exam.

Means Whereby Students Can Prepare for the SIE Exam

There are numerous ways students can prepare for the SIE Examination:

1. Incorporating the SIE content as components of business law and finance classes as part of a degree program (see FINRA's SIE Exam content description).
2. A special prep course (for academic credit) or workshop (non-credit) focusing on SIE Examination delivered by faculty without using a commercial exam prep company (see FINRA's suggested curriculum guide file). A school's securities industry corporate partners (recruiters) may also be willing to help deliver this workshop. Note the special prep course could either charge a fee (with scholarships available for needy students) or be free. If a fee is charged, the non-credit workshop program could be opened to the larger community and those fees could be used to fund workshop scholarships for needy students. If no fee is charged, the workshop could be available to the community as a public service and good public relations/community outreach for the school.
3. A special prep course (for academic credit or not) focusing on the SIE Examination with the school in partnership with a commercial exam prep company. Some schools that have used this approach include Clemson University, University of Iowa, Ohio University, and Ouachita Baptist University.

4. Students could utilize self-study using exam prep materials (e.g., SIE Exam for Dummies book).
5. Students could also take a commercial exam prep program not affiliated with the school.

Benefits for Schools and Departments

There are several potential benefits for schools that have students who pass the SIE exam prior to graduation. Among those potential benefits are the following:

1. Placement statistics (the percentage of new graduates employed and average compensation) for the School/Department could be enhanced insofar as students passing the SIE Exam prior to graduation prove more likely to secure the better-compensated positions in the securities industry. As these graduates advance professionally, they can give back to their alma mater through financial contributions and serve as mentors for future students.
2. Securities industry firms currently recruiting at the school will be happier with their new hires who have already passed the SIE Exam. This can solidify the School/Department relationship with the firm and lead to enhanced financial support for the school and department and more involvement (e.g., internships, mentoring. presentations, and service on advisory boards).
3. If several graduates are doing well at a securities industry firm which has not previously established a relationship with the school, the school might eventually become included on the firm's short list of on campus recruiting schools.

An Attempt to Remedy Lack of Diversity

Robert Cook, FINRA's CEO, communicated that his organization wants to team with historically Black colleges and universities to spread the word about the SIE exam (Salinger, 2020). In response to the George Floyd murder, Cook commented that fewer than 4% of Certified Financial Planners (CFP) are Black or Latinx even though the 2020 population of the US was composed of Blacks (12.2%) and Latinx (18.7%) which combined, make up 30.9% of the population (VisualCapitalist.com, 2021). Others such as Reiter and Kiss (2012) and Pasztor (2012) have also noted the lack of diversity in the finance industry. The SIE exam could prove a tool to help students of comparatively disadvantaged origins to become upwardly mobile.

Conclusion

The finance industry offers a variety of challenging and rewarding career opportunities. The SIE Examination is the gateway to many of those careers. In this paper we have described several ways that business faculty can inform their students of the SIE exam and alternative approaches to preparing students for successful completion of the SIE exam. As business scholars Joseph W. Goetz, et al. (2011, p. 35) remind faculty: "Only a relatively small amount of time is necessary to simply organize and make information about professional designations and credentials available to students." If your school has not yet recognized the potential benefits of the SIE exam, we encourage you to explore the possibilities.

References

Alajoutsijarvi, K., K. Juusola and M. Siltaoja. (2015). The Legitimacy Paradox of Business Schools: Losing by Gaining? *The Academy of Management Learning & Education, 14*(2), 277-289.

Association to Advance Collegiate Schools of Business International, 2020 Guiding Principles and Standards for Business Accreditation (2020) (available at www.aacsb.edu/accreditation/about-the-batf/final-proposed-standards) (last visited May 19, 2020).

Bowles, F. and F.A. DeCosta (1971). Between Two Worlds: A Profile of Negro Higher Education. McGraw-Hill, New Jersey.

Brint, S. (2018). Two Cheers for Higher Education: Why American Universities Are Stronger Than Ever--and How to Meet the Challenges They Face. (Princeton, NJ: Princeton University Press).

Bryant, W.K. and C.D. Zick (2006). The Economic Organization of the Household, Second edition. Cambridge University Press, N.Y. (2006).

Bureau of Labor Statistics, U.S. Department of Labor, Occupational Outlook Handbook, Personal Financial Advisors, #tab-1-#tab-3 https://www.bls.gov/ooh/business_and_finc_/personal-financial-advisors.htm [last visited November 8, 2020].

Burney, L. (2017). Accounting Student Transformations. Strategic Finance (August), 36-41.

Conard, E. (2016). The Upside of Inequality: How Good Intentions Undermine the Middle Class. (New York: Penguin Random House LLC).

Daniel, J. (2015). Book Review. Academe, (September-October), 44-46.

Financial Advisor Overview (2020). money.usnews.com/careers/best-jobs/financial-advisor [last visited November 8, 2020].

Financial Industry Regulatory Authority. (2017). Regulatory Notice 17-30 (SEC Approves Consolidated FINRA Registration Rules, Restructured Representative-Level Qualification Examinations and Changes to Continuing Education Requirements) (October 4, 2017) (available at www.finra.org/notices/17-30) [last visited November 8, 2017].

FINRA.org https://www.finra.org/registration-exams-ce/qualification-exams/securities-industry-essentials-exam [last viewed December 22, 2022].

Goetz, J.W., Zhu, D., Hampton, V.L., Chatterjee, S. & Salter, J. (2011). Integration of Professional Certification Examinations with the Financial Planning Curriculum: Increasing Efficiency, Motivation, and Professional Success. American Journal of Business Education, 4(3), 35-46.

Hacker, J.S. (2006). The Great Risk Shift. The New Economic Insecurity and the Decline of the American Dream. Oxford University Press. New York.

Jencks, C., and D. Riesman (1969). The Academic Revolution. Doubleday & Co.

Kaplan, https://www.kaplanfinancial.com/cfp/free-study-materials [last viewed December 22, 2022].

Launch Your Career in Finance with SIE Certification (https://udallas.edu/cob/executive_education/career_enhancement/certification_preparation/finance/sie/index.php) [last visited December 24, 2019].

Lowenstein, H. (2013). Building on the Manager's Toolbox: Reflections of a Former Business Dean on the State of Law in the Business Curriculum. J. Legal Stud. Educ., 30(2), 347-78.

Mincer, J. (1993). Studies in Human Capital. (Burlington, VT: Edward Elgar Publishing, Incorporated) (Collected Essays of Jacob Mincer, vol. 1).

North, D. 2005. Understanding the Process of Economic Change. Princeton: Princeton University Press.

Pasztor, J. (2021). Improving Diversity in Financial Services. Journal of Financial Services Professionals. (May), 21-23.

Ready to Start Your Career in Financial Services? (https://business.ucdenver.edu/commodities/academic-course-offerings/fnce-4950-introduction-investment-services-industry-and-opportunities) [last visited December 24, 2019).

Reiter, M. & Kiss, D. (2021). Efforts in Diversity and Recruiting in Financial Planning Undergraduate Programs. Family & Consumer Sciences Research Journal, 49(3), 238-253.

Robinson, M. "What Kind of Country Do We Want?" New York Review of Books LXVII, no. 10 (2020): 43-46.

Salinger, T. (2020). FINRA examining itself and seeking industry collaboration on racial equity. https://www.proquest.com/docview/2442967520?parentSessionId=ztu0wnYv4cY3JTBXGO PTD6aY5dlVxgFi%2F1URuooAdqs%3D [Last viewed December 22, 2022]

Saunders, B. (2017). Political Revolution. New York, Henry Holt and Company.

Schoeff, M. (2018). Is FINRA 360 Living Up to the Hype? InvestmentNews (April 30), 10-12.

Securities and Exchange Commission's January 24, 2018, Release No. 34-82578

Swan, G. (2017). Uniform Commercial Code Study as Business Career Certificate Preparation: That Certified Commercial Contracts Manager Credential. Lincoln Memorial University Law Review, 4(2), 19-41.

Thomas, P., Cutter, C. & Te-Peng Chen. (2020). Some Industries Enjoying a Hiring Boom. Wall Street Journal (October 16), A2.

Visual Capitalist https://www.visualcapitalist.com/, viewed Jan. 17, 2021.

Using a Problem-Based Learning Simulation as Introductory Activity in Financial Management

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Financial Management is a course within the Business Administration core curriculum focusing on managerial decision making in a business finance setting. Students integrate new financial concepts with knowledge gained through prerequisites courses in accounting, economics, and statistics and learn to move between the big-picture, decision-maker view of a problem and the detailed, often quantitative decision tools applied in various decision settings. A well-designed introductory learning activity should engage students, help them understand where Financial Management fits within the business curriculum as well as spark interest, garner confidence and build upon students' prior knowledge. This introductory activity should also serve to support student learning from somewhat intuitive day-one problems to more complex computational and process tasks. This paper outlines a Problem-Based Learning (PBL) simulation used as an introductory activity in Financial Management, designed to introduce and organize the semester topics while establishing a learning culture of active engagement.

Keywords: Problem-based learning, financial management, simulation, student engagement, introductory learning activity

Introduction

Financial Management is a survey course within the business curriculum required of students majoring in all business-related fields including accounting, management, entrepreneurship, marketing, and finance. Instructors of Financial Management face a wide variation in student interest levels and must balance the need for breadth of coverage with that of depth. For many students, Financial Management will be the only finance course they complete while for others, Financial Management will the first in a sequence of finance courses.

An overall learning objective for Financial Management is for students to become effective decision makers regarding financial business problems and opportunities. Specifically, students will demonstrate how financial managers establish and influence cash flows from assets, estimate and influence cost of borrowing and cost of equity, evaluate and apply various capital budgeting techniques, and consider and evaluate factors that impact a firm's overall weighted average cost of capital and firm valuation. Heavy reliance is placed on prerequisites and student ability to synthesize materials from past courses.

Building upon Prerequisite Knowledge

Development of key finance topics relies upon the knowledge and skills students gained in the prerequisite courses of Principles of Accounting I and II, Business Statistics, Microeconomics and Macroeconomics. Building upon students' prior knowledge, when done well, can support student

confidence, foster student understanding of where Financial Management fits within the business curriculum, and spark student interest in the finance discipline.

Principles of accounting. Financial Management builds upon students' knowledge and skills studied in accounting. Students bring to class their understanding of business entity concepts such as assets, liabilities, equity, revenue, and expenses. From their accounting courses students comprehend the structures of and connections between the balance sheet and income statement, as well as understand depreciation methods and the impact of tax shields on firm cash flows.

Principles of economics. Financial Management borrows from and builds upon students' understandings of economic concepts such as cost/volume/profit analysis, time value of money, incremental, sunk and opportunity costs, as well as a foundational understanding of the capital markets and the historical existence of a risk-return tradeoff in the U.S. capital markets.

Business statistics. Financial Management also builds upon students' understanding of statistical concepts such as expected values, variance, correlations, and regression analysis.

Big Picture as well as Detailed Analysis

As future financial decision makers, students will need to incorporate both the bigger picture of decision making as well as the finer details of an often-quantitative analysis to support decision making. As analytic computations become increasingly complicated later in the term, students realize the "right answer" to their computation is only an early step in the decision-making process rather than a conclusion to the decision-making process, often pointing to further actions that might improve the attractiveness of an opportunity. As such, effective instruction supports student movement between higher-level conceptual decisions and detail-level analytic computations.

Challenge of Getting Students Actively Engaged Early

First-day-of-class activities are important and often include helping students to learn course expectations, navigate course resources, and become acquainted with other members of the class. Introducing course topics is also common, but instructors typically wish to avoid giving even a brief lecture on day one. Classroom norms and expectations that begin to develop on the first day of class can be difficult to change and a wealth of educational research suggests students learn more when actively engaged. To avoid creating a passive learning culture early in the term, this paper offers an early course activity which both introduces the course topics and establishes a culture of active learning.

Literature Review

Thoughtful course design promoting student engagement and active learning has become a goal of many instructors, and with good reason. Student engagement has been positively associated with important student outcomes such as learning, persistence, and satisfaction (Kuh, Kinzie, Buckley, Bridges, & Hayek, 2006) and linked to improved reasoning and problem solving (Pascarella, Seifert, & Blaich, 2009). Carini, Kuh, and Klein (2006) found positive links between student engagement and student learning as measured by standardized exams, college GPA, and student self-measures of learning.

 In designing an early course activity, particular consideration should be given to how that activity impacts motivation to learn. Research suggests student motivation to learn is enhanced

when students can see a real-world connection to the course content and when their participation involves creative solutions (McClure, 2012). As an instructional tool, simulations allow students (novices) to engage in a simplified version of a real-world practice (Chernikova et al., 2020) and, as such, serve as an excellent early course activity. Simulations focus student attention on open-ended real-world problems, require students to draw upon what they already know while advancing inquiry, and promote creative problem solving and decision making, often in the context of working with others (Chernikova et al., 2020).

Problem-based learning (Barrows, 1996) is another instructional tool particularly effective at engaging students. Originating in medical curriculum and subsequently adapted more broadly to other academic areas, problem-based learning (PBL) is characterized by six key features: *1) Learning is student-centered; 2) Learning occurs in small student groups; 3) Teachers are facilitators or guides; 4) Problems form the organizing focus and stimulus for learning; 5) Problems are a vehicle for the development of clinical problem-solving skills; 6) New information is acquired through self-directed learning* (Barrows, 1996, p. 5-6). A PBL activity is structured around topics relevant to the course materials, requiring students to draw upon what they already know and connecting them to real-world problems they can recognize.

Implementing an early PBL activity as a simulation combines these two instructional tools. While students may not be equipped at the beginning of the semester to perform complex financial computations, these computational tasks can be offloaded to the instructor as part of the PBL simulation. Such instructional support (e.g., scaffolding) allows students to focus on the conceptual aspects of solving the business problem and to learn from more complex problems than their current level of skill and ability would otherwise support (Chernikova et al., 2020; Puntambekar & Hubscher, 2005; Reiser, 2004). The instructor can use the PBL simulation to help students transition from early and intuitive understanding of financial topics to subsequently more complex analytical and conceptual processes.

The PBL Simulation

As noted by Barrows (1996), the "linchpin" in an effective PBL activity to promote meaningful and relevant learning is the "collection of problems in any given course or curriculum with each problem designed to stimulate student learning in areas relevant to the curriculum" (p. 8). Thus, important characteristics of the PBL "problem" must include a business problem that introduces the key topics important to financial management decision makers including business cash flows, costs of capital, capital budgeting, and value creation. As an introductory class activity, the PBL "problem" should represent a situation students can comprehend before the course learning begins, heighten students' appreciation for the importance of financial management, and establish a road map for how to solve problems in the future.

In the PBL simulation, the instructor introduces a "real world" problem faced by a business entity. The instructor guides the students' inquiries and analyses while the business entity's problem serves as the organizing focus, helps students generate relevant questions, helps students think critically about the questions needed to be answered, and models any computations. Throughout the activity, the instructor notes key finance topics as they emerge organically through the problem-solving process. The progression of the simulation is not purely linear; rather, answers to earlier questions impact the direction of the activity including subsequent questions and computations.

Appendix A outlines the PBL simulation used as introductory learning activity in Financial Management. The business problem: A local entrepreneur and owner of a canine kennel wishes to grow their business and is currently considering one of two options, increasing the size of the facilities, or adding improved services to charge a higher price. Details on customer demand, revenues and expenses, investment costs, financing options and costs emerge as the simulation unfolds. The outline includes a list of relevant questions to guide student problem-solving: 1) What should be the overall goal to guide this owner's decision? 2) Are there other options beyond the owner's suggestions of increasing volume or increasing price? 3) What information does the owner need to estimate and evaluate the benefits and the costs? 4) Does it matter that the owner needs to raise funds to purchase the technology today, but the benefits from the investment and the costs associated with financing will not occur until later years? 5) How will the owner finance the purchase of the new equipment? If needed by the instructor, additional discussions prompts are offered for each question. Drawing from prerequisite courses, students typically perform some part of the preliminary analyses such as creating income statements, computing depreciation, and the like, while the instructor models the financial computational skills students have not yet acquired in Financial Management. The outline indicates how topics from prerequisite courses become relevant, and when new finance topics are introduced.

Through this PBL simulation, students develop an intuitive understanding of financial management concepts including cashflow from operations, time value of money, capital budgeting, cost of capital, and the overall goals of the firm. This activity promotes an understanding of how firm value is created and how owner's wealth is increased. Students experience how Financial Management builds on their previous coursework but also differs from that coursework.

Reflections on PBL Simulation

The six components of a Problem Based Learning simulation facilitate several important student learning and course design objectives.

Problems are a Vehicle for Development of Problem-Solving Skills

While considering the opportunity faced by a canine kennel owner to expand their business, students face the question of how the owner determines a "good" decision from a "bad" one and experience the processes of decision making and problem solving. The activity promotes a "big picture" conceptual problem-solving perspective for students which can serve as a guidepost to more complex topics and computations later in the semester. This PBL simulation promotes learning-how-to-learn as students identify what information is relevant to the decision and estimate the impact of incorrect assumptions.

Problems Form the Organizing Focus and Stimulus in Learning

The relevance of a real-world problem can motivate learning as students begin to recognize where this information shows up in their personal and professional lives (Shawver, 2015). Early in the term, students recognize they will be learning things in Financial Management that could be personally relevant to their lives long after this class and their college experience end.

Learning is Student Centered

As an introductory learning activity, the norm of student involvement is established. Students are actively engaged, drawing from their backgrounds, either gathered through prerequisites or as part of their day-to-day interactions with the business world. The PBL simulation promotes integration of knowledge from both prerequisite courses as well as new financial knowledge and skills. The introductory activity also facilitates students, regardless of their major, to experience how finance-related problem-solving is aided and improved by understanding corollary knowledge in accounting, economics, and statistics.

New Information is Acquired through Self-Directed Learning

As an early course activity, the PBL simulation does not go as far as to have students gather their own information; rather, new information is offered once students determine what they need, and complex computations are demonstrated. While falling short of a full PBL experience that might occur later in the term, this simulated PBL allows students to focus more conceptually, rather than computationally, on the processes of problem solving. Students can focus conceptually on the generation of questions, recognizing how answers to questions often lead to new questions and the need for additional information.

Teachers are Facilitators or Guides

The instructor helps students focus on what to consider and provides guidance on how to approach the problem. The instructor helps students build upon their existing knowledge and models critical thinking approaches to problem solving. As the facilitator/guide for student learning, the instructor serves as scaffold while students move from what they already know to "new" knowledge and analysis.

Learning Occurs in Small Student Groups

While not essential to the implementation of this introductory learning activity, breaking a larger class of students into smaller groups of 3-to-5 students promotes student participation and sets the stage for an engaged learning environment throughout the term.

Recommendations

Based on the author's experience with this class activity, the following recommendations are offered. First, in advance of implementing the class activity, the instructor should anticipate likely directions students might take in their problem solving and prepare informational details for each scenario. One of the more critical functions for the instructor is to keep student question generation active and on track. Anticipating possible scenarios can improve flow once the activity is under way. Second, to the extent possible, select a subject for the PBL that is readily identifiable to students. Selecting a business entity close to students' lived experiences helps students recognize business finance in everyday activities, promotes their active participation, and facilitates a light-hearted atmosphere. Breweries and kennels have been particularly well-received as subject businesses. Third, keep students actively involved, whether calling on individuals to provide

financing, soliciting their solutions or simply seeking assistance in recording class responses. Again, creating an engaging classroom environment early can benefit the entire term. Finally, break a larger class into several smaller groups to facilitate engagement.

Moving forward, two modifications of the PBL simulation are offered. First, rather than basing the PBL on a hypothetical business, consider collaborating with a local entrepreneur on a genuine business problem. In such a scenario, the entrepreneur would pose the business problem to the class and respond to requests for follow-up information. Second, a PBL simulation should work well as an introductory activity in any course that focuses on managerial decision making. So, for example, a marketing course might implement an introductory PBL simulation that solves a client's marketing research question. Again, the "linchpin" in effective PBL (Barrows, 1996) is identification of a business problem that stimulates student learning in areas relevant to that discipline. As such, a PBL simulation should be effective in introducing and organizing the semester's topics in courses as diverse as Human Resource Management, Auditing, and Operations Management, to name but a few.

Conclusions

This paper proposes a PBL simulation as an introductory class activity to introduce and organize the key topics of a Financial Management course, motivate student learning, and help establish an engaging class environment. This introductory PBL simulation supports student transition from background knowledge and skills gained in prerequisite coursework to an early and intuitive understanding of financial management concepts including cashflow from operations, time value of money, capital budgeting, cost of capital, and firm value creation. The PBL simulation supports development of student decision making skills and movement between bigger-picture conceptual processes and detailed-level analytical tools. By the conclusion of the PBL simulation, students share an understanding of real-world problems that business finance helps to solve and, hopefully, a heighted motivation for active learning during the upcoming term.

References

Barrows, H. (1996). Problem-based learning in medicine and beyond: A brief overview. *New Directions for Teaching and Learning, 1996*(68), 3-12.

Carini, R. M., Kuh, G. D., & Klein, S. P. (2006). Student engagement and student learning: Testing the linkages. *Research in Higher Education*, *47*, 1-32.

Chernikova, O., Heitzmann, N., Stadler, M., Holzberger, D., Seidel, T., & Fisher, F. (2020). Simulation-based learning in higher education: A meta-analysis. *Review of Educational Research, 90*(4), 499-541.

Kuh, G. D., Kinzie, J., Buckley, J. A., Bridges, B. K., & Hayek, J. C. (2006). *What matters to student success: A review of the literature?* Washington, DC: National Postsecondary Education Cooperative.

McClure, N. C. (2012). Demonstrating the importance and significance of the subject matter. *IDEA Notes on Instruction*. The IDEA Center. Retrieved June 2, 2022 from https://www.ideaedu.org/idea-notes-on-instruction/demonstrated-the-importance-and-significance-of-the-subject-matter/

Pascarella, E. T., Seifert, T. A., & Blaich, C. (2009). Validation of the NSSE Benchmarks and deep approaches to learning against liberal arts outcomes. Iowa City: University of Iowa Center for Research on Undergraduate Education.

Puntambekar, S. & Hubscher, R. (2005). Tools for scaffolding students in a complex learning environment: What have we gained and what have we missed? *Educational Psychologist, 40*(1), 1-12.

Reiser, B. (2004) Scaffolding complex learning: The mechanisms of structuring and problematizing student work. *Journal of the Learning Sciences, 13*(3), 273-304.

Shawver, T. (2015). Building student success using problem-based learning approach in the accounting classroom. *Journal of Instructional Pedagogies, 17*, 1-16.

PBL Simulation Outline

In the PBL simulation, the instructor introduces a "real world" problem faced by a business entity that also introduces key topics relevant to the course. The business problem for this PBL simulation introduces the following key topics in Financial Management: business cash flows, time value of money, costs of capital, capital budgeting, weighted average cost of capital, and value creation.

Problem Introduction

Students are introduced to the following business problem: A local entrepreneur and owner of a canine kennel business has invited students to help the owner solve a business problem the owner is facing. The canine kennel business is currently operating at full capacity. The owner wishes to "grow" their business to secure their financial future. The owner is not sure what they should focus on (goal) to ensure a sound decision. Options the owner is considering include: a) increasing size of the facilities to increase number of animals they can kennel; or b) charging a higher rate by perhaps adding improved services. The owner is also wondering if there are other options beyond these two.

Questions and Analyses

The instructor guides the students' inquiries and analyses while the business entity problem serves as the organizing focus. As a simulation the instructor helps students generate relevant questions, helps students think critically about the questions needed to be answered, and models new computations. The following list and sequence of questions illustrate how the class simulation may evolve.

Question 1: What should be the overall goal to guide this owner's decision?
As students generate lists of possible goals, students begin to see how financial decision-making builds upon many accounting concepts (for example, profits) but also differs in scope and perspective. Students also begin to realize that without a goal to guide decision making, they are unable to assess the quality of any decision. For this PBL simulation, the overall goal is to increase the entrepreneur's wealth. The relevant topics utilized from prerequisite courses include sales, profits, dividends, and market share. The key finance topic introduced is the overall goal of the firm.

Question 2: Are there other options beyond the owner's suggestions of increasing volume or increasing price?
This question highlights that limited knowledge consequently limits the list of potential solutions. If students need additional guidance the instructor might provide prompts such: does knowledge of the kennel's current revenue and expenses, cash flow generation, competition, or capacity impact the owner's options? Typically, students realize they need more information. In a regular PBL activity, new information would be acquired through self-directed learning (i.e., students would seek out the information). For this PBL simulation, new information is offered once students determine what is needed. Additional details of the case include: *The owner believes there is customer demand for a new service: providing owners the ability to watch their pets via*

webcam and video interfacing while their pet is boarded at the kennel. For this premium service, the kennel should be able to charge a premium rate. There will be upfront costs for the new technology and training. The relevant topics utilized from prerequisite courses include price/volume/profit analysis as well as supply and demand functions.

Question 3: What information does the owner need to estimate and evaluate the benefits and the costs?

If students need additional guidance the instructor might provide prompts such as: did your economics professor ever mention sunk costs? What do you remember about incremental cost/benefit analysis or about depreciation and tax savings? As students seek more information, additional numerical details are provided: *By charging a premium rate for such service, the owner anticipates an increase in revenue of $40,000 per year. Upfront cost for the new technology, installation and technical training is $120,000. The new project is expected to have a five-year life and zero salvage value. The business current tax rate is 20%.*

Students create an income statement for each year of the five-year project. And, depending upon what students remember about cash flows, the instructor "models" how net income converts to operating cash flows. Based on these numbers, operating cash flow is $36,800 per year for five years. (Solution provided below). The relevant topics utilized from prerequisite courses include cost/benefit analysis, depreciation, tax shields, and income statements. The key finance topics introduced include operating cash flows and timelines.

Question 4: Does it matter that the owner needs to raise funds to purchase the technology today, but the benefits from the investment and the costs associated with financing will not occur until later years?

Students readily offer "a dollar today is worth more than a dollar in the future," a concept even easier to grasp with current inflation. While students maintain their focus at the conceptual level of decision-making, the instructor demonstrates how to compute the project's rate of return, using either a financial calculator or spreadsheet. The instructor shares that, if this investment progresses exactly as the owner anticipates, its return would be over 16% annually (16.2%). (Solution provided below). The relevant topic utilized from prerequisite courses includes inflation. The key finance topics introduced include time value of money, internal rate of return, and capital budgeting.

Question 5: How will the owner finance the purchase of the new equipment?

Before students decide to accept or reject the project, the question emerges on how the equipment will be financed. To increase engagement, the instructor might consider asking students how much they would lend to the owner if they had the personal resources to do so, what interest rate they would charge, and how they chose that rate. The instructor can also ask students whether it should matter if owner's contributions come from outside (personal) funds or from business operations over time. Students realize more information is needed: *The owner can raise $40,000 as a 5-year bank loan at 9% APY, $20,000 from the owner's mom at 6% APY, and $60,000 by cashing in part of their investment portfolio that had been averaging a 10% rate of return.*

The instructor demonstrates how weighted average cost of capital is computed, although students may remember how weighted averages are computed from their accounting courses. Based on these numbers, the kennel owner's cost of capital is 8.2%. (Solution provided below). The relevant topics utilized from prerequisite courses include interest and weighted average

computations. The key finance topics introduced include investor's required rate of return, cost of capital, opportunity cost, cost of debt, cost of equity, tax deductibility of interest, and weighted average cost of capital.

Instructor Summary

At this point in the PBL simulation, the instructor may wish to summarize the questions and answers that have been generated so far. Basically, if the estimates that underly the computations hold, this five-year project should generate a 16.2% rate of return. A 16.2% return on a $120,000 investment can be used to pay back the sources of financing (the bank will earn 9% on its $40,000 loan and mom will earn 6% on her $20,000 loan). As the "residual owner," the entrepreneur will earn not only the 10% opportunity cost of their $60,000 but will also be entitled to the extra returns that remain. In fact, the entrepreneur will earn significantly more than 10%. Again, if the numbers hold, students quickly determine this is a "good" set of capital budgeting and financing decisions that will lead to an increase in the entrepreneur's wealth.

The concluding analysis should also include a brief discussion of the power of leverage (i.e., the fixed rates on the loans when the project returns were high) and the risk of leverage (i.e., those same fixed rates on the loans should the project returns drop below the 8.2% weighted average cost of capital). Finally, the instructor should help students consider how "sensitive" their conclusions are to the assumptions used (costs, revenues, expenses, timelines, etc.) and the consequences of possible biases in the earlier numbers. The key finance topics introduced include capital budgeting decision rule, advantages and risks of leverage, firm value creation, and sensitivity analysis.

Solutions

Solution to question 3: incremental operating cash flow.
To calculate incremental operating cash flow, begin by first calculating the annual depreciation on the initial capital investment:

$$D = CapEx / n \tag{1}$$

where D is depreciation, CapEx is initial incremental capital expenditure, and n is number of years over which that initial investment will be depreciated.

Next, calculate the increment annual operating cash flow:

$$OCF = (R - D) * (1 - T) + D \tag{2}$$

where OCF is operating cash flow, R is revenue, T is tax rate, and D is defined as in equation 1.

In this simulation both incremental revenue and depreciation values remain constant for each year of the project life; consequently, operating cash flows will also remain constant for each year of the project life:

$$OCF_{1-5} = (40,000 - (120,000/5))(1-.20) + (120,000/5)$$
$$= 36,800$$

Solution to question 4: internal rate of return.

Using a Texas Instruments 83 or 84 financial calculator, the project's internal rate of return is calculated by accessing the internal rate of return function and entering the incremental cash flows for each year as follows:

$$=irr(CF_0, \{CF_1, CF_2, CF_3, CF_4, CF_5\})$$
$$= irr(-120000, \{36800, 36800, 36800, 36800, 36800\})$$
$$= 16.18\%$$

Solution to question 5: weighted average cost of capital.

To calculate weighted average cost of capital, begin by first determining the cost of each component of capital.

Calculate the after-tax cost of debt:

$$k_d (1 - T) \tag{3}$$

where k_d is the cost of debt and T is the income tax rate.

Next, estimate an appropriate cost of equity (k_e). Since the owner is looking to take funds from their investment portfolio to help pay for the new equipment, the opportunity cost of those funds (10% in this scenario) would be an appropriate starting point for cost of equity, which could then be adjusted upward or downward if the new business direction is considered more risky or less risky than that of their investment portfolio.

Calculate the weighted average cost of capital:

$$WACC = w_d * k_d (1 - T) + w_e * k_e \tag{4}$$

where w_d is weight of debt, w_e is weight of equity, k_e is cost of equity, and other terms are defined in equation 3.

Given the financing options outlined earlier in Appendix A, the weighted average cost of capital is computed as follows:

$$WACC = [(9\% * (1 - .20) * (40 / 120)] + [(6\% * (1 - .20) * (20 / 120)] + [(10\% * (60 / 120)]$$
$$= 8.2\%$$

Terminal Case of the Blues: Modifying Remote Investment Lab Assignments

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Prior to 2020, over two-thirds of students attending U.S. public higher education institutions were completing all of their coursework face-to-face. Leveraging students' access to on-campus computer labs, this instructional organization often allowed professors (e.g., student managed investment fund advisors) to design assignments heavily reliant upon subscription database inputs. However, once COVID-19 forced universities to adopt primarily remote delivery modes, these assignments were rendered useless and had to quickly be reconfigured to accommodate less costly and accessible options. Despite the subsequent return to campus, lower enrollment and higher demand for asynchronous learning models continue to highlight the need for such resources. Further, employer demand for advanced technology skills behooves educators to focus on spreadsheet queries, website scraping, and programming. Specific examples of alternate platforms and data providers are provided.

Keywords: Excel, Python, Programming, Student Managed Investment Funds, Technology

Introduction

Within a matter of months, the coronavirus pandemic had impacted over 25 million students across 4,234 higher education institutions (Entangled Solutions, 2020) and over 1 billion learners worldwide (United Nations Educational, Scientific and Cultural Organization, 2020). The campus closures that riddled the Spring 2020 academic landscape quickly bled into the Summer and Fall terms (i.e., 73% and 58% of responding U.S. institutions indicated that they would increase or only offer online delivery, respectively; American Association of Collegiate Registrars and Admissions Officers, 2020). In fact, social distancing models (Kissler et al., 2020) accurately predicted remote learning to be a real possibility for the following one to two years (Bevins et al., 2020). In addition to the numerous impacts the pandemic has had on the higher learning environment, this watershed event forced faculty to scramble as they redesigned assignments – previously dependent upon on-campus computer lab databases – to be completed entirely online in geographically diverse locations.

Shortly before the pandemic and concurrent market downturn, more than half of public university trustees had already voiced concerns about their institutions' financial futures (Association of Governing Boards of Universities and Colleges, 2020). Adding to the burden, the outbreak generated a laundry list of unexpected new expenses such as technology costs, additional cleaning, and refunds. The total tally was not insignificant – ranging from Syracuse University's $35 million (DePietro, 2020) and Massachusetts Institute of Technology's $50 million (Anderson et al., 2020) to the University of California's $310 million (Yuen, 2020). Although the CARES Act allocated $14 billion in federal funding to higher education in March (Green, 2020), at least half were required to be given to students for emergency relief. The remaining aid fell short of the

institutions' actual expenditures, which leaders estimated amounted to an additional $46.6 billion (Mitchell, 2020b).

Compounding the issue, universities faced these mounting expenses as their revenue continued to freefall. State appropriations – accounting for 54% of the 2019 full-time-equivalent student revenue and down from 69% twenty-five years earlier (Laderman & Weeden, 2020) – were in jeopardy as municipalities grappled with their own unexpected COVID-related damages. New York, for example, faced a $10 billion tax revenue shortfall (Walsh, 2020). Severe appropriation cuts were projected for the following few years. The Center on Budget and Policy Priorities estimated that states would face a $615 billion shortfall from 2020 through 2022, exceeding that of the 2001 Recession and the 2008 Great Recession (McNichol & Leachman, 2020). On the tuition side, 90% (72%) of public 4-year institution presidents anticipated that their FY21 revenue (enrollment) would decrease (Taylor et al., 2020). Estimates from the American Council on Education forecasted that enrollments for the next academic year would drop by 15%, including a 25% decline in the number of international students (Mitchell, 2020a).

Together, the increased expenses and tumbling revenue resulted in devastating shortfalls. The University of Kentucky estimated it would lose $70 million (Nadworny, 2020), Stanford University projected $200 million, while Johns Hopkins' 2020 $100 million loss was expected to grow to $375 million in 2021 (Anderson et al., 2020). The University of Arizona anticipated it would lose $250 million while the University of Michigan estimated its losses would range from $400 million to $1 billion (DePietro, 2020). Pandemic escalation scenarios modeling online delivery persisting into 2021 suggested that 57% (36%) of public 4-year institutions would face at least a 5% (10%) gap between projected revenues and historic expenses (Bevins et al., 2020). Accordingly, in mid-March 2020, credit rating agency Moody's Investors Service downgraded its outlook for the higher-education sector from "stable" to "negative" (Moody's, 2020).

In a battle for survival, institutions pursued a variety of cost-cutting measures – hiring freezes, salary deferments and reductions, furloughs and unpaid leaves, layoffs, retirement contribution suspensions, delayed maintenance, program elimination, even program and school closures. An easy target for these budget-trimming efforts were expensive databases locked away in indefinitely closed finance labs. These databases sit at the cross-section of research support (16% of public 4-year institutions' expenses, NCES (2020)) and information technology spending (4.3% of institutional expenses, Lang, Pearlman, and Rosa (2018)). Administrators found it difficult to build a strong case for renewing contracts for expensive databases inaccessible to remote learners. Although some databases (e.g., Bloomberg) temporarily allowed remote access, these were only stop-gap provisions. Further, managing remote access for hundreds of students is a timely and costly investment. Consequently, faculty were forced to modify assignments which historically had relied on lab resources. While unfortunate in many ways, this was also an opportunity to enhance the technical skillsets of students and faculty alike.

Within the financial domain, modeling and student managed funds courses are perhaps the most reliant upon external data. To simplify the conversion process for faculty facing budgetary constraints and possible database cancelations, the following sections provide suggestions as to how deliverables can be modified to instead incorporate alternate resources and technologies.

Google Sheets

Google Sheets is an excellent gateway to aggregating data from multiple external providers. The platform offers easy-to-use built-in functions designed for scraping websites, is accessible

across competing operating systems (i.e., Windows and Macs), and automatically saves and shares across multiple machines rendering the stability of a single machine less critical. However, its shortcomings include its reliance upon uninterrupted internet access (which is increasingly becoming problematic as traffic snowballs), limitations on import functions (50 per workbook), and API call limits on free plans (see Figure 1).

Figure 1
Free Account API Call Limits

API Call Limits	Alpha Vantage	Finnhub	FRED	Quandl	Refinitiv	Tiingo
Items/request			1,000			
Request/sec		30			5	
Requests/10 sec				300		
Requests/min	5	60	120			
Requests/10 min				2,000		
Requests/hour						500
Requests/day	100			50,000	10,000	20,000

Macroeconomic Indicators

Nasdaq Data Link's Quandl is an online data aggregator that offers free and premium (i.e., paid) plans. After creating an account and obtaining an API key, Quandl users can export data from the website interface; however, efficiency can be increased by instead pulling the data directly into their computing environment. The common structure and output to call Quandl data in CSV format using Google Sheets's IMPORTDATA function is shown in Figure 2.

Figure 2
Confidence Index (Quandl via Google Sheets)

Date	Index Value	Standard Error
12/31/2021	47.3	5.8
11/30/2021	48.89	5.27
10/31/2021	47.96	5.05
9/30/2021	47.79	4.7
8/31/2021	45.53	4.49
7/31/2021	44.8	4.45
6/30/2021	45.6	4.45
5/31/2021	43.64	4.73
4/30/2021	43.4	4.81
3/31/2021	45.28	4.83
2/28/2021	42.7	5.24
1/31/2021	43.82	5.26
12/31/2020	44.68	5.13
11/30/2020	41.84	4.98
10/31/2020	46.39	5.06
9/30/2020	45.92	5.03
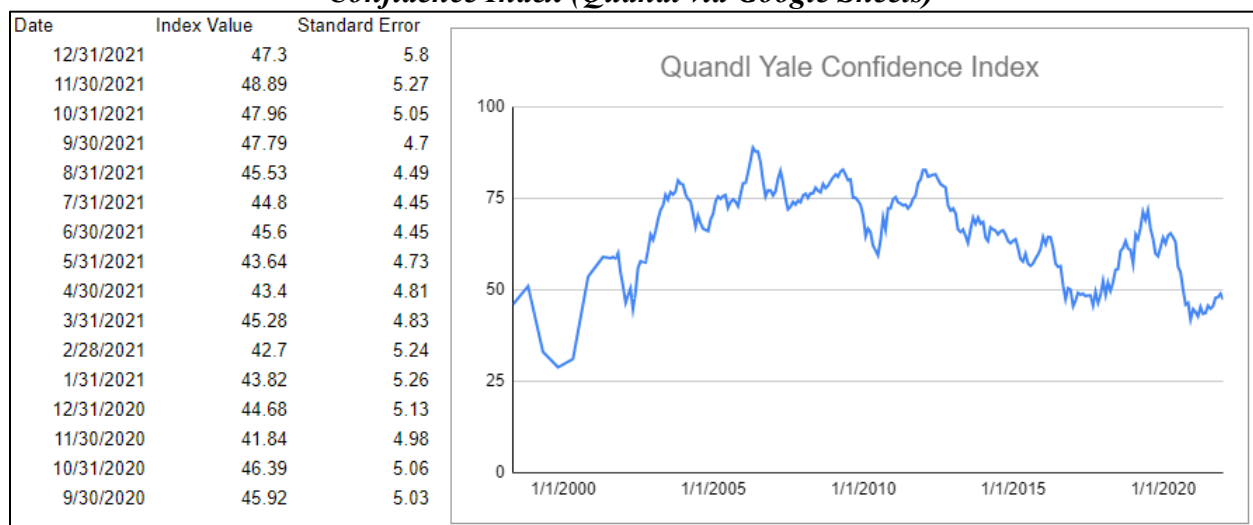
=IMPORTDATA("https://data.nasdaq.com/api/v3/datasets/"&**DataSetCell**&"/"&**SeriesNameCell**&".csv?api_key=" &**APIcell**)

Although the Federal Reserve's FRED series are accessible through Quandl, they can also be imported directly from the St. Louis bank itself (after obtaining a FRED API key) with the more

complicated IMPORTXML function. Figure 3 displays the common structure and output of a FRED IMPORTXML call.

Figure 3
Unemployment Rate (FRED via Google Sheets)

UNRATE observations observation date	value
1948-01-01	3.4
1948-02-01	3.8
1948-03-01	4
1948-04-01	3.9
1948-05-01	3.5
1948-06-01	3.6
1948-07-01	3.6
1948-08-01	3.9
1948-09-01	3.8
1948-10-01	3.7
1948-11-01	3.8
1948-12-01	4
1949-01-01	4.3
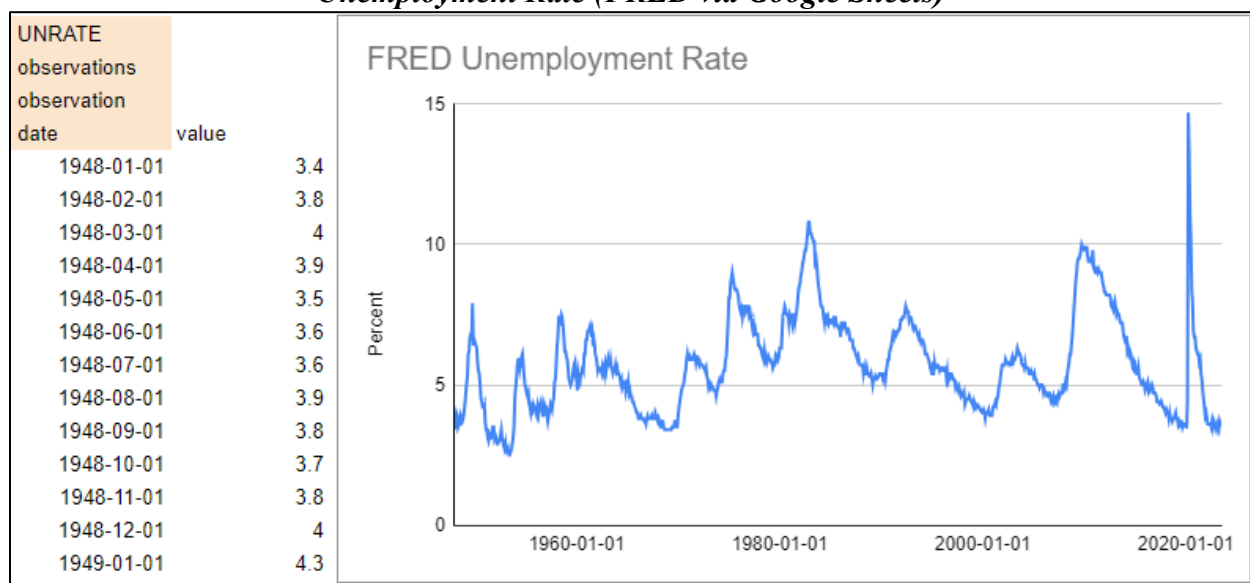
=IMPORTXML("https://api.stlouisfed.org/fred/series/observations?series_id="&**SeriesNameCell**&"&api_key="&**APIcell**,"//"&**XPathQueryCell1**&"/"&**XPathQueryCell2**&"/@"&**XPathQueryCell3**)

Stock Quotes & Ratios

Inarguably, the easiest function with which to scrape real-time stock data is GOOGLEFINANCE. With only a few simple arguments, it is the perfect entry point for new students. Figure 4 displays the common structure and output of a GOOGLEFINANCE stock request.

Figure 4
Tesla Statistics (GOOGLEFINANCE in Google Sheets)

TSLA	
price	$245.01
priceopen	$257.26
high	$259.08
low	$242.01
volumeavg	110,346,453
marketcap	$767,731,467,487.00
tradetime	9/1/2023 16:00:01
datadelay	0
volumeavg	110,346,453
pe	69.55
eps	$3.52
high52	$313.80
low52	$101.81
change	-$13.07
beta	2.07
changepct	-5.06
closeyest	258.08
shares	3,173,994,000
currency	USD

=GOOGLEFINANCE(**TickerCell**, **AttributeCell**)

However, the function will only pull the displayed limited datapoints. One way to scrape a larger variety of website information (assuming the webpage utilizes conforming encoding) is via IMPORTHTML. Users may simply need to substring portions of the copy and pasted URL to point to specific tickers while also employing a trial-and-error approach to determine the appropriate table number. Figure 5 displays the common structure and output of a FinViz IMPORTHTML request.

Figure 5
Apple Statistics (IMPORTHTML via Google Sheets)

AAPL		10											
Key Metrics													
Index	*DJIA, NDX, S&I	P/E	*31.84*	EPS (ttm)	*5.95*	Insider Own	*0.07%*	Shs Outstand	*15.70B*	Perf Week	*6.07%*
Market Cap	*2925.08B*	Forward P/E	*28.66*	EPS next Y	*6.61*	Insider Trans	*-4.53%*	Shs Float	*15.62B*	Perf Month	*-0.89%*
Income	*94.76B*	PEG	*5.00*	EPS next Q	*1.39*	Inst Own	*60.10%*	Short Float / Rat	*0.57% / 1.57*	Perf Quarter	*4.70%*
Sales	*383.93B*	P/S	*7.62*	EPS this Y	*8.90%*	Inst Trans	*-0.48%*	Short Interest	*88.85M*	Perf Half Y	*25.45%*
Book/sh	*3.84*	P/B	*49.34*	EPS next Y	*8.95%*	ROA	*27.70%*	Target Price	*200.68*	Perf Year	*20.51%*
Cash/sh	*4.05*	P/C	*46.81*	EPS next 5Y	*6.37%*	ROE	*164.90%*	52W Range	*124.17 - 198.23	Perf YTD	*45.82%*
Dividend	*0.96*	P/FCF	*28.96*	EPS past 5Y	*21.60%*	ROI	*58.30%*	52W High	*-4.42%*	Beta	*1.27*
Dividend %	*0.51%*	Quick Ratio	*0.90*	Sales past 5Y	*11.50%*	Gross Margin	*43.40%*	52W Low	*52.58%*	ATR	*3.15*
Employees	*164000*	Current Ratio	*1.00*	Sales Q/Q	*-1.40%*	Oper. Margin	*29.20%*	RSI (14)	*61.95*	Volatility	*1.52% 1.78%*
Optionable	*Yes*	Debt/Eq	*1.81*	EPS Q/Q	*5.40%*	Profit Margin	*24.70%*	Rel Volume	*0.81*	Prev Close	*187.87*
Shortable	*Yes*	LT Debt/Eq	*1.63*	Earnings	*Aug 03 AMC*	Payout	*15.60%*	Avg Volume	*56.53M*	Price	*189.46*
Recom	*2.00*	SMA20	*5.68%*	SMA50	*1.50%*	SMA200	*16.09%*	Volume	*45,674,597*	Change	*0.85%*

=IMPORTHTML("https://finviz.com/quote.ashx?t= "&**TickerCell**, "table", **TableNumberCell**)

Stock Price History

The GOOGLEFINANCE function can also import the asset price histories required for return analyses. Figure 6 displays the common structure and output of a GOOGLEFINANCE stock price history request.

Figure 6
Apple Closing Prices (GOOGLEFINANCE in Google Sheets)

Ticker	AAPL
Start Date	9/1/2013
End Date	9/1/2023
Date	Close
9/3/2013 16:00:00	17.45
9/4/2013 16:00:00	17.81
9/5/2013 16:00:00	17.69
9/6/2013 16:00:00	17.79
9/9/2013 16:00:00	18.08
9/10/2013 16:00:00	17.67
9/11/2013 16:00:00	16.7
9/12/2013 16:00:00	16.88

=GOOGLEFINANCE(**TickerCell**, "price", **StartDateCell**, **StopDateCell**)

However, although the function does adjust prices for splits, calculating total return requires either the integration of dividend payments or importing an adjusted closing price series. While several financial data platforms provide this supporting information, one of the most user-friendly is Tiingo. Like the other APIs, users must first create a free account in order to obtain a token. Figure 7 displays the common structure and output of an IMPORTDATA Tiingo daily stock price request.

Figure 7
Apple Price History (Tiingo via Google Sheets)

Ticker	AAPL										
Frequency	daily										
Start Date	1/1/2023	1-1-2023									
End Date	9/1/2023	9-1-2023									
date	close	high	low	open	volume	adjClose	adjHigh	adjLow	adjOpen	adjVolume	divCash	splitFactor
1/3/2023	125.07	130.9	124.17	130.28	112117471	124.5382491	130.3434621	123.6420756	129.7260982	112117471	0	1
1/4/2023	126.36	128.6557	125.08	126.89	89113633	125.8227645	128.1087041	124.5482066	126.3505112	89113633	0	1
1/5/2023	125.02	127.77	124.76	127.13	80962708	124.4884617	127.2267697	124.2295671	126.5894908	80962708	0	1
1/6/2023	129.62	130.29	124.89	126.01	87754715	129.0689042	129.7360556	124.3590144	125.4742526	87754715	0	1
1/9/2023	130.15	133.41	129.89	130.465	70790813	129.5966509	132.8427906	129.3377563	129.9103116	70790813	0	1
1/10/2023	130.73	131.2636	128.12	130.26	63896155	130.1741849	130.7055163	127.5752817	129.7061832	63896155	0	1
1/11/2023	133.49	133.51	130.46	131.25	69458949	132.9224504	132.9423654	129.9053329	130.6919741	69458949	0	1
1/12/2023	133.41	134.26	131.44	133.88	71379648	132.8427906	133.6891767	130.8811663	133.3107923	71379648	0	1

=IMPORTDATA("https://api.tiingo.com/tiingo/daily/"&**TickerCell**&"/prices?startDate="&**StartDateCell**&"&endDate="&**EndDateCell**&"&format=csv&resampleFreq="&**FrequencyCell**&"&token="&**APIcell**)

Financial Statements

To acquire the main firm financial statements over the past five years, users can scrape from Zack's website using several IMPORTHTML calls (one call is shown in Figure 8).

Figure 8
Intel Balance Sheet (Zack's via Google Sheets)

INTC	12/31/2022	12/31/2021	12/31/2020	12/31/2019	12/31/2018
Assets					
Cash & Equivalents	28,338	28,413	23,895	13,123	11,650
Receivables	4,133	9,457	6,782	7,659	6,722
Notes Receivable	0	0	0	0	0
Inventories	13,224	10,776	8,427	8,744	7,253
Other Current Assets	4,712	9,072	8,145	1,713	3,162
Total Current Assets	50,407	57,718	47,249	31,239	28,787
Net Property & Equipment	80,860	63,245	56,584	55,386	48,976
Investments & Advances	5,912	7,138	7,344	7,243	9,430
Other Non-Current Assets	0	0	0	0	0
Deferred Charges	0	0	0	0	0
Intangibles	33,609	34,233	35,997	37,103	36,349
Deposits & Other Assets	11,315	6,072	5,917	5,553	4,421
Total Assets	182,103	168,406	153,091	136,524	127,963

=IMPORTHTML("https://www.zacks.com/stock/quote/ "&**TickerCell**"statement-name", "table", **TableNumberCell**)

Alternatively, Tiingo will import three years' worth of annual and quarterly datapoints with a single IMPORTDATA (as shown in Figure 9). Unfortunately, users must then re-organize the data into separate statements via many MATCH statements.

Figure 9
Intel Statement Data (Tiingo via Google Sheets)

Ticker	INTC				
date	year	quarter	statementType	dataCode	value
7/1/2023	2023	2	incomeStatement	intexp	-224000000
7/1/2023	2023	2	balanceSheet	acctRec	2996000000
7/1/2023	2023	2	balanceSheet	acctPay	8757000000
7/1/2023	2023	2	cashFlow	issrepayDebt	-1095000000
7/1/2023	2023	2	incomeStatement	opex	5654000000
7/1/2023	2023	2	incomeStatement	nonControllingInterests	-8000000
7/1/2023	2023	2	balanceSheet	debt	49046000000
7/1/2023	2023	2	incomeStatement	shareswa	4182000000
7/1/2023	2023	2	balanceSheet	inventory	11984000000
7/1/2023	2023	2	incomeStatement	opinc	-1016000000
7/1/2023	2023	2	cashFlow	freeCashFlow	-3080000000
7/1/2023	2023	2	cashFlow	ncfx	0
7/1/2023	2023	2	incomeStatement	shareswaDil	4196000000
7/1/2023	2023	2	cashFlow	capex	-5888000000

=IMPORTDATA("https://api.tiingo.com/tiingo/fundamentals/"&**TickerCell**&"/statements?token="&**APIcell**&"format=csv")

Company News

IMPORTHTML can also be leveraged to track recent headlines for a given stock. Figure 10 displays the common structure and output of a FinViz news request. Another Google Sheet import function, IMPORTFEED, can also be used to scrape company headlines. While Figure 11 illustrates the setup to scrape RSS feeds from Yahoo! Finance, the approach is also similar for sites such as Seeking Alpha. Like the other Google Sheet import functions, IMPORTFEED is subject to the same workbook limitations that can often result in loading issues.

Figure 10
Apple News (FinViz via Google Sheets)

AAPL		
Sep-01-23 6:00 PM	Tech suppliers in China skip seasonal hiring rush amid weak demand (Financial Times)	
5:36 PM	Globalstar Satellites Could Score for Small Devices, IoT, Says New Boss (Barrons.com)	
4:26 PM	These Stocks Moved the Most Today: Dell, Elastic, Nutanix, Warner Bros. Discovery, Samsara, Broadcom, and More (Barrons.com)	
4:24 PM	Is Apple Stock A Buy Ahead Of iPhone 15 Introduction? (Investor's Business Daily)	
3:11 PM	Want to know what's 'NEXT'? Tune in to Yahoo Finance's new series (Yahoo Finance Video)	
2:19 PM	Loading...	
2:19 PM	Best Dow Jones Stocks To Buy And Watch In September 2023: Apple's New Buy Point (Investor's Business Daily)	
1:48 PM	Apple's Big Moves: Trademark Settlement, iPhone 15 Reveal, and 3D Printing Trials (Benzinga)	
1:34 PM	These Stocks Are Moving the Most Today: Dell, Elastic, Nutanix, Warner Bros. Discovery, Samsara, Broadcom, and More (Barrons.com)	
	Folding phones are here. So where is Apple?	

=IMPORTHTML("https://finviz.com/quote.ashx?t="&**TickerCell**&"&p=d", "table", **TableNumberCell**)

Figure 11
Amazon News (Yahoo! Finance via Google Sheets)

AMZN
Title
Jeff Bezos Vs. Elon Musk Space Contract Lawsuit, Novo Nordisk's Famed Drug Ozempic
Like Amazon And Google, Salesforce Is Optimistic About The Remaining Half Of The Year
Hollywood strikes: 'Focus on the consumer,' MNTN CEO says
100 Most Popular Songs of All Time on Spotify
15 Countries That Produce the Most E-waste in the World
Amazon (AMZN) Integrates Buy With Prime Into Shopify Stores
EVGO & Amazon Launch Alexa-Enabled EV Charging Experience
FAT Brands (FAT) Unveils Its Co-Branded Store in Happy Valley
The Zacks Rank Explained: How to Find Strong Buy Retail and Wholesale Stocks
Investors Heavily Search Amazon.com, Inc. (AMZN): Here is What You Need to Know

=IMPORTFEED("https://feeds.finance.yahoo.com/rss/2.0/headline?s="&**TickerCell**&"&region=US&lang=en-US","items title",TRUE,10)

Excel

Although Google Sheets is admirably suited for scraping online data, Microsoft has made big strides in recent years to enhance Excel's external connection capabilities. Although its familiar environment and more advanced analysis capabilities might lead to student favor, users will quickly encounter two big shortfalls. First, many options discussed below are not available to Mac users. Second, larger queries are susceptible to internet connectivity issues and will often fail to run if interruptions arise.

Macroeconomic Indicators

Windows users looking for St. Louis Federal Reserve data can easily download and install the bank's FRED add-in. While a bit finicky, series can be imported, manipulated, and refreshed in just a few steps within the Excel environment. Figure 12 displays the input and output cells for some common economic indicators retrieved via the Excel FRED add-in.

Figure 12
Unemployment Rate (Excel FRED Add-In)

Alternatively, both Windows and Mac users (Microsoft 365 subscribers for the latter) can take advantage of Power Query (Get & Transform in Excel) to import series from the central bank. Utilizing the same FRED API key used in Google Sheets, Figure 13 displays the common structure of the URL used in From Web FRED queries along with the corresponding output.

Figure 13
Unemployment Rate (FRED via Excel Query)

Attribute:realtime_start	Attribute:realtime_end	Attribute:date	Attribute:value
8/10/2023	8/10/2023	1/1/1948	3.4
8/10/2023	8/10/2023	2/1/1948	3.8
8/10/2023	8/10/2023	3/1/1948	4
8/10/2023	8/10/2023	4/1/1948	3.9
8/10/2023	8/10/2023	5/1/1948	3.5
8/10/2023	8/10/2023	6/1/1948	3.6
8/10/2023	8/10/2023	7/1/1948	3.6
8/10/2023	8/10/2023	8/1/1948	3.9
8/10/2023	8/10/2023	9/1/1948	3.8

="https://api.stlouisfed.org/fred/series/observations?series_id="&**SeriesNameCell**&"&api_key="&**APICell**

Stock Quotes & Ratios

Starting with the 2019 Windows version of Excel (and included in Microsoft 365 subscriptions, including those for Mac platforms), Microsoft included a feature on its ribbon's Data tab that imports real-time data based on transformed tickers into Excel. While the fields are limited to those displayed in Figure 14, the feature is extremely simple and convenient. For additional real-time data points, Windows users can again turn to external Get & Transform queries, scraping from popular websites such as Yahoo! Finance (as shown in Figure 15), FinViz, or Alpha Vantage (although users of the latter must use the previously mentioned API key and are still subject to the Figure 1 call limits).

Figure 14
Apple and Amazon Statistics (via Excel's Stock Data Type)

	A	B	C	D
1		**AAPL**	**AMZN**	
2	Company	🏛 APPLE INC. (XNAS:AAPL)	🏛 AMAZON.COM, INC. (XNAS:AMZN)	
3	Ticker symbol	AAPL	AMZN	
4	Name	APPLE INC.	AMAZON.COM, INC.	
5	Official Name	APPLE INC.	AMAZON.COM, INC.	
6	Exchange	Nasdaq Stock Market	Nasdaq Stock Market	
7	Exchange abbreviation	XNAS	XNAS	
8	Currency	USD	USD	
9	Previous close	$187.87	$138.01	
10	Open	$189.49	$139.46	
11	Low	$188.28	$136.88	
12	High	$189.92	$139.96	
13	Price	$189.46	$138.12	
14	Change	$1.59	$0.11	
15	Change (%)	0.85%	0.08%	
16	52 week low	$124.17	$81.43	
17	52 week high	$198.23	$143.63	
18	Volume	45,749,966	40,973,980	
19	Volume average	56,437,316	52,068,636	
20	Shares outstanding	15,634,230,000	10,317,750,000	
21	Market cap	$2,962,061,215,800	$1,425,087,630,000	
22	P/E	31.5506	109.7277	
23	Beta	1.2748	1.2358	
24	Instrument type	Stock	Stock	
25	Last trade time	11:16:56 PM	11:16:44 PM	
26	Year incorporated	1977	1996	
27	Employees	164,000	1,461,000	
28	Headquarters	One Apple Park Way, CUPERTINO, CA, 95014 US	410 Terry Ave N, SEATTLE, WA, 98109 US	
29	Industry	Computers, Phones & Household Electronics	Diversified Retail	
	Description	Apple Inc. (Apple) designs, manufactures and markets	Amazon.com, Inc. provides a range of products and services to customers.	

Figure 15
Apple Statistics (Yahoo! Finance via Excel Query)

	A	B	C	D	E	F	G
1	Column1	Column2					
2	Previous Close	178.19					
3	Open	179.48					
4	Bid	177.88 x 2200					
5	Ask	178.00 x 800					
6	Day's Range	177.60 - 180.75					
7	52 Week Range	124.17 - 198.23					
8	Volume	51,330,160					
9	Avg. Volume	57,113,016					
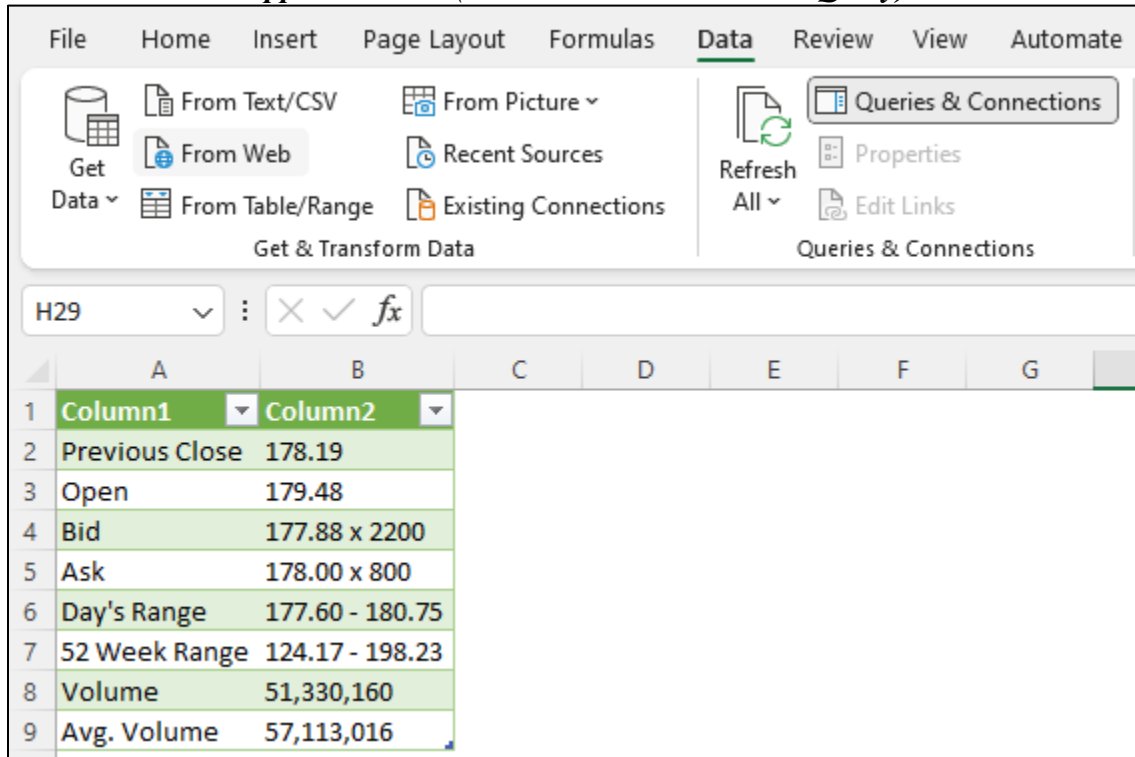
="https://finance.yahoo.com/quote/"&**TickerCell**

Stock Price History

Users seeking historic price data must prioritize either the desired time period or the capability of calculating total returns. Microsoft 365 Windows and Mac users can couple the STOCKHISTORY function with Excel's Stock data type to easily pull actual closing data for specific time periods (subject to the underlying Refinitiv API limits) as shown in Figure 16. Similar data spanning the past 20 years is also available to Alpha Vantage users via Get & Transform queries. However, these sources lack the data needed for total returns. Although Yahoo! Finance queries import both actual and adjusted prices (as shown in Figure 17), this approach only scrapes data for the most recent 100 trading days.

Figure 16
Apple Price History (via Excel's STOCKHISTORY)

Figure 17
Apple Price History (Yahoo! Finance via Excel Query)

="https://finance.yahoo.com/quote/"&**TickerCell**&"/history?p="&**TickerCell**

Financial Statements

Like with Google Sheets, historic financial statements can be imported into Excel from sources such as MarketWatch and Tiingo. As with Google Sheets, although Tiingo provides annual and quarterly data for the past three years, importing the data via Get & Transform is extremely cumbersome (i.e., multiple column manipulations and deletions in Advanced Editor are required for each statement query). Line items again are unsorted and must be reassembled via matches to the proper order (e.g., Figure 18). Users may find scraping quarterly or annual financial statements over the past five years off MarketWatch with a Get & Transform query (one per statement) to be easier, as shown in Figure 19.

Figure 18
Apple Statement Data (Tiingo via Excel Query)

	A	B	C	D	E	F	G
1	date	year	quarter	dataCode	value		
2	2023-07-01	2023	3	netinc	19881000000		
3	2023-07-01	2023	3	shareswaDil	15775021000		
4	2023-07-01	2023	3	consolidatedIncome	19881000000		
5	2023-07-01	2023	3	revenue	81797000000		
6	2023-07-01	2023	3	prefDVDs	0		
7	2023-07-01	2023	3	epsDil	1.26		
8	2023-07-01	2023	3	sga	5973000000		
9	2023-07-01	2023	3	taxExp	2852000000		
10	2023-07-01	2023	3	eps	1.27		
11	2023-07-01	2023	3	netIncDiscOps	0		
12	2023-07-01	2023	3	ebit	23731000000		

="https://api.tiingo.com/tiingo/fundamentals/"&**TickerCell**&"/statements?startDate="&**StartDateCell**&"&format= csv&token="&**APIcell**

Figure 19
Apple Income Statement (MarketWatch via Excel Query)

Item	Item	2018	2019	2020	2021	2022	5-year trend
Sales/Revenue	Sales/Revenue	265.81B	259.97B	274.15B	365.82B	394.33B	
Sales Growth	Sales Growth	-	-2.20%	5.46%	33.44%	7.79%	
Cost of Goods Sold (COGS) incl. D&A	Cost of Goods Sold (COGS) incl	163.83B	162.26B	170.14B	212.98B	223.55B	
COGS Growth	COGS Growth	-	-0.95%	4.86%	25.18%	4.96%	
COGS excluding D&A	COGS excluding D&A	154.53B	150.96B	159.09B	201.7B	212.44B	
Depreciation & Amortization Expense	Depreciation & Amortization	9.3B	11.3B	11.06B	11.28B	11.1B	
Depreciation	Depreciation	9.3B	11.3B	11.06B	11.28B	11.1B	
Amortization of Intangibles	Amortization of Intangibles	-	-	-	-	-	
Gross Income	Gross Income	101.98B	97.7B	104.01B	152.84B	170.78B	
Gross Income Growth	Gross Income Growth	-	-4.20%	6.45%	46.95%	11.74%	
Gross Profit Margin	Gross Profit Margin	-	-	-	-	43.31%	

="https://www.marketwatch.com/investing/stock/"&**TickerCell**&"/financials?mod=mw_quote_tab"

Company News

Turning to the ribbon's Developer tab (which users may need to display through Options > Customize Ribbon), the Source button allows users to build XML Maps as an alternative means of importing external data. Available only to Windows users, Figure 20 displays the common structure of a Seeking Alpha URL that can be used with XML Maps to import recent headlines for a given stock (some users may prefer to subsequently manipulate the imported map).

Figure 20
Apple News (Seeking Alpha via Excel XML Map)

title	link	pubDate	ns1:symbol	ns1:company_nam
AAPL				
Apple: Net Income Growth Is A Mirage	Link	Thu, 10 Aug 2023 16:05:19 -0400	AAPL	Apple Inc.
Biden issues order restricting certain US tech investments in China; UK mulls	Link	Thu, 10 Aug 2023 06:43:34 -0400	AAPL	Apple Inc.
Apple Fiscal Q3: Time To Face The Music As The Slowdown Continues	Link	Wed, 09 Aug 2023 12:56:37 -0400	AAPL	Apple Inc.
Apple wins reprieve at Supreme Court against Epic on App Store payments	Link	Wed, 09 Aug 2023 12:52:09 -0400	AAPL	Apple Inc.
US curbs on investment in China to be limited by revenue rule - report	Link	Wed, 09 Aug 2023 09:52:18 -0400	AAPL	Apple Inc.
China wants all apps to file business details - report	Link	Wed, 09 Aug 2023 08:30:39 -0400	AAPL	Apple Inc.
Apple: Expectations May Need A Reset	Link	Tue, 08 Aug 2023 02:16:01 -0400	AAPL	Apple Inc.
Apple: Don't Buy The Dip Just Yet	Link	Mon, 07 Aug 2023 18:34:22 -0400	AAPL	Apple Inc.
Three stocks make the cut for Credit Suisse's 'Top of the Crop' list	Link	Mon, 07 Aug 2023 12:28:52 -0400	AAPL	Apple Inc.
Apple manufacturing partner Foxconn reports July sales decline, expects Q3 increase	Link	Mon, 07 Aug 2023 07:17:31 -0400	AAPL	Apple Inc.
Apple: Staying On The Sidelines As Near-Term Weakness Likely To Persist	Link	Mon, 07 Aug 2023 00:36:06 -0400	AAPL	Apple Inc.

="https://seekingalpha.com/api/sa/combined/"&**TickerCell**

Python

As faculty rework their assignments, the most valuable change they could incorporate is a larger emphasis on coding in the classroom. Accessing data via Python offers many advantages: it appears to be less susceptible to the connection issues mentioned earlier, the platform is available in multiple computing environments (e.g., Windows, Macs, and browser editions), but most of all programming is a much-demanded skill in the workplace and thus serves as a resume booster. However, the benefits do not come without costs — installation of the program and packages can be tricky; many students and faculty are reticent to pursue a "foreign language"; and instruction, grading, and debugging will be more time-consuming.

Macroeconomic Indicators

Python can import in FRED data a variety of ways. To gain access via Python to the Federal Reserve's FRED data through its API, users must first create a free account in order to obtain an authentication token. Users can couple the FRED API key used earlier for Google Sheets and Excel with the FREDAPI package (which must be downloaded and installed) using basic syntax such as that displayed in Figure 21. Like before, Python can also access FRED data using Quandl's API. Using the same Quandl API key from earlier, users can download and install the QUANDL package to pull in economic series using syntax such as that displayed in Figure 22.

Figure 21
S&P 500 (FREDAPI in Python)
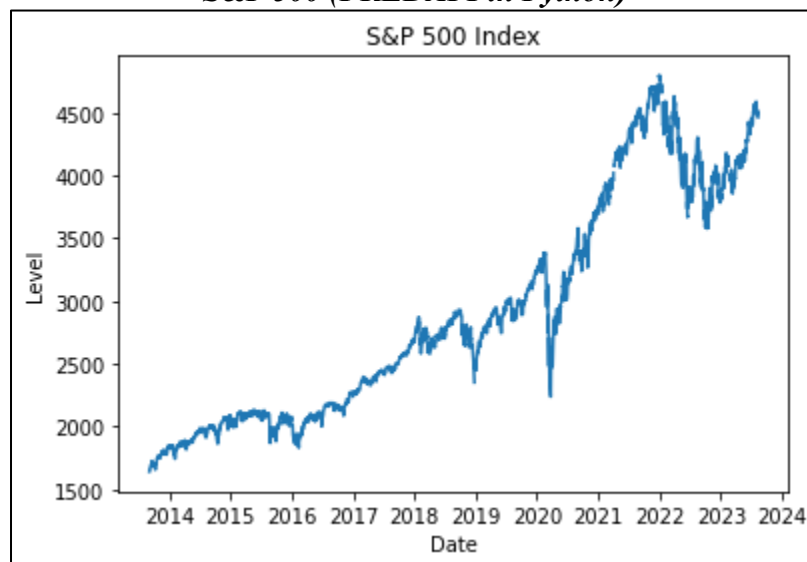

```
from fredapi import Fred
fred=Fred(api_key=token)
fred.get_series(SeriesName, observation_start=StartDate, observation_end=EndDate,
frequency=Freq)
```

Figure 22
Unemployment Rate (QUANDL in Python)
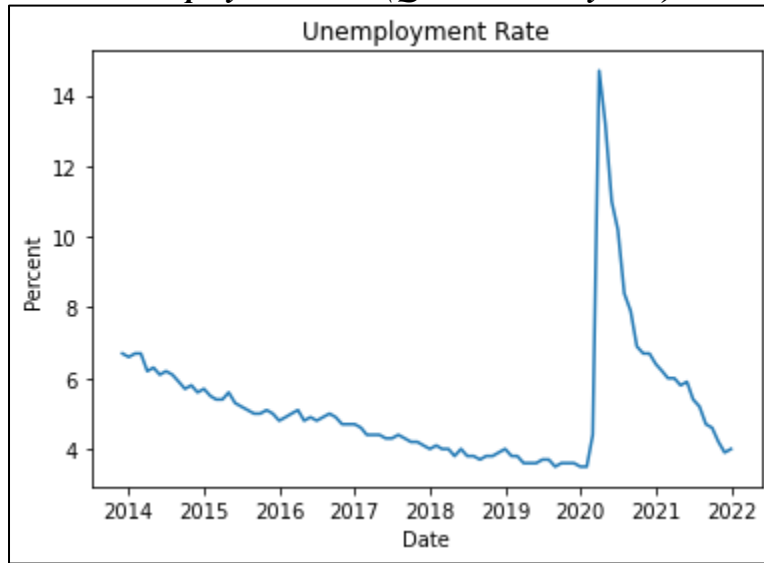

```
import quandl
quandl.ApiConfig.api_key=token
quandl.get(SeriesName, start_date=StartDate, collapse=Freq)
```

Stock Quotes & Ratios

While there are several Yahoo! Finance packages available, downloading and installing the YAHOO_FIN package provides the capability of scraping a variety of the website's tables. Figure 23 displays the common syntax and transformed output (from a dictionary to a data frame) for a stock quote request.

Figure 23
Amazon Quote (YAHOO_FIN via Python)

	AMZN
1y Target Est	169.91
52 Week Range	81.43 - 143.63
Ask	137.98 x 1100
Avg. Volume	54879177.0
Beta (5Y Monthly)	1.26
Bid	137.92 x 900
Day's Range	136.88 - 139.96
EPS (TTM)	1.28
Earnings Date	Oct 25, 2023 - Oct 30, 2023
Ex-Dividend Date	NaN
Forward Dividend & Yield	N/A (N/A)
Market Cap	1.425T
Open	139.46
PE Ratio (TTM)	107.91
Previous Close	138.01
Quote Price	138.119995
Volume	39848042.0

```
import yahoo_fin.stock_info as si
si.get_quote_table(Ticker)
```

Stock Price History

Users have many options when it comes to importing historic price series. The YAHOO_FIN package will also import a data frame of historic and adjusted prices and volume (see example syntax and output in Figure 24). The data frame imported by the TIINGO package (which must be downloaded and installed and used simultaneously with the free aforementioned API key) also includes adjusted variables as well as dividend payments, as shown in Figure 25's sample syntax and output.

Figure 24
Apple Price History (YAHOO_FIN in Python)

	open	high	low	close	adjclose	volume	ticker
2022-01-03	177.830002	182.880005	177.710007	182.009995	180.190994	104487900	AAPL
2022-01-04	182.630005	182.940002	179.119995	179.699997	177.904068	99310400	AAPL
2022-01-05	179.610001	180.169998	174.639999	174.919998	173.171844	94537600	AAPL
2022-01-06	172.699997	175.300003	171.639999	172.000000	170.281006	96904000	AAPL
2022-01-07	172.889999	174.139999	171.029999	172.169998	170.449295	86709100	AAPL

```
import yahoo_fin.stock_info as si
si.get_data(Ticker, start_date= StartDate, end_date= EndDate)
```

Figure 25
Apple Price History (TIINGO in Python)

	close	high	low	open	volume	adjClose	adjHigh	adjLow	adjOpen	adjVolume	divCash	splitFactor
date												
2020-08-03 00:00:00+00:00	435.75	446.5457	431.57	432.80	77037847	106.805966	109.452083	105.781413	106.082897	308151388	0.00	1.0
2020-08-04 00:00:00+00:00	438.66	443.1600	433.55	436.53	43198092	107.519232	108.622219	106.266728	106.997151	172792368	0.00	1.0
2020-08-05 00:00:00+00:00	440.25	441.5700	435.59	437.51	30497988	107.908954	108.232497	106.766749	107.237357	121991952	0.00	1.0
2020-08-06 00:00:00+00:00	455.61	457.6500	439.19	441.62	50607225	111.673818	112.173839	107.649139	108.244752	202428900	0.00	1.0
2020-08-07 00:00:00+00:00	444.45	454.7000	441.17	452.82	49511403	109.139398	111.656394	108.333959	111.194740	198045612	0.82	1.0

```
from tiingo import TiingoClient
config = {}
config['session'] = True
config['api_key'] = Token
client = TiingoClient(config)
client.get_dataframe(Ticker, startDate= StartDate,endDate= EndDate,frequency= Freq)
```

Financial Statements

Python can scrape Yahoo! Finance historic financial statements, too. The YAHOOQUERY package imports statements for the prior four fiscal years along with the trailing twelve months values, as shown in Figure 26's sample syntax and output.

Figure 26
Apple Income Statement (YAHOOQUERY via Python)

asOfDate	2019-09-30 00:00:00	2020-09-30 00:00:00	2021-09-30 00:00:00	2022-09-30 00:00:00
Category				
symbol	AAPL	AAPL	AAPL	AAPL
periodType	12M	12M	12M	12M
currencyCode	USD	USD	USD	USD
CostOfRevenue	161782000000.0	169559000000.0	212981000000.0	223546000000.0
DilutedNIAvailtoComStockholders	55256000000.0	57411000000.0	94680000000.0	99803000000.0
EBIT	63930000000.0	66288000000.0	108949000000.0	119437000000.0
EBITDA	NaN	NaN	NaN	NaN
GrossProfit	98392000000.0	104956000000.0	152836000000.0	170782000000.0
InterestExpense	3576000000.0	2873000000.0	2645000000.0	2931000000.0
InterestExpenseNonOperating	3576000000.0	2873000000.0	2645000000.0	2931000000.0
InterestIncome	4961000000.0	3763000000.0	2843000000.0	2825000000.0

```
from yahooquery import Ticker
Ticker(Ticker).income_statement()
```

Company News

Finally, the Finnhub website provides a free API (which requires a Python package installation and account registration to obtain an API token) that allows users to retrieve headlines over the past year for a given stock. Figure 27 displays the common syntax and output of such a news request.

Figure 27
Apple Headlines (FINNHUB via Python)

symbol	formatted_datetime	headline
AAPL	2023-08-31 22:07:15	Apple reportedly doing 3D printing trials for ...
AAPL	2023-08-31 20:56:39	'Magnificent Seven' investing playbook: Meta s...
AAPL	2023-08-31 20:40:00	Apple Stock Booked a Fifth Straight Rise—Thoug...
AAPL	2023-08-31 20:35:00	Stock Market's August Losses Snap Monthslong W...
AAPL	2023-08-31 20:23:00	Apple Ends Historic Winning Streak. The iPhone...

```
import finnhub
finnhub_client = finnhub.Client(api_key=Token)
finnhub_client.company_news(Ticker, _from=StartDate, to=EndDate)
```

Lessons

Incorporating any of the above approaches into classwork as a substitution for inaccessible or expensive financial database subscriptions will add new tools to students' technical toolboxes, thus augmenting their learning experience and marketability. But beyond the quantitative skills, this conversion provides faculty with the opportunity to emphasize an important soft skill – i.e., the importance of adopting a flexible mindset. Technology is constantly shifting, and the rate of change will only continue to accelerate. URLs and website formatting changes; code deprecates; programming languages come and go. To stay relevant in the market, our students must understand that they need to continue learning even after they walk across the stage. Continual revision is necessary and there is no better time than now to model the behavior.

References

American Association of Collegiate Registrars and Admissions Officers (2020). *Undergraduate enrollment indicators: Impact on admissions practice and fall course delivery.* https://www.aacrao.org/research-publications/aacrao-research/covid-19-undergraduate-enrollment-indicators-impact-on-admissions-practice-and-fall-course-delivery

Association of Governing Boards of Universities and Colleges (2020). *The AGB 2020 Trustee Index: Concern Deepens for the Future of Higher Education.* https://agb.org/wp-content/uploads/2020/01/AGB_2020_Trustee_Index.pdf

Alpha Vantage, Inc. (2023). *AlphaVantage.co.* https://www.alphavantage.co/

Anderson, N., Douglas-Gabriel D., & Svrluga, S. (2020, April 23). Rising expenses, falling revenues, budget cuts: Universities face looming financial crisis. *The Washington Post.* https://www.washingtonpost.com/education/2020/04/23/rising-expenses-falling-revenues-budget-cuts-universities-face-looming-financial-crisis/

Bevins, F., Bryant, J., Krishnan, C., & Law, J. (2020). *Coronavirus: How should US higher education plan for an uncertain future?* McKinsey & Company. https://www.mckinsey.com/industries/education/our-insights/coronavirus-how-should-us-higher-education-plan-for-an-uncertain-future

DePietro, A. (2020, June 2). Impact of coronavirus (COVID-19) on college tuition and finances. *Forbes.* https://www.forbes.com/sites/andrewdepietro/2020/06/02/impact-covid-19-tuition-finance/?sh=25b198fb4b88

Entangled Solutions (2020). *Colleges and universities impacted by COVID-19.* https://www.entangled.solutions/coronavirus-he/

Financial Modeling Prep (2020). *Financial Modeling Prep API Documentation.* https://financialmodelingprep.com/developer/docs

Finnhub Stock API. (2023). *API Documentation.* https://finnhub.io/docs/api/introduction

FINVIZ.com (2023). *Financial Visualizations*. https://finviz.com/

FRED (2020). *Data Tools — St. Louis Fed.* https://research.stlouisfed.org/datatools.html

Google.com (2023). GOOGLEFINANCE — Docs Editors Help. https://support.google.com/docs/answer/3093281?hl=en

Google.com (2023). IMPORTFEED — Docs Editors Help. https://support.google.com/docs/answer/3093337?hl=en

Google.com (2023). IMPORTHTML — Docs Editors Help. https://support.google.com/docs/answer/3093339?hl=en

Google.com (2023). IMPORTXML — Docs Editors Help. https://support.google.com/docs/answer/3093342?hl=en

Green, E. (2020, March 25). Colleges get billions in coronavirus relief, but say deal falls short of needs. *New York Times.* https://www.nytimes.com/2020/03/25/us/politics/colleges-universities-coronavirus.html

IES (2019). *Enrollment and Employees in Postsecondary Institutions*. U.S. Department of Education.

Kissler, S. M., Tedijanto, C., Goldstein, E., Grad, Y. H., & Lipsitch, M. (2020). Projecting the transmission dynamics of SARS-CoV-2 through the postpandemic period. *Science*, 368(6493), 860-868.

Laderman, S., & Weeden, D. (2020, April). *State higher education finance FY 2019.* https://shef.sheeo.org/wp-content/uploads/2020/04/SHEEO_SHEF_FY19_Report.pdf

Lang, Leah, Leslie Pearlman, and Thomas Rosa (2018). *2017 EDUCAUSE Core Data Service (CDS) Benchmarking Report.* EDUCAUSE Publications.

MarketWatch, Inc. (2023). *MarketWatch.com.* https://www.marketwatch.com/

McNichol, E., & Leachman, M. (2020, July 7). *States continue to face large shortfalls due to COVID-19 effects.* https://www.cbpp.org/research/state-budget-and-tax/states-continue-to-face-large-shortfalls-due-to-covid-19-effects

Medium. 2020. *How to Import JSON Data into Google Spreadsheets in Less Than 5 Minutes.* https://medium.com/@paulgambill/how-to-import-json-data-into-google-spreadsheets-in-less-than-5-minutes-a3fede1a014a

Microsoft (2023). *STOCKHISTORY Function.* https://support.microsoft.com/en-gb/office/stockhistory-function-1ac8b5b3-5f62-4d94-8ab8-7504ec7239a8

Mitchell, T. (2020, April 9). Higher education supplemental request [Letter written to U.S. Senate]. https://www.acenet.edu/Documents/Letter-Senate-Higher-Ed-Supplemental-Request-040920.pdf

Mitchell, T. (2020, May 29). Higher education supplemental request [Letter written to U.S. Senate]. https://www.acenet.edu/Documents/Letter-Senate-fifth-supplemental-request-052920.pdf

Moody's Investors Services. (2020, March 17). *Moody's changes outlook on Pearson's Baa2 ratings to negative* [Press release]. https://www.moodys.com/research/Moodys-changes-outlook-on-Pearsons-Baa2-ratings-to-negative—PR_419991

Nadworny, E. (2020, April 4). Can colleges survive coronavirus? 'The math is not pretty.' https://www.npr.org/2020/04/20/833254570/college-brace-for-financial-trouble-and-a-big-question-will-they-reopen-in-fall

NCES (2020). *Postsecondary Institution Expenses.* National Center for Education Statistics

Python.org (2023). *Welcome to Python.org.* https://www.python.org

Python Software Foundation (2023). *Fredapi 0.5.1.* https://pypi.org/project/fredapi/

Python Software Foundation (2023). *Yahooquery 2.3.2.* https://pypi.org/project/yahooquery/

Quandl.com (2023). *Get Financial Data Directly into Python.* https://www.quandl.com/tools/python

Quandl.com (2023). *Quandl.* https://www.quandl.com/

Reuters (2023). *Reuters.com.* https://www.reuters.com/

Seeking Alpha (2023). *SeekingAlpha.com.* https://seekingalpha.com/

Taylor, M., Sanchez, C. Turk, J., Chessman, H., & Ramos, A.M. (2020, March 4). *College and university presidents respond to COVID-19.* https://www.acenet.edu/Research-Insights/Pages/Senior-Leaders/College-and-University-Presidents-Respond-to-COVID-19-2021-Spring-Term.aspx

Tiingo.com (2023). *Stock Market Tools.* https://www.tiingo.com/

Treadway, Andrew (2021). *Yahoo_Fin Documentation.* http://theautomatic.net/yahoo_fin-documentation/

United Nations Educational, Scientific and Cultural Organization (2020). *COVID-19 impact on education.* https://en.unesco.org/covid19/educationresponse

Verizon Media (2023). *Yahoo! Finance.* https://finance.yahoo.com/

Walsh, M.W. (2020, April 15). States are in a quandary as taxes evaporate and virus spending soars. *New York Times.* https://www.nytimes.com/2020/04/15/business/economy/state-tax-revenue-debt-coronavirus.html

Yuen, V. (2020, June 11). Mounting peril for public higher education during the coronavirus pandemic. https://www.americanprogress.org/article/mounting-peril-public-higher-education-coronavirus-pandemic/

Zacks Investment Research (2023). *Zacks.com.* https://www.zacks.com/

The Decision to Strictly Enforce a Company's Terms of Sale

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A company's terms of sale specify the maximum days a customer has to pay an invoice and whether a trade discount is offered. By strictly enforcing its terms of sale, a company can lose sales but will generally collect faster. Collections affect the company's cash budget for the upcoming forecast period. Quicker collections affect anticipated short-term borrowings and investments. In our working capital management course, we create an MS Excel based integrated system of financial statements which enable students to analyze working capital decisions. In the example presented here, we analyze the decision to strictly enforce the terms of sale. The tradeoff is between quicker collections and lost revenues. After constructing the system of financial statements, we analyze the decision in terms of the effects on operations, investments, liquidity, and solvency.

Keywords: Working capital management, terms of sale, accounts receivable management.

Introduction

Working capital decisions can affect many aspects of a company's operations, from managing liquidity to providing funds for organic growth. When asked to analyze the effect of such decisions, we find that students lack a comprehensive understanding of how financial statements intertwine to make informed decisions. The most effective way of increasing students' understanding of financial statements is to have them create the statements and observe how changes to one statement affect other statements. We find that an MS Excel-based model that is originally developed for forecasting short-term borrowings and investments provides a foundation for analyzing how financial statements work together and, thus, providing necessary information to make numerous decisions, including decisions related to working capital policy. The model's objective is to maximize net interest cash flows over a forecast period. Typically, the choices given to students are to follow either an aggressive or a conservative working capital policy. With an aggressive policy, a company maximizes net interest cash flow (interest earned less interest paid). With a conservative policy, a company borrows only from long-term sources without restrictions on short-term investing. We find that most students will base their choice on which policy provides the highest net interest cash flow (since this is the "objective" of the algorithm). With normal spreads between investing and borrowing rates, an aggressive policy's net interest cash flow is greater than a conservative policy's net interest cash flow.

However, financial decisions have effects beyond maximizing interest earned (minimizing interest paid). As innocuous as a company's terms of sale would appear to be, their impact on working capital management is significant. The decision to strictly enforce terms of sale can also have a significant impact on a company's operating results, freeing funds for investment, liquidity and solvency. Hill (2013) argued that a company's terms of sale are the foundations upon which working capital management is constructed. Hill supports aggressive working capital management by maximizing current liabilities and minimizing current assets, while remaining consistent with a company's debt capacity. A survey by Ng, Smith and Smith (1999) found "Net 30" to be the most common simple net terms. For companies offering a trade discount, consistent terms appear within groups of companies sorted by SIC codes as well as little variation across groupings.

In an effort to have students expand their analysis beyond just maximizing net interest cash flows, we introduce the decision for a company to strictly enforce its terms of sale. By enforcing terms of sale, we specify that the company will lose revenue. This forces students to reconcile the loss of revenue with the higher net interest cash flow that results from the quicker collections. We assume that strict enforcement will result in a 5% loss in revenues. With a forecasting model of the company's monthly financial statements, we are able to conduct a comprehensive analysis.

Maintaining relationships with customers can discourage a company from strictly enforcing its terms of sale. Some companies in the Ng et al. (1999) survey reported occasionally allowing "unearned" discounts. When selling products that have numerous substitutes and vendors, enforcing (or not enforcing) terms of sale can be a strategic part of customer relationships. As an example, a commodity such as iceberg head lettuce has numerous growers and distributors, including produce brokers, ground buyers and jobbers who compete for sales, which can become a contest of who has the most favorable terms. While the industry "norm" might be Net 30 (shorter or even "cash" for more perishable products), not strictly enforcing the terms of sale can be the difference between making or losing a sale. A company strives to reach a reasonable balance between losing sales and unnecessarily building up receivables. If a company has a relatively high return on assets, holding higher levels of trade receivables can reduce liquidity and profitability (when compared to holding cash or higher earning assets).

Furthermore, the decision to enforce terms of sale can have an impact on a company's operating results, funds available for investment, liquidity and solvency. To evaluate the decision's impact on these areas, a cash forecast that integrates operations, investments and financing provides a comprehensive view of how the decision will affect the company. To this end, we set up a cash forecasting model to assess the working capital decision to strictly enforce the terms of sale or not. With a system of fully integrated financial statements, we can conduct scenario analyses by flexing key inputs. In the following section, we will construct the model.

A Forecasting Model to Assess Working Capital Decisions without enforcing Net 30

The model is divided into four sections: Income Statements, Operating Cash Flows, Investing and Financing Cash Flows, and Balance Sheets. From these sections, we assess operations by measuring cash flow from operations and free cash flow, funds available to invest from the balance sheet, liquidity from the income statement and balance sheet, and solvency from the balance sheet. We also generate a financing/investing plan and estimate its cost.

We specify the following model input values:

    a. Monthly sales estimates. The schedule of collections is 0% during the month of sale, 55% from the previous month's sales and 45% from two-month's prior sales.

b. Purchases. For a given month, purchases equal the cost of sales forecasted for the following month (70% of sales). The vendors' terms are Net 30 (to which we adhere). This assumption can be modified to include several upcoming months' costs of sales if vendors offer quantity discounts. (For this example, we will not include quantity discounts).

c. Fixed operating expenses. Remain constant throughout the forecast period.

d. Property, plant, and equipment. PPE remains constant throughout the forecast period (to focus on working capital decisions).

e. Depreciation. Recognized and expensed monthly.

f. Taxes. The corporate tax rate is 21%. The company calculates taxes monthly and pays them quarterly.

g. Interest. The company pays and earns interest monthly.

h. Financing. Three sources of financing are available: 30-day and 90-day notes, and long-term debt, which is available only in the first month of the forecast period.

i. Investments. Available short-term investments are 30-day and 90-day CDs. We provide the yield curve forecast for the interest-bearing instruments.

j. Cash Balance. The company must maintain a minimum of $6,500 monthly.

k. Our model's objective is to maximize net interest cash flows (interest received – interest paid).

The forecasting model includes 4 sections: (2.1) Income Statements, (2.2) Operating Cash Flows (receipts less disbursements), (2.3) Investing and Financing Cash Flows (maturing CDs and Notes, interest cash flows and investments and borrowings) and (2.4) Balance Sheets. From section 2.1 to section 2.4, we create a system of financial statements that captures the impact of working capital changes beginning in the income statement and concluding in the balance sheet. The objective of the system is to maximize net interest cash flow (or to minimize financing costs if interest paid exceeds interest earned). With the forecasts of the financial statements, we analyze the decision in terms of effects on operations, financing, investible funds and solvency.

In Table 1, we introduce the initial inputs for the model. In Table 2, we show the monthly income statements for the forecast (January through December). At this point, we do not have an investing/borrowing strategy. The available financial instruments are listed in rows 13 through 17 of Table 1 along with the yield curve forecast.

Table 1
Given parameters and the yield curve

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Collection Fractions:														
2	Current month	0													
3	First month prior	0.55													
4	Second month prior	0.45													
5															
6	Cost of goods sold	70%													
7	General and administrative	18,000													
8	Monthly Depreciation	1,800													
9	Tax rate	21%													
10	Minimum cash	6,500													
11							Term structure of interest rates by month								
12	Financial instruments		DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
13	C/D(30)		2.09%	2.24%	2.24%	2.19%	2.13%	2.13%	2.13%	2.14%	2.15%	2.16%	2.17%	2.18%	2.19%
14	C/D(90)		3.22%	2.99%	2.99%	2.88%	2.83%	2.79%	2.78%	2.79%	2.80%	2.81%	2.82%	2.83%	2.84%
15	N/P(30)		5.98%	6.04%	6.10%	6.15%	6.23%	6.41%	6.44%	6.47%	6.50%	6.53%	6.56%	6.59%	6.62%
16	N/P(90)		6.84%	6.84%	6.84%	6.84%	6.92%	6.95%	7.06%	7.17%	7.17%	7.17%	7.17%	7.17%	7.17%
17	Long-term debt		7.82%	7.88%	7.94%	7.94%	7.91%	7.91%	7.91%	7.91%	7.91%	7.91%	7.91%	7.91%	7.91%

Table 2
Monthly income statements

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
19		NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
20	Sales	155,250	139,725	237,375	228,375	209,531	126,821	248,400	186,300	186,300	136,620	321,368	558,900	388,125	322,920	223,560
21	Cost of goods sold			166,163	159,863	146,672	88,775	173,880	130,410	130,410	95,634	224,957	391,230	271,688	226,044	156,492
22	Operating Margin			71,213	68,513	62,859	38,046	74,520	55,890	55,890	40,986	96,410	167,670	116,438	96,876	
23	General and administrative			18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	
24	Depreciation			1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	
25	EBIT			51,413	48,713	43,059	18,246	54,720	36,090	36,090	21,186	76,610	147,870	96,638	77,076	
26	Net interest			-1,212	-983	-983	-782	-782	-782	-782	-782	-782	-782	-782	-782	
27	Pre-tax income			52,625	49,696	44,043	19,028	55,502	36,872	36,872	21,968	77,392	148,652	97,420	77,858	
28	Taxes			10,542	10,023	8,836	3,668	11,327	7,415	7,415	4,285	15,924	30,888	20,130	16,022	
29	Net income			42,083	39,673	35,207	15,361	44,175	29,457	29,457	17,683	61,468	117,764	77,290	61,836	

Table 3
Monthly Operating Cash Flows

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
		NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEP
31		NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	SEP
32	Receipts:															
33	Current month			0	0	0	0	0	0	0	0	0	0	0	0	
34	First month prior			76,849	130,556	125,606	115,242	69,752	136,620	102,465	102,465	75,141	176,752	307,395	213,469	
35	Second month prior			69,863	62,876	106,819	102,769	94,289	57,070	111,780	83,835	83,835	61,479	144,615	251,505	
36	Total receipts			146,711	193,433	232,425	218,011	164,041	193,690	214,245	186,300	158,976	238,231	452,010	464,974	
37																
38	Purchases		166,163	159,863	146,672	88,775	173,880	130,410	130,410	95,634	224,957	391,230	271,688	226,044	156,492	
39																
40	Disbursements:															
41	Purchases			166,163	159,863	146,672	88,775	173,880	130,410	130,410	95,634	224,957	391,230	271,688	226,044	
42	General and Administrative			18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	
43	Taxes			0	0	29,401	0	0	22,409	0	0	27,623	0	0	67,040	
44	Total disbursements			184,163	177,863	194,073	106,775	191,880	170,819	148,410	113,634	270,581	409,230	289,688	311,084	
45																
46	Operating net cash			-37,451	15,570	38,352	111,236	-27,839	22,870	65,835	72,666	-111,605	-170,999	162,323	153,890	

Income Statements

As shown on Table 2, the income statement section is completed using the following information:

Sales	given
Cost of goods sold (COGS)	70%*sales of following month
Operating margin	Sales - COGS
Depreciation	given
General and administrative	given
EBIT	Operating margin - (Depreciation + Gen & Admin)
Net interest	From Financing Cash Flows section (Table 5, row 72)
Pre-tax income	EBIT - Net Interest
Taxes	21% * Pre-Tax Income
Net Income	Pre-Tax Income - Taxes

Operating Cash Flows

Operating cash flows are the difference between cash receipts and cash disbursements. Given the sales and expenses from the income statements (Table 2), we prepare the operating cash flow section as shown on Table 3:

Operating cash flows consist of receipts less disbursements. We take operating expenses and taxes from the income statement (Table 2) and purchases from the separate schedule of purchases.

Calculations in the operating cash flow section for March (column F in Table 3):

	MAR
Receipts:	
Current month	=0%*209,531 = 0
First month prior	=55%*228,375 = 125,606 (55% of Feb sales)
Second month prior	=45%*237,375 = 106,819 (45% of Jan sales)
Total receipts	sum of receipts for Mar = 0 + 125,606 + 106,819 = 232,425
Purchases	Cost of Goods Sold for April = CGS*April's sales = 70%*126,821 =
	(Cell G21 from Table 2)
Disbursements:	
Purchases	Paying for Feb purchases = 146,672
General and Admin	Paid in the same month from Income Statement = 18,000
Taxes	Sum of taxes from Inc. Stmt. for Jan, Feb, Mar = 10,542 + 9,054 + 7,468
Total disbursements	Sum of all disbursements for Mar = 146,672 + 18,000 + 29,401 =
Operating net cash	Total Receipts - Total Disbursements = 232,425 - 194,073 = 38,352

For this example, we selected March because this month includes the first quarterly tax disbursement. For purchases, the disbursement in March comes from February, following the terms of Net 30.

Investing and Financing Cash Flows

Investing and financing cash flows include maturing securities, interest earned and paid, and new securities. Initially, this section includes only securities that are on the December (pre-forecast) balance sheet, as shown in Table 4. After we optimize the system, this section will populate based on the assumption that the company maintains a minimum ending monthly cash balance of $6,500 while maximizing net interest cash flows.

<u>Maturing securities</u>. The maturing securities prior to optimization are:

In December (pre-forecast), the Company had a $10,000 90-day CD, a $46,000 30-day note and a $40,000 90-day note. By March, all these mature.

<u>Interest Cash Flows</u>. Our model assumes that the company pays and receives interest monthly. The interest cash flows prior to optimizing are:

Total interest cash flow (cell P72, Table 5) for the year is -$10,217. This value is the sum of the interest cash flows that are tied to the investments/borrowings on the December balance sheet shown below. We will choose our borrowings and investments in the next section that maximize this value. For January, cash flow before investing or borrowing comes from the following values (column D from Table 5):

Interest Cash flows	JAN (rates from Table 1)
Interest received	
CD (30)	December CD (30) * December CD (30) rate /12 = 0*2.09%/12 = 0
CD (90)	December CD (90) * December CD (90) rate /12 = 10,000*3.22%/12
Total interest	Sum of interest received January = 0 + 27 = 27
Interest paid	
N/P (30)	December N/P (30) * December N/P (30) rate /12 = 46,000*5.98%/12
N/P (90)	December N/P (90) * December N/P (90) rate /12 = 40,000*6.84%/12
Long-term debt	December LTD * December LTD rate /12 = 120,000*7.82%/12 = 782
Total interest paid	Sum of interest paid January = 229 + 228 + 782 = 1,239
Net interest cash	Interest earned - interest paid = 27 - 1,239 = -1,212
Cash flow before Investing/borrowing:	
	Operating net cash flow + maturing CDs - maturing notes + net
	-37,451 + 0 - 46,000 + (-1,212) = -84,664

<u>New securities</u>. The negative operating cash flow and maturing securities in January will require substantial borrowing in order to bring the month's ending cash balance back to the required minimum. We introduce the borrowing and investing options available to the company in Table 6. Initially, all values are set to 0. We will later find the investments/borrowings that maximize net interest cash flow (cell P72, Table 5) for the forecast period while maintaining the required minimum monthly cash balance.

Table 4
Maturing CDs and notes

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
		NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
48		NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
49	Maturing CDs:														
50	CD (30)			0	0	0	0	0	0	0	0	0	0	0	0
51	CD (90)			0	0	10,000	0	0	0	0	0	0	0	0	0
52	Total Maturing			0	0	10,000	0	0	0	0	0	0	0	0	0
53															
54	Maturing Debt:														
55	N/P (30)			46,000	0	0	0	0	0	0	0	0	0	0	0
56	N/P (90)			0	0	40,000	0	0	0	0	0	0	0	0	0
57	Total Maturing			46,000	0	40,000	0	0	0	0	0	0	0	0	0

Table 5
Interest cash flows and the cash position prior to optimization

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
59	Interest cash flows:															
60				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
61	Interest received															
62	CD (30)			0	0	0	0	0	0	0	0	0	0	0	0	
63	CD (90)			27	27	27	0	0	0	0	0	0	0	0	0	
64	Total interest earned			27	27	27	0	0	0	0	0	0	0	0	0	
65																
66	Interest paid															
67	N/P (30)			229	0	0	0	0	0	0	0	0	0	0	0	
68	N/P (90)			228	228	228	0	0	0	0	0	0	0	0	0	
69	Long-term debt			782	782	782	782	782	782	782	782	782	782	782	782	
70	Total interest payments			1,239	1,010	1,010	782	782	782	782	782	782	782	782	782	
71																Total
72	Net interest cash flow			-1,212	-983	-983	-782	-782	-782	-782	-782	-782	-782	-782	-782	-10,217
73																
74	Cash flow before invest/borrow			-84,664	14,587	7,369	110,454	-28,621	22,088	65,053	71,884	-112,387	-171,781	161,541	153,108	

Table 6
Investing and borrowing options (initially 0 values until model is optimized).

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
76				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
77	Short-term investments:														
78	CD (30)			0	0	0	0	0	0	0	0	0	0	0	0
79	CD (90)			0	0	0	0	0	0	0	0	0	0	0	0
80	Total			0	0	0	0	0	0	0	0	0	0	0	0
81															
82	Borrowings:														
83	N/P (30)			0	0	0	0	0	0	0	0	0	0	0	0
84	N/P (90)			0	0	0	0	0	0	0	0	0	0	0	0
85	Long-term debt			0											
86	Total			0	0	0	0	0	0	0	0	0	0	0	0

Table 7
Monthly balance sheets prior to optimizing

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
92			DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
93	Cash		7,000	-77,664	-63,077	-55,708	54,746	26,125	48,213	113,266	185,150	72,763	-99,017	62,523	215,631
94	CD (30)		0	0	0	0	0	0	0	0	0	0	0	0	0
95	CD (90)		10,000	10,000	10,000	0	0	0	0	0	0	0	0	0	0
96	Trade receivables		121,444	212,108	247,050	224,157	132,967	217,326	209,937	181,992	132,312	294,703	615,372	551,487	409,433
97	Inventory		166,163	159,863	146,672	88,775	173,880	130,410	130,410	95,634	224,957	391,230	271,688	226,044	156,492
98	Total current assets		304,607	304,307	340,645	257,223	361,593	373,861	388,560	390,892	542,419	758,696	788,042	840,054	781,556
99	Gross PP&E		329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000
100	Accumulated Depreciation		25,000	26,800	28,600	30,400	32,200	34,000	35,800	37,600	39,400	41,200	43,000	44,800	46,600
101	Net PPE		304,000	302,200	300,400	298,600	296,800	295,000	293,200	291,400	289,600	287,800	286,000	284,200	282,400
102	Total Assets		608,607	606,507	641,045	555,823	658,393	668,861	681,760	682,292	832,019	1,046,496	1,074,042	1,124,254	1,063,956
103															
104	Accounts Payable		166,163	159,863	146,672	88,775	173,880	130,410	130,410	95,634	224,957	391,230	271,688	226,044	156,492
105	Taxes Payable		0	10,542	20,565	0	3,668	14,994	0	7,415	11,700	0	30,888	51,018	0
106	N/P (30)		46,000	0	0	0	0	0	0	0	0	0	0	0	0
107	N/P (90)		40,000	40,000	40,000	0	0	0	0	0	0	0	0	0	0
108	Total current liabilities		252,163	210,405	207,237	88,775	177,548	145,404	130,410	103,049	236,657	391,230	302,576	277,062	156,492
109	Long-term debt		120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000
110	Equity		236,444	276,102	313,808	347,048	360,845	403,456	431,350	459,243	475,362	535,266	651,466	727,192	787,464
111	Total liabilities and equity		608,607	606,507	641,045	555,823	658,393	668,861	681,760	682,292	832,019	1,046,496	1,074,042	1,124,254	1,063,956

Balance Sheet

In the final section of the model, all the previous sections come together in the monthly balance sheets as shown in Table 7.

The December values are historical. The following 12 months are the values that the company expects without borrowing and investing to maintain the desired ending cash value. Cash is below the $6,500 minimum balance in January, February, March, and October. In the other months of the forecast period, cash exceeds the minimum required.

In general, the balance sheet values for a given month are the previous month's values plus the changes that occur during the current month. For January, the balance sheet values are calculated as follows (column D in Table 7):

	DEC	JAN				
Cash	7,000	Beginning value + cash flow before investing/borrowing - CDs purchased + borrowings				
		= 7,000 + (-84,664) - 0 + 0 = -77,664				
CD (30)	0	Beginning value + CD (30) purchased - CD 30 matured = 0 + 0 - 0				
CD (90)	10,000	Beginning value + CD (90) purchased - CD 90 matured = 10,000 + 0 - 0 = 10,000				
Trade receivables	121,444	Beginning value + sales - receipts = 121,444 + 237,375 - 146,711 = 212,108				
Inventory	166,163	Beginning value + purchases - cost of sales = 166,163 + 159,863 - 166,163 = 159,863				
Total Current Assets	304,607	Sum of current assets = -77,664 + 0 + 10,000 + 212,108 + 159,863 = 304,307				
Gross PPE	329,000	Same as previous month = 329,000				
Depreciation	25,000	Beginning value + current month's depreciation = 25,000 + 1,800 = 26,800				
Net PPE	304,000	Gross PPE - Depreciation = 329,000 - 26,800 = 302,200				
Total Assets	608,607	Sum of Current Assets + Net PPE = 304,307 + 302,200 = 606,507				
Accounts Payable	166,163	Beginning value + purchases - purchases disbursement = 166,163 + 159,863 - 166,163 = 159,863				
Taxes Payable	0	Beginning value + JAN taxes - JAN tax disbursement = 0 + 10,542 - 0 = 10,542				
N/P (30)	46,000	Beginning value + NP (30) borrowed - NP (30) matured = 46,000 + 0 - 46,000 = 0				
N/P (90)	40,000	Beginning value + NP (90) borrowed - NP (90) matured = 40,000 + 0 - 0 = 40,000				
Total Current Liabilities	252,163	Sum of current liabilities = 159,863 + 10,542 + 0 + 40,000 = 210,405				
Long-term debt	120,000	Beginning value + JAN long-term debt = 120,000 + 0 = 120,000				
Equity	236,444	Beginning value + JAN net income = 236,444 + 39,658 = 276,102				
Total liabilities and Equity	608,607	Current liabilities + long-term debt + equity = 210,405 + 120,000 + 276,102 = 606,507				

Optimizing the Model

The forecasting model is ready for optimization. The objective is to maximize net interest cash flow (or minimize financing costs if interest paid exceeds interest earned). We return to the investments/borrowings section and select "Solver" option in the Data ribbon in MS Excel. The inputs to Solver are in Figure 1.

Figure 1
Solver dialogue box

For the "Set Objective" parameter, we point to cell P72 from Table 5, total interest cash flow. Row 72 contains the differences between the monthly interest received less interest paid values. We maximize cell P72 to either maximize the interest earned (if in a net investing position) or minimize the interest paid (if in a net borrowing position). In the "By Changing Variable Cells:" box, we specify the investing alternatives from Table 6 (D78 through O79 for CD investments, D83 through O84 for note borrowing, and D85 for long-term debt borrowing). In the "Subject to the Constraints:" box, we click on the Add button and the dialog box in Figure 2 appears.

Figure 2
Add Constraint dialogue box
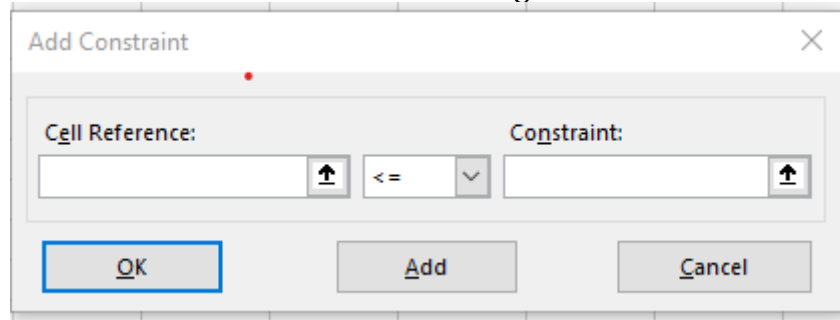
In the "Cell Reference:" we enter the left side of our constraint. Our objective is to maximize total interest cash flow, but the solution must provide a minimum monthly cash balance of $6,500.

In the "Cell Reference:" box we enter the cash balances for January through December from Table 7 (Cells D93 through O93). We select the ">=" option in the center and specify cell B10 from Table 1 ($6,500 minimum balance). After entering the cell references, the dialog box is complete in Figure 3.

Figure 3
Filled in Add Constraint dialogue box.
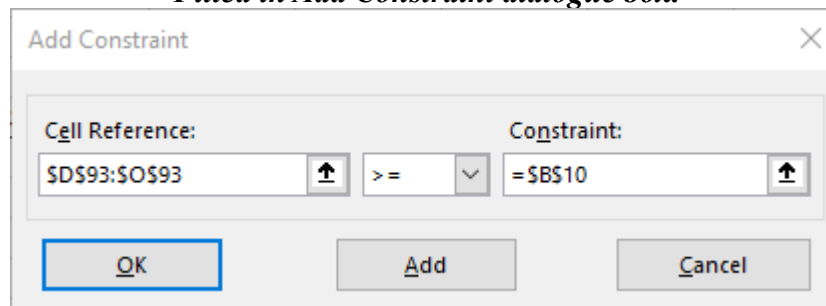
For the Solver "Select a Solving Method:" we click on the drop-down button and select "Simplex LP". This directs Solver to search for the optimal solution using a linear model, which is available if all variables have an exponent of 1.

After clicking on the "Solve" button in Figure 1, solver finds the values for investments/borrowings in Table 8.

The Table 8 investing/borrowing schedule results in the net interest cash flows in Table 9.

Table 8
Model after optimizing

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
76				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
77	Short-term investments:														
78	CD (30)			0	0	0	28,526	0	0	17,875	89,996	0	0	0	153,300
79	CD (90)			0	0	0	18,782	0	22,171	66,055	0	0	0	55,392	0
80	Total			0	0	0	47,308	0	22,171	83,931	89,996	0	0	55,392	153,300
81															
82	Borrowings:														
83	N/P (30)			84,164	70,000	62,824	0	0	0	0	0	0	105,572	0	0
84	N/P (90)			0	0	0	0	0	0	0	0	0	0	0	0
85	Long-term debt			0											
86	Total			84,164	70,000	62,824	0	0	0	0	0	0	105,572	0	0

Table 9
Net interest cash flow after optimizing.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
59	INTEREST CASH FLOWS:			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
60																
61	INTEREST INCOME															
62	CD (30)			0	0	0	0	51	0	0	32	161	0	0	0	
63	CD (90)			27	27	27	0	44	44	96	205	205	154	0	131	
64	TOTAL INTEREST INCOME			27	27	27	0	95	44	96	237	366	154	0	131	
65																
66	INTEREST PAYMENTS															
67	N/P (30)			229	424	356	322	0	0	0	0	0	0	577	0	
68	N/P (90)			228	228	228	0	0	0	0	0	0	0	0	0	
69	LONG-TERM DEBT			782	782	782	782	782	782	782	782	782	782	782	782	
70	TOTAL INTEREST PAYMENTS			1,239	1,434	1,366	1,104	782	782	782	782	782	782	1,359	782	
71																
72	NET INTEREST CASH FLOW			-1,212	-1,407	-1,339	-1,104	-687	-738	-686	-545	-416	-628	-1,359	-651	-10,773

Table 10
Income Statement after optimizing

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
19		NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
20	Sales	155,250	139,725	237,375	228,375	209,531	126,821	248,400	186,300	186,300	136,620	321,368	558,900	388,125	322,920	223,560
21	Cost of goods sold			166,163	159,863	146,672	88,775	173,880	130,410	130,410	95,634	224,957	391,230	271,688	226,044	156,492
22	Operating Margin			71,213	68,513	62,859	38,046	74,520	55,890	55,890	40,986	96,410	167,670	116,438	96,876	
23	General and administrative			18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	
24	Depreciation			1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	
25	EBIT			51,413	48,713	43,059	18,246	54,720	36,090	36,090	21,186	76,610	147,870	96,638	77,076	
26	Net interest			-1,212	-1,407	-1,339	-1,104	-687	-738	-686	-545	-416	-628	-1,359	-651	
27	Pre-tax income			52,625	50,119	44,398	19,350	55,407	36,828	36,776	21,731	77,026	148,498	97,997	77,727	
28	Taxes			10,542	9,934	8,761	3,600	11,347	7,424	7,435	4,335	16,001	30,921	20,008	16,049	
29	Net income			42,083	40,185	35,637	15,750	44,060	29,404	29,342	17,397	61,025	117,578	77,988	61,678	

Table 11
Balance Sheet after optimizing

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
92			DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
93	Cash		7,000	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500
94	CD (30)		0	0	0	0	28,526	0	0	17,875	89,996	0	0	0	153,300
95	CD (90)		10,000	10,000	10,000	0	18,782	18,782	40,953	88,226	88,226	66,055	0	55,392	55,392
96	Trade receivables		121,444	212,108	247,050	224,157	132,967	217,326	209,937	181,992	132,312	294,703	615,372	551,487	409,433
97	Inventory		138,444	159,863	146,672	88,775	173,880	130,410	130,410	95,634	224,957	391,230	271,688	226,044	156,492
98	Total current assets		304,607	388,470	410,222	319,431	360,655	373,018	387,800	390,227	541,991	758,488	893,559	839,422	781,116
99	Gross PP&E		329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000
100	Accumulated Depreciation		25,000	26,800	28,600	30,400	32,200	34,000	35,800	37,600	39,400	41,200	43,000	44,800	46,600
101	Net PPE		304,000	302,200	300,400	298,600	296,800	295,000	293,200	291,400	289,600	287,800	286,000	284,200	282,400
102	Total Assets		608,607	690,670	710,622	618,031	657,455	668,018	681,000	681,627	831,591	1,046,288	1,179,559	1,123,622	1,063,516
103															
104	Accounts Payable		166,163	159,863	146,672	88,775	173,880	130,410	130,410	95,634	224,957	391,230	271,688	226,044	156,492
105	Taxes Payable		0	10,542	20,476	0	3,600	14,947	0	7,435	11,769	0	30,921	50,929	0
106	N/P (30)		46,000	84,164	70,000	62,824	0	0	0	0	0	0	105,572	0	0
107	N/P (90)		40,000	40,000	40,000	0	0	0	0	0	0	0	0	0	0
108	Total current liabilities		252,163	294,568	277,149	151,599	177,480	145,357	130,410	103,069	236,727	391,230	408,180	276,973	156,492
109	Long-term debt		120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000
110	Equity		236,444	276,102	313,474	346,433	359,975	402,661	430,590	458,558	474,865	535,058	651,379	726,649	787,024
111	Total liabilities and equity		608,607	690,670	710,622	618,031	657,455	668,018	681,000	681,627	831,591	1,046,288	1,179,559	1,123,622	1,063,516

From Table 9, we observe that the objective function's maximum value is -$10,773 (cell P72). This is our financing cost over the planning period required to maintain a minimum monthly cash balance of $6,500. The resulting income statements and balance sheets, after optimizing, are shown below in Tables 10 and 11, respectively.

All cash balances in the forecast period are $6,500. At the end of the forecast period (column O, rows 92 to 111), we have investible funds of $208,692 consisting of $153,300 a 30-day CD and a $55,392 90-day CD.

Strictly Enforcing Net 30

As mentioned above, Ng et al. (1999) found "Net 30" to be the most common simple net terms. We examine the scenario in which the company strictly enforces Net 30 (100% collections in 30 days) and analyze this decision in terms of its effects on operations, liquidity, financing, investible funds and solvency. For this scenario, we assume that the company will lose 5% of its sales if it strictly enforces its terms of sale. To evaluate the impact of the loss of sales, we change the collection fractions in Table 1 to 100% in the first month prior (and others to 0) and reduce monthly sales by 5%. Table 12 shows these changes.

We reduce sales in row 20 by 5% beginning in column D (compared to those in Table 2) and adjust collection fractions to 100% in the first month prior (cell B3). After making these changes, we solve for the borrowings and investments that maximize net interest cash flow. The Solver set up is the same as shown in Figures 1 and 3. After running Solver, we arrive at the solution shown in Table 13. The net interest cash flow associated with the solution in Table 13 (strictly enforcing Net 30 and collecting 100% in the month following the sale) is -$9,505.93. Previously, not enforcing Net 30 (collecting 55% in the month following the sale and 45% in the second month following the sale) resulted in a net interest cash flow of -$10,773.

Table 12

Model adjustments for strictly enforcing Net 30 (100% collections in 30 days, sales reduced by 5% compared to Table 2 values)

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
1	Collection Fractions:															
2	Current month	0														
3	First month prior	100%														
4	Second month prior	0														
:																
:																
:																
19		NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
20	Sales	155,250	139,725	225,506	216,956	199,055	120,480	235,980	176,985	176,985	129,789	305,299	530,955	368,719	306,774	212,382

Table 13

Investments and borrowings that maximize net interest cash flow for enforcing Net 30.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
76				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
77	Short-term investments:														
78	CD (30)			0	0	0	63,363	0	12,206	0	67,611	0	0	0	0
79	CD (90)			0	0	0	5,162	0	60,475	51,856	0	0	0	220,713	0
80	Total			0	0	0	68,525	0	72,681	51,856	67,611	0	0	220,713	0
81															
82	Borrowings:														
83	N/P (30)			82,842	28,605	27,272	0	0	0	0	0	0	33,175	0	0
84	N/P (90)			0	0	0	0	0	0	0	0	0	0	0	0
85	Long-term debt			0											
86	Total			82,842	28,605	27,272	0	0	0	0	0	0	33,175	0	0

Table 14
Income statement from enforcing Net 30 terms of sale after optimizing the model.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
19		NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN
20	Sales	155,250	139,725	225,506	216,956	199,055	120,480	235,980	176,985	176,985	129,789	305,299	530,955	368,719	306,774	212,382
21	Cost of goods sold			157,854	151,869	139,338	84,336	165,186	123,890	123,890	90,852	213,709	371,669	258,103	214,742	148,667
22	Operating Margin			67,652	65,087	59,716	36,144	70,794	53,096	53,096	38,937	91,590	159,287	110,616	92,032	
23	General and administrative			18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	18,000	
24	Depreciation			1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	
25	EBIT			47,852	45,287	39,916	16,344	50,994	33,296	33,296	19,137	71,790	139,487	90,816	72,232	
26	Net interest			-1,212	-1,400	-1,129	-922	-657	-770	-608	-521	-400	-661	-963	-261	
27	Pre-tax income			46,639	43,887	38,788	15,422	50,337	32,526	32,687	18,615	71,390	138,825	89,852	71,971	
28	Taxes			9,794	9,216	8,145	3,239	10,571	6,830	6,864	3,909	14,992	29,153	18,869	15,114	
29	Net income			36,845	34,671	30,642	12,184	39,766	25,695	25,823	14,706	56,398	109,672	70,983	56,857	

Table 15
Balance sheet from enforcing Net 30 terms of sale after optimizing the model

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
92			DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
93	Cash		7,000	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500	6,500
94	CD (30)		0	0	0	0	63,363	0	12,206	0	67,611	0	0	0	72,579
95	CD (90)		10,000	10,000	10,000	0	5,162	5,162	65,637	112,330	112,330	51,856	0	220,713	220,713
96	Trade receivables		121,444	207,225	198,675	180,774	102,199	217,699	158,704	158,704	111,508	287,018	512,674	350,438	288,493
97	Inventory		138,444	160,178	147,646	92,644	173,494	132,198	132,198	99,160	222,018	379,977	266,411	223,050	156,976
98	Total current assets		304,607	383,903	362,822	279,918	350,719	361,559	375,245	376,695	519,967	725,351	785,585	800,701	745,261
99	Gross PP&E		329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000	329,000
100	Accumulated Depreciation		25,000	26,800	28,600	30,400	32,200	34,000	35,800	37,600	39,400	41,200	43,000	44,800	46,600
101	Net PPE		304,000	302,200	300,400	298,600	296,800	295,000	293,200	291,400	289,600	287,800	286,000	284,200	282,400
102	Total Assets		608,607	686,103	663,222	578,518	647,519	656,559	668,445	668,095	809,567	1,013,151	1,071,585	1,084,901	1,027,661
103															
104	Accounts Payable		166,163	160,178	147,646	92,644	173,494	132,198	132,198	99,160	222,018	379,977	266,411	223,050	156,976
105	Taxes Payable		0	9,794	19,011	0	3,239	13,809	0	6,864	10,774	0	29,153	48,022	0
106	N/P (30)		46,000	82,842	28,605	27,272	0	0	0	0	0	0	33,175	0	0
107	N/P (90)		40,000	40,000	40,000	0	0	0	0	0	0	0	0	0	0
108	Total current liabilities		252,163	292,814	235,262	119,916	176,733	146,007	132,198	106,025	232,791	379,977	328,740	271,072	156,976
109	Long-term debt		120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000	120,000
110	Equity		236,444	273,289	307,960	338,602	350,786	390,552	416,247	442,070	456,776	513,174	622,846	693,829	750,686
111	Total liabilities and equity		608,607	686,103	663,222	578,518	647,519	656,559	668,445	668,095	809,567	1,013,151	1,071,585	1,084,901	1,027,661

The resulting income statement and balance sheet for enforcing Net 30 terms of sale after optimizing the model are shown in Tables 14 and 15, respectively.

As with the previous case, i.e., not enforcing Net 30, all ending cash balances are equal to the minimum required $6,500. At the end of the forecast period, we have $72,579 30-day and $220,713 90-day CDs for a total of $293,293 in investible funds.

Analysis of The Decision to Enforce Net 30

By enforcing Net 30 terms of sales, the company has 5% lower annual revenues ($3,151,035 - $2,993,483 = $157,552) but saves $10,773.20 - $9,505.93 = $1,267 in annual interest payments. These values do not capture the effect of faster collections (on average, 5 days sooner) that result from enforcing Net 30. Further analysis will assist in making an informed decision to enforce or not enforce the terms of sale. We decompose the analysis into 4 areas: operations, investments, liquidity and solvency.

Cash flow from operations and free cash flow

To analyze operating results, we measure cash flow from operations and free cash flow. Figure 4 presents the calculation of cash flow from operations. While net income associated with not enforcing is greater than that for enforcing, the difference is easily offset by the lower addition to receivables associated with enforcing.

Figure 4
Cash flow from operations, enforcing and not enforcing Net 30

	Not enforce Net	Enforce Net
Net income	550,580	514,242
Depreciation	21,600	21,600
Change in accounts	-287,989	-167,049
Change in inventory	9,671	9,187
Change in trade payables	-9,671	-9,187
Change in taxes payable	0	0
Cash flow from operations	284,192	368,793

The free cash flow calculations for enforcing and not enforcing Net 30 are shown in Figures 5, 6 and 7.

From Figure 5, after-tax operating profit for enforcing Net 30 is 6.7% lower than for the not enforcing case, compared to 5% lower revenues due to fixed operating costs (general and administrative and depreciation) creating sufficient operating leverage to multiply a 5% decrease in revenues to a 6.7% decrease in EBIT, resulting in a degree of operating leverage (DOL) of:

$$DOL = \% \text{ change in EBIT} / \% \text{ change in revenues} = -6.7\% / -5\% = 1.34$$

Thus, for each 1% change in revenues, operating profit changes by 1.34%

Figure 5.
Operating profit after taxes

	Not enforce Net 30	Enforce Net 30
Sales (annual)	3,151,035	2,993,483
Cost of goods sold	2,205,725	2,095,438
Gross profit	945,311	898,045
General and administrative	216,000	216,000
Depreciation	21,600	21,600
EBIT	707,711	660,445
Less: Taxes on EBIT (21%)	148,619	138,693
Operating profit after taxes	559,091	521,752
Reconciling net income to operating profit:		
Net Income	550,580	514,242
Plus: Interest after-tax	8,511	7,510
Operating profit after taxes	559,091	521,752

Figure 6.
Free cash flow not enforcing Net 30

	Beginning	Ending	Change
Cash	7,000	6,500	
Receivables	121,444	409,433	
Inventory	166,163	156,492	
Operating Current Assets	294,607	572,425	
Operating Current Liabilities			
Trade Payables	166,163	156,492	
Taxes Payable	0	0	
Operating Current Liabilities	166,163	156,492	
Operating Working Capital	128,444	415,933	
Net PPE	304,000	282,400	
Investor Capital	432,444	698,333	265,889
Short-term Investments	10,000	208,692	
Investor Funds	442,444	907,024	464,580
Reconcile to capital accounts			
Debt	206,000	120,000	
Equity	236,444	787,024	
Investor Funds	442,444	907,024	464,580
Free cash flow calculation:			
Net Operating Profit After Taxes (from	559,091		
Change in Short-term Investments	198,692		
Investor Cash flow	360,400		
Less: Change in Investor Capital	265,889		
Free Cash Flow	94,511		
Reconcile with cash flows to capital			
After-tax interest	8,511		
Debt	86,000		
Free Cash Flow	94,511		

Figure 7
Free cash flow enforcing Net 30

	Beginning	Ending	Change
Cash	7,000	6,500	
Receivables	121,444	288,493	
Inventory	166,163	156,976	
Operating current assets	294,607	451,969	
Trade Payables	166,163	156,976	
Taxes Payable	0	0	
Operating current liabilities	166,163	156,976	
Operating Working Capital	128,444	294,993	
Net PPE	304,000	282,400	
Investor Capital	432,444	577,393	144,949
Short-term Investments	10,000	293,293	
Investor Funds	442,444	870,686	428,242
Reconcile to Capital			
Debt	206,000	120,000	
Equity	236,444	750,686	
Investor Funds	442,444	870,686	428,242
Free cash flow calculation:			
Operating Profit after Taxes (from Table 5)	521,752		
Change in Short-term Investments	283,293		
Investor Cash flow	238,459		
Change in Investor Capital	144,949		
Free cash flow	93,510		
Reconcile with cash flows to capital			
Interest After-tax	7,510		
Debt	86,000		
Free Cash Flow	93,510		

However, when comparing Figures 6 and 7, we find that the operating profit advantage does not equate to a similar free cash flow advantage. Free cash flow is found by subtracting the increases in investor capital and non-operating assets from after-tax operating income. While after-tax operating profit for not enforcing was $559,091 - $521,752 = $37,339 greater, the increase in investor capital was $265,889 - $144,949 = $120,940 greater compared to enforcing. This is due mostly to the greater increase in receivables for the not enforcing strategy. The increase in short-term investments (non-operating assets) was $84,601 greater for the enforcing strategy. Hence the free cash flow net advantage to not enforcing is $37,339+$84,601 - $120,940 = $1,000, or 1% higher. We do not consider this a significant advantage to the not enforcing strategy.

Liquidity Analysis

Faulkender and Wang (2006) summarized the advantages to having higher liquidity. Companies can make investments without having to access external markets. They avoid both transaction costs on either debt or equity issuance. Corporate liquidity also reduces the likelihood of incurring financial distress costs if operations generate cash flows that are insufficient to service debt obligations.

We chose to evaluate liquidity based on two indexes: the Comprehensive Liquidity Index and the Current Liquidity index. The Comprehensive Liquidity Index adjusts the liquidity of current assets and liabilities based upon their turnovers. Back (2001) used the Comprehensive Liquidity Index in a bankruptcy prediction study while Nassirzadeh (2011) compared the profitability and liquidity of Tehran Stock Exchange listed companies as measured by the Comprehensive Liquidity Index.

For the Comprehensive Liquidity Index, cash is not adjusted because it is 100% liquid. CDs are adjusted based on their maturities. CDs with maturities of 30 and 90 days will have turnovers of 365/30=12.17 and 365/90=4.06, respectively. In general, we adjust a balance sheet value by multiplying it by $1 - 1/turnover$. The higher the turnover, the more liquid the asset or liability will be. Turnovers (excluding CDs and Notes) are essentially the ratio of an income statement item divided by its corresponding balance sheet item. Figure 8 compares the Comprehensive Liquidity Index values for both the enforcing and not enforcing Net 30 strategies. Both strategies exhibit a high degree of liquidity, with over $4 of liquid assets for each $1 of liquid liabilities.

Another measure of liquidity is the Current Liquidity Index (Hill, Zietlow & Maness, 2017). While the Comprehensive Liquidity Index adjusts all current assets and liabilities to reflect their relative liquidity the Current Liquidity Index adds current year's Cash Flow from Operations, beginning cash and CDs and divides the sum by beginning Notes and other current cash liabilities. The Current Liquidity Index measure gives an indication of how well the company will be able to cover its interest- bearing obligations that will come due over the forecast period. The components and calculations for the Current Liquidity Index are shown in Figure 9. With less investment in receivables, enforcing Net 30 generates nearly $1.00 more in cash and near cash assets for each $1.00 of near cash liabilities compared to the not enforcing option.

Solvency

We measure solvency with the current ratio (Current Assets/Current Liabilities). From Table 11, we find the December (column O) values of Current Assets and Current Liabilities to be $781,116 and $156,492, respectively, resulting in a current ratio of 4.99 for the not enforcing option. From Table 15, we obtain similar values for the enforcing Net 30 option of $745,261 and $156,976 for current assets and current liabilities, respectively resulting in a current ratio of 4.75. Both strategies yield strong current ratios with nearly $5.00 of assets that mature within the next year for each $1.00 of maturing liabilities. Thus, either strategy will provide a strong solvency position. This leads us to our final analysis category, investible funds.

Figure 8
Comprehensive Liquidity Index Analysis for enforcing and not enforcing Net 30

Enforce net 30 Current Assets	Turnover Equation	Turnover	(1-1/TO) Multiplier	From B/S Raw Value	Adjusted Value
Cash	100% liquid	1.00	1.00	6,500	6,50
CD (30)	365/maturity	12.17	0.92	72,579	66,61
CD (90)	365/maturity	4.06	0.75	220,713	166,29
Receivables	Sales/ Acct Rec	10.38	0.90	288,493	260,69
Inventory	CGS / Inventory	13.35	0.83*	156,976	130,08
Adjusted current assets					630,18
Current Liabilities					
Trade Payables	Purchases/Acct Pay	13.29	0.92	156,976	145,16
Adjusted current liabilities					145,16
Comprehensive Liquidity Index		4.34			
Not enforce Net 30 Current Assets		Turnover	(1-1/TO) Multiplier	From B/S Raw Value	Adjusted Value
Cash	100% liquid	1.00	1.00	6,500	6,50
CD (30)	365/maturity	12.17	0.92	153,300	140,70
CD (90)	365/maturity	4.06	0.75	55,392	41,73
Receivables	Sales/ Acct Rec	7.70	0.87	409,433	356,23
Inventory	CGS / Inventory	14.09	0.80*	156,492	125,05
Adjusted current assets					670,22
Current Liabilities					
Trade Payables	Purchases/Acct Pay	14.03	0.93	156,492	145,34
Adjusted current liabilities					145,34
Comprehensive Liquidity Index		4.61			

*Multiplier for Inventory is 1-1/Inv TO – 1/Acct Rec TO (Cash is tied up in inventory then in receivables)

Figure 9
Current Liquidity Index Analysis for enforcing and not enforcing Net 30

	Not enforce Net 30	Enforce Net
Cash flow from operations	284,192	368,793
Beginning cash and CDs	17,000	17,000
Cash flow plus cash assets	301,192	385,793
Beginning Notes	86,000	86,000
Current Liquidity Index	3.50	4.49

Investible funds

The company reports (about) a 50% return on assets as measured by annual net income to total assets ratio. Accordingly, the company can improve earnings by moving funds from low earning CDs (earning less than 3% as this is written) to long-term assets. In Figure 10, we find that enforcing Net 30 finishes the forecast period with an $84,601 advantage in highly liquid CDs. We view the ending investible funds position to be an advantage to enforcing Net 30.

Figure 10
Investible funds

Instrument	Not Enforcing Net December	Enforcing Net December
CD (30)	153,300	72,579
CD (90)	55,392	220,713
Available for	208,692	293,293

Summary

In Figure 11, we summarize the analysis measures. By enforcing Net 30, we find that the company essentially reduces receivables and increases CD holdings when compared to not enforcing.

Figure 11
Summary of analysis measures

	Not Enforce net	Enforce net 30
Operating Results		
Free Cash Flow	94,511	93,510
Cash flow from operations	284,192	368,793
Available for investment		
30- and 90-day CDs	208,692	293,293
Liquidity		
Comprehensive Liquidity Index	4.61	4.34
Current Liquidity Index	3.50	4.49
Solvency		
Current Ratio (Current Assets/Current	4.99	4.75

With lower receivables and higher CD holdings, enforcing Net 30 has a favorable cash flow from operations, a higher Current Liquidity Index and higher investible funds compared to not enforcing. Not enforcing has a higher Free Cash Flow and Comprehensive Liquidity Index. The relatively small free cash flow advantage of not enforcing would disappear if the increases in short-term investments (in Figures 6 and 7) were instead made available to capital providers. Also, the Comprehensive Liquidity Index advantage all but disappears if the company would hold cash

instead of CDs at the end of the forecast period (Index values would change to 4.79 (not enforcing) versus 4.76 (enforcing Net 30) – just change the CD multipliers to 1.0 in Figure 8).

Conclusion

We provide students with an exercise involving the decision to enforce a company's terms of sale assuming a that a 5% loss in revenues would result. In order to analyze the full impact of the 5% loss, students make monthly forecasts of the company's financial statements, including borrowing and investing options. They create a system of financial statements that capture the impact of working capital changes beginning in the income statement and concluding in the balance sheet. The objective of the system is to maximize net interest cash flow (or minimize financing costs if interest paid exceeds interest earned). With the forecasts of the financial statements, they analyze the decision in terms of effects on operations, investible funds, liquidity, and solvency.

The shorter collection period associated with enforcing Net 30 enables the company to reduce receivables and hold higher amounts of short-term interest-bearing securities when compared to not enforcing.

While the Excel model provided evidence that the company should enforce Net 30, it does not focus on probably the most challenging aspect of the decision – estimating the resulting loss in revenue. Only experience and knowledge of customer attitudes and industry norms will lead to an accurate estimate.

Also, for exposition purposes, we limited the forecast to a one-year horizon. Since the decision involves working capital, this would appear to be sufficient. However, with the cyclical nature of the company's revenue stream, the funds held in short-term CDs might be needed to maintain liquidity in the next year. Thus, they might not be investible as we have treated them. Nonetheless, enforcing Net 30 would leave the company in a more liquid position to begin the following year.

Another area in which we found the exercise useful is entrepreneurial finance. In this application, we simplify the statements by removing the yield curve and the borrowing and investing schedules. Most of our entrepreneur program students lack the background to work with the complete model. But after a couple of class periods, we find that students are able to analyze the feasibility of their business ideas.

References

Back, P. (2001, March). Testing Liquidity Measures as Bankruptcy Prediction Variables. Liiketaloudellinen Aikakauskirja, 309-327.

Faulkender, M., & Wang, R. (2006). Corporate financial policy and the value of holding cash. Journal of Finance, 61(4), 1957-1990.

Hill, M., Maness, T., & Zietlow, J. (2017). Short-Term Financial Management (5th ed.). San Diego, CA: Cognella.

Hill, R. A. (2013). Strategic debtor management and terms of sale (1st ed.). doi:bookboon.com

Nassirzadeh, F., & Rostami, A. (2011). Studying the relationship between liquidity indices (traditional and modern) and the profitability of companies listed in Tehran Stock Exchange. Accounting and Auditing Review, 1-17.

Ng, C. K., Smith, J. K., & Smith, R. L. (1999). Evidence on the Determinants of Credit Terms Used in Interfirm Trade. Journal of Finance, 24(3), 1109-11.

After-Tax Salvage Value for Capital Budgeting Decisions – Implications of MACRS Half-Year Convention

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Capital budgeting is widely covered in finance textbooks and finance courses. A tool used in capital budgeting to determine if a project should be accepted or rejected is Net Present Value (NPV). However, NPV is dependent on the tax deduction related to depreciation, including the Modified Accelerated Cost Recovery System (MACRS), which businesses are often required to use in the preparation of tax returns. One aspect of MACRS is the use of mid-month convention, mid-quarter convention or half-year convention, particularly in disposals of assets prior to the end of their depreciable life. This paper illustrates the impact on NPV and the capital budgeting decision if the half-year convention is not correctly applied to the sale of 5-year property. Our paper shows the potential for flawed project decisions if the half-year convention is mis-applied in the year of disposal and shows how the correct application leads to more accurately based decisions.

Keywords: Capital budgeting, MACRS, half-year convention

Introduction

Capital budgeting is a topic covered in widely used finance textbooks. Most finance textbooks contain at least a chapter or two on this topic, (Brealey et al., 2018; Chambers & Lacey, 2019; Eakins, 2009; Eakins & McNally, 2021; Ross et al., 2022). Capital budgeting includes the evaluation of projects under consideration, which is one of the primary responsibilities of a financial manager. Making the right decisions on those projects, accepting projects that add value to the firm and rejecting those that do not, contributes a major element to the success of the firm itself. To arrive at those decisions, financial managers employ Net Present Value (NPV) as a primary capital budgeting tool. Generated from estimated cash flows discounted for a given level of project risk, a positive NPV indicates projects to be viable, and those with a negative NPV to be non-viable. Accordingly, as financial managers utilize the projected cash flows of projects under consideration to determine whether those projects should be accepted and executed, or rejected, it is therefore essential that those projected cash flows be as accurate as possible.

When compiling and analyzing cash flows for a potential project, managers apply depreciation rules set forth by IRS Publication 946, *How to Depreciate Property* (IRS, 2019). These rules have direct tax-impacts to the cash flows. The failure to correctly apply those rules and account for the corresponding tax-impact will lead to erroneous cash flow estimations, ultimately resulting in the possibility of a flawed project decision -- one that loses value for the firm instead of adding to it.

Most financial management textbooks review only the essentials, or provide even more cursory treatment, regarding depreciation methods. Although there are multiple options and justifications

for different methods of depreciation, finance texts generally present two: (1) straight-line depreciation, a simple method used to introduce students to the concept of allocating an asset's cost over its useful life, and (2) the Modified Accelerated Cost Recovery System (MACRS), which businesses are required to use in the preparation of tax returns. Utilizing MACRS permits more of an asset's value to be depreciated in the early years, financially advantageous when the time-value-of-money is considered.

This paper seeks to refine the use of MACRS with respect to the application of the half-year convention when used with the Net Present Value (NPV) method for capital budgeting decisions.

MACRS: The Half-Year Convention and After-Tax Salvage Value

IRS Publication 946, *How to Depreciate Property*, provides guidance on how to recover the cost of business or income-producing property through deductions for depreciation, including under the Modified Accelerated Cost Recovery System (MACRS) (IRS, 2019). This paper assumes the use of MACRS in the application of capital budgeting decisions.

One aspect of MACRS requires a taxpayer to properly select the "convention" used to identify the beginning and ending of the recovery period. The choice of convention will specify the number of months used in the determination of the amount of depreciation in the year the property is placed in service and in the year of disposal. MACRS has three different conventions: 1) mid-month convention, 2) mid-quarter convention and 3) half-year convention. The selection of the proper convention is based on the type of property (e.g., nonresidential real property, residential rental property, etc.) and the proportion of the total depreciable basis (costs) of property placed in service during the last 3 months of the year. The convention discussed in this paper is the half-year convention because it is most applicable to the Net Present Value decisions addressed in college business courses.

The half-year convention is the default choice used if neither the mid-quarter convention nor the mid-month convention is applicable. The underlying assumption driving the half-year convention is that during a tax year all property is presumed to be placed in service or disposed of at the midpoint of the tax year. Therefore, the allowable amount of depreciation during the year of acquisition or year of disposal is equal to one-half year of the depreciation that would otherwise be calculated for that year (IRS, 2019, Pub 946, pp. 34-5).

After-Tax Salvage Value (ATSV) is a variable often used in capital budgeting decisions. It represents the net cash inflow to the seller of an asset, resulting from the sale of that asset, by adjusting the sales price or market value of the asset by the tax impact of its disposal. At the time of sale, the difference between the book value and sales price either generates a gain on sale (if the sales price exceeds the book value) or a loss (if the book value exceeds the sales price). Taxes are recaptured on the excess of any gain, or a corresponding tax-credit is generated on any loss. Once the recapture tax is deducted from the sales price, (or added in the case of a tax-credit), this generates the ATSV. A concern addressed in this paper is where some finance textbooks present MACRS asset-class tables and illustrate the calculation of after-tax-salvage value (ATSV) for assets, but then entirely omit the half-year convention in instances where it needs to be applied, while other textbooks only mention it in a footnote. In Publication 946 the IRS provides tables for the half-year convention where one-half of a full year's deprecation is presented both in the year the asset is placed into service and for the last year of the asset's allowable recovery period. These tables, however, presume that the asset is held for the entire length of its allowable recovering period.

If a capital asset subject to depreciation via MACRS is taken out of service before the end of the MACRS-class life shown in the Publication 946 tables, then the IRS will also presume a half-year of use in the year the asset is withdrawn from service. Thus, only half the depreciation figure shown in the tables should be utilized in the year the asset is disposed (see "Sale or Other Disposition before Recovery Period Ends, Publication 946, page 40). Some finance textbooks do not address the sale or disposal before the end of the recovery period, nor illustrate it in examples.

The reason this may be often overlooked is that in many cases there is no impact to cash flows, as shown in Exhibit 1, columns (a) and (b), discussed later. This is because the ATSV would essentially remain unchanged. That is, if the half-year convention is not applied, the tax on capital gain or tax-credit on any capital loss (difference between market value, or sales price of the asset, and the book value) often may be offset exactly by what the tax or tax-credit would have been using the half-year convention, once the tax-credit was also taken into account for the other half-year depreciation that did not occur.

There is a situation, however, where this does not happen, and the end-result is that the ATSV changes when the half-year convention is not applied. This would adversely impact the projected cash flows that are used in computing the NPV for that project. Potential projects that financial managers analyze generally fall into one of two categories: new projects and replacement projects. This paper addresses where, under specific conditions that sometimes occur in practice, the cash flows for replacement projects may change depending on whether the half-year convention is properly applied or not. Erroneous project evaluation decisions under these conditions may occur when financial managers fail to account for IRS Publication 946 rules requiring the application of the half-year convention when an asset is withdrawn early from service, as typically occurs with replacement projects.

In this paper, we examine one example of this specific circumstance where the failure to correctly apply the half-year convention rule set forth by the IRS and account for its tax-impact will lead to erroneous cash flow estimations. Ultimately, with large-scale asset values, this could result in the possibility of a flawed project decision -- one that loses value for the firm instead of adding to it. In promoting awareness of this possibility, we seek to emphasize the importance of proper application of the half-year convention in MACRS, particularly when evaluating replacement-type projects, specifically the situation where an asset would be likely to be taken out of service early, before the end of its asset-class life.

Capital Budgeting Decisions

Capital budgeting decisions are a standard topic covered in finance courses and managerial accounting courses. Some capital budgeting decisions involve the sale of an existing asset. The amount of cash flow related to the sale of an asset is determined by the sales price and the tax-related cash flow effects. The tax aspects of the cash flow effects from disposal of an asset are primarily related to the impact of tax depreciation.

This article illustrates the impact of properly applying tax deprecation to the capital budgeting decision. Specifically, we emphasize how the proper application of Modified Accelerated Cost Recovery System (MACRS) depreciation can impact replacement-type project decisions.

Determining Depreciation Under MACRS

The basis of most business and investment property is recovered using the Modified Accelerated Cost Recovery System (MACRS) (IRS, 2019). Within MACRS are two depreciation systems; the General Depreciation System (GDS) and the Alternative Depreciation System (ADS), which both have different requirements and features. ADS may be required or elected under certain limited circumstances. GDS is the more widely followed system and the focus of this discussion.

GDS property generally has nine classifications that dictate the recovery periods, i.e., the length of time on which the depreciation is based, assuming the asset is held during the entirety of the recovery period. The classifications (recovery periods in years) are: 3-year property (3), 5-year property (5), 7-year property (7), 10-year property (10), 15-year property (15), 20-year property (20), 25-year property (25), residential rental property (27.5) and nonresidential real property (39).

The "placed in service" date is defined as "the date the property is ready and available for a specific use." Related to recovery periods and "placed in service" variables are the "convention," which establishes the number of months and thus the amount of depreciation that can be taken in the year the asset is placed in service and the year in which it is disposed. There are three conventions: 1) the mid-month convention, 2) the mid-quarter convention and 3) the half-year convention, explained next.

1) The mid-month convention is used with residential rental property, nonresidential real property and any railroad grading or tunnel bore. Under mid-month convention all property placed in service or disposed of is presumed to have occurred in the mid-point of the month.

2) The mid-quarter convention is used if the mid-month convention does not apply, and the depreciable property placed in service during the last quarter of the year is greater than 40% of all property placed in service during the year. Under this convention all property is treated as if it were placed in service and disposed of at the mid-point of the quarter.

3) The half-year convention is the default choice if neither the mid-month nor mid-quarter convention is appropriate. Under the half-year convention all property is deemed to be placed in service or disposed of at the mid-point of the year. If the half-year convention is chosen, the amount of depreciation in the year of disposal is half the depreciation amount if the asset had been retained for the entire year, i.e., half the amount shown in the MACRS table for the year of disposal.

The half-year convention is illustrated for MACRS 5-Year property as an example. Next is a table drawn from IRS Publication 946 that shows the amount of depreciation for MACRS 5-Year property under half-year convention (IRS, 2019, Table A-1, page 70). Under MACRS, 5-Year property is assumed to be depreciated from the mid-point of year 1 to the mid-point of year 6 with no salvage value; thus, under the half-year convention a MACRS 5-Year asset is depreciated over a span of six tax years assuming it is not disposed of before the mid-point of year 6.

	MACRS 5-Year
1	20.00%
2	32.00
3	19.20
4	11.52
5	11.52
6	5.76

The double-declining balance rate of 40% is presumed in year 1, found by dividing 100% by the five-year life and doubling the result. Due to the half-year convention, however, only 20% is used in year 1 as that is one-half of the double-declining balance rate of 40%. Taking the remaining 80% of book value, again dividing by five and doubling provides 32% for the year 2 depreciation rate; and the same method in years 3 and 4 generates 19.20% and 11.52% respectively. After year 4, however, the depreciation rate reverts to the straight-line rate of 11.52% since that exceeds what the double-declining balance rate would be. That is, with 28.8% remaining book value at the start of year 4, dividing by five generates a straight-line depreciation rate of 5.76% per year. Thus, doubled for years 4 and 5, depreciation is 11.52%. Finally, the asset is presumed to be disposed at the mid-point of year 6 in keeping consistent with the half-year convention, with a depreciation rate of only 5.76%, which is one-half the straight-line rate of 11.52%. The total of the table equals 100%.

If the asset is sold before year 6, however, then only half of the full-year depreciation for that year is allowed in the year of disposal. Thus, if the asset is removed from service in year 4 then only 5.76% (one-half the year 4 depreciation rate of 11.52%) is applied to determine the allowable depreciation for year 4. The half-year convention would therefore affect the book value of the asset compared to applying a full year of depreciation.

MACRS Treatment of After-Tax Salvage Value

Table 1 shows that the impact on after tax salvage value (ATSV) depending upon the assumed selling price and the depreciation convention applied. In Table 1 it is assumed an asset that cost $100,000 is placed into service during Year 1. It is further assumed that the asset is a MACRS 5-year asset subject to half-year convention in the year of acquisition, year 1, and the last year of depreciation, year 6, unless it is disposed of before year 6. For year 1, however, a depreciation rate of 20.00% is appropriately applied. The asset is sold in year 4, so under the half-year convention the depreciation for year 4 will be 5.76%, one-half the 11.52% for year 4.

A 40% tax rate is applied to this example. It is assumed all of the gains on the sale of the 5-year property would be subject to depreciation recapture and thus taxed at ordinary income tax rates. While current Federal income tax rates on business are at 21%, varied news reports have predicted that the current administration in Washington D.C. plans to increase the Federal rate to 28% (Bischoff, 2021; Cook & Davison, 2021; El-Sibaie et al., 2020; and Foster, 2021). State income tax rates vary among the 44 states that levy corporate income taxes and vary from as little 2.5% to 11.5% (Cammenga, 2021). We take a worse-case scenario of the Federal tax rate being increased to 28% and adding the highest state tax rate of 11.5%, rounding up to 40%. Our analysis would arrive at the same conclusion though, regardless of the tax rate, so long as the same rate is appropriately applied to all scenarios shown in Table 1.

The After-Tax Salvage Value (ATSV) of an asset is calculated as a relevant cash flow to be considered in capital budgeting decisions. Examples of capital budgeting decisions in some textbooks, however, include ATSV under the assumption of whole-year convention for the year of disposal instead of the half-year convention actually required by MACRS. Table 1 contrasts whole-year, columns (a) and (c), with properly executed half-year, columns (b) and (d).

Table 1

Impact on After Tax Salvage Value (ATSV) Based on Assumed Selling Price and Depreciation Convention

The example below assumes that a 5-year MACRS asset that cost $100,000 is subject to half-year convention and placed in service at the beginning of year 1, thus appropriately assuming a full year of depreciation (20.00%) in Year 1. The asset is assumed to be sold during year 4, thus when MACRS is appropriately applied is subject to 5.76% depreciation in Year 4 (11.52% X ½ year convention). A tax rate of 40% is assumed. Columns (a) and (b) assume the same selling price of $20,280 (book value in column (a) plus a stipulated $3,000 over book capital gain). Columns (c) and (d) assume different selling prices based on a stipulated $3,000 capital gain in each column over book value. After Tax Salvage Value (ATSV) is larger in column (d).

	MACRS 5-Year Property	Same Selling Price		Selling Price $3,000 above Book Value	
		(a) Depreciation Under Whole-Year Convention	(b) Depreciation Under Half-Year Convention	(c) Depreciation Under Whole-Year Convention	(d) Depreciation Under Half-Year Convention
Year 1	20.00%	$20,000	$20,000	$20,000	$20,000
Year 2	32.00	32,000	32,000	32,000	32,000
Year 3	19.20	19,200	19,200	19,200	19,200
Year of Sale -- Year 4	**11.52**	**11,520**	**5,760**	**11,520**	**5,760**
Year 5	11.52				
Year 6	5.76				
Total depreciation		$82,720	$76,960	$82,720	$76,960
Book value ($100,000 less total depreciation)		$17,280	$23,040	$17,280	$23,040
Plus $3,000 salvage value (= gain above book value)		3,000		3,000	3,000
Selling price		**$20,280**	**$20,280**	**$20,280**	**$26,040**
Less tax on capital gain ($3,000 X .4)		(1,200)		(1,200)	(1,200)
Plus tax credit on capital loss ($2,760 X .4)			1,104		
Tax credit on ½ depreciation deduction not available to shield income ($5,760 X .4)			(2,304)		(2,304)
After Tax Salvage Value		**$19,080**	**$19,080**	**$19,080**	**$22,536**

In addition, columns (a) and (b) assume the same selling price in each column, which is the book value in column (a) of $17,280 plus a $3,000 premium over book value, or a total selling price of $20,280. In column (b) the $3,000 premium over book value is ignored, instead assuming the same selling price of $20,280. In column (a) the tax on capital gain of $1,200 ($3,000 multiplied by 40%) reduces the net cash inflow from the sale to $19,080. The ATSV in columns (a) and (b) is the same despite that the book value is larger in column (b) than in column (a). The reason for this is that the impact in column (b) of the selling price ($20,280) being less than the book value ($23,040) results in a positive cash flow tax-effect of $1,104 ((selling price of $20,280 subtracted from $23,040 book value) multiplied by 40%) and the opposite effect of the $2,304 lost tax credit from the half-year of depreciation deduction that is not applied under the half-year convention ($5,760 multiplied by 40%). Thus, when examples of asset sales use the same selling price, the ATSV or net cash inflow would be the same whether whole-year or half-year convention is applied. Therein lies the potential issue.

The impact on ATSV becomes evident when the same $3,000 premium is added to the book value in both columns (c) and (d) resulting in different selling prices of $20,280 and $26,040 respectively, a more consistent approach to valuing and comparing the ATSV. The same tax on capital gain of $1,200 ($3,000 multiplied by 40%) in column (a) is applied in columns (c) and (d) and the $2,304 lost tax credit ($5,760 multiplied by 40%) in column (b) from the forgone half-year of depreciation is present in column (d). What becomes evident in comparing columns (c) and (d) is that the when the same assumption of the $3,000 premium is added to the book value under both the whole-year and half-year convention, the half-year convention results in a larger ATSV, which could impact a capital budgeting decision.

Summary

This article illustrates the impact on cash flows of half-year convention for MACRS 5-Year property depreciation compared to whole-year convention when the same premium over book value is presumed in determining the selling price. Some textbooks may not fully take this into consideration when illustrating the capital budgeting decision. We seek to emphasize its importance. Thus, the impact of half-year convention should be incorporated into any capital budgeting illustrations where half-year convention is appropriately applied to property being replaced before the end of its MACRS asset class life.

Although we address a specific case of miscalculating the ATSV for assets in a replacement project scenario, the erroneous impact to the projected cash flows from large-scale assets could be sufficient to change a positive NPV project to a negative NPV, or vice-versa. This would adversely impact firm value in causing a flawed acceptance or rejection of the project. Accordingly, we hope this refinement in the deprecation calculation in the application of NPV analysis will avoid this component from being overlooked. More emphasis on correctly applying the half-year convention when utilizing MACRS in these cases could lead to fewer inaccurately based accept or reject decisions that fail to add value to their firms.

References

Bischoff, B. (2021). TaxWatch: 10 Biden tax plans that will sail through a democratic-controlled senate — and how to prepare for them. *MarketWatch*, (Jan. 16). https://www.marketwatch.com/story/10-biden-tax-proposals-that-will-sail-through-a-democratic-controlled-senate-and-how-to-prepare-for-them-11609958777.

Brealey, R., Meyers, S., & Marcus, A. (2018). *Fundamentals of Corporate Finance, 9th ed*. McGraw-Hill.

Cammenga, J. (2021). State corporate income tax rates and brackets for 2021. *Tax Foundation*. https://taxfoundation.org/publications/state-corporate-income-tax-rates-and-brackets/.

Chambers, D. & Lacey, N. (2019). *Modern Corporate Finance, 8th ed*. FlatWorld.

Cook, N. & Davison, L. (2021). Biden eyes first major tax hike since 1993 in next economic plan. *Bloomberg*. (Mar. 15). https://www.bloomberg.com/news/articles/2021-03-15/biden-eyes-first-major-tax-hike-since-1993-in-next-economic-plan?srnd=premium.

Eakins, S. (2009.) *Finance, 3rd ed*, Pearson.

Eakins, S. & McNally, W. (2021). *Corporate Finance, 2nd ed*. FlatWorld.

El-Sibaie, A., VanAntwerp, T. & York, E. (2020). Tracking the 2020 presidential tax plans. *Tax Foundation*. (Oct. 21). https://taxfoundation.org/2020-tax-tracker/.

Foster, S. (2021). Federal Reserve: Biden's tax plan: Watch for these expanded breaks soon and possible hikes later. *Bankrate*. (Feb. 15). https://www.bankrate.com/banking/federal-reserve/biden-tax-plan-changes-how-to-prepare/.

Internal Revenue Service. (2019). Publication 946 Cat. No. 13081F: How to depreciate property; section 179 deduction, special depreciation allowance, MACRS, listed property. https://www.irs.gov/pub/irs-prior/p946--2019.pdf.

Ross, S., Westerfield, R. & Jordan, B. (2022). *Fundamentals of Corporate Finance, 13th ed*. McGraw-Hill.

Optimizing Working Capital Financing Plan: A Case of Paramount Projects Limited

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The recommendation of newly appointed auditors of Paramount Projects ushered in an unexpected dilemma for its Chief Financial Officer, Sachin Menon. The company had accepted the auditors' recommendation to switch to an input-based policy for measuring the Percentage of Completion (POC) of projects from the extant output-based policy. The likely reduction in bank financing required Menon to determine the optimal mix of sources of financing to meet Paramount's working capital requirements. Ruling out equity infusion, the board advised Menon to use Commercial Paper (CP) with a tenor of 90 days or bonds with a tenor of 3-5 years. Menon decided to model the decision as an LP problem and use the Solver application available on Excel©. The LP model allows the decision-maker to experiment with different values for the parameters and enables quantification of the trade-offs involved for the options available. This multidisciplinary case linking corporate finance and decision sciences illustrates the benefits of integrating intuition with formal analysis for managerial decisions.

Keywords: Linear programming, Optimizing working capital financing, Working capital, Excel solver, Optimization models, Revenue recognition.

Introduction

After considerable debate, Paramount accepted the suggestion of its new auditors to change its accounting policy for computing the Percentage of Completion (POC) for its construction projects. Paramount's output-based method (using milestones completed) complied with the accounting standards. However, Paramount agreed to the suggestion of the new auditors to switch over to the widely used input-based method (using costs incurred) starting the next financial year, FY 2019 (Paramount's financial year was from April 1 to March 31 of the following year. Thus, its fiscal year 2019 would begin on April 1, 2018, and ended on March 31, 2019).

The change in the accounting policy would affect several accounts and the amounts in Paramount's financial statements. As a result, some assets recorded under the new accounting policy might not qualify for bank financing. The regulation - Credit Monitoring Arrangements (CMA) of the Reserve Bank of India, the country's central bank - permitted banks to provide financing only against inventories, trade payables, and trade receivables. The existing accounting policy of Paramount recorded construction in progress for incomplete contracts as inventory. However, this item would be recorded as unbilled revenues under the new accounting policy. As the CMA did not include unbilled revenues as an asset against which banks could lend, Paramount

faced the prospect of a reduction of about ₹10 billion in bank financing for FY 2019 (₹ is the symbol for the Indian currency. The average exchange rate in 2018 was $USD 1 = ₹ 70).

Paramount's Audit Committee Chair saw the likely reduction in the bank financing as a boon in disguise. He suggested that the 'adversity' that might arise from the change in the accounting policy should be used as an opportunity to review the source mix for financing Paramount's working capital requirements. He asked Sachin Menon, the company's CFO, to suggest the appropriate source mix by taking a longer-term perspective. Menon realized that in the prevailing uncertain environment where the availability and the cost of funds varied considerably from month to month, the decision on the right source mix would be challenging.

Paramount Projects Limited

Paramount Projects Limited was a large, unlisted company in India specializing in EPC (Engineering, Procurement, and Construction) contracts. A well-known business group in India promoted the company. Six group companies owned about 75% of Paramount's stock, and a foreign private equity firm owned the remaining 25%.

Paramount specialized in executing fixed-price industrial and urban infrastructure projects, which took several years to complete. It handled all the activities, including the design, procurement, construction, commissioning, and handing over of completed projects to the clients. Paramount's senior management was proud of the company's reputation for executing projects on time with uncompromising standards for safety and sustainability.

Paramount had grown significantly under the leadership of Shyam Sundar, the company's CEO, and Sachin Menon, the CFO. Menon joined Paramount in 2008 after two decades of experience as a finance professional in companies in the infrastructure sector. After qualifying as a Chartered Accountant, Menon completed his MBA in finance. In the ten years that Menon had been with Paramount, revenues of the company had increased from ₹935 million (approximately US$133 million) in FY 2008 to ₹7.1 billion (approximately US$1 billion) in FY 2018.

Paramount's Debt Profile

Paramount's debt at the end of FY 2018 was ₹25 billion, and its stockholders' equity stood at about ₹8 billion. The financial gearing (also known as the debt-equity ratio or financial leverage) was thus 3.1 (₹25 billion / ₹8 billion). As the company had ambitious expansion plans, the financial gearing was likely to rise with increased borrowing to support growth without a commensurate increase in equity. Menon was concerned the company's AA rating for debt might deteriorate without equity infusion and, as a result, increase the cost of funds. He proposed to Paramount's board injection of fresh equity to maintain the financial gearing. The board informally sounded out the company's shareholders and concluded that they were unwilling to provide fresh equity to the company. Therefore, the board advised Menon to rely on cash flows from operations and additional borrowing to support growth.

After the collapse of several Non-Banking Finance Companies (NBFCs) in 2018, the financial markets in India witnessed tight liquidity conditions. Menon informed the board that he expected the tight debt market conditions to prevail through FY 2019 and perhaps beyond. The board advised Menon to diversify the funding sources so that the company does not rely overwhelmingly on a single source of borrowing. Menon was to ensure the availability of funds while minimizing the overall financing cost.

Financing Challenge and Working Capital Needs for FY 2019

Menon called a meeting with Seema Thomas, the Head of Corporate Finance, to discuss the company's financing decision. The meeting began with a review of Paramount's source mix at the end of FY 2018, summarized in Exhibit 1.

Exhibit 1
Paramount's Debt at the End of FY 2018

Source	Amount (₹ billion)
Banks	13
Commercial Paper	6
Bonds	6
Total	**25**

Source: Company records

Menon noted, "We will try to convince our bankers that the change in accounting policy would only change the presentation of financial statements with no effect on the company's functioning or business prospects. Therefore, they should not reduce the level of funding due to the change in the nomenclature from inventories (construction in progress) to unbilled revenues. That being said, bankers are a conservative lot. They are also bound by regulations. The banks may therefore be unwilling to lend against unbilled revenue. We have, anyway, become too dependent on bank funding. The flexibility to change the amount borrowed from banks each month is attractive. Still, we should consider increased financing from alternative sources such as commercial paper (CP) and medium-term bonds." Commercial Paper (CP) is a form of unsecured, short-term debt, typically of 90-day tenor, to finance the working capital needs.

In preparation for the meeting, Menon had asked Thomas to prepare a forecast of the cash flows from operations for FY 2019 and determine the availability of bank financing using the proforma financial statements using the new accounting policy. The difference between the cash flows and bank financing would indicate the amount to be borrowed from other sources. Thomas presented an estimate of the funds needed from external sources in FY 2019 (Exhibit 2).

Exhibit 2
Funds Requirement from External Sources for FY 2019

No.	Month	Amount (₹ billion)
1	April 2018	26.67
2	May	27.78
3	June	25.80
4	July	27.18
5	August	27.88
6	September	26.95
7	October	27.82
8	November	28.45
9	December	27.67
10	January	28.67
11	February	29.95
12	March 2019	30.45

Source: Interviews with company officials

The financing requirement varied from month to month based on the progress of the incomplete projects. The projected requirement of funds at the end of FY 2019 was ₹30.45 billion, about 20% higher than Paramount's debt of ₹25 billion at the end of FY 2018.

Turning to Thomas, Menon asked, "If the bank funding continues at the current level of ₹13 billion, we would need the remaining amount raised from the alternative sources. What is your assessment of the availability of funds and the movement of interest rates next year?" Thomas had anticipated such a question. She said, "Given Paramount's excellent credit rating (AA), short-term as well as medium-term borrowings (maturity of 3-5 years) will be available, albeit at a higher cost than last year. I also expect the overall interest rates to increase over the year." Thomas provided her assessment of the interest rates for bank borrowing, 90-day commercial paper, and bonds (medium-term tenor) for the four quarters of FY 2019 (Exhibit 3).

Exhibit 3
Projected Interest Rates, FY 2019

Source	Q1	Q2	Q3	Q4
Banks	8.20%	8.30%	8.40%	8.50%
Commercial Paper	8.00%	8.20%	8.30%	8.40%
Bonds	9.50%	9.60%	9.70%	9.80%

Source: Interviews with company officials

Effect of New Accounting Policy and Banking Regulation on Available Financing

"What would be the reduction in the bank funding due to the new accounting policy?" asked Menon. Thomas replied. "Although the amount would change from month to month, I expect a reduction of about ₹10 billion." Menon continued, "What alternative sources of financing appear reasonable to you?" Thomas suggested that the easiest course of action would be to substitute the shortfall in bank funding with Commercial Paper (CP). Responding to Thomas' suggestion Menon said, "Yes, that would be the lowest cost option. However, it would entail going to the market every three months to refinance the CPs. Given the expected tight liquidity in the market, I am not sure whether that would be desirable."

After a few minutes of contemplation, Thomas added, "I recall an analysis we had carried out last year. While the monthly need for funds fluctuated considerably, it rarely went below 70% of the average requirement during the year. As we expect interest rates to harden, we should increase our medium-term borrowing. We can also consider increasing our long-term borrowing in the future."

The projected requirement of funds at the end of FY 2019 was ₹30.45 billion, about 20% higher than Paramount's debt of ₹25 billion at the end of FY 2018. This amount will have to be funded through CPs and bonds, even if the banks generously agreed to continue to fund at the current level of ₹13 billion. Should the banks decide to reduce the funding in strict compliance with the CMA, Paramount will have to fund another ₹10 billion. Thus, the additional funds needed in FY 2019 would be between ₹5.45 billion and ₹15.45 billion. Menon and Thomas assessed that Paramount could comfortably raise another ₹3 billion through CPs and ₹9 billion through bonds (beyond the amounts outstanding at the end of FY 2018 from the respective sources).

Consistent with the above assessment, the maximum funding available from banks, CPs, and bonds for FY 2019 would be ₹13 billion, ₹9 billion, and ₹15 billion, respectively. If the banks were to reduce funding to ₹3 billion, and if the market conditions worsen in FY 2019, Menon and

Thomas decided that to ensure diversity of sources, Paramount should borrow at least ₹3 billion each from banks and CPs and ₹9 billion through bonds. The minimum and maximum funding levels from the three sources are presented in Exhibit 4.

Exhibit 4
Available Borrowing - Status Quo on Bank Funding
(Amounts in ₹ billion)

Source	Minimum	Maximum
Banks	3	13
Commercial Paper	3	9
Bonds	9	15

Source: Interviews with company officials

The challenge of finding resources would be severe if the bankers insisted on strict compliance with CMA. In that case, the maximum available bank funding would reduce to ₹3 billion. Paramount would then be required to raise the entire additional amount of ₹15.45 billion for FY 2019 through CPs and bonds. Menon and Thomas realized that Paramount would be required to go beyond the comfortable levels of additional funds raised through CPs and bonds assessed earlier. After some more deliberations, they concluded that Paramount, at the most, might be able to raise another ₹3 billion each from CPs or bonds, thereby increasing the maximum funding available from CPs and bonds to ₹12 billion and ₹18 billion, respectively. To ensure diversity of sources, they decided to specify the minimum levels of funding from banks, CPs, and bonds unchanged at ₹3 billion, ₹3 billion, and ₹9 billion, respectively. The minimum and maximum funding from the three sources in such an eventuality are presented in Exhibit 5.

Exhibit 5
Available Borrowing with Reduced Bank Funding
(Amounts in ₹ billion)

Source	Minimum	Maximum
Banks	3	3
Commercial Paper	3	12
Bonds	9	18

Source: Interviews with company officials

Financing Options and Optimization Approach

Concluding the discussions, Menon said, "Thank you for your inputs in assessing the availability of funds for the next year (FY 2019). We have the estimates of the minimum and maximum funding available from the three sources, assuming no reduction in the available bank funding (Exhibit 4). Let us derive an optimal funding plan for this baseline scenario (Option A). However, the available bank funding would likely be reduced to ₹3 billion. In this case, we will need to devise an optimal financing plan (Option B) considering the modified funding limits as assessed in Exhibit 5. In case the reduction in bank funding becomes inevitable, let us also proactively analyze two other options to bridge the funding gap: i) Option C - where the additional funds are raised entirely through CPs, if possible, and ii) Option D – where the additional funds

are raised entirely through bonds, if possible. We should analyze these options by suitably changing the maximum limits on funding through CPs and bonds.

Menon turned to Thomas and asked, "How would we minimize the cost of financing with the restriction we have spelled out?" Thomas explained that she would use Microsoft Excel©'s workbook to aid her task as she had done in the past. She said, "Using the 'data table', 'goal seek', and 'pivot table' features, I would experiment with different source-mix to arrive at the lowest cost solution. I will set up a workbook with an input section containing each source's expected interest rates and funding limits. An output section would compute the financing cost and verify whether every month's financing requirement was met. Thomas was not certain that the solution would indeed be the best. However, she believed her experience and intuition would yield good solutions to the source-mix problem.

Menon said, "The choices we need to explore now are more complex than before. I doubt your approach can deal with the multiple restrictions we must abide by to find the best solution. Can we use a different approach based on science rather than intuition? I recall a paper discussing Linear Programming (LP) for optimal working capital management from the CFO summit I attended last year. I suggest we explore using LP to solve our source mix problem. Finding a solution to LP problems has become easier with the availability of the Solver add-in in Microsoft Excel©."

Thomas had a nodding familiarity with LP, but she had not used it to address a real-world managerial problem. Using the Solver add-in in Microsoft Excel© held high hopes for Thomas but not having used it in the past made her anxious. She knew that Microsoft Excel© and coding-based tools such as Python and R are commonly used to solve LP problems. In the field of finance, these tools are used for various applications, such as investment portfolio optimization and capital budgeting decisions. Therefore, Menon's suggestion was an opportunity for Thomas to understand how to set up and solve an LP problem using commonly used business software. She had heard about the use of artificial intelligence and machine learning in solving business problems but was convinced that if a simpler technique such as Microsoft Excel© suited the nature of the problem, it would be preferable, to use simpler techniques.

Menon concluded the discussion, "Let us meet again in about two weeks. Please send me a report on your progress. I have promised the chair of the Audit Committee that I will revert to him soon."

References

Association of American colleges and Universities, the Carnegie foundation for the advancement of teaching, 2005. A statement on integrative learning. Accessed at: http://wacenter.evergreen.edu/sites/wacenter.evergreen.edu/files/statementintlearning.pdf

Leese, Wallace R. "Using Excel's Solver Function to Facilitate Reciprocal Service Department Cost Allocations." *American Journal of Business Education* (Online) 6.5 (2013): 551.

Patterson, Mike C., and Bob Harmel. "An Algorithm for using Excel Solver) for the Traveling Salesman Problem." *Journal of Education for Business* 78.6 (2003): 341-6.

Trentmann, Nina. "Bed Bath & Beyond CFO Looks to Declutter Shelves, Reduce Working Capital; Home-Goods Retailer Plans to Close 200 Stores Over the Course of Two Years and Unveil a New Store Model Later this Month." *Wall Street Journal* (Online), October 12, 2020.