CZU: 371.3:371.21+373.61 DOI: 10.36120/2587-3636.v26i4.64-72

CASE STUDY: ACTIVE LEARNING TEACHING METHOD FOR COURSES IN FINANCIAL MANAGEMENT

Eugenia BUSMACHIU, PhD, associate professor
Finance and Insurance Department, Academy of Economic Studies, Moldova
https://orcid.org/0000-0002-6640-8100
Kent T. SAUNDERS, PhD, associate professor
College of Business, Anderson University (SC), United States
https://orcid.org/0000-0003-2006-5920

Abstract. The use of case studies is an active learning teaching method that enables students to apply and analyze course material. The focus of the described case is cash flow estimation for a new project, capital budgeting decision. The case is designed to specifically consider the effects of changing exchange rates and determine ways to mitigate exchange rate risk. This case study includes discussion questions related to objectionable business activity, weighted average cost of capital, cash flow estimation, net present value calculation, exchange rate risk, and sensitivity analysis. This case is appropriate for both undergraduate and graduate courses in financial management. Additionally, this case can be used in courses in entrepreneurial finance.

Keywords: teaching method, active learning, case study, critical incident, wine industry, cash flow estimation, capital budgeting, sensitivity analysis, Moldova.
JEL classification: A20, F10, G31.

STUDIU DE CAZ: METODĂ ACTIVĂ DE PREDARE-ÎNVĂȚARE PENTRU CURSURILE DE MANAGEMENT FINANCIAR

Rezumat. Utilizarea studiilor de caz reprezintă o metodă de predare-învățare activă care permite studenților să aplice și să analizeze materialul de curs. În studiul de caz descris, accentul se pune pe estimarea fluxului de numerar pentru un nou proiect, decizia de bugetare a capitalului. Cazul este conceput în mod specific pentru a lua în considerare efectele modificării cursurilor de schimb și pentru a determina modalități de atenuare a riscului cursului de schimb. Acest studiu de caz include întrebări de discuție legate de activitatea comercială inacceptabilă, costul mediu ponderat al capitalului, estimarea fluxului de numerar, calculul valorii actuale nete, riscul cursului de schimb și analiza de sensibilitate. Cazul este potrivit atât pentru cursurile de licență, cât și pentru cursurile de master în management financiar. În plus, acest caz poate fi implementat la cursurile de finanțare antreprenorială.

Cuvinte cheie: metodă de predare, învățare activă, studiu de caz, incident critic, industria vinului, estimarea fluxului de numerar, bugetarea capitalului, analiza de sensibilitate, Moldova.

1. INTRODUCTION

Undergraduate and graduate courses in financial management include dedicated material (e.g., textbook chapters) to the weighted average cost of capital, cash flow estimation, and capital budgeting decision making. This case study provides a "real-life" application of these concepts with the additional multinational financial management consideration of fluctuating exchange rates. This case can be integrated as supplementary material in both undergraduate and graduate courses in financial management. The Excel spreadsheet used for this study is a modification and extension of the chapter 12 case study from Brigham & Houston [4].

2. LITERATURE REVIEW

At the beginning of the twenty-first century, Saunders [17] conducted the first comprehensive survey of faculty teaching methods for the undergraduate financial management course in the United States and reported that active learning teaching methods were rarely used if at all. Similar studies were conducted in Canada [6] and the United Kingdom and Ireland [8]. Hamilton and Saunders [7] updated the 2001 study and also included teaching methods in the master's level courses in financial management. Hamilton and Saunders [7] reported that teaching methods had not noticeably changed for the undergraduate course. However, they did note that the use of case discussion was more common at the graduate level (57% of faculty indicated usage) compared to the undergraduate level (20% of faculty indicated usage). The use of case studies is an active teaching method that enables students to reach higher levels of learning on Bloom's taxonomy [2]. Whether case studies are integrated as an in-class or outside-of-class activity has tradeoffs. Adams and Saunders [7] report that students found the subject of finance more interesting when participating in a student-led outside-of-class case study. Whereas, students found the course less difficult when participating in an instructor-led in-class case study.

Redmer [15] describes the distinction between a case study and a critical incident. A critical incident is a shorter and more focused "real-life" example of a business decision. The author's advocate the use of case studies/critical incidents in order to both apply and analyze the course material. Redmer [14] describes the process for writing case teaching notes from the perspective to "begin with the end in mind". The teaching notes for this case are available from the corresponding author and follow the outline advocated by Redmer [14]:

> critical incident, learning objectives, intended courses, suggested teaching approach, research method, relevant theory, discussion questions, Excel template, suggested answers to discussion questions, and disclaimer.

The production and distribution of alcohol is somewhat controversial. The production and distribution of alcohol was banned in the United States from 1920 to 1933 during Prohibition. Today, several environmental, social, and governance themed exchange traded funds specifically exclude businesses that are involved in the production and distribution of alcohol from their funds. Three example funds are the Vanguard ESG International Stock ETF [19], the Nuveen ESG Small-Cap ETF [13], and the Inspire International ESG EFT [10]. Saunders [16] uses the production and distribution of alcohol as an example of the type of good or service where there are differing opinions on what constitutes an objectionable business activity. The production and distribution of wine is specifically included in this case study in order to illicit discussion and consideration of the types of activities that a business owner may or may not consider objectionable.

3. CASE STUDY

Case Introduction

Chrissie is a 55-year-old American art teacher who lives in upstate South Carolina. Chrissie has worked as a public-school teacher for thirty years and is interested in a change. Chrissie has a part-time, online, hand-crafted pottery business. Chrissie recently inherited $300,000 and took a vacation to Moldova. While on her vacation, she toured the Cricova, Mileştii Mici, and Purcari wineries. She fell in love with Moldovan wine. When Chrissie returned to the USA, she noticed a store location offered for sale at a price of $300,000. Chrissie is contemplating retiring from teaching to expand her online pottery business to a physical store location where she would sell both hand-crafted pottery and imported wine from Moldova.

Moldova and the Wine Industry

Moldova is a small Eastern European country with a population less than three million. Moldova has been an independent country since 1991 when the Soviet Union dissolved. Although Moldova has been known as the poorest country in Europe, it has a rich and complicated history. One of the things that Moldova is most well-known for is wine. The Mileştii Mici Winery has more than 124 miles of limestone tunnels which house the largest wine collection in the world according to the Guinness Book of World Records. The Cricova Winery is the second largest winery in Moldova and famously hosted Russian president Vladimir Putin's 50th birthday. Both the Cricova and Mileştii Mici wineries are located near Chisinau which is the capital of Moldova. The underground tunnels were originally created to extract limestone to help build Chisinau during the 1500's. Chisinau was heavily bombed during World War II. After World War II, more tunnels where created to help rebuild Chisinau. It wasn't until after the 1950s that the tunnels were converted into wine cellars. Whereas, Cricova and Mileştii Mici are state-owned, Purcari Wineries is a publicly traded company with shares traded under the ticker WINE on the Bucharest stock exchange. Purcari was established in 1827 and is known to be a favorite of the British royal family with Queen Elizabeth II regularly placing orders [9, p. 2].

The 2020 COVID pandemic had a negative effect on the global wine industry including Moldova. However, the total volume of wine produced in Moldova that was sold to foreign markets increased by 10% in 2019 compared to 2018 [18]. According to Gaina, Fedorchukova, & Gobirman [3], Moldovan wines are primarily exported to Romania, the Czech Republic, Germany, Poland, China, the United States, and Canada. Figure 1 displays the total production of Moldovan wine industry products from 2008 through 2020. Grape wine and sparkling wine dominate in terms of volume and the production of both have increased over this time interval. Port, Madeira, Sherry, and other wines have noticeably decreased over this time interval.

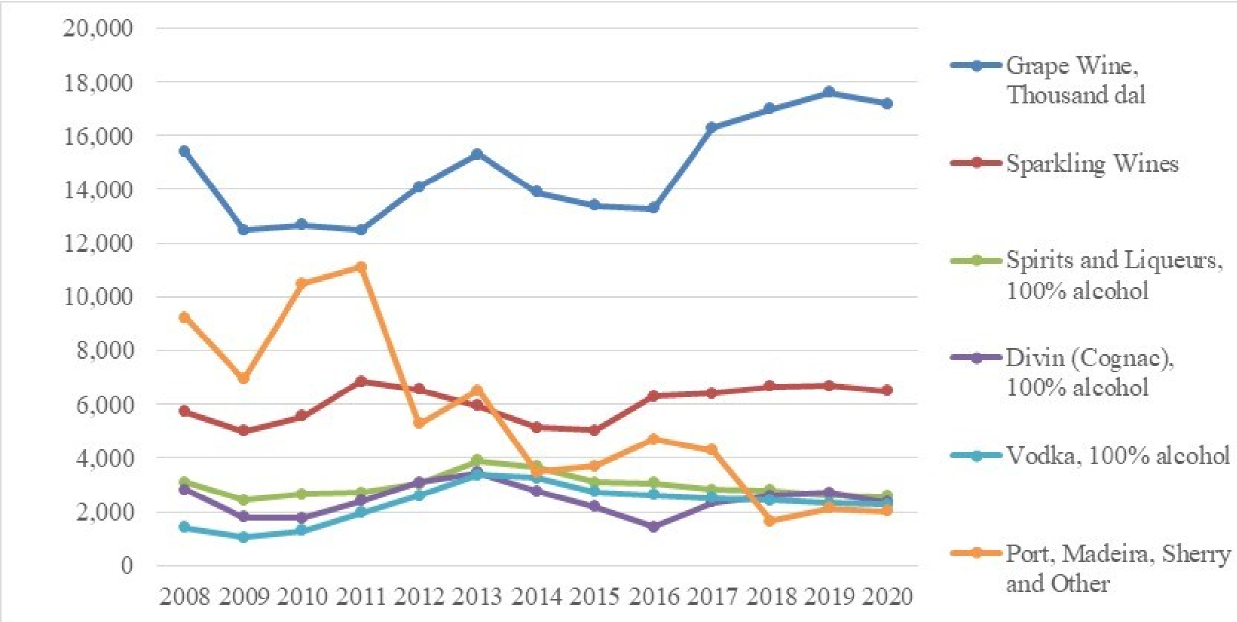

Figure 1. Moldovan Wine Industry Production from 2008 to 2020 (measured in thousands of liters except for Grape Wine)

Source: National Bureau of Statistics of the Republic of Moldova [12]

The exchange rate between the Moldovan leu and the U.S. dollar has changed dramatically since 1994 when data first became available. The all-time high MDL/USD was 20.31 in January of 2016 and the all-time low was 4.06 in July of 1994. Figure 2 from CEIC Data [5] shows the MDL/USD for a recent 10-year period from October of 2009 through October of 2019. In this recent 10-year period the MDL/USD has varied from a low around 11 to a high around 20.

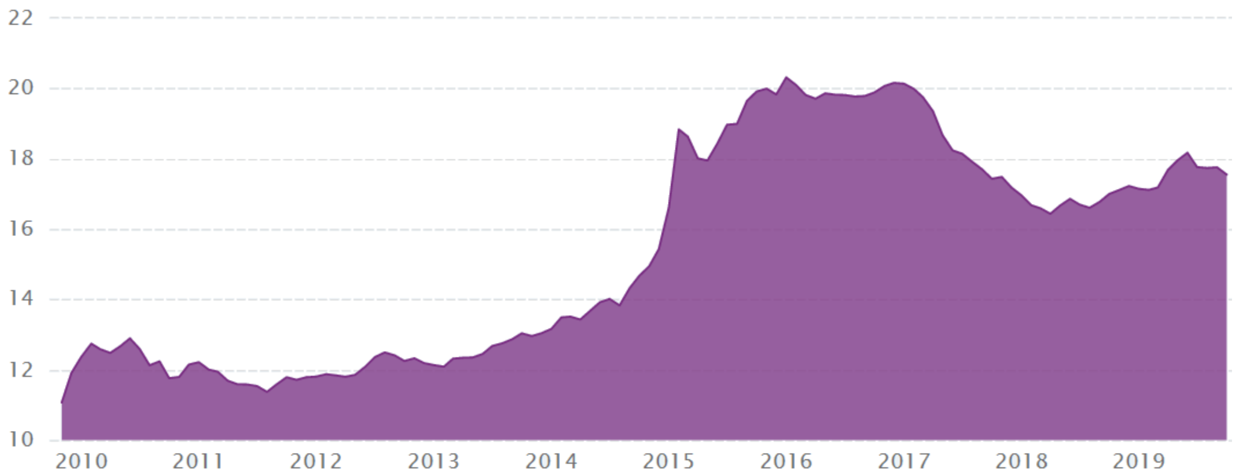

Figure 2. MDL/USD from October of 2009 through October of 2019

Source: CEIC Data (2021) [5]

Case Assumptions

Chrissie currently earns a yearly salary of $40,000 and has a marginal tax rate of 20%. If she were to proceed with the full-time physical store location for her business she would retire from teaching. Chrissie would forsake her art teacher salary; however, she anticipates that net revenue from her pottery sales would increase by $24,000 per year. Chrissie has a Fair Isaac Corporation (FICO) credit score above 800 and could borrow funds to purchase the store. Chrissie currently has $325,000 in her checking account (primarily from her inheritance). Thus, Chrissie would not have to borrow any money to purchase the store with cash. The Modified Accelerated Cost Recovery System (MACRS) with a life of 20 years is the appropriate tax depreciation system for the store. The depreciation rates from the Internal Revenue Service [11] are shown in Table 1 below.

Table 1. MACRS Depreciation Rates

Year	Depreciation rate for recovery period					
	3-year	5-Year	7-year	10-year	15-year	20-Year
1	33.33%	20.00%	14.29%	10.00%	5.00%	3.75%
2	44.45	32.00	24.49	18.00	9.50	7.219
3	14.81	19.20	17.49	14.40	8.55	6.677
4	7.41	11.52	12.49	11.52	7.70	6.177
5		11.52	8.93	9.22	6.93	5.713
6		5.76	8.92	7.37	6.23	5.285
7			8.93	6.55	5.90	4.888
8			4.46	6.55	5.90	4.522
9				6.56	5.91	4.462
10				6.55	5.90	4.461
11				3.28	5.91	4.462
12					5.90	4.461
13					5.91	4.462
14					5.90	4.461
15					5.91	4.462
16					2.95	4.461
17						4.462
18						4.461
19						4.462
20						4.461
21						2.231

Source: Internal Revenue Service (2021)

In addition to the store, Chrissie would need to purchase two 300 capacity wine cellars to store her wine inventory. The wine cellars cost $6,000 each. The 2017 Tax Cuts and Jobs Act in the United States changed the appropriate depreciation system for the wine cellars. Chrissie would be able to use 100% depreciation at the time of purchase. Thus, the time zero cash flow related to the purchase of the wine cellars would be equal to the capital expenditure multiplied by (1 – Chrissie’s marginal tax rate).

Chrissie estimates that she can sell 200 bottles of wine per month for $19 per bottle. She would import the wine from Moldova to the rail served Inland Port in Greer, South

Carolina. She estimates the transportation cost to be $500 per case of 300 bottles. The cost of wine is estimated to be 100 Moldovan leu per bottle and the current exchange rate is 17.50 Moldovan leu per U.S. dollar. Chrissie plans to start with an initial inventory of 600 bottles and then import 600 bottles every three months. The total time zero increase in net operating working capital is estimated to be $5,000. Chrissie believes that she can sell the store in ten years for $600,000 and then retire.

Discussion Questions

- Would you find it acceptable to work for or own a business involved in the production and distribution of alcohol?
- Even though Chrissie has enough money to pay cash for the store, what are some of the costs and benefits of securing a bank loan for some or all of the initial cash outlay?
- What is the opportunity cost of using cash to purchase the store rather than investing the funds in the U.S. stock market?
- What are some considerations that an entrepreneur should contemplate when determining the weights of debt and equity for a capital budgeting project?
- What happens to the net present value of the project when the weighted average cost of capital increases/decreases?
- What happens to the net present value when there is inflation in the U.S.? Moldova?
- What happens to the net present value when the U.S. dollar appreciates/depreciates relative to the Moldovan leu?
- What are some actions that could be taken by the entrepreneur to mitigate the risk of fluctuating exchange rates?
- How can you quantify the non-pecuniary benefits of owning your own business and being your own boss into the net present value analysis?
- Should Chrissie purchase the store and import Moldovan wine?

Capital Budgeting Excel Template

Depending on the experience of the students, an Excel template may or may not be provided for students to conduct their analysis. Similarly, whether or not the formulas are included in the cells can be determined at the discretion of the instructor. Table 2 displays a screenshot of the Excel spreadsheet used for cash flow estimation, net present value calculation, and sensitivity analysis based on a specific set of assumptions (listed in the shaded cells). The cash flow estimation process includes the initial cash outlay for the store and equipment along with an increase in net working capital at time 0, estimation of the operating cash flows as earnings before interest and taxes multiplied by (1 – marginal tax rate), and the end of project cash flows including the net salvage value and the return of operating working capital.

As with most cases, there is room for disagreement and discussion of the underlying assumptions and resulting conclusions. The complete teaching notes which include suggested answers to the discussion questions and the Excel template shown in Table 2 are available from the corresponding author.

Table 2. Suggested Excel Template

Weighted Average Cost of Capital	8.10%			Net Present Value	$6,089.80	
Increased Pottery Net Revenue per Year	$24,000.00			Internal Rate of Return	8.34%	
Opportunity Cost of Lost Salary per Year	$40,000.00			Modified Internal Rate of Return	8.31%	
Cost of Store	$300,000.00					
Cost of Two 300 Bottle Wine Cellars	$12,000.00					
Increase in Net Operating Working Capital	$5,000.00					
Marginal Tax Rate	20.00%					
Sale Price of Store in 10 years	$600,000.00					
Unit Sales of Wine Per Year	2,400.00					
Price per Unit of Wine	$19.00					
Cost per Unit of Wine in MDL	MDL 100.00					
MDL/USD Exchange Rate	17.50	17.50	17.50	17.50	17.50	17.50
Cost per Unit of Wine in USD	$5.71	$5.71	$5.71	$5.71	$5.71	$5.71
Transportation Cost for Wine per Year	$4,000.00					
Depreciation Rate for Store for each Year		3.750%	7.219%	6.677%	6.177%	4.461%
Store Depreciation per Year		$11,250.00	$21,657.00	$20,031.00	$18,531.00	$13,383.00
Store Book Value		$288,750.00	$267,093.00	$247,062.00	$228,531.00	$140,538.00
	Year 0	Year 1	Year 2	Year 3	Year 4	Year 10
Cost of Store	-$300,000.00					
Cost of Wine Cellar * (1-Marginal Tax Rate)	-$9,600.00					
Increase in Net Operating Working Capital	-$5,000.00					
Wine Marginal Revenues		$45,600.00	$45,600.00	$45,600.00	$45,600.00	$45,600.00
Pottery Marginal Revenues		$24,000.00	$24,000.00	$24,000.00	$24,000.00	$24,000.00
Wine Marginal Costs		$17,714.29	$17,714.29	$17,714.29	$17,714.29	$17,714.29
Foregone Salary		$40,000.00	$40,000.00	$40,000.00	$40,000.00	$40,000.00
EBITDA		$11,885.71	$11,885.71	$11,885.71	$11,885.71	$11,885.71
Depreciation		$11,250.00	$21,657.00	$20,031.00	$18,531.00	$13,383.00
EBIT		$635.71	-$9,771.29	-$8,145.29	-$6,645.29	-$1,497.29
EBIT(1-Marginal Tax Rate)		$508.57	-$7,817.03	-$6,516.23	-$5,316.23	-$1,197.83
EBIT(1-Marginal Tax Rate) + Depreciation		$11,758.57	$13,839.97	$13,514.77	$13,214.77	$12,185.17
Sale Price of Store in 20 years						$600,000.00
Tax on Sale						$91,892.40
Net Salvage Value						$508,107.60
Return of Net Operating Working Capital						$5,000.00
Total Free Cash Flows	-$314,600.00	$11,758.57	$13,839.97	$13,514.77	$13,214.77	$525,292.77

4. CONCLUSION

The use of case studies is an active learning teaching method that enables students to apply and analyze course material. The primary benefit of using case studies to teach the course material is that the case assumptions provide a “real-life” common point of reference to conduct sensitivity analysis and see how changes in assumptions lead to changes in results and decisions. This case study includes discussion questions related to objectionable business activity, weighted average cost of capital, cash flow estimation, net present value calculation and exchange rate risk. This case is appropriate for both undergraduate and graduate courses in financial management.

Acknowledgements

The paper is the result of common analysis with equal contribution from each author.

References

1. ADAMS, S.; SAUNDERS, K. T. A Pedagogical Comparison between the Use of Instructor-Led In-Class Cases and Student-Led Out-of-Class Cases. *Journal of Economics and Finance Education,* 2007. No. 6(2), pp. 39-47. https://www.economics-finance.org/jefe/fin/AdamsSaunderspaper.pdf
2. BLOOM, B. S.; ENGLEHART, M. D.; FURST, E. J.; HILL, W. H.; KRATHWOHL, D. R. *Taxonomy of Educational Objectives: The Classification of Educational Goals, Handbook I: Cognitive Domain*. David McKay Company, 1956.
3. GAINA, B.; FEDORCHUKOVA, S.; GOBIRMAN, G. Development of grapes and wine-making industry of Moldova on the basis of modern achievements of science and innovations. Published in: *Agrarian Economy and Rural Development - Realities and Perspectives for Romania*, 19 November 2020. Vol. 11, pp. 219-223. ISSN 2668-0955, ISSN-L 2285-6803: https://mpra.ub.uni-muenchen.de/106350/
4. BRIGHAM, E. F.; HOUSTON, J. F. *Fundamentals of Financial Management, 16th Edition*. Cengage, 2022.
5. CEIC Data, 2021. https://www.ceicdata.com/en/indicator/moldova/exchange-rate-against-usd
6. FAROOQI, N.; SAUNDERS, K. T. A Note on Teaching Methods: The Canadian Experience. *Advances in Financial Education*, 2004. No. 2, pp. 52-56. https://ssrn.com/abstract=2868728
7. HAMILTON, J. G.; SAUNDERS, K. T. An Update of Teaching Methods and Evaluation in the Introductory Finance Classroom. *Advances in Financial Education*, 2009. No.7, pp. 86-100. https://ssrn.com/abstract=2868758
8. IQBAL, A. M.; FAROOQI, M. N.; SAUNDERS, K. T. Teaching methods and assessment techniques used for the introductory level undergraduate finance course in British and Irish universities. *Journal of Economics and Finance Education*, 2006. No. 5, pp. 47–61. https://www.economics-finance.org/jefe/fin/Saunderspaper.pdf
9. HAYNES, R. *Moldova: A History*. Bloomsbury Publishing, 2020.
10. Inspire International ESG ETF, 2021. https://www.inspireetf.com/wwjd

11. Internal Revenue Service, 2021. https://www.irs.gov/publications/p946
12. National Bureau of Statistics of the Republic of Moldova, 2021. https://statbank.statistica.md
13. Nuveen ESG Small-Cap ETF, 2021. https://www.nuveen.com/en-us/exchange-traded-funds/nusc-nuveen-esg-small-cap-etf
14. REDMER, T. A. O. Research Opportunities Featuring Christian Businesses: Case Teaching Notes, Tackling the Hard Part First. *Christian Business Academy Review*, 2019. No. 14(1). https://cbfa-cbar.org/index.php/cbar/article/view/501
15. REDMER, T. A. O. Critical Incidents Featuring Christian Businesses: New Research and Publication Opportunities for CBFA Faculty. *Christian Business Academy Review*, 2018. No. 13(1). https://cbfa-cbar.org/index.php/cbar/article/view/483
16. SAUNDERS, K. T. Biblically Responsible Investing in the (New?) Kingdom Economy. *Christian Business Review*, 2021. No. 10, pp. 24-36. https://www.yumpu.com/en/document/read/65871935/christian-business-review-2021-the-new-kingdom-economy/24
17. SAUNDERS, K. T. Teaching Methods and Assessment Techniques for the Undergraduate Introductory Finance Course: A National Survey. *Journal of Applied Finance*, 2001. No. 11, 2001. https://ssrn.com/abstract=285567
18. ŠILHÁNKOVÁ, K. The success of the Moldovan wine industry in 2019 and the bright prospects for the future. *Embassy of the Czech Republic in Moldova*, 2020. https://www.mzv.cz/chisinau/ro/relatiile_dintre/succesul_industriei_viti_vinicole.html
19. Vanguard ESG International Stock ETF, 2021. https://investor.vanguard.com/etf/profile/vsgx