The Pedagogy of Financial Leverage: Using a "Hook" to Improve Learning

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ABSTRACT

The past few years have seen the emergence of a distinct literature concerned with the pedagogy of finance. One area of particular interest is the effective teaching of the concept of financial leverage. This paper presents an overview of some considerations pertaining to the initial presentation of financial leverage to the undergraduate business student. The paper begins by providing a review of the most common teaching approaches as evidenced by prominent introductory finance textbooks. Next, an alternative streamlined initial presentation is discussed which can serve as an effective "hook" when the concept of financial leverage is presented.

Introduction

One of the more common organizational principles for any type of presentation is to segregate the session into three distinct parts; the introduction, the body, and the conclusion. This is also a common organizational principle for academic lectures. Although not all Business faculty members have had formal pedagogical training, many use this general approach to structure their classroom presentations.

In discussions of pedagogical technique, it is common to suggest that course material be partitioned into topic "modules" which may last more than a single class period. These modules become the structure of the presentation of the course material. Each module, in turn, should be comprised of an introduction, a main body, and a conclusion. Pedagogical experts frequently suggest that the introduction contain a "hook" to stimulate the students' interests and convince them that the new topic is worthy of their attention [Small, 2000].

To be effective, the "hook" must be concise, easily understandable, and show the relevance of the new topic to the listener's world. A story, a relevant newspaper article, a concise numerical example, a video clip, a song, or even a joke can serve as the hook. The hook must somehow convey the relevance, thus importance, of the issue and must offer a glimpse or hint of the fuller ramifications. Once the listener is convinced of the value of the material, the presenter can move on to the details which are necessary for a full working understanding of the concept.

Hooks are relatively easy to devise for social and political topics due to the constant stream of media coverage of current events. In contrast, devising hooks for technical, mathematical, and financial material tends to be much more challenging. However, the more complex, intricate, and, perhaps, potentially boring the material, the more valuable a good hook becomes. Finance and accounting concepts are surely in this category, and financial leverage, the topic of this paper, is clearly a fine example.

The use of financial leverage to impact corporate rates of returns and corporate values is one of the clear examples in which financial management theory has found its way out of academia and has become an established technique of financial management in practice. Nonetheless, experience has shown the impact of financial leverage to be one of the more difficult concepts for beginning students of corporate financial

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management to grasp. Perhaps this difficulty arises from the apparent conflict that students feel when first confronted with the idea that debt, in certain circumstances, can be good. Certainly, many parents have counseled their children to avoid financial indebtedness if possible. Perhaps, too, the background complexity of financial statements and valuation models makes a cursory understanding difficult.

The instructional issue typically arises at the introductory finance course level. This may occur in the planned course module on financial leverage or earlier in the course when a perceptive student recognizes the issue during the presentation of some other topic related to or impacted by financial leverage.

In many introductory financial management course outlines, the use of financial ratios to analyze financial statements is presented before the financial leverage module is presented. Naturally, this entails the presentation and interpretation of debt management ratios such as the total debt ratio and the equity multiplier. At this point in the course, a student often asks a question to the effect of "If the company is really strong, why would they want to have any debt at all?" Even if the extended DuPont equation (which incorporates financial leverage by way of the inclusion of the equity multiplier) had previously been covered in class, many students will still feel uncomfortable with the idea that "debt can be good." In this instance, a good financial leverage hook can provide a quick glimpse of the essence of the issue, and the instructor can usually then successfully postpone a full discussion by promising further detail later in the course.

If the issue does not arise prior to the financial leverage course module, then the hook will serve its designed role within the introductory segment of that module. As discussed in more detail below, the typical introductory finance textbooks cover financial leverage through the venue of a well-developed and intricate example of otherwise identical firms with different levels of financial leverage. Most often, the textbook example demonstrates an increase in the expected value of some measure of equity return with higher degrees of financial leverage. Frequently, an increase in the variability (riskiness) of the expected return is demonstrated using a comparison of the ranges of outcomes for the unleveraged and the leveraged firms. As often as not, the textbook's example will extend to an EBIT-EPS analysis in which the break-even level of EBIT is calculated. Some texts extend the example even further to include the maximum value of the implied stock prices and, in some cases, the value of the firm. If this type of extended, fully detailed example is also to serve as a substantial portion of the main body of the financial leverage course module, a good "hook" in the module's introduction is clearly in order. That is, the hook can catch the attention of the students and energize the students before the instructor launches into the full presentation.

It seems clear that this particular instructional situation is also one in which the documented differences in prevalent personality types among business students and business professors is relevant. Data collected by both the *Center for Applications of Psychological Type* and the *Georgia State University Master Teaching Program* clearly and consistently indicate these differences.[2] A complete discussion of the extant personality type research is beyond the scope of this paper. However, a reasonable summary would stress that the typical business professor prefers to think from the abstract to the concrete, while the typical business student learns best when thinking from the concrete to the abstract. Further, while the typical business professor prefers to work from the general to the specific, the typical business student prefers the opposite. The implication is that frequently, by force of personality, business professors will structure their lectures (and write their textbooks) in a suboptimal way relative to the goal of student learning.

In the case of the financial leverage course module, beginning the presentation with a short, self-contained numerical example serving as the "hook" can bridge the gap between the student's preferred cognitive style and the need to present a detailed comprehensive example to explain the full complexity of the management issue. If student learning styles are considered, the literature suggests that a business professor should start with the specific and concrete, then expand to the more general and abstract.[3] This accommodation can be

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[2]Summaries of the data available from these two sources are available from the lead author on request. Both sources use the Myers-Briggs Type Indicator, finding a majority of professors are INTJ personalities, while the majority of students are ESTJ personalities. The preferred learning styles referred to in this paper are those implied by these well established personality types.

[3]Sources such as Filbeck and Smith [1996], Wolk and Nikolai [1997], and Wheeler [2001] report personality type and learning style differences between business students and business professors. These sources also discuss the pedagogical implications of the differences.

very beneficial and does not displace the larger educational goal of helping the students develop their abstract reasoning skills.

The authors of this paper, along with earlier authors, contend that the typical fully developed two-firm example of financial leverage impacts is likely to be ineffective as a first presentation given prevailing business student personality types. Specifically, the typical extended textbook example may be unnecessarily complex for the initial presentation of the concept of financial leverage. Thus, a more concise and intuitive presentation, or hook, using rate of return indifference points should be used as a bridge into the more comprehensive coverage.

Literature Review

Although journals covering pedagogical issues pertaining to finance have now been in circulation for several years, articles directly addressing the initial presentation of financial leverage are few. Three article directly addressing the issue are Liang and Singh [2001], Burney, Boyles, and Marcis [2001], and Luoma and Spiller [2002].

Liang and Singh [2001] assert that the typical simplified financial statement approach used in textbooks fails to focus on the key issues and may lead to student confusion by introducing additional details that must also be explained. They offer a break-even point implied by the typical EBIT-EPS analysis used in many textbooks. Liang and Singh contend the break-even point suggests a straightforward cost of funds perspective that students can easily understand. Although Liang and Singh state their indifference point in terms of operating ROI, they demonstrate the decisions suggested by their criterion are identical to those found using examples which rely on break-even EPS analysis and the associated assumptions concerning numbers of shares outstanding.[4]

Burney, Boyles, and Marcis [2001] discuss the use of the common comparative financial statement approach when the example statements are developed ad hoc during a spontaneous explanation of financial leverage which may arise before capital structure is formally addressed in the course. The authors point out that unintended counterproductive results may arise when such an ad hoc example is not properly structured with respect to interest rates and returns on equity. In their paper, reference is also made to the indifference point for capital structure changes as being defined relative to the Basic Earning Power (BEP) ratio, which is identical to Liang and Singh's operating ROI.

Luoma and Spiller [2002] discuss teaching financial leverage in the context of accounting education. Primarily arguing for specific coverage of financial leverage in introductory accounting textbooks, they essentially introduce the multi-case simplified financial statements approach common in finance textbooks to their intended audience of accounting educators. Luoma and Spiller acknowledge that such material is usually given an entire chapter in prominent finance textbooks, but express concern that the lack of coverage in introductory accounting textbooks does not communicate the importance of the issue to financial managers who may take only the typical introductory level two course sequence in accounting. Their treatment of the issue is of interest to finance professors primarily because of its inclusion of relevant common accounting terminology (for example, "leverage benefit to common shareholders").

All three of these articles discuss the introduction of financial leverage concepts using examples based on accounting rates of return. Furthermore, none of these papers suggest incorporating the market value effects of financial leverage into the initial introduction of the financial leverage concept to undergraduate finance students.

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[4]Liang and Singh [2001] demonstrate that this indifference point occurs when the interest rate is equal to EBIT/TA which is commonly known as either Basic Earning Power or Operating ROI.

A Typical Comprehensive Financial Leverage Example

Finance educators have developed various approaches to introduce the topic of financial leverage. Clearly, the dominant approach is to present the student with two sets of sample income statements and balance sheets. These representative financial statements are structured so that the impact of adding financial leverage can be clearly seen to increase both the expected level of, and volatility of, equity returns as measured by EPS or ROE. Although the risk-return tradeoff is clearly evident, the valuation implications may not initially be as apparent to the typical student.

The typical scenario includes an adequately complex firm with a balance sheet and income statement for each of the two cases. A discrete probability distribution is often assumed which allows the outcomes to be described using basic statistics, specifically the expected value and standard deviation of return on equity.

The example may be summarized in the format of net income, EPS, or ROE, although there appears to be a preference for the use of examples framed in terms of EPS among those textbooks reviewed. The key component is that the two cases, or firms, differ only by the amount of debt. Their operations are assumed to be identical, with identical EBIT.

In the initial presentation of the example, no market value data is provided. Total assets are assumed fixed. If a number of shares outstanding is given, the book value per share is assumed constant, and any implied repurchase of shares does not affect the book value per share. Clearly, for this type of example to hold up to even student scrutiny, some assumption concerning share value, number of shares outstanding, and the total amount of equity must be made. For example, in order for total assets to remain constant, the implied assumption is that shares are repurchased with the new debt.

A fine and typical example of this approach is one used in the introductory textbook by Besley and Brigham. This is presented in Table 1. The example gives the financial statements of a hypothetical firm under two different capital structures - one with no debt and one with a fifty-fifty debt-equity mix. Notice in the example that a rudimentary discrete probability distribution is included, so that the uncertainty of outcomes and the risk-return tradeoff is included. In this example, the EPS of the leveraged firm is greater, but with a larger standard deviation indicating the greater risk faced by the leveraged firm's equity investors.[5]

Table 2 presents an extension of the basic example which is intended to show the related stock price impacts. This extension of the example uses the earnings per share discounted cash flow model to compute an implied stock price (value). In the extension, specific assumptions concerning the cost of capital as a function of financial leverage lead to an optimal amount of debt with respect to the maximization of share price. This example shows that, ceteris paribus (and example specific assumptions met), the highest per share stock value need not occur at the highest per share earnings.[6]

In some textbook presentations of financial leverage, <u>operating leverage</u> is interwoven with financial leverage. However, this joint presentation is more common at the intermediate finance textbook level. If operating leverage is introduced, the basic two case example becomes a three case example with low operating leverage, high operating leverage, and high operating leverage with financial leverage. In the authors' experiences, this approach may actually add to student confusion. For example, students may

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[5]At this point, it is worth noting the complexity which arises given the potential for variations in the number of shares outstanding among otherwise identical firms. The alternative would be to focus on equity's value in aggregate. It may be that textbook examples that incorporate per share value (which no doubt is intended to give the student a more concrete reference point) may actually lead to student confusion in later presentations of the more abstract and complex theoretical financial leverage literature in the vein of Modigliani and Miller.

[6]This type of example can be even further extended to include firm valuation. In such an extension, the assumption might be made that the repurchased shares will be bought at a price suggested by the Discounted Cash Flow valuation model, using the rate of return implied by the Capital Asset Pricing Model (CAPM). A good example of this type of extension must ensure that the relationships are true to the Discounted Cash Flow valuation of stock and the CAPM. See Brigham and Daves [2007], p. 533 for an example.

Table 1: Typical Leverage Example Using Financial Statement Approach

Besley and Brigham: Essentials of Managerial Finance, 13th ed.(2005), p.386

EPS based leverage Example

Income Statement
(thousands of dollars except per-share figures)
Calculation of EBIT

Prob. of Indicated Sales	0.2	0.6	0.2
Sales	100.0	200.0	300.0
Fixed Costs	(40.0)	(40.0)	(40.0)
Variable Costs (.6 of	(60.0)	(120.0)	(180.0)
Total Costs	(100.0)	(160.0)	(220.0)
EBIT	0.0	40.0	80.0

(thousands of dollars except per-share figures)

Case I with TD/TA=0   ***Case I Balance Sheet***

Interest	0.0	0.0	0.0	Current Assets	100 Debt	0
EBT	0.0	40.0	80.0	Fixed Assets	100 Com.	200
Taxes (.40)	0.0	(16.0)	(32.0)	Total Assets	200 Total L&E	200
Net Income	0.0	24.0	48.0			
EPS (10,000 shares)	*0.00*	*2.40*	*4.80*	(10,000 shares at $20 per share)		
Expected EPS		*2.40*				
Std. Deviation of EPS		*1.52*				
Coefficient of Variation		*0.63*				

Case II with TD/TA=.500   ***Case II Balance Sheet***

Interest (.12 x $100,000)	(12.0)	(12.0)	(12.0)	Current Assets	100 Debt	100
EBT	(12.0)	28.0	68.0	Fixed Assets	100 Com.	100
Taxes (.40)	4.8	(11.2)	(27.2)	Total Assets	200 Total L&E	200
Net Income	(7.2)	16.8	40.8			
EPS (5,000 shares)	*(1.44)*	*3.36*	*8.16*	(5,000 shares at $20 per share)		
Expected EPS		*3.36*				
Std. Deviation of EPS		*3.04*				
Coefficient of Variation		*0.90*				

Table 2: Typical Leverage Example Extended to Show Stock Price Impacts

***Besley and Brigham: Essentials of Managerial Finance, 13th ed.*(2005), p.390**

Financial Leverage and Stock Price

% Debt/Assets	% Equity/Asset	% Kd	E(EPS)	Beta	% Ks	Price	P/E Ratio	WACC %
0	100	0	$2.40	1.5	12	$20.00	8.33	12.00
10	90	8	$2.56	1.55	12.2	$20.98	8.20	11.46
20	80	8.3	$2.75	1.65	12.6	$21.83	7.94	11.08
30	70	9	$2.97	1.8	13.2	$22.50	7.58	10.86
40	60	10	$3.20	2	14	*$22.86*	7.14	10.80
50	50	12	*$3.36*	2.3	15.2	$22.11	6.58	11.20
60	40	15	$3.30	2.7	16.8	$19.64	5.95	12.12

mistakenly conclude that financial leverage arises when operating leverage is increased.[7] The authors suggest keeping the two concepts separate, at least during the first undergraduate exposure.

It is notable that the inclusion of both operating leverage and financial leverage in the same discussion would appeal to the prevailing professorial cognitive style of preferring to reason from the general to the specific. That is, such a cognitive style would see leverage of any sort having similar impacts, so a discussion including two types of leverage would be expected to enhance learning. In profound contrast, a cognitive style preferring to reason from the specific to the general might result in the dual leverage type presentation impeding instead of enhancing learning.

The Hook: A Simplified Preliminary Financial Leverage Example

The goal of the presentation of financial leverage in the introductory finance course is to impart in the students - typically from all majors within business administration - an appreciation and general understanding of the impact debt financing can have on the performance of the firm. The financial leverage hook is a simplified numerical example using hypothetical financial statements. This example is presented in Table 3. The complexity of the financial statements is kept to a minimum and the example is limited to two cases - unleveraged firm (all equity financing) and leveraged firm (debt-equity mixed financing). The two cases are identical except for financing, so operating profit (EBIT) is the same in both cases. This is important, since the idea is to clearly convey that the difference in shareholder return is based on financial leverage alone. Neither probability distributions nor valuation impacts are included. The idea is to keep the example self-contained and streamlined so that it may be fully presented in a very short time. The goal is to demonstrate that something important is occurring and to capture the attention of the students.

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[7]This tendency to mistakenly link increases in operating leverage with increased financial leverage persists even in many upper-level financial management classes, suggesting the linking of operating leverage and financial leverage concepts in common examples may be ill-advised throughout the undergraduate curriculum.

Table 3: Example of Simplified Financial Statement Approach

	Case 1 All Equity Funding	Case 2 Financially Leveraged
INCOME STATEMENT (12/31/06)		
Sales	100	100
Cost of Goods Sold	(60)	(60)
Gross Profit	40	40
Other Operating Expenses	(20)	(20)
Earnings Before Interest & Taxes	20	20
Interest Expense (8% p.a.)	0	(4)
Earnings Before Taxes	20	16
Taxes (.40)	(8)	(6.4)
Net Income (NI)	12	9.6
BALANCE SHEET (12/31/06)		
Current Assets	50	50
Fixed Assets	50	50
TOTAL ASSETS (TA)	100	100
Debt	0	50
Equity (TE)	100	50
TOTAL LIABILITIES & EQUITY	100	100
Return on Assets (NI/TA)	*0.12*	*0.096*
Return on Equity (NI/TE)	*0.12*	*0.192*

The main result is obvious to most students - although there is less equity investment in the leveraged firm, the remaining equity earns a higher return. Intuitively, the students will recognize that adding debt to the funding mix will reduce the cost of funds. An insightful student may also recognize a break-even relationship must exist which would govern whether the change increases or decreases return.

In this formulation, reference to the number of shares and EPS, common in textbook examples, is not necessary. Again, our assumed purpose at this initial presentation stage is simply to quickly get some understanding of the potential benefit of debt financing across to the students. If a student can be convinced that some specific benefit to debt exists, the professor may likely have much greater success in later leading that student through more intricate examples showing more complex impacts and interrelationships having to do with the capital structure choices of the firm.

A financing strategy break-even point is implied by this streamlined example. This break-even point is the interest rate at which adding debt to the current funding mix has no effect on the firm's ROE. This would be the interest rate at which the unleveraged ROE is equal to the leveraged ROE. Interest rates higher than this break-even level would cause the addition of debt funding to reduce the value of the firm, while those below this break-even level would cause the addition of debt funding to increase the value of the firm.

This break-even interest rate has doubtlessly been derived numerous times before, but only recently discussed in the pedagogical context. Note that unlike many of the textbook examples discussed above, here

there is no need to hypothesize a functional relationship between financial leverage and interest rates.

As a general rule, equilibrium required rates of return on equity are higher than those of the debt of the same firm due to the relative priority of claims. While variations in the actual ex-post rate of return on equity are expected, proper capital structure policy formulation depends on the ex-ante rate of return.

The condition of $ROE_{Leveraged}$ being greater than $ROE_{Unleveraged}$ can be stated in terms of the relationship between the rate of interest and some measure of the rate of return on invested capital, such as ROE. The derivation is straightforward - set the two ROE expressions equal to one another and solve for the interest rate.[8] The resulting indifference point can be expressed in either before-tax or after-tax terms. In either case, the increase in ROE for the leveraged firm occurs whenever the interest rate is lower than the break-even rate of return on equity.

In Equation 1 through Equation 2b below, the relationships are stated in terms of conditions necessary for a benefit from financial leverage. Stated as equalities, each of these formulas would generate the indifference point. Equation 1 and Equation 2 are referred to as the pre-tax and after-tax versions, respectively. Liang and Singh [2001] derive the pre-tax version (Equation 1) in their paper. They refer to an after-tax version but do not explicitly derive it.

It is evident in Equation 1, that in order for financial leverage to increase ROE, the interest rate must be lower than the Basic Earning Power (BEP) ratio (that is, Operating ROI). Alternatively, we can solve the condition for EBIT as shown in equation (1a). This is equivalent to the "break-even" EBIT calculated in the typical textbook example.

The alternative statement presented in Equation 2 shows the necessary condition related to the unleveraged firm's ROA, or equivalently, the ROE. One interpretation of this relationship is that for financial leverage to increase ROE, the after-tax cost of borrowing must be less than the expected return on total capital invested in the unleveraged firm.

Pre-tax Version: $r^* < EBIT/TA$ (1)

$r(TA) < EBIT^*$ (1a)

After tax Version: $r(1-t) < [EBIT(1-t)]/TA$ (2)

$r(1-t) < ROA_{Unleveraged}$ (2a)

$r(1-t) < ROE_{Unleveraged}$ (2b)

Using the indifference point for financial leverage conditions based on relative rates of return, the instructor is presented with several choices of which version of the condition to present. The selection would naturally depend on the setting in which the concept of financial leverage were first being presented, with one version emphasizing the relative productivity of capital and the other emphasizing relative costs of different types of capital. In keeping with the concept of an instructional hook, one or the other of the two indifference points, but not both, should be presented.

The key consideration is that the indifference point is discussed without the need for the typical textbook's lengthy example. Further, the same conclusions can be reached without introducing the complication of number of shares necessary to find the break-even relationship between EBIT and EPS, as is commonly done. This approach provides a quick, self-contained, and concrete example of the impact of financial leverage which can serve as the hook for a lengthier comprehensive example or can serve as an effective side point in other parts of the course.

In the Table 3 example, the break-even EBIT using equation 1a is simply [.08(100) =] 8, given the interest rate. Alternatively stated, if EBIT were 8, then ROE would be the same for both the leveraged and the unleveraged firms - in this case 4.8% for both. Since the expected EBIT is 20, which is greater than 8, adding

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[8]The entire derivation is presented in the Appendix.

financial leverage will increase the ROE. Furthermore, using the version in Equation 2, it can be seen that if EBIT were 20, then the interest rate must be lower than 20% to increase ROE. Since the interest rate is 8%, the financial leverage will increase the ROE. Again, these conditions will yield the same conclusions as the common EBIT-EPS analysis examples - without the need for the complicating issue of the number of shares or even the introduction of the share valuation issues implied by the EPS-framed examples.

 If the goal is to catch the students' attention at the outset of a full financial leverage course module, success will most likely be enhanced by introducing the concept with a more direct and streamlined financial leverage example. Alternatively, this type of streamlined approach can be used as a stand-alone introduction to financial leverage at any point in the course that debt funding impacts might arise in the classroom discussion. The authors of this paper have successfully used this approach both to enrich the presentation of the extended DuPont equation early in the introductory course before a full treatment of financial leverage is presented and to function as an introductory hook for the full financial leverage course module.

Caveat For Spontaneous In-class Examples (Or, How To Avoid A Bent Hook)

As mentioned above, the streamlined example discussed above can serve as a quick self-contained introduction to the concept of financial leverage if questions of the impact of debt arise early in the course, when most course outlines have presented financial analysis using financial ratios, but have not yet presented financial leverage concepts. The example could be used in response to the frequent student question to the effect of "If the company is really strong, why would they want to have any debt at all."[9]

Even if the extended DuPont equation has already been presented, many students will feel uncomfortable with the idea that debt can be beneficial to the investors in the firm. When the question of how debt can be good for the corporation comes up spontaneously, early in the course, the Finance professor may address the question by presenting a brief numerical example similar to the one portrayed in Table 3.

Obviously, different professors have different teaching styles. Some prefer detailed lecture plans while others prefer relying on general lecture outlines allowing class discussion to determine the flow of the lecture. Clearly outstanding professors exist in both groups. However, for the more spontaneous lecturer, the aforementioned break-even conditions are a key component of success.

When a spontaneous example is used, it is occasionally constructed using input from the class. The example begins with the instructor constructing the income statement and balance sheet for a hypothetical company. If desired, the instructor can prompt the class to envision what type of firm is being examined. The instructor would then guide the class through the construction of a typical set of financial statements for such a firm - relying on an approximate expense proportion and asset mix.

As an example, when the instructor asks what type of firm is being considered, the class might suggest a retailing firm. From this point, the instructor would begin to construct an example income statement on the board starting with some round number for sales to facilitate computations. As the income statement evolves on the board, the instructor stops at each level of the income statement and prompts the students to estimate the size of the major expense categories - providing guidance if the students estimates become too unrealistic. At the end of the interchange, a set of representative financial statements would be on the board/screen which would be similar to those depicted in Table 3 above.

Students may then be asked to calculate the ROA and ROE for each of the two firms. For dramatic effect, one should begin with the ROA and ROE of the unleveraged firm, stressing the point that the two are the same. Then when ROA is calculated for the leveraged firm, the professor can feign disgust at the obvious incorrect funding decision - since, ceteris paribus, the leveraged firm will always have a lower ROA. Finally, when

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[9]This reaction to the initial assertion that debt can be good is not unique to students or individuals not involved in management. One of the authors recalls giving a review session on the topic as a continuing education seminar for a group of experienced, practicing CPAs. After the hour-long presentation, one of the CPAs in attendance raised a hand and asked in a scornful, incredulous voice, "Do you really mean to tell us that debt can be GOOD?"

ROE for the leveraged firm is calculated and proves to be higher than for the unleveraged firm, the instructor can summarize the examples and present the break-even rates discussed above.

If by oversight, the required conditions discussed above are not incorporated into the example, the effect of leverage will be negative. If the instructor had previously presented the CAPM, or had already discussed the risk/return tradeoff, it might be possible to back track and convince the students that the example was flawed because of the improbable relationship between the rates of return on debt and equity. More likely, the class will be divided between those who were simply confused and those who no longer trust the instructor.

As long as the instructor follows the guidelines discussed above, a workable example will be guaranteed. Thus, the spontaneous nature of the example can be preserved while ensuring the required pedagogical outcome.

Conclusions

This paper has discussed the merits of using a streamlined alternative presentation as an introductory "hook" for a course module on the topic of financial leverage. This streamlined alternative presentation is discussed as a way of augmenting the more detailed and comprehensive financial leverage examples appearing in the majority of textbooks for the introductory finance course. The benefits of this augmentation are discussed in the context of established differences in personality types, and thus cognitive styles, between business professors and business students.

The authors' conclusion is that the use of a streamlined preliminary presentation can bridge the differences between professor and student cognitive styles without endangering the overall educational goal of promoting the development of abstract reasoning skill in the student. The alternative streamlined approach is also discussed as a stand alone express treatment of financial leverage impacts for use in other course modules prior to the formal coverage of financial leverage. An empirical investigation of whether the use of this specific hook results in the presentation being either more or less effective is left to future research.

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Appendix: Derivation Of Rate Of Return Indifference Point/Conditions

We wish to establish conditions under which the return on equity of the leveraged firm will be greater than the return on equity of the unleveraged firm.

$$ROE_{Leveraged} > ROE_{Unleveraged} \tag{A-1}$$

However, we must state the relationship in terms which do not differ between the leveraged and the unleveraged firm. We assume that the firm's tax rate is not impacted by the change in leverage. This is realistic since most large firms are in the highest corporate tax bracket.

$$\frac{[EBIT - I](1 - t)}{(TA - TD)} > \frac{EBIT(1 - t)}{TA} \tag{A-2}$$

$$\frac{EBIT(1 - t) - I(1 - t)}{(TA - TD)} > \frac{EBIT(1 - t)}{TA} \tag{A-3}$$

$$EBIT(1 - t) - I(1 - t) > \frac{EBIT(1 - T)(TA - TD)}{TA} \tag{A-4}$$

$$\frac{EBIT(1 - t) - I(1 - t)}{EBIT(1 - t)} > \frac{(TA - TD)}{TA} \tag{A-5}$$

$$1 - \frac{I(1 - t)}{EBIT(1 - t)} > \frac{(TA - TD)}{TA} \tag{A-6}$$

$$1 - \frac{I(1 - t)}{EBIT(1 - t)} > 1 - \frac{TD}{TA} \tag{A-7}$$

$$-\frac{I(1 - t)}{EBIT(1 - t)} > -\frac{TD}{TA} \tag{A-8}$$

$$\frac{I(1 - t)}{EBIT(1 - t)} < \frac{TD}{TA} \tag{A-9}$$

$$\frac{r(TD)(1 - t)}{EBIT(1 - t)} < \frac{TD}{TA} \tag{A-10}$$

$$\frac{r(1 - t)}{EBIT(1 - t)} < \frac{1}{TA} \tag{A-11}$$

$$r(1-t) < \frac{EBIT(1-t)}{TA} \qquad \text{(Text Equation 2)}$$

$$r(1 - t) < ROA_{Unleveraged} \qquad \text{(Text Equation 2a)}$$

$$r < \frac{EBIT}{TA} \qquad \text{(Text Equation 3)}$$