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The Private Equity Myth

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Abstract

Private equity has become a huge force in American business, but how is it creating value. The paper shows that private equity firms in recent years have paid high prices for acquired companies, leveraging them up, and then hoping to sell them to someone else. Doubts are raised as to whether this is a good strategy for investors or the nation.

KEYWORDS: private equity, valuation, multiples, Modigliani and Miller

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The first wave of highly leveraged transactions (HLTs) also known as leveraged buyouts (LBOs) began in the late 1980s. Fewer transactions occurred in the 1990's after a number of companies in the first wave failed when the economy slowed down. More recently, the driving force behind levered deals has been the private equity business. Private equity has grown exponentially in the past decade, see Kaplan and Schoar (2005). Nationally, an unprecedented takeover binge occurred between 2005-2007 as private equity firms used leveraged loans (at the same time that subprime borrowers used No Income No Assets loans to buy houses) to finance numerous transactions. Consider how a major player in the industry, Sun Capital Partners, Inc., (SCP) described itself on its web site in 2008 (bold added by the author):

> Sun Capital Partners, Inc. is a leading private investment firm focused on leveraged buyouts, equity, debt, and other investments in market-leading companies that can benefit from its in-house operating professionals and experience. Sun Capital affiliates invest in companies which typically have the number one or two market position in their industry, long-term competitive advantages, and significant barriers to entry. …
>
> Sun Capital affiliates have invested in and managed more than 190 companies worldwide since Sun Capital's inception in 1995, with combined sales in excess of $40 billion and more than 150,000 employees. On a consolidated basis, Sun Capital's affiliated portfolio companies would rank in the top 100 of Fortune Magazine's listing of the 500 largest companies in the United States.
>
> Sun Capital has approximately $10 billion of equity capital under management, and can invest more than $2 billion of capital in any one transaction. Sun Capital often bridges the entire purchase price at closing; raising permanent debt financing afterwards. Sun Capital is one of the very few private equity firms that has completed all transactions to which it has committed, despite the difficult economic and financing environment in 2007, and thus far in 2008. 1

Companies such as SCP are important players in American business. Using their estimate of a $10 billion equity capital investment and an 80% debt ratio suggests that SCP controls companies worth approximately $50 billion. Analyzing this development from a societal point of view, requires that we understand whether SCP has in fact shared its "operating professionals and experience" with the enterprises and thereby improved their results or whether SPC has merely increased the acquired companies' debt load and using a portfolio

[1] Source: http://www.suncappart.com/ the overview section, on May 30, 2008.

concept is willing to let the strong excel and the weak fail. More is said about this idea later in this chapter.

Doug Lowenstein, President of the Private Equity Council noted in a speech that the private equity industry which had raised $5 billion in capital in 2002 was able to expand that amount to $198 billion in 2006.[2] The reach of the industry is exemplified by the announcement that a company owned by Blackstone, a large American private equity firm, was in talks to acquire the Viennese giant wheel. The nationalistic political party in Austria, the Austrian Freedom Party, has attacked the proposed transaction.

Besides the issue of whether private equity funds can profitably invest hundreds of billions of dollars, the sheer amount of money involved in private equity raises a host of societal issues. Amongst these are employment questions (will private equity owners be less compassionate), the concentration of ownership (will private equity owners destroy economic competition), and the shrouding of critical company decisions from public view (will private equity firms, for example, be unwilling to address environmental issues).

How private equity firms value their acquisitions is a key question.[3] The simplest and yet probably the most common technique used to value target companies is an earnings-multiple method. The technique usually relies on an earnings figure called EBITDA. EBITDA equals operating income plus depreciation and amortization as seen in equation (1).

EBITDA = Operating income (EBIT) + Depreciation and Amortization (1)

Operating income equals operating revenues less operating costs. Operating costs include costs of good sold, SGA (selling, general and administrative expenses), and deprecation and amortization. Depreciation and amortization are added back to EBIT because they are non cash expenses which are available for use by the private equity firm.

Private equity companies buy firms (either public or private companies) at a multiple of their EBITDA value. Depending on the target's size, profit margin, industry, and other factors the multiple might range between 3 and 10. The purchase price is paid for with a mix of equity and debt. Typically, private equity firms lever up their acquisitions beyond the level that the company was historically levered and beyond the norm of other firms in the industry. One explanation for introducing high leverage is that it forces a company to stay

[2] The Carried Interest: Private equity and Venture Capital Club, Columbia Business School, 2008 Volume 1, page 1.

[3] I've greatly benefited from discussions with Bill Haan and Tom McCarthy on this and other topics.

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focused on improvement, growth and profits.[4] While the private equity firm owns a company it seeks improvement in the firm's performance by fixing its infrastructure, compensation plan, management, marketing and sales methods, and other areas of weakness. By achieving these, the company's revenues increase while its costs decrease; consequently, its EBITDA increases. The private equity firm profits when it sells the firm since its value rises along with its EBITDA.[5] It is also conceivable that the company may command a higher multiple following the changes which also raises the purchase price. One reason for a higher multiple may be that the firm's growth rate has increased following changes initiated by the private equity firm. Another reason may be that the firm is now more highly leveraged than it had been previously (more on this below).

This process of value creation is described mathematically below:

Enterprise value – debt = Equity value (2)

Enterprise value = Multiple X EBITDA (3)

Increases in either EBITDA or the multiple (equation 3) raise enterprise value which after the repayment of debt increases the firm's equity value (equation 2).

Among the firms acquired in the recent private equity buyout binge were many in which erstwhile rational people paid huge premiums, sometimes approaching 50%, above market prices for companies. Many of these deals were done at earnings-multiples greater than 10 times EBITDA. Table 1 illustrates this point using nine prominent transactions.

Table 1: Nine Major Private Equity Deals (2005 – 2007)

Company	**Year**	**Premium to Market**
SunGard	2005	44%
Kinder Morgan	2006	27%
Clear Channel Communications	2006	30%
Harrah's Entertainment Inc.	2006	36%
Petco Animal Supplies Inc.	2006	49%
TXU	2007	25%
First Data	2007	26%
Hilton	2007	32%
Equity Office Properties	2007	37%

[4] Michael Jensen made this point in his presidential address before the American Finance Association meeting, published in the *Journal of Finance*, 1993, page 831 - 880.

[5] Some private equity firms (particularly larger ones) pay dividends to themselves after completing a purchase. They use new debt to fund the dividend.

The TXU buyout of shareholders, for example, cost $32 billion plus the assumption of $13 billion in debt. The buyers were private equity firms Texas Pacific Group and Kohlberg Kravis Roberts, and a partner, Goldman Sachs. The 25% equity premium, see Table 1, meant that the group paid $6.4 billion more than the "efficient" stock market thought TXU was worth. How could this be? Was the stock market incorrect? Were the buyout firms imprudent, see Vissing-Jorgensen and Moskowitz, (2002)?

A year after Blackstone's acquisition of the Hilton hotel chain a lot had changed: the real estate market had fallen from lofty heights, high gasoline prices were scaring people into staying at home, and hotel room rates were in decline. As reported in the New York Times, the value of a still public competitor, Starwoods Hotels and Resorts, had fallen over the time period by 45% (See Senati, 2008). It is highly likely that the value of Hilton had fallen too. Presumably, the $5.17 billion that Blackstone had invested of its own money was worth less a year later.

Many announced private equity deals fell through in 2008 when the money-spigot (bank lenders) shut. How the target company stock's fared after the deals died may also illustrate the precarious pricing models employed in some private equity transactions. For example, Penn National Gaming Inc. agreed to be acquired by Fortress Investment Group and Centerbridge Partners for $67 per share. After the demise of the deal the stock traded at $27.06 on July 10, 2008.

In some cases, after the acquisition buyout firms change management teams and instill the company with a new spirit of creativity along with lean management, see Lerner (1995). Maybe their plan is to "Lead with Cash Flow." Organic growth and profit improvement do lead to a higher valuation. Is it reasonable to anticipate a valuation surge in excess of 34% (the simple unweighted average of the equity premiums paid in the table above)? Could current managements be so incompetent as to not be aware of growth and cost saving opportunities?

Central to modern finance theory is the concept of market efficiency. In its basic form, market efficiency means that a stock's price fully reflects all the available information about it, its industry, and the global economy. While there is no agreement on what the market price should be today -- some investors are long in the stock and others are short -- the price reflects all that is known about the company. Finance professionals don't say that the price is accurate, though market efficiency purest might go that far. What they do say is that prices are unpredictable which may seem counterintuitive. Unpredictability means that since everything has been reflected in the current price (with some investors going long and others going short) changes from that price are not predictable events.

Another explanation for the high premiums paid to shareholders in buyouts is that there is a transactions-based mentality to the private equity

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industry and its pricing model. Many private equity firms are paid annual management fees that are unrelated to the overall success of their investments. The typical private equity model is a 2/20 split with the investor paying 2% of their investment to the private equity firm each year as a management fee and then paying the firm an additional 20% of realized profits. Under the transactions model it is in the private equity firm's best interest to spend all of an existing fund's money to justify raising another fund and more money. If this is an accurate representation there need not be a close relationship between purchase price and actual value because then fund objectives are not aligned with those of its investors.

In fact, most of the cast of characters in a private equity transaction make out well, see Fenn, et al. (1996). The list includes the fund's partners, institutional investors, the existing public company's management and shareholders, and holders of the original debt in the acquired firm. How does each benefit from taking a public company private. The private equity firm itself is probably the biggest winner because it has nothing to lose under a 2/20 compensation model. Each year they earn 2% of the fund's invested capital regardless of the performance of the portfolio of companies owned by the fund. Most funds are contractually obligated to close out their investments within 10 or 12 years. At that point the institutional and other investors determine whether the private equity firm has earned them a sufficient return in comparison with alternative investments. Existing shareholders and management are rewarded immediately with a share price surge and in the case of managers with exit or retention bonuses. A possible immediate loser may be the holders of the original company's debt obligations who unless they had sufficient covenant protection might find themselves either subordinated to secured loans issued to finance the buyout or else on par with other loans taken on either at the time of the investment or later when the private equity firm pays itself an outsized dividend.

Still another answer to the pricing conundrum may simply be the impact of leverage on firm value. To understand the movement to take companies private, to conduct leveraged recapitalizations, or to use excess cash to buy back shares, let's first see how these tactics "theoretically" lead to value creation. A common first step after purchasing a company is for a private equity firm to change its capital structure. The new capital structure contains more debt (and consequently less equity) than when the firm was public. How this capital structure change affects the firm's weighted average cost of capital (WACC) is at the crux of the valuation puzzle. Note of course, that if the acquired firm is later resold by the private equity firm with a capital structure similar to the one it originally had, there is no value creation. Presumably, the resale occurs at a leverage rate between the firm's original low debt ratio and the private equity firm's imposed high debt ratio.

WACC is used throughout the finance profession as a measure of the cost of capital to a firm. The basic formula is seen in equation (4).

$$WACC = \alpha_d (1-T) r_d + (1-\alpha_d) r_e \quad (4)$$

α_d = debt portion of firm's capital structure
T = tax rate
r_d = cost of debt
r_e = cost of equity

As the private equity firms increases the leverage on the newly acquired company its WACC declines since r_d is generally less than r_e and (1-T) which represents the tax deductibility of debt financing further heightens this cost advantage. A lower WACC in the simplest of worlds leads to an increase in the firm's value derived from its future cash flows. This is illustrated in Table 2 below for the case of an acquisition which has rising future cash flows, a case with constant future cash flows, and a case with falling cash flows. In all three instances, the value of the firm grows dramatically. At the bottom of the three tables is a ratio that compares the value of the original firm to that of the highly levered firm analogue. While it is true that the best outcome derives from the rising cash flows case -- the value of the firm rises by 64.5% and the value of each levered share increases by 416.8% -- with constant and falling cash flows, the more highly levered firm also achieves a substantial valuation premium over the less levered firm, though to a lesser extent. Moreover, to be ultra conservative, the analyses assumes no future growth in the calculation of the terminal value for years beyond the first three shown in the tables. That is, the impact of levering up the company is still greater if in fact the company experiences any growth after the third year of the analysis.

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Table 2 The Impact of Higher Leverage on Valuation: Rising, Constant, and Falling Income Cases

Existing Company with Rising Cash Flow (TV with g = 0)

EBIT	2.000	4.000	6.000	TV
Interest	0.360	0.396	0.468	
EAT	0.984	2.162	3.319	
Depreciation	1.000	1.000	1.000	
Cash Flows	1.984	3.162	4.319	4.319
Terminal Value				45.561
Cost D	0.060	0.060	0.060	0.060
Cost E	0.120	0.120	0.120	0.120
WACC	0.095	0.095	0.095	0.095
Discount Factor	0.913	0.834	0.762	0.762
Discounted CF	1.812	2.638	3.292	3.292
Total Discounted Value	42.463			34.721
Total Assets	20.000	22.000	26.000	
Debt	0.300	0.300	0.300	0.300
Equity	0.700	0.700	0.700	0.700
Equity Value	$36.46			
Equity Value/Share	$36.46			

Ratio of Levered Total Values/Share to Existing Total Value/Share	1.645

Levered Company with Rising Cash Flow (TV with g = 0)

EBIT	2.000	4.000	6.000	TV
Interest	0.960	1.056	1.248	
EAT	0.624	1.766	2.851	
Depreciation	1.000	1.000	1.000	
Cash Flows	1.624	2.766	3.851	3.851
Terminal Value				72.939
Cost D	0.060	0.060	0.060	0.060
Cost E	0.120	0.120	0.120	0.120
WACC	0.053	0.053	0.053	0.053
Discount Factor	0.950	0.902	0.857	0.857
Discounted CF	1.543	2.496	3.300	3.300
Total Discounted Value	69.845			62.506
Total Assets	20.000	22.000	26.000	
Debt	0.800	0.800	0.800	0.800
Equity	0.200	0.200	0.200	0.200
Equity Value	$53.85			
Equity Value/Share	$188.46			

Ratio of Levered Equity Value/Share to Existing Equity Value/Share	5.168

Existing Company with Falling Cash Flow (TV with g = 0)

EBIT	6.000	4.000	2.000	TV
Interest	0.360	0.324	0.288	
EAT	3.384	2.206	1.027	
Depreciation	1.000	1.000	1.000	
Cash Flows	4.384	3.206	2.027	2.027
Terminal Value				21.384
Cost D	0.060	0.060	0.060	0.060
Cost E	0.120	0.120	0.120	0.120
WACC	0.095	0.095	0.095	0.053
Discount Factor	0.913	0.834	0.762	0.762
Discounted CF	4.004	2.674	1.545	1.545
Total Discounted Value	24.520			16.296
Total Assets	20.000	18.000	16.000	
Debt	0.300	0.300	0.300	0.800
Equity	0.700	0.700	0.700	0.200
Equity Value	$18.52			
Equity Value/Share	$18.52			

Ratio of Levered Total Values/Share to Existing Total Value/Share	1.474

Levered Company with Falling Cash Flow (TV with g = 0)

EBIT	6.000	4.000	2.000	TV
Interest	0.960	0.864	0.768	
EAT	3.024	1.882	0.739	
Depreciation	1.000	1.000	1.000	
Cash Flows	4.024	2.882	1.739	1.739
Terminal Value				32.939
Cost D	0.060	0.060	0.060	0.060
Cost E	0.120	0.120	0.120	0.120
WACC	0.053	0.053	0.053	0.053
Discount Factor	0.950	0.902	0.857	0.857
Discounted CF	3.822	2.600	1.490	1.490
Total Discounted Value	36.140			28.228
Total Assets	20.000	18.000	16.000	
Debt	0.800	0.800	0.800	0.800
Equity	0.200	0.200	0.200	0.200
Equity Value	$20.14			
Equity Value/Share	$70.49			

Ratio of Levered Equity Value/Share to Existing Equity Value/Share	3.806

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Existing Company with Steady Cash Flow (TV with g = 0)

EBIT	4.000	4.000	4.000	TV
Interest	0.360	0.360	0.360	
EAT	2.184	2.184	2.184	
Depreciation	1.000	1.000		
Cash Flows	3.184	3.184	3.184	3.184
Terminal Value				33.586
Cost D	0.060	0.060	0.060	0.060
Cost E	0.120	0.120	0.120	0.120
WACC	0.095	0.095	0.095	0.095
Discount Factor	0.913	0.834	0.762	0.762
Discounted CF	2.908	2.656	2.426	25.595
Total Discounted Value	33.586			
Total Assets	20.000	20.000	20.000	
Debt	0.300	0.300	0.300	
Equity	0.700	0.700	0.700	
Equity Value	$27.59			
Equity Value/Share	$27.59			

Ratio of Levered Total Values/Share to Existing Total Value/Share	1.592

Levered Company with Steady Cash Flow (TV with g = 0)

EBIT	4.000	4.000	4.000	TV
Interest	0.960	0.960	0.960	
EAT	1.824	1.824	1.824	
Depreciation	1.000	1.000	1.000	
Cash Flows	2.824	2.824	2.824	2.824
Terminal Value				53.485
Cost D	0.060	0.060	0.060	0.060
Cost E	0.120	0.120	0.120	0.120
WACC	0.053	0.053	0.053	0.053
Discount Factor	0.950	0.902	0.857	0.857
Discounted CF	2.682	2.548	2.420	45.835
Total Discounted Value	53.485			
Total Assets	20.000	20.000	20.000	
Debt	0.800	0.800	0.800	0.8
Equity	0.200	0.200	0.200	0.2
Equity Value	$37.48			
Equity Value/Share	$131.20			

Ratio of Levered Equity Value/Share to Existing Equity Value/Share	4.756

Merton Miller and Franco Modigliani, who received Nobel Prizes in 1990 and 1985 respectively, produced the seminal work on the question of the impact of leverage on value, see Modigliani and Miller (1958). They theorized that in a world without taxes and no bankruptcy costs that regardless of how a firm finances itself (what is known as its capital structure) its value remains unchanged. They argued that no matter how a pie is sliced there is only so much of the pie to go around. This is known as the value-invariance principle. The principle argues that financing decisions and the value of the firm are independent.

The graphical view of the Modigliani and Miller (M&M) theory in Figure 1 shows the tradeoff between the firms's cost of money (WACC) and its debt/equity ratio. Basically, the theory says that as the firm takes on more debt (i.e., its debt/equity ratio rises) that the cost of both debt (r_d) and equity (r_e) increase. These costs increase because the heightened use of debt raises the firm's risk since there is a greater chance that it will not be able to pay the interest owed on the debt or repay the principal. Consequently, debt holders demand a higher return and shareholders require a higher return on their capital. Yet, the WACC remains constant in Figure 1 due to the fact that $r_d < r_e$. In other words, two things are happening: 1) both that r_d and r_e increase due to the firm's increased riskiness due to its higher debt ratio and 2) the WACC does not change because the movement towards relatively lower cost debt is exactly balanced by the increasing cost of both debt and equity. In this version of the M&M theory (without taxes) a higher debt ratio is not a costless route to an increase in firm value.

What happens when the theory is made more realistic by relaxing the no tax assumption? In that case, according to the theory, the value of the firm depends on how it is financed. Driving this conclusion is the tax deductibility of interest paid to debt holders from income before taxes are calculated. In other words, funds raised from debt financing are subsidized by the government because returns paid to bond holders reduce the amount of taxes owed to the government. Using equation (1) above, WACC decreases as the proportion of debt (α_d) increases. That is, there is an inverse relationship between WACC and α_d. A firm financed entirely with debt has a WACC equal to r_d (1-T) while the firm with all equity financing has a WACC of r_e. Even if $r_d = r_e$ the all debt firm has a clear WACC advantage due to taxes; if $r_d < r_e$ the advantage is even greater. Figure 2 illustrates how the firm's WACC declines as the debt/equity ratio rises.

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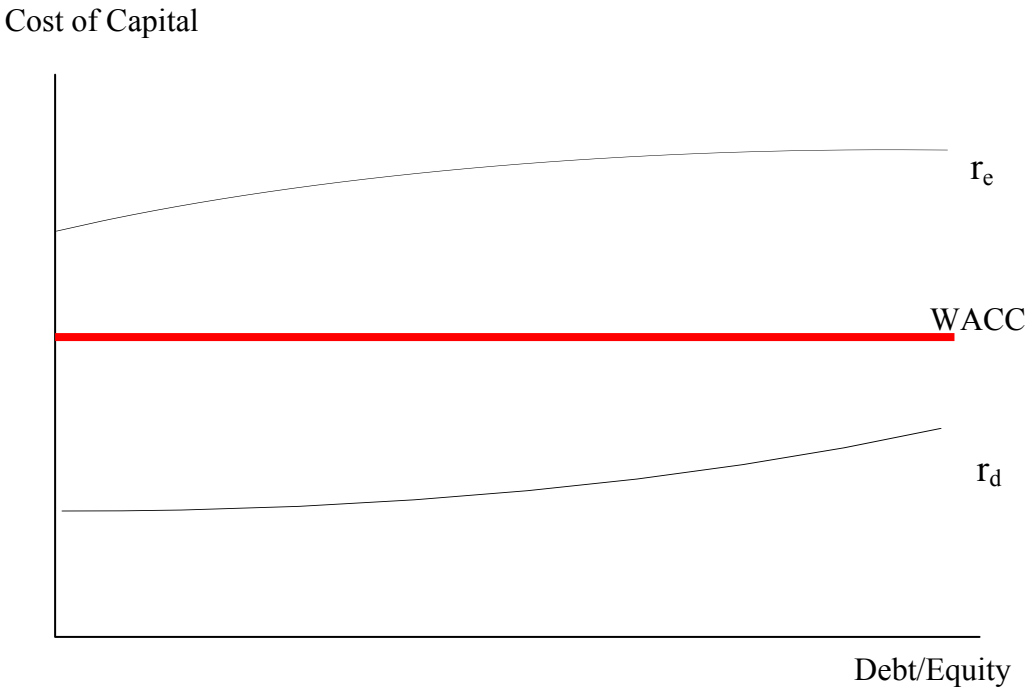
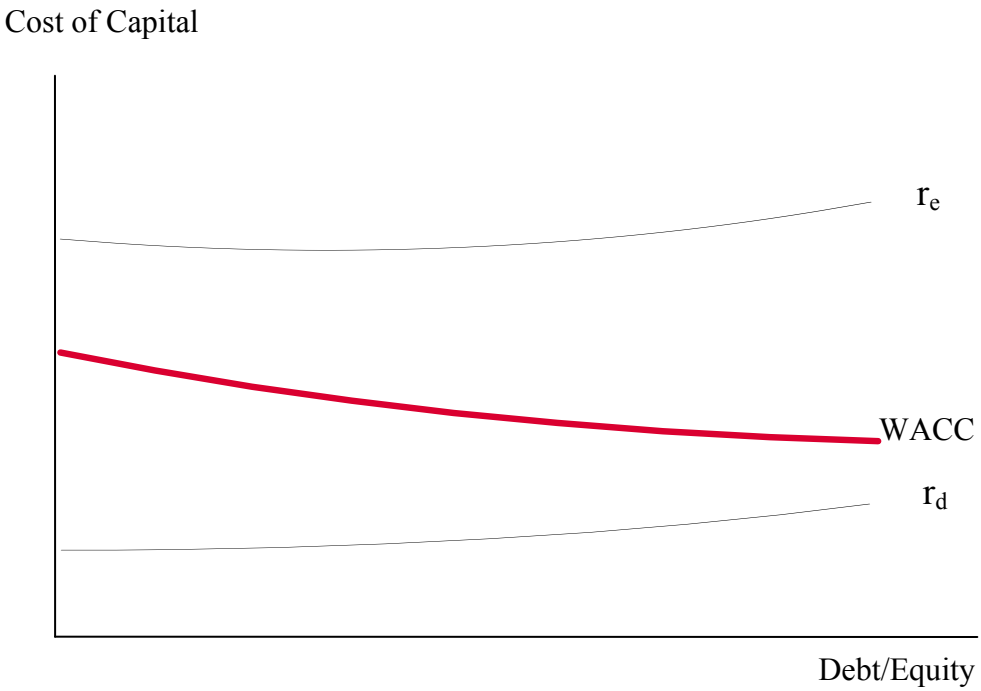
Figure 1: WACC – Modigliani and Miller Proposition II (No Taxes)
Demonstrating the Value-invariance Principle



The contrast between the behavior of the WACCs depicted in Figures 1 and 2, as the firm increases its debt ratio, is the force driving the dramatically different estimates of firm value seen above in Table 2. Private equity and similarly highly leveraged transactions are partially justified by analyses that contend that the use of debt "magically" raises valuation. Might these studies be missing something?

Figure 2: WACC – Modigliani and Miller Proposition II (With Taxes)



The private equity firm discussed earlier, SCP has experienced rougher going recently. Propelled by investor capital, SCP averaged over one transaction a month since its inception in 1995. In early 2008, three of their companies filed for bankruptcy: Wickes Furniture Co., Sharper Image Corp, and Lillian Vernon Corp. Then later in 2008, it's Jevic Holdings Corp filed for bankruptcy followed in July by their Mervyn's department store. Could SCP and other private equity firms like it have overreached itself? A number of the companies that it owns have failed and filed for bankruptcy court protection. Possibly these failures resulted from the economic slowdown in 2008 following the unraveling of the credit market in 2007. Alternatively, SCP has discovered that if you pay too much, whoever you may be, your investment may not be able to support the level of debt that private equity firm piles on to capital structures. Of course, SCP might simply be relying on holding a large portfolio of companies some of whom do well, some which do fine, and others which do poorly.

The M&M theory is not silent on bankruptcy and the costs of financial distress. Rather most analysts say that at some point when the debt ratio is high the firm begins to have a probability of going bankrupt.[6] Bankruptcy imposes a

[6] Among the earliest academic discussions of bankruptcy cost is by Baxter (1967); another good discussion comes from Jacques A Schnabel (1984).

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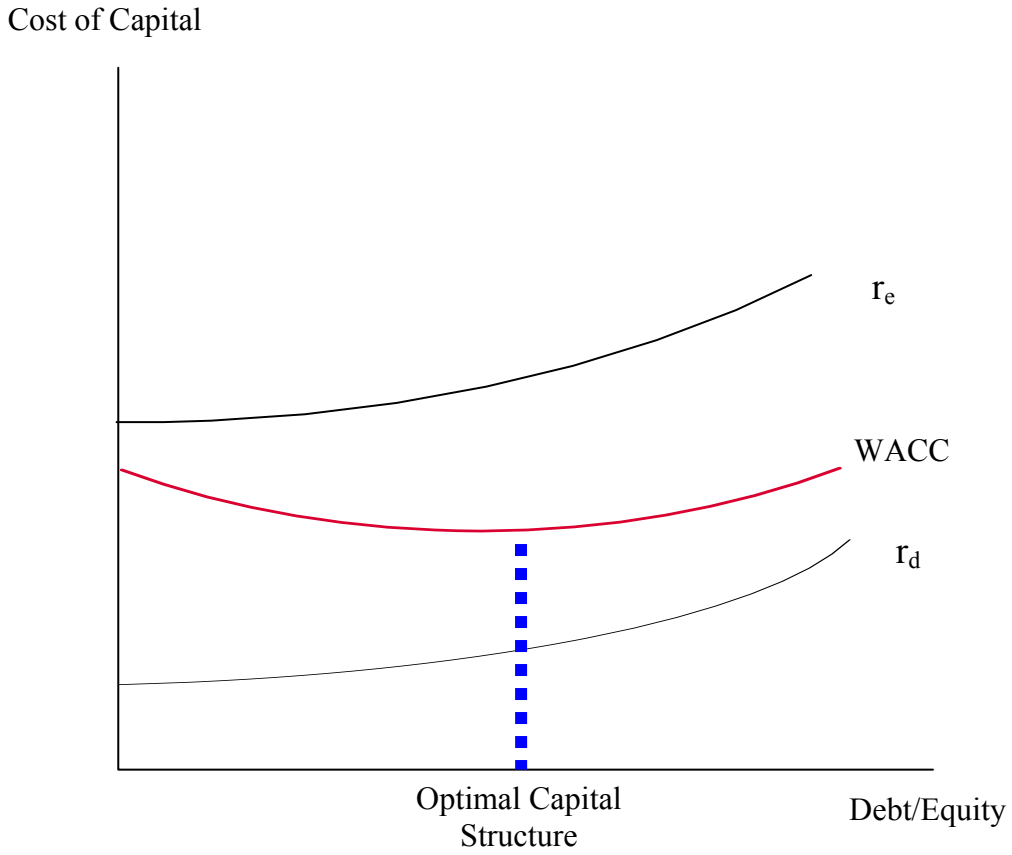
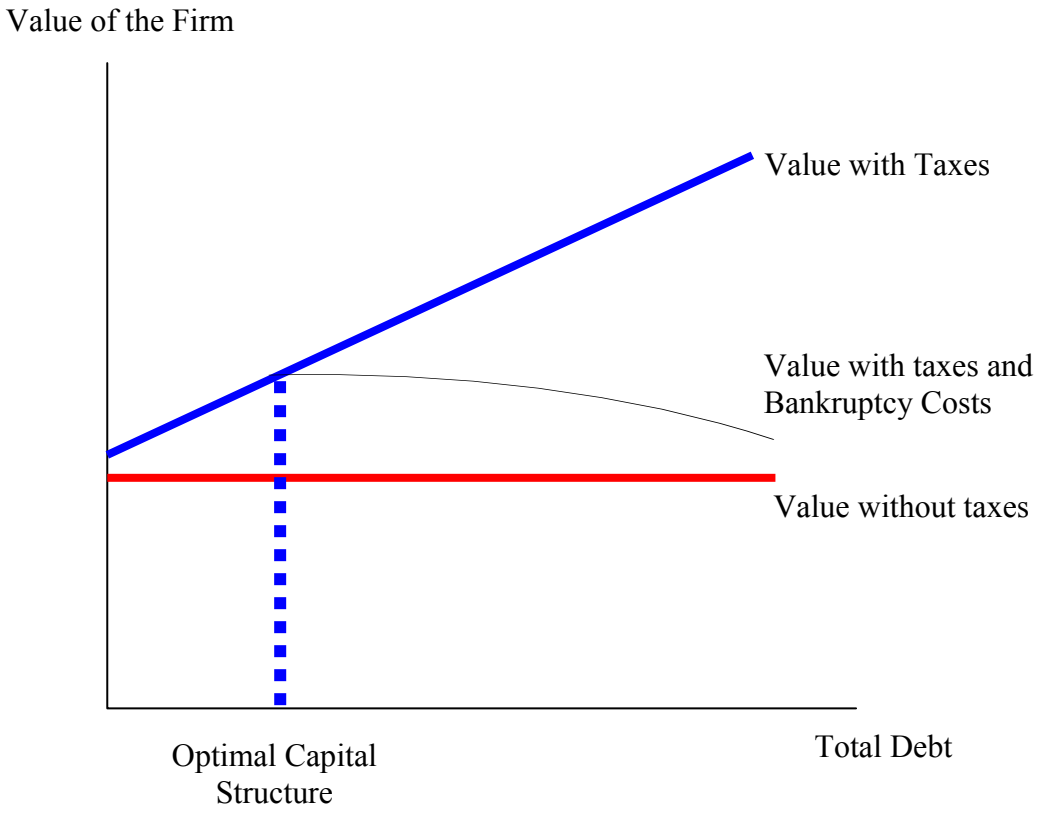
number of costly nonfunctional expenses on the firm such as legal expenses, trustee fees, costs associated with the plan of reorganization, and the loss of business due to the stigma. These costs lower the value of the firm. The probability that the firm actual will need to pay these costs depends, among other things, on its debt ratio. As the debt ratio rises, the probability of bankruptcy rises and the expected value of bankruptcy costs increase. This expected value reduces the present value of future cash flows. Consequently, debt financing has additional costs beyond the payment of interest and principle. These costs reduce the gains from tax savings arising from debt financing. This is usually called the trade-off theorem. As seen in Figure 3, at some level of the debt ratio the decrease in WACC ends due to costs associated with a potential bankruptcy. When the WACC begins to turn up, the company is at its optimal capital structure.

Figure 3: The Trade-Off Model - With Taxes and Bankruptcy



The three version of the world discussed above are presented below in a single figure, Figure 4, as three value curves dependent on the amount of debt raised by the firm, rather than with debt ratios and WACCs. The lowest curve, in red, is the Modigliani and Miller case without taxes. Value does not vary with the firm's level of debt. The blue curve shows the Modigliani and Miller world with taxes – value rises with debt. The black line shows the value of the firm with both taxes and bankruptcy costs. The firm would probably have no debt in the first case (be all equity financed), would have all debt (zero equity) in the second case, and would have a mix of debt and equity in the third case. The trick for the private equity firm is to find where the optimal capital structure point is located and to raise that level of debt. By doing so, the value of the firm is maximized.

Figure 4: The Value of the Firm With Different Models



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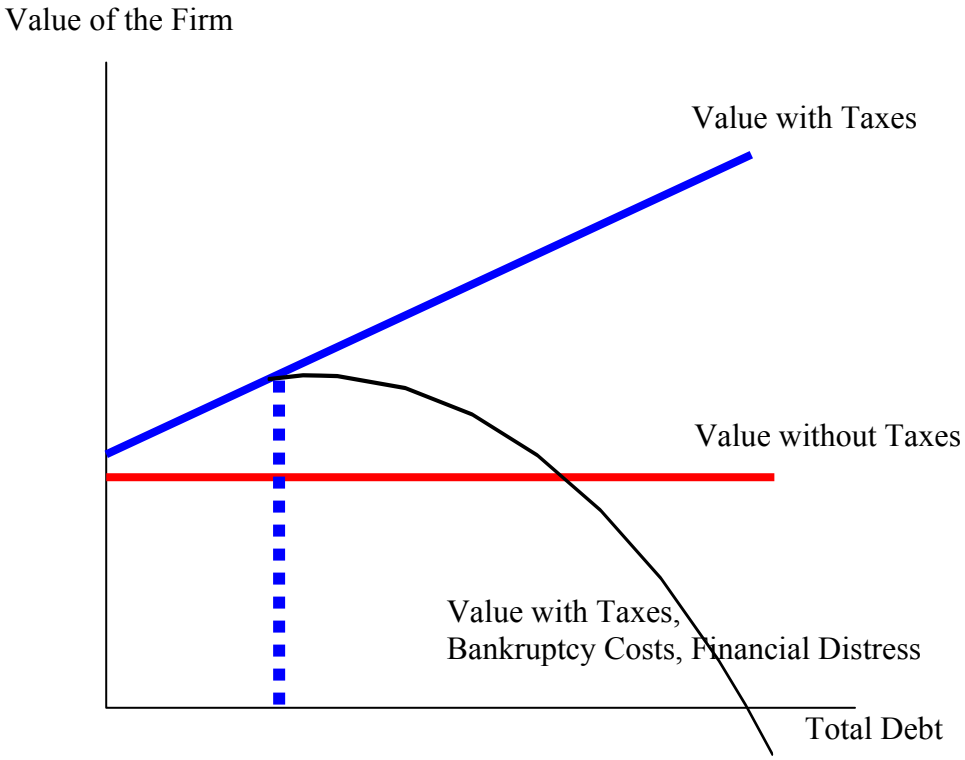
The missing element throughout this discussion of value, capital structure, and WACC has been the price paid for the investment. Over one hundred years ago, Fisher (1906, 1930) devised his Separation Theorem which argued that first the firm makes an investment decision (whether to buy an asset and how much to pay) and then independent of that decision, makes a financing decision (whether to use debt or equity). The key to understanding Fisher's idea is to realize that a fixed stream of cash flows can only support a certain level of debt. When a private equity firm overpays for an asset, according to Fisher, it needs to reduce the company's usage of debt to matchup with the firm's cash flows. Ignoring price in the capital structure decision process, is conceptually the same as ignoring financial distress or bankruptcy costs.

Bankruptcy is a legal event that has a rising probability as a firm takes on debt. In contrast, financial distress occurs when a firm is weakened by financial or operating decisions that lead to a loss in confidence in the firm by its customers, suppliers, bankers, and employees. A financially distressed firm incurs many costs that are not part of the traditional bankruptcy cost equation. For example, a financially distressed firm would likely face strict loan covenants that would impinge on its ability to grow and operate, be restricted by suppliers from normal trade credit terms and thus would be forced to use its own capital, it might under invest due to a shortage of capital, lose customers and might be raising cash by selling off its assets below their true worth. Incorporating these costs into the theory might easily yield a value relationship that looks like that in Figure 5.

Some analyst will be uncomfortable with the view of the world expressed in Figure 5, believing staunchly in the world view described in Figure 4. Some academics though have begun to support the argument advanced in Figure 5 (See for example, Ju et al. (2005)). In a recent study which accounts for purchase price, a dynamic capital structure model was created which concludes that the median firm in Standard & Poor's Compustat database has an optimal capital structure of 15.29% which is far below the actual capital structure of 22.62%. In other words, private equity activity which buys companies and raises their debt beyond 15.29% is pushing down value, not raising it!

Figure 5: The Value of the Firm with Different Models



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