CAPITAL STRUCTURE AND THE BUSINESS CYCLE

The genius of management is to place itself “in the right place at the right time.” While a talented manager can take the helm in a recession and slowly guide a company into recovery, even a mediocre manager can prosper if he or she is prescient enough to anticipate the dynamics of an industry that is “suddenly” favored by the economy. That foresight, when coupled with even slipshod leadership ability, may be enough to garner huge bonuses at the end of the year. Despite the protestations of “more talented” underlings, the manager who can outforesee the competition (in this case - other potential managers) will be the one who is rewarded.

A personal story - My nephew Randy was a whiz at computers and helped design many Internet sites early in the game. He day-traded stocks at a time when such a passion was unique. However, he failed to “foresee” shifts in the economy which successful managers will anticipate. When stocks tumbled at the end of 2000, he got hit. His famous line? “But the fundamentals were great on that company!” Corporate fundamentals are always secondary to the actions of the entire economy which the market anticipates. Huge earnings can be made, but if they are garnered in an inflationary period, for example, the market will totally discount them. Therefore, the business cycle is the ultimate source of all stock gains and “structures” capital structure, so to speak.

COMMON ELEMENTS OF BUSINESS CYCLES

At times, the economy follows a discernible pattern, and although each market is different from the last, distinct similarities emerge. While economists cannot predict the peaks and troughs of this pattern with precision, they have isolated common characteristics of most markets:
• 1) Four phases appear valid (some economists would argue for more or less) and smaller sub-cycles are sometimes prevalent. They are: 1. Recession/contraction 2. Recovery 3. Expansion 4. Plateau

• 2) A similar pattern of interest rate changes occurs over the cycle as the Federal Reserve responds to both the need for investment and the potential blight of inflation.

• 3) Companies prosper at different times over the entire cycle, separating themselves into industrial sectors that have similar cash-flow patterns and borrowing habits.

The danger of business cycle analysis comes from expectations; we naturally assume that past patterns will be duplicated and begin to extrapolate into the future. However, each market is different in some risk-taking aspect - legislatively, tax-wise, in the amounts of inflation or the rates of foreign exchange. Phases rarely make smooth transitions from one to the next, and leading indicators such as M2 or the stock market can even be lagging in some cycles. Sometimes entire sectors will be left out of a recovery and expansion because conditions in that industry have changed since the last cycle. After about three to five years into a recovery/expansion, prospects may again seem dim and the Federal Reserve may engineer what is termed a “soft landing” or “growth recession” - a period of low GDP growth which allows a “bull” market to continue for a few more years, contrary to the best pundits’ predictions. Fortunately, the student/investor does not need to make accurate predictions in order to make money. He or she can concentrate on the capital structure decisions of the best sectors and seek out patterns of leverage that will replicate throughout the cycle.

THE YIELD CURVE AND INTEREST RATE BEHAVIOR

Students tend to think of the yield to maturity curve as a supply and demand curve which is not a correct assumption. In fact, it is much more a gauge of investor
expectations about the direction of future rates than a demand graph for loanable funds. The reason for this confusion is that the demand (and price) for a debt issue moves in the opposite direction from changes in the interest rate. A logical question might be: “Why would anyone pay more for an investment with a lower rate?” The answer is: “They don’t.” As interest rates are raised by the Federal Reserve, the price of existing issues with lower rates goes down. Investors can make more on an issue with higher rates and sell off any bonds that have the older and lower rates. Thus, when interest rates spike above the debt issue with lower rates, there is less demand for the old issue and the price goes down. At a lower price, the lower interest rate now yields more return, giving it parity with new issues – when held to maturity. However, when the issue is sold before maturity, and interest rates have risen, the price will be below par. The process is dynamic and not static.

With the yield curve, the yield which relates price to interest rates is a function of the time to maturity. During the business cycle, as the Federal Reserve raises or lowers rates, the curve changes shape to reflect investor sentiment and the prevailing rate for each level of maturity. If investors expect a normal spate of inflation to occur, long-term rates will be above short-term rates, because investors need to be compensated for the risk of holding an investment that is more exposed to changes in interest rates and inflation. Analogously, financial institutions make profits by borrowing at lower short-term rates and lending at long-term rates, and the ascending yield curve is universally accepted by economists as “normal.”

A second incorrect assumption is that a firm’s choosing the lowest interest rate, based on the maturity of a loan, will minimize capital costs. As we shall see, just the opposite is often true because rates reflect investor expectations as much as the price of debt. Financial professionals analyze yield curve behavior through what is termed “the segmented markets hypothesis.” This theory implies that the supply and demand for loanable funds is derived from the cash-flow patterns of a
business. Companies with large amounts of fixed assets demand the use of long-
term funds, while companies with more current assets will borrow short-term.
Banks, for example, have many short-term liabilities and they will match those
maturities by investing in short-term securities, mostly treasury bills. As the
economy heats up, the Federal Reserve begins raising rates at the same time that
loan demand is also high. To meet both required reserve ratios and higher loan
demand, banks will sell these short-term securities, flooding the market and pushing
up the yields on them.

Academics, on the other hand, generally analyze yield curve behavior
through what is termed, “the expectations hypothesis.” Long-term rates are viewed
as the sum of short-term rates combined into a longer maturity. Therefore, the
shape of the curve is a reflection of future expectations which will determine basic
supply and demand. If long-term rates are temporarily lower than short-term rates
(the dreaded inverted yield curve), it is because the economy is in bad enough shape
for the Federal Reserve to begin lowering rates.

In essence, these theories are not mutually exclusive, and both appear to
explain yield curve behavior. The segmented markets hypothesis proclaims that
short and long-term debt cannot be substituted for each other which is backed up
by empirical evidence. Braniff Airlines in the 1980s is a case in point: when this
company began using short-term debt as a substitute for long-term debt, it went
bankrupt. The volatility of short-term rates began “eating” the company’s profits.
Although many companies will convert short-term debt into long-term once it
reaches a specified level, the opposite does not occur because firms do not want to
pay variable interest rates; the uncertainty of the level of default rises. Therefore,
demand for loanable funds is a function of both the financial structure of a company
and expectations about the direction of interest rates. While a large company
cannot delay all of its funding until interest rates are lower, it may ration capital by
limiting outlays to current projects and forego any new projects until a downturn transpires and the Fed lowers rates.

**GRAPHS THAT UNITE THE TWO THEORIES**

To match corporate behavior with the shape of the yield curve in each phase of the cycle, these graphs serve to unite both the segmented markets and expectations hypotheses.

**Figure 8-1**

1) **Phase: Contraction/Recession**

2) **Expectations Theory:** Short-term rates are above long-term rates and long-term rates are expected to decline. Companies do not want to lock in a loan at a higher rate and wait for interest rates to decline. However, this is “self-fulfilling prophecy,” because recessions begin when investment and loan demand declines, and become worse when firms delay building their inventories.

3) **Segmented Markets Hypothesis:** Banks have raised short-term rates by selling securities to meet loan demand in prior periods. Consumer spending is now declining, and companies with steady demand and short product cycles will do well. With higher debt levels, industrial companies may not be demanding loans to
maintain fixed assets, and the price of long term debt is declining. The lack of capital expenditures is a leading indicator of “‘trouble” down the road.

4) Company Behavior: Most companies retrench and attempt to deplete existing inventories. As stated above, firms delay major purchases of plant and equipment because they are uncertain about the direction of their respective sectors. Any company with steady demand will generally outperform the economy, even if profit margins are squeezed. Thus, “sin” companies like alcohol and tobacco, healthcare maintenance firms, and consumer staples like bathroom tissue etc. will at least maintain the value of most portfolios.

Figure 8-2

1. Phase: Recovery
2. Expectations Theory: The yield curve tends to be flat (it may be slightly ascending or descending), but rates are now lower and companies begin to borrow at these lower rates for large capital expenditures. The expectation is that the Fed is through with cutting rates and that now would be a good time to “lock” them in. Refinancing loans is again common for financial institutions.
3. Segmented Markets Hypothesis: Companies with more fixed assets and steady operating leverage can best benefit from lower interest rates on long-term debt.
These firms tend to use a lot of debt and have large periodic expenditures which would lower capital costs if bought with lower cost loans. Long-term debt is now in demand. Lower risk companies have the greatest acceleration of EPS beyond the cost of capital.

4. Company Behavior: Firms will extend inexpensive loans among themselves and to consumers. Housing, banks and utilities will benefit from lower cost borrowing, and the slightly higher price they charge for their services. These sectors are deemed “interest sensitive.”

Figure 8-3

1. Phase: Expansion

2. Expectations Theory: Companies expect interest rates to rise as the economy “heats” up. The Fed does indeed raise rates, perhaps several times before inflation appears. The economic imperative is to borrow and buy “now,” before interest rates rise and inflation takes hold. Essentially, this scenario represents a collective race for immediate consumption.

3. Segmented Markets Hypothesis: Long-term debt is still in high demand. Companies with higher operating leverage begin to do well. At this point, the equity markets are in full-swing which represents the main source of financing for many of
these firms. Higher GDP growth and higher consumer spending offsets the higher risk.

4. Company Behavior: Consumer spending has been bolstered by a great employment market and loans are extended for “consumer durables” - autos, boats, appliances- so called “big ticket” items. Intermediate industrial goods (used to produce consumer end products) and transportation companies begin to do well.
1. Phase: Plateau

2. Expectations Theory: “Mixed signals” are given off by an economy that is unsure of which direction it is going. Some think the Fed will raise rates to curb inflation, while others see diminishing returns and hope for a rate cut. In essence, the flat yield curve mimics an early recovery and yet interest rates are too high for another expansion. The financial sector begins to succumb to interest rate worries and lobbies for a cut.

3. Segmented Markets Hypothesis: At the market peak, companies with high operating leverage and little debt do the best. Consumers are still spending even though there is less industrial activity. The tech sector can benefit at this time because their financing is independent (superficially) of high interest loans. However, there may be more volatility in the market, and some of these stocks will “sky-rocket,” only to face the consequences of a high beta during the latter part of the phase.

4. Company Behavior: Both personal income and interest rates are relatively high. Capital goods have benefited from replacement needs, but most companies take a “wait and see” approach as merger and acquisition activity slows down. In this
market, it is “winner take all” and some sectors are heavily favored over others, causing volatility as investors are unsure of where to put their money.

The student/investor should realize that the characteristic of a phase is not derived from its predicted patterns, but defined by its anomalies. Can a market go from recovery to plateau and miss an expansion? Can banks do better when interest rates are high? Can stocks do well in the first part of a recession? As improbable as the scenarios behind these questions sound, the increased complexity of the economy, especially the behavior of foreign markets, can turn them plausible. Banks, for example, increasingly cherish “noninterest income” that diversifies them away from dependence on the Fed. Borrowing at low rates in Japan, in order to invest in China, makes companies less sensitive to the yield curve. Inevitably, there may come a time when the stock market no longer reflects risk in the United States alone, and in the period 2003-2008, we witnessed another anomaly: gold and stocks were perfectly correlated. But - if we combined our own yield curve with that of other countries and weighted it by GDP, that curve would reflect economic conditions throughout the developed world. The real utility behind the shape of the yield curve is that it graphically represents the business cycle at each point in time. Although it fluctuates and shifts to reflect immediate conditions, no other measurement so precisely captures investor behavior and expectations. If we were to conclude that capital structure decisions are an outgrowth of the relationship between long and short-term interest rates, we would be very close to the truth. Those rates affect the equity markets and the type of assets that generate income. The length of time that they maintain a pattern, the level they are at, the distance between short and long, as well as their inherent volatility, all determine the amount and timing of cash flows - and also determine how those cash-flows are funded.

STRATEGIC CONSIDERATIONS
• 1) The market precedes actual business activity by approximately six months. One reason that insiders profit is their ability to anticipate increased activity in their respective businesses. This is also the reason why “chasing profits” by investing in the most profitable companies, is doomed to failure. By the time an investment is made, the yield curve shifts and begins to favor another sector. The one highly recommended strategy is to invest in a general market index about six month’s after a recession is officially announced. History dictates that a market begins to recover at this point, and that the greatest gain will be at the beginning of a recovery. No one except market professionals will be watching the index, and the market seems to respond to this level of anonymity.

• 2) A favorable leverage state will move a firm toward an optimal capital structure and a higher stock price. Unfortunately, as interest rates rise and the yield curve shifts, the confluence of ideal income and capital cost conditions will only be temporary. The span can be from six months to two years before a stock becomes “overbought.” When an investor has seen a company double its stock price, it usually signifies that the sector is about to wash, although it does not mean a company will make less than optimal capital structure decisions or lose value. If earnings decelerate compared to the cost of capital, investors begin looking to other sectors, but that does not mean that the company is not a good long-term prospect.

• 3) Two other aphorisms have historical merit: 1. The greatest gains in the market occur before the Federal Reserve raises the interest rate three times in succession. At this point, the market becomes more sector oriented, responding to individual cash-flow/capital cost circumstances. 2. If after three to four years of recovery, and short-term rates exceed long-term, it may be time to shift money out of the market. At this point, the Fed will try to increase the money supply with open market operations and other lending facilities, trying to
engineer what is termed, ”a soft landing.” While enormous speculative opportunities exist, prudent investors will curb trading because the potential risk outweighs the returns. If the inverted yield curve is at low enough a level, it does have the potential to flatten out and begin ascending to continue the bull market. However, such a move would signify that the Fed considers inflation to be at an acceptable level and would penalize creditors with deflated dollars. Since debt levels are higher, losses would be high unless inflation was actually held in check. The average investor best not tempt fate.

- 4) Political considerations may trump economic discretion. Since the public equates economic behavior with the prevailing presidential administration, the Federal Reserve tries not to raise rates in the last two years of an incumbent’s reign. If inflation gets out of hand, the postponement of a rate hike may make it worse, forcing the Fed to take even more drastic measures. Historically, stocks generally do twice as well in the last two years of a President’s term than in the first two years.

- 5) Major trends are confirmed by sequential movement in the same direction of all three Dow component indices, utilities, industrials and transports. At first, electric utilities lead the way, up or down. Second, the Dow Industrials follow the utilities. Last, the transportation index, follows the Dow industrials. Unless a trend occurs in that specific order, it is not considered “confirmed,” and may lead to a less predictable business cycle and a chaotic market. From a sector rotation standpoint, the Dow Theory is completely rational. Interest rates get too high for the “interest sensitive” utilities, pushing them down. Fewer orders push down the industrials because companies do not want to commit to projects at higher rates. Last, the transports suffer because they are the main service unit for the industrials.

THE BUSINESS CYCLE AND THE COST OF EQUITY
The first misconception that investors have about beta is that companies with greater financial leverage have higher betas. In fact, while leverage increases beta, the greater proportion of beta is derived from the relationship between sales and market return. To reiterate the Mandelker and Rhee equation, \( \text{Beta} = (\text{DOL})(\text{DFL})(\text{ROE}) \left( \frac{(\text{COV} \% \text{Sales}, \% \text{Market})}{\text{Variance} \% \text{Market}} \right) \). Sales is a prominent part of both the degree of operating leverage and the covariance component of the equation. Moreover, it is an assumption of capital structure theory that operating and financial leverage balance each other; a company with more financial leverage will have less operating leverage and vice-versa. Although some sectors employ more of both types, within any sector, the mixture of leverage will be similar and balanced.

Theoretically, the “ideal” company would have a low beta because it would be well diversified and be able to increase its beta with more debt and/or acquisitions. Playing the cycle, it would take advantage of low interest rates until the market picked up, and rates were increased. At this point, its investment in assets would begin to pay off, and the company would raise its return on equity (ROE), while maintaining high demand for its products. As the Federal Reserve raises interest rates to stave off inflation, the firm begins to pay off some of its old debt, attracting equity through its higher EPS. Simultaneously, the company begins to retain more earnings and lowers its long-term debt to capital ratio, decreasing beta just as the business cycle transitions to a plateau. During the stagnant market, the firm continues to diversify with acquisitions, lowering operating risk, and trying to broaden its customer base for the next profit cycle.

Thus, the “ideal” company engineered a strategy that took advantage of three cyclical characteristics. First, it took advantage of lower interest rates and began taking on debt and raising its beta just as the economy was improving. Second, as interest rates were continually raised, it lowered its debt ratio and began
restructuring its capital towards an equity base. Concurrently, EPS was rising and an “over-heated” economy ensured that demand for its products was stable. Last, the company prepared for a downturn in two different ways: 1. It jettisoned its high interest debt and positioned itself for greater solvency. 2. It began to broaden its customer base by investing in risk lowering acquisitions that would diversify its operations. From the perspective of capital structure, after a downturn, the firm uses leverage to accelerate the change in EPS well past the rate of change in the cost of equity; the cost of equity was at a cyclical low because the market had declined and the Federal Reserve had lowered interest rates. In the second phase of its strategy, the firm actually begins to lower beta in response to higher interest rates. By paring down its proportion of debt to equity, it nullifies the risk of leverage at higher rates. On the other hand, it can do nothing about the systemic risk of an overheated market, and so it attracts equity funding with its higher EPS and substitutes it for debt. The third phase of the strategy lowers its beta in response to a stagnate market but also prepares for the next business cycle by diversifying away some of its operating risk. In essence, the firm is both prepared for a downturn and yet “cautiously optimistic” about future prospects.

Preposterous you say? A fantasy? While even the best-run corporations cannot go through every cycle with such machine like precision, many firms hire economists to guide them through the various pitfalls and missteps. The banking industry in particular is exposed to cyclical risk, which carries over to all those who are influenced by the prime rate - which encompasses at least some aspect of nearly every sector in the economy. Again, the premium is placed on foresight and not hindsight because if a company adopts these strategies as a reactionary response, it will find itself “out of sync” with changes in the cost of capital, i.e., the rate of earnings increases will slow and be suddenly eclipsed by the cost of equity, which will begin to accelerate. On the downside, earnings will usually outpace the
decrease in the risk-free rate, but even if earnings are stable, a higher beta will create an over-reaction to a market downturn. At this point, we often see firms with twenty percent earnings increases - lose and not gain - twenty percent in stock price. The market simply factors in diminished future prospects.

Beta rarely performs as expected in the short-run. In fact, right after the theory of the CAPM was proposed, Wall Street immediately jumped on the bandwagon. Investing in high beta stocks during an upswing and then in low beta stocks during a downturn, institutional investors’ attempt to time the market was futile. Performance was spotty at best. However, the real culprit was methodology; beta was used as a tool for predicting stock prices, and not to gauge comparative risk. It is always possible (although not likely) for a high beta stock to only react violently when the market is declining and to make meager gains during the expansion phase of a typical cycle; beta encompasses cumulative volatility and is not stable in the short term. Such anomalies can be further punctuated by a low correlation coefficient and a high but volatile alpha - the part of a regression that depends on factors outside of market influence. For example, if tariff policy suddenly favors a particular industry, i.e., steel, then that industry may prosper with the effect of a greater “alpha,” and less beta; it is no longer as dependent on the market. The industry may have a collective beta of perhaps “1,” but hardly reacts at all during a market downturn.

THE CAPITAL ASSET PRICING MODEL AND SENSITIVITY ANALYSIS

The true worth of beta is gauged in relation to the other components of the CAPM. The CAPM is a dynamic model that changes daily as the market changes. Periodically, the risk-free rate is manipulated outside the system by the Federal Reserve, but it changes yields (not coupon rates) based on demand for treasuries. The more volatile stock market index can vary from negative twenty percent to positive twenty percent over the course of a year, and the difference between that
figure and the risk-free rate, known as the market risk premium, is the primary
economic factor affecting the cost of equity. Ultimately, the singular relationship
between beta and the risk premium will determine the coherence of the model

In the following example, we will observe the effect of a one percent change
in interest rates on the CAPM, defining three levels of beta: low medium, and high.

Table 8-1

<table>
<thead>
<tr>
<th>EQUILIBRIUM</th>
<th>Risk Free %</th>
<th>Beta</th>
<th>Market</th>
<th>Risk Prem.</th>
<th>CAPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>0.05</td>
<td>0.75</td>
<td>0.098</td>
<td>0.048</td>
<td>8.6%</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>0.05</td>
<td>1</td>
<td>0.098</td>
<td>0.048</td>
<td>9.8%</td>
</tr>
<tr>
<td>HIGH</td>
<td>0.05</td>
<td>1.25</td>
<td>0.098</td>
<td>0.048</td>
<td>11%</td>
</tr>
</tbody>
</table>
Notice that with the high beta stock (1.25), increasing the risk-free rate actually decreases the cost of equity (from 11% to 10.75%). This is a systemic advantage that encompasses firms who must finance with more equity. Companies that have high betas may have a difficult time turning to the credit markets for necessary financing. When interest rates rise, the cost of capital goes up for those firms who use leverage. On the other hand, those who use equity have a competitive advantage, especially if the market ignores the higher rates and keeps ascending. The higher beta allows a firm to both escalate earnings with lower capital costs, and temporarily outperform the market. However, as the market keeps rising, these companies have a much higher cost of capital, and when either earnings or the market declines, high beta stocks fall precipitously.

This next example will show sensitivity to market changes. It also shows the importance of always examining the cost of equity in the context of earnings. If we examine the CAPM in isolation, a market decline actually reduces the cost of equity, but then we must remember that earnings are highly correlated with the market; a decline in market value implies that earnings may be decreasing by an even greater amount.

Table 8-2

<table>
<thead>
<tr>
<th>INCREASE 1%</th>
<th>Risk Free %</th>
<th>Beta</th>
<th>Market</th>
<th>Risk Prem.</th>
<th>CAPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>0.06</td>
<td>0.75</td>
<td>0.098</td>
<td>0.038</td>
<td>8.85%</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>0.06</td>
<td>1</td>
<td>0.098</td>
<td>0.038</td>
<td>9.8%</td>
</tr>
<tr>
<td>HIGH</td>
<td>0.06</td>
<td>1.25</td>
<td>0.098</td>
<td>0.038</td>
<td>10.75%</td>
</tr>
</tbody>
</table>

Table 8-3

<table>
<thead>
<tr>
<th>EQUILIBRIUM</th>
<th>Risk Free %</th>
<th>Beta</th>
<th>Market</th>
<th>Risk Prem.</th>
<th>CAPM</th>
</tr>
</thead>
</table>

LOW 0.05 0.75 0.098 0.048 8.6%
MEDIUM 0.05 1 0.098 0.048 9.8%
HIGH 0.05 1.25 0.098 0.048 11%

This scenario calls for a three percent drop in market return to 6.8%.

Table 8-4

<table>
<thead>
<tr>
<th>MKT. DECREASE</th>
<th>Risk Free %</th>
<th>Beta</th>
<th>Market</th>
<th>Risk Prem.</th>
<th>CAPM</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOW</td>
<td>0.05</td>
<td>0.75</td>
<td>0.068</td>
<td>0.018</td>
<td>6.35 %</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>0.05</td>
<td>1</td>
<td>0.068</td>
<td>0.018</td>
<td>6.8 %</td>
</tr>
<tr>
<td>HIGH</td>
<td>0.05</td>
<td>1.25</td>
<td>0.068</td>
<td>0.018</td>
<td>7.25 %</td>
</tr>
</tbody>
</table>

Even with the introduction of extraordinary cash flow during this period (beating the average company in earnings gains), it is doubtful whether a high beta stock could maintain its price. Certainly, the cost of equity dropped more than that of low beta stocks, but the student/investor should consider the source of the higher beta - usually higher operating risk attributable to volatile sales and earnings. Any firm that finances with equity, and has a higher beta, must have higher operating volatility by definition.

One of the keys to understanding the cost of equity is the recognition of how market dependent it is. Although interest rate changes can move the market, they will represent only a small fraction of the cost if the market does not respond. The next table should convince readers that market reaction is paramount: we cut the interest rate in half, without a market response.

The equation is the CAPM with a beta of one: Risk-free rate + (Beta)(Market rate - Risk-free).

Table 8-5

The Market goes from 20 % to 15 % Return
.05 + (1)(0.2-.05) = 0.2 or 20 %
.05 + (1)(.15-.05) = 0.15 or 15 %

Table 8-6

<table>
<thead>
<tr>
<th>Interest Rates are Cut in Half (the risk-free goes from 5 % to 2.5 %)</th>
</tr>
</thead>
<tbody>
<tr>
<td>.05 + (1)(0.2 - .05) = .2 or 20 %</td>
</tr>
<tr>
<td>.025 +(1)(0.2 - .025) = .2 or 20 %</td>
</tr>
</tbody>
</table>

Moreover, there is no factor in the model that expresses the relationship between interest and market return except for the comparative risk premium (market return - risk-free rate). The correlation between rates and market is not explicit and cannot be permanently quantified because volatility in both credit and equity markets changes the relationship. Ultimately, the relationship is a function of yield curve behavior, inflation and aggregate demand among many factors. Expressed as a logarithmic curve, the relationship is in a state of perpetual change which diminishes forecasting ability, i.e., the market creates inflation, which raises rates which lowers the market, which lowers rates, which increases the market which causes inflation...

Figure 8-5
The most constructive advice that an investor or corporate professional can receive is to keep beta at a minimum; the empirical evidence is unchallenged. Low beta stocks are rewarded out of proportion to their risk profiles, while high beta stocks are penalized. In statistical terms, a downward bias exists for high beta stocks. However, the danger of making this generalization is to lose the upside potential that so many higher beta stocks provide during the expansion phase of the business cycle. While some high beta stocks offer an exception and achieve some degree of stability by their very size alone (Intel, for example), the imperative is to seek out firms who can raise beta and take advantage of upswings, but not have the type of operating risk that would damage the stock during a downturn.

One of the best examples of how beta can be deceptive, is with Chapter One’s introductory illustration, Fisher Scientific (now Thermo-Fisher Scientific). With a small profit margin of 3 to 4 percent, Fisher was capable of increasing sales even in a downturn. The company was well-diversified with a low operating leverage, but had a debt to capital ratio that sometimes approached seventy percent because of numerous leveraged buyouts. Nevertheless, the company maintained a beta of about 0.6 and was able to increase their share price sevenfold in about eight years. How was that possible? Besides balancing operating and financial leverage, this firm rarely reacted as much as the market. No one ever bragged about how Fisher was beating Wall Street estimates and the stock was not heavily traded. In fact, sales and cash-flow were comparatively large, but the low profit margins put the company in the “high turnover” class; asset growth was leveraged through the stability of sales. The “mystery” behind Fisher was that the stock simply did not move on the basis of sales or profits, but once the word “acquisition” was mentioned, it took off like a guided missile. Eventually, it would again settle in for another soporific interim, waiting for word of the next growth opportunity.

Mathematically, these large jumps would not be interpreted as volatility because
they were isolated to specific short periods; thus, the small beta. In other words, Fisher had upside potential but was protected from downside risk.

One famous study was conducted by the formidable research team of Black, Jensen and Scholes. They found that the entire period from April 1957 to December, 1965, was characterized by a skewed risk-return tradeoff - higher beta stocks produced lower returns than low beta stocks. In fact, these findings are often pointed out as a condemnation of the entire CAPM. Again, the anomaly can be explained by the extremity of the movement; a stock with a high beta can triple the markets downward path in only a few short days, while it may take a year or more for it to achieve a new high during an expansion. That jack rabbit-volatility almost always represents a return to relative book value and away from speculative risk.

Another example of being “burned by beta” was during the tech stock speculation of the 1990s. This period offered rewards to high beta investors only if they were adept enough to part with their investments before they “fell through.” Very reputable financial professionals thought that a “new era” had dawned, characterized by permanently high price to earnings ratios, and volatile stocks that would “go back up.” By 2001, many high beta stocks that commanded a hundred dollars a share just a few years earlier, could be bought for ten dollars and change.

Unfortunately, the volatility of certain tech stocks has led to more speculation and less investment. Even a well-run company like Google is not an investment grade stock as of this writing (2008), because it is overexposed to a downturn. On the other hand, Microsoft has become more investor worthy as it gives out special dividends and trades between a much narrower range than it once did. Its beta is no longer exceptionally high and it has diversified into voice generated programming and video games. Therefore, a high beta should not condemn a stock’s investment potential; a well-managed high beta company can lower its beta as it takes advantage of lower cost equity. However, even during an upswing, low
beta stocks can outperform the higher betas because of a tendency to hold their gains.

CIRCUMVENTING THE OPTIMAL CAPITAL STRUCTURE

The relationship between short-term interest rates and long-term rates defines the business cycle. If income streams are certain over a long period, the cost of borrowing short-term would be significantly less than borrowing long-term - given a “normal” yield curve. The reason for the lower “price” of short-term debt is that the lender incurs less risk. Any pricing anomaly in the borrower’s favor is short-lived because the loan will be frequently renewed at the current rate. However, the borrower incurs much greater default risk - loans might have to be paid when cash-flow is negative - and there is greater risk incurred because of the potential for interest rate fluctuation. Most businesses need to plan far enough ahead to be competitive and frequent rate changes on top of frequent payments will increase default probability. This disparity between the price of debt and the risk of debt skews the absolute cost of capital in the direction of greater risk. In essence, the company is forced to choose higher cost debt because it is less risky. Since a well-run firm matches its cash-flow with its funding needs, there is always the temptation to use less expensive debt when the firm is in a temporary “holding” pattern at the top of the business cycle: it may wish to delay major projects because interest rates are expected to decline. As banks sell off short-term securities to meet loan demand, there is a tendency for short-term rates to rise, indicating the prospect of a contraction. Thus, a firm may temporarily substitute the increasingly expensive short-term loans for long-term debt, in the hopes of avoiding being “locked in” at a higher rate. This trade-off of more immediate risk and expense for the prospect of lower rates in the future is a luxury that high beta companies cannot afford. Lower beta companies, who have less operating risk can make a strategic play to lower capital costs in the long-run by accepting these immediate risks: they do not face
the prospect of great market volatility which would damage a high beta firm that accepted the same risks. Interest expense would rise in the interim, as would default probability, but this movement away from an optimal capital structure would position the firm for greater gains once a recovery commenced. Essentially, the higher price paid for the short-term loans buffers the firm against uncertainty, acting like an insurance premium, and counterbalancing the risk of default because the action is only implemented temporarily.

THE GAME OF CAPITAL STRUCTURE “GOTCHA”

High beta companies who peak near the top of a business cycle primarily finance with equity. Long-term debt is both prohibitively expensive and risky, because cash-flow is not stable enough to warrant it. Under normal circumstances, retained earnings provide sufficient equity given the lower economic prospects that occur during the plateau phase of a business cycle. However, the cost of equity is relatively high at this stage, pushed up by a market that has surged through a few years of expansion. Unless earnings are maintained and even accelerated, the cost of equity will be rising and eclipsing the rate of earnings, sometimes vectoring off into a different direction altogether. With the prospect of both lower capital and consumer spending, the forecast for a stable stock price is dim.

When a high beta stock is at its peak, company officials sometimes feel indestructible. Their unbridled optimism is punctuated by huge bonuses and a stock price that is soaring. Opportunities for growth are sighted and the firm may begin raising capital to fund large projects. At the same time, an expanding market creates many unsophisticated investors who have never seen a downturn. The market seems like a Lotto ticket that always pays off. Thus, the” perfect storm” occurs in capital structure. The unbridled optimists are matched with the unsophisticated investors; one entity demands plenty of equity and the other supplies it. In fact, the high beta firm is minimizing capital costs by raising equity
when the stock price is high: more funds will be raised with fewer shares. What each player in this scenario does not realize is that they have upped the “ante” at the wrong time, taking on more risk than is warranted by the economic outlook. Naturally, the investment begins to implode as soon as any of the major industry participants misses earnings expectations. Therefore, an investor needs to view equity issued late in the business cycle just as a company views short-term debt. The higher risk needs to be counterbalanced with the potential for appreciation - except - in this game, the loan does not expire like short-term debt. Once stock is issued, it is kept until sold; the investor must enter the deal like a gambler, expecting to “dump” the shares before getting “burned.” In essence, even with the best of intentions, both parties end up like poker players in a Las Vegas casino.

IDEALIZED TRENDS

Business cycle behavior defies expectations more than it confirms them. High beta stocks may recover earlier than low beta stocks. Temporarily, the cost of equity may actually decrease during an upswing. The market may go into a tailspin just as the expansion phase is expected. Exceptions to the rule do not negate its logic, but offers the opportunity to observe the workings of other forces. Often, the political motives of a lobby can be exhibited in some piece of legislation that seems inconsequential but has repercussions in the market; the laws of supply and demand are circumvented by creating an artificial scarcity for example. Speculative excess, a “bubble” created by government action or inaction, can occur. An example of such a bubble was the housing speculation that occurred in the early millennium which was purported to be an outgrowth of interest rates being too low for too long. In such a scenario, the investing public will put too much capital in one area to the detriment of others, and the result will be a sector (housing or Reits) that remains profitable beyond its capacity to generate income. Thus, a sector whose internal dynamics would normally let it prosper for one phase only, ended up being favored
by the economy for three. This imbalance can only end up affecting other sectors, and indeed we saw a fallout with mortgage companies, banks and brokers causing a severe credit debacle in 2007. By recognizing the rationality behind the “ideal” business cycle, the investor can therefore be alerted to the danger of an exception - whether it be a speculative bubble or a more complicated supply and demand issue such as occurred with the price of oil.
The managerial imperative is to find its own “efficient frontier” within the parameters of its industry; that is - it should strive always to achieve the greatest return with a given level of risk. The reader should observe that economic risk is less in phases A and B and it is at this juncture that corporate risk can be increased. Once a firm enters phase C, corporate risk is no longer an option: it should decrease beta, reduce debt, and attempt to lower operating risk through diversification.

A very obvious example of an industry changing its risk profile is land line telecom. These formerly regulated companies have increased their collective risk by
branching out into wireless, the Internet and even telecom equipment. Without the low beta of a regulated utility, these firms peak much later in the business cycle. In fact, AT&T with a beta of around “1,” only had a long term debt to capital ratio ranging from 15% to 33% throughout the 1990s. The typical utility has more financial leverage but not nearly the greater operating risk that AT&T has incurred over the years. Extreme amounts of capital poured into these firms right at the market peak of the late 90s, which was the wrong time to incur such risk. When the market imploded, telecom suffered more than most, but could have avoided some of the damage by expanding in the earlier phases of the cycle.

SECTOR ROTATION

To flawlessly predict which sector will be the next to profit is a pipe dream. Most sectors will be segmented by performance and all firms will not prosper at once. Nor will it be possible to predict how long a sector will profit, although six months of accelerated earnings will be an indicated minimum to be considered as “outperforming” the economy. “Chasing” profitable sectors, however, is much like chasing earnings: the investor might gain from momentum, but just as likely will lose money because the large investors have already spotted “the next big thing” and moved on. The real value in sector rotation is to recognize that a diversified portfolio can be achieved by concentrating on firms that benefit from the recovery and expansion but should also have some defensive stocks in case of a contraction. In addition, stocks that do well during a plateau should be chosen on the basis of lower risk simply because the higher risk stocks that do well during this phase will be the first to fall.

SECTOR LOGIC

The concept behind sector rotation is that the cycle favors specific industries within the bounds of interest rates and demand. For example, when interest rates are low, more applicants qualify for credit and any “big ticket” item requiring a loan will be
favored. Consequently, any industry that depends on interest rates - autos, housing, banks, etc. - will be favored as well. During a contraction, when credit risk is still high, consumers will not be taking out loans for purchases, but will still be buying bread and going to visit the doctor if needed. Thus, consumer staples and the healthcare industry are favored. When the recovery and expansion phases hit, goods that are used in the production of other goods - sub assemblies, small motors, heat expanders etc., often called intermediate goods, will be in demand and set the stage for the late expansion, early plateau. It is at this juncture that unused capacity disappears and manufacturers begin to expand by purchasing “capital goods” - the tools and machinery that constitute the final product of the intermediate goods.

Naturally, all of this freight must be transported, and the various transportation stocks begin to do well - railroads, trucking, shipping. While the astute reader will notice that sector rotation is merely a detailed elaboration of the “Dow theory,” the premium for economists is to observe how it is different. Many sectors will “bleed-over” into a phase whose interest/demand characteristic does not fit the industry.

Additionally, most economists will debate which phase the economy has entered as well as how many phases or sub phases actually exist. As a general guideline, the following table offers a rough estimate of a typical business cycle:

Table 8-7
One pattern that is worth noting: both consumers and businesses follow similar borrowing patterns. The consumers with the best credit will be purchasing the homes and autos that stimulate the economy in a recovery. Likewise, the largest manufacturers with the least operating risk will expand with the greatest financial leverage. Paradoxically, as interest rates rise, credit is even more obtainable and less credit-worthy customers will be picking up loans later in the business cycle, albeit at higher rates. The basic reason for this anomaly is that personal and business incomes do not rise until later in the cycle, thus qualifying customers for loans. However, the axiom that the most credit-worthy customers need the least amount of credit is true; wealthy businesses and people use debt as a moneymaking tool rather than as a necessity. Individuals and companies who are the least credit-worthy “somehow” end up paying more interest for loans because they did not possess the collateral early enough in the “game” when rates were low. This recipe for default costs financial institutions billions but no alternative system seems practical. The successful firms who finance with equity do so not because they cannot qualify for loans, but because it is the most cost effective method, helping to maximize the stock price. On the other hand, firms who have a volatile cash flow will sometimes take on debt when credit terms ease and will suffer the consequences late in the plateau phase. This “survival of the fittest” scenario can be combated with knowledge of the business cycle and applied judgment.

The reader should notice that the risk premium, the difference between stocks and the risk-free rate, also mirrors sector rotation. At the prospect of a contraction, there is a “flight to quality,” a general movement into low risk, high quality debt instruments like treasuries and AAA bonds. The greater certainty in the bond market attracts capital away from stocks. As the market expands, investors take on more risk, inflating the risk premium, and stocks are again
favored. In fact, at the top of the market there will be investment in junk bonds, IPOs (initial public offering) and even in firms without any earnings. This higher demand for debt instruments in the initial phases of the recovery, makes debt less expensive in the capital structure, but as risk premiums rise, firms can garner more funds from an equity issue despite its higher cost because stocks are in demand. This situation presents another anomaly: when debt is in demand by investors, it is relatively inexpensive for the issuing company, but when equity is demanded, the company must pay a higher price; the rising market raises the risk premium, and the cost of equity. When such an equity issue is supported by higher earnings, both beta and the cost of bankruptcy proceed to drop - beta by the decrease in debt to equity and bankruptcy costs by an earnings generated decrease in default probability.

INDUSTRY RESPONSE TO THE BUSINESS CYCLE

The following industries respond (not always positively) to the respective phase:

<table>
<thead>
<tr>
<th>Table 8-8</th>
<th>Table 8-9</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) CONTRACTION</td>
<td>2) RECOVERY</td>
</tr>
<tr>
<td>Utilities</td>
<td>Electric Power</td>
</tr>
<tr>
<td>Consumer Staples</td>
<td>Paper Products, Forestry</td>
</tr>
<tr>
<td>Tobacco</td>
<td>Chemicals</td>
</tr>
<tr>
<td>Food, Beverages</td>
<td>Steel</td>
</tr>
<tr>
<td>Publishing</td>
<td>Household Furnishings, Autos, Appliances</td>
</tr>
<tr>
<td>Drugs</td>
<td>Crude Oil</td>
</tr>
<tr>
<td>Healthcare</td>
<td>Banks</td>
</tr>
<tr>
<td>Apparel</td>
<td>Small Machine Tools</td>
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<tr>
<td></td>
<td>Intermediate parts</td>
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<tr>
<td></td>
<td>Defense Electronics</td>
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<tr>
<td></td>
<td>Pollution Control</td>
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<tr>
<td></td>
<td>Waste Management</td>
</tr>
</tbody>
</table>

| Table 8-10 | Table 8-11 |
### Table 8-12

<table>
<thead>
<tr>
<th>CROSSOVER SECTORS</th>
<th>INDUSTRY PHASES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Publishing</td>
<td>Contraction, Recovery</td>
</tr>
<tr>
<td>Beverages</td>
<td>Contraction, Recovery</td>
</tr>
<tr>
<td>Mining</td>
<td>Expansion, Plateau</td>
</tr>
<tr>
<td>Oil</td>
<td>Recovery, Expansion, Plateau</td>
</tr>
<tr>
<td>Electric Utilities</td>
<td>Contraction, Recovery</td>
</tr>
<tr>
<td>Tobacco</td>
<td>Expansion, Plateau, Contraction</td>
</tr>
<tr>
<td>Drugs</td>
<td>Contraction, Expansion</td>
</tr>
<tr>
<td>Defense Electronics</td>
<td>Recovery, Plateau</td>
</tr>
</tbody>
</table>

### ECONOMIC SIGNALS

Economic indicators are so mixed that it is very difficult to achieve consensus among leading economists. The decisions to invest in a certain sector must anticipate its economic milieu, and much money is made in making a correct forecast. However, once the majority of economists agree on the state of the economy, it is almost too late to move into a sector because all the money is made through early anticipation. The average investor can benefit from knowledge of
economic signals if only as an instructional tool for “what not to do.” Charts and tables set up the illusion that anticipation of an economic phase is effortless, but these tables do not function as “tea leaves.” For example, why would any investor buy stocks on margin when interest rates are high during a plateau phase? If the investor has a speculative bent, it is much better to take advantage of low interest rates and speculate during the recovery phase. No one needs to be a fortuneteller to almost guarantee that interest rates will drop during a contraction. The following tables give a brief outline of what signals to expect in each phase:

**Table 8-13**

<table>
<thead>
<tr>
<th>CONTRACTION</th>
<th>RECOVERY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. GDP Declines as a Negative Percentage</td>
<td>1. GDP Percentage Change turns Positive.</td>
</tr>
<tr>
<td>2. 12 Month Average Percentage Change in Federal Funds Rate turns Negative.</td>
<td>2. 12 Month Average of Industrial Production Change becomes Positive</td>
</tr>
<tr>
<td>3. The percentage change in M2 turns from Negative to Positive.</td>
<td>3. Non Farm Payrolls Increase.</td>
</tr>
<tr>
<td>4. Interest Rates Decline.</td>
<td>4. Initial Unemployment Claims Decrease.</td>
</tr>
</tbody>
</table>

**Table 8-14**

<table>
<thead>
<tr>
<th>EXPANSION</th>
<th>PLATEAU</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Interest Rates Increase.</td>
<td>1. The Moving Average for the Rate of Change of Industrial Production turns Negative.</td>
</tr>
<tr>
<td>2. 6 Month Moving Average in the CPI (Inflation) turns Positive</td>
<td>2. GDP Declines as a Percentage Change (2 % instead of 4 % for example)</td>
</tr>
<tr>
<td>3. Non Farm Payrolls Increase</td>
<td>3. Unemployment Claims Increase</td>
</tr>
<tr>
<td>4. 12 Month Moving Average of the Rate of Change in the Federal Funds Rate turns Positive.</td>
<td></td>
</tr>
<tr>
<td>5. 6 Month Moving Average of the Rate of Change for the Real Monetary Base turns Positive</td>
<td></td>
</tr>
</tbody>
</table>
The arbitrariness of some of these signals is apparent if one views an indicator like the CPI in isolation. In some economies, there will be inflation and recession at the same time and so the acceleration in the rate of change will certainly not be an expansion phase indicator. Common sense and coordination of several factors (some not enumerated) will be the watchwords. Again, the premium is placed on anticipation of the phase, but investment on the basis of such indicators is in itself, a risky proposition.