

Business Cycles: Simulating Solvency

By David N. Fuller, CFA

Introduction

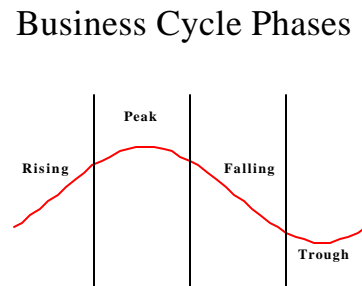
Until recently, the U.S. economy experienced one of the longest periods of economic expansion in its history. Traditionally, economic cycles have averaged about six years in length, but a combination of technological innovation, skillful monetary policy and global market competition and leadership has made possible a steady expansion lasting nearly a decade.

Many executives have earned their leadership roles during this time period. Young managers were just beginning their careers when the last recession occurred, and just as many investors today don't remember the bear markets and high inflation of the 1970s and early 1980s, many of today's executives have never led a company during a period of economic contraction. Lower consumer confidence, corporate profits and major stock indices, in conjunction with numerous interest rate cuts, have left managers more uncertain than they have been for some time.

Executives and managers need to expand their focus to encompass contraction as well as expansion when planning for future needs. Budgeting and forecasting processes must consider what may be a harsher operating environment in the future for a company to successfully adapt to those conditions. Simulating solvency is a process of modeling the company and testing its reaction to hardship. Through this intricate process, management can assess the company's ability to weather an economic storm, and not only survive but also be poised to prosper again as favorable conditions return.

Phases of the Business Cycle

The economic cycle can be characterized as a trigonometric wave, such as a sine wave, with four distinct phases. These are Rising, Peak, Falling and Trough. The phases are illustrated in the graphic below.



The Rising phase occurs when the cycle has passed the Trough and has begun to climb towards the Peak. After the Peak has been reached, the Falling phase connects the Peak to the following Trough of the cycle. Whether your company follows the broader economic cycle or a more specialized industry cycle, such as the building cycle, understanding the patterns and positions of the business cycle is essential to planning for the future.

Some companies follow the broader economic cycle generally while being just out of phase with the economy. For example, firms that supply raw materials are first to benefit as the economy passes the trough because they sell the materials that will later be processed into inventories and ultimately sold as the market strengthens. Some firms track leading indicators and some seem to lag. Manufacturers of production equipment often lag because purchases are often made that expand capacity near or even after the economy reaches its peak.

Commodities often have cycles that are unique compared to the economic cycle. Usually, production levels can influence prices for these commodities. Take industrial chemicals as an example. Ethylene is a petrochemical product manufactured by

very large companies. Modern ethylene plants require huge capital investments and take years to build and put into production. Oftentimes, the decision to build a new plant cannot be justified until demand has forced prices to cyclical highs. However, when the new production capacity becomes available, production costs fall and prices follow. Prices stay low until increased demand again acts to increase prices.

The first step in modeling economic conditions for your firm is to make a judgment about which phase of the cycle your business is likely in.

Cycle Characteristics

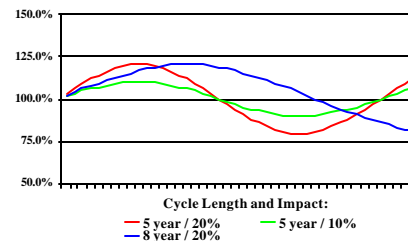
Different businesses have different levels of cyclicity. Most consumer products companies have very low levels of cyclicity. Higher levels of cyclicity are seen with high-priced items and luxury products. While the health of the economy doesn't have much effect on the amount of food we eat, it certainly may influence decisions such as the purchase of a new car or home. In the business-to-business area, cyclicity often is highest with companies that sell durable equipment. For example, many companies that sell furniture and equipment are exposed to high levels of cyclicity. These firms typically follow a cycle which is in sync with the economy in general but much more dramatic in terms of impact. They begin to benefit greatly as firms see indications of rising prospects and existing capacity dries up, but in an economic downturn their results decline much farther than those of companies in other industries.

The impact of cycles on a business can be estimated in a number of ways. The history of the individual business can be reviewed to determine what happened in the past. Alternatively, one could include the company's peers in a similar analysis of the past experience of the industry.

The duration of the business cycle affecting your company is another factor that should be considered in the planning process. Time periods vary historically and it is impossible to predict a business or economic cycle with certainty. The best one can hope for is a reasonable level of accuracy based on prior experience. If history shows the company faces the challenges of a complete cycle every 5 to 8 years, one should begin to watch out for signs of trouble by the third year of an expansion.

The figure below shows three examples of different business cycle curves. The red line represents a five-year cycle where the impact is 20% expansion and contraction. The green line shares the red line's five-year cycle with a more moderate 10% impact. Meanwhile, the blue line has the same 20% impact but a cycle period of eight years instead of five.

Business Cycle Curves



By changing assumptions as to phase, impact and duration, a wide variety of economic environments can be created to test the company.

Implications for the Firm

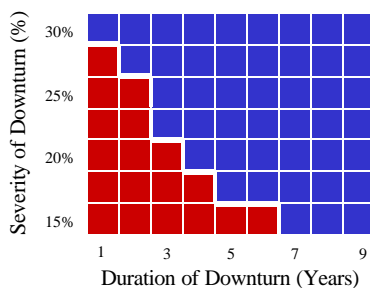
When a market contracts, there are a number of possible effects on the performance of a company. Perhaps most obvious is shrinking sales volume. The company will likely sell less of its products than it had previously. The compound effect is that as volumes fall, competition intensifies because firms in the industry are attempting to maintain production volumes.

Competition usually results in falling prices so revenue decreases as a result of the combined impact of falling prices and volumes.

Falling volumes may have even more serious implications for production costs than for revenue. If a company has a high burden of fixed costs, falling volume will result in increased relative production costs and a corresponding decline in profit margins. Selling, general and administrative costs may also increase on a percentage basis when revenues fall. In the case of a former client, a building products manufacturer, the last cyclical downturn decreased company sales by about 15%, but reduced its profits by nearly 100%.

By simulating company performance in a variety of different economic scenarios and taking all of the predicted company reactions into account, a pattern can be established showing the conditions under which the company is strong enough to survive without additional investment. The graph below illustrates this concept. The firm in the example experiences losses that require a capital infusion to maintain operations in the scenarios depicted in red. In could be said that the line dividing red and blue represents the “solvency limit” for the firm.

Solvency Map



Some executives may find that they are running a company that has an 80% chance of insolvency in a downturn given its current resources and business model. Others with

more conservative attitudes may find that their company has only a 10% chance of insolvency. While one company may be over-extended and need improvement, the other may be too conservative and not be pursuing all of the opportunities it should. The goal should be to establish a reasonable margin of safety and manage the company’s resources to monitor and maintain that margin of safety.

Incremental Risk of Insolvency

When evaluating new investments, the impact of the investment on the company’s margin of safety should be as important to a manager as the financial benefits associated with the project.

Take the example of a company considering an investment in a new plant that would add significantly to its production capacity. While the typical forecast focuses on the net present value of the project, the project’s impact on the risk profile of the firm should also be reviewed. If management knew only that a successful investment would add 30% to the value of the company, the decision would appear to be an easy one. However, if management also learned that this investment increased the risk of business failure from 10% to 35% as a result of weakening the company’s financial reserves and substantially raising its fixed costs, a different decision may be more appropriate.

Conclusion

To be clear, this is not a prediction of a recession in general or a downturn in any particular market. An economic downturn will occur in the future, however, the precise timing of such a downturn is impossible to predict. While managers need not run their businesses as if hard times are imminent, they should maintain their businesses’ readiness to face hard times when they occur.

In the long run, companies must maintain their competitiveness without accepting excessive risk. By incorporating business cycle simulation techniques into their decision-making process, companies can identify their current level of risk and work to become nimble enough to adapt to unfavorable conditions when necessary.

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