

## **A CORRELATION STUDY BETWEEN BUSINESS CYCLE & INVESTORS BEHAVIOR**

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**Abstract**-A great number of psychological studies have demonstrated that test subjects regularly overestimate their abilities, especially relative to others. Studies also show that people tend to overestimate the accuracy of information. Investors make better decisions when they separate emotions from the thought process, but it's practically impossible to achieve the goal in perfection. Regardless of how hard one tries, emotions will always be present. The best an investor, or anyone who makes decisions about finances, can achieve is awareness of the ways psychology prevents optimal decision making.

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### **Introduction**

#### **Business Cycles, Growth Cycles**

Economic cycles are characteristic features of market-oriented economies – whether in the form of the alternating expansions and contractions that characterise a classical business cycle, or the alternating speedups and slowdowns that mark cycles in growth. With the progress of the liberalisation process in India, which has transformed it into more of a market-driven economy, such cycles are destined to become prominent features of the economic landscape. The National Bureau of Economic Research (NBER), founded in New York in 1920, pioneered research into understanding the repetitive sequences that underlie business cycles. Wesley C. Mitchell, one of its founders, first established a working definition of the business cycle that he, along with Arthur F. Burns (1946), later characterised as follows:

"Business cycles are a type of fluctuation found in the aggregate economic activity of nations that organize their work mainly in business enterprises: a cycle consists of expansions occurring at about the same time in many economic activities, followed by similarly general recessions, contractions and revivals which merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic; in duration business cycles vary from more than one year to ten or twelve years; they are not divisible into shorter cycles of similar character with amplitudes approximating their own."

This definition of the business cycle does not make explicit the notion of 'aggregate economic activity', leading some to argue in recent years that a satisfactory proxy for this concept is a country's GDP, which is, after all, about as aggregate a measure of output as possible. On this narrow, output-based view, if one had available a monthly estimate of GDP, then its peaks and troughs would be all that would be needed to determine the peak and trough dates for the business cycle.

But Geoffrey H. Moore, who worked closely with Mitchell and Burns at the NBER, noted (1982) that "No single measure of aggregate economic activity is called for in the definition because several such measures appear relevant to the problem, including output, employment, income and [wholesale and retail] trade... Virtually all economic statistics are subject to error, and hence are often revised. Use of several measures necessitates an effort to determine what the consensus among them is, but it avoids some of the arbitrariness of deciding upon a single measure that perforce could be used only for a limited time with results that would be subject to revision every time the measure was revised." Basically, both on the basis of the meaning of aggregate economic activity and issues of revision and measurement error, he advocated the determination of business cycle dates based on multiple measures. This approach is, in fact, the basis of the determination of the official U.S. business cycle dates by the NBER, and of international business cycle dates by the Economic Cycle Research Institute (ECRI), founded by Moore.

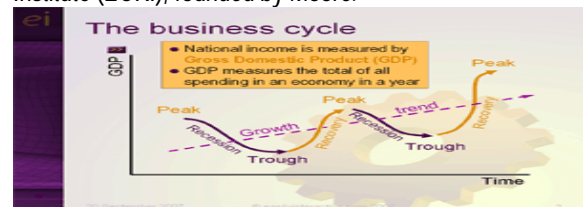


Fig. 1

### **Recession**

In this context, it is important to understand something of the mechanism that drives a business cycle. A recession occurs when a decline – however initiated or instigated – occurs in some measure of aggregate economic activity and causes cascading declines in the other key measures of activity. Thus, when a dip in sales causes a drop in production, triggering declines in employment

and income, which in turn feed back into a further fall in sales, a vicious cycle results and a recession ensues. This domino effect of the transmission of economic weakness from sales to output to employment to income, feeding back into further weakness in all of these measures in turn, is what characterizes a recessionary downturn.

At some point, the vicious cycle is broken and an analogous self-reinforcing virtuous cycle begins, with increases in output, employment, income and sales feeding into each other. That is the hallmark of a business cycle recovery. The transition points between the vicious and virtuous cycles mark the start and end dates of recessions.

Under the circumstances, it is logical to base the choice of recession start and end dates not on output or employment in isolation, but on the consensus of the dates when output, income, employment and sales reach their respective turning points. To do any less is to do scant justice to the complexity of the phenomenon known as the business cycle (Layton and Banerji, 2004). That is also why a decline in GDP alone, when it does not trigger the characteristic vicious cycle of falling employment, income and sales, does not constitute a recession. Similarly, that is why a transient rise in GDP that does not ignite a self-reinforcing recovery in employment, income and sales may be part of a "double-dip recession", but does not qualify as a new expansion. However, because of its simplicity, two consecutive quarterly declines in GDP has become perhaps the most popular rule for determining the onset of recession. Yet, the use of such a rule may produce quite a nonsensical set of business cycle dates. One could well imagine a period of depressed economic activity associated with falling output and employment and with unemployment climbing, but with two clear quarterly declines in GDP happening to have a modestly positive intervening quarter. Similarly, to automatically conclude that a country was in recession simply because of two minutely negative quarterly growth rates in GDP – particularly if they occurred simply because they followed on from one or two quarters of unusually strong quarterly growth – seems just as misguided. In the Indian case, quarterly GDP data were not available until the late 1990s, so it would be difficult in any case to base the historical business cycle dates on such a rule.

The above discussion describes classical business cycles that measure the ups and downs of the economy in terms of the absolute levels of the coincident indicators, i.e. indicators that gauge current economic activity. However, in the decades that followed the end of World War II, many economies like Japan and Germany saw long periods of rapid revival from wartime devastation, so that classical business cycle recessions seemed to have lost their relevance. Rather, what was considered increasingly germane was a second NBER definition of fluctuations in economic activity, termed a growth cycle. A growth cycle traces the ups and downs through deviations of the actual growth rate of the economy from its long-run trend rate of growth. In other

words, a growth cycle upturn (downturn) is marked by growth higher (lower) than the long-run trend rate. Economic slowdowns begin with reduced but still positive growth rates and can eventually develop into recessions. The high-growth phase typically coincides with the business cycle recovery, while the low-growth phase may correspond to the later stages leading to recession. Some slowdowns, however, continue to exhibit positive growth rates and are followed by renewed upturns in growth, not recessions. As a result, all classical business cycles associate with growth cycles, but not all growth cycles associate with classical cycles. Of course, growth cycles, measured in terms of deviations from trend, necessitated the determination of the trend of the time series being analysed. However, while growth cycles are not hard to identify in a historical time series, they are difficult to measure accurately on a real-time basis (Boschan and Banerji, 1990). This is because any measure of the most recent trend is necessarily an estimate and subject to revisions, so it is difficult to come to a precise determination of growth cycle dates, at least in real time.

This difficulty makes growth cycle analysis less than ideal as a tool for monitoring and forecasting economic cycles in real time, even though it may be useful for the purposes of historical analysis. This is one reason that by the late 1980s, Moore had started moving towards the use of growth rate cycles for the measurement of series which manifested few actual cyclical declines, but did show cyclical slowdowns.

Growth rate cycles are simply the cyclical upswings and downswings in the growth rate of economic activity. The growth rate used is the "six-month smoothed growth rate" concept, initiated by Moore to eliminate the need for the sort of extrapolation of the past trend needed in growth cycle analysis. This smoothed growth rate is based on the ratio of the latest month's figure to its average over the preceding twelve months (and therefore centred about six months before the latest month). Unlike the more commonly used 12-month change, it is not very sensitive to any idiosyncratic occurrences 12 months earlier. A number of such advantages make the six-month smoothed growth rate a useful concept in cyclical analysis. Cyclical turns in this growth rate define the growth rate cycle.

At ECRI, growth rate cycles rather than growth cycles are used along with business cycles as the primary tool to monitor international economies in real time. The growth rate cycle is, in effect, a second way to monitor slowdowns in contrast to contractions. Because of the difference in definition, growth rate cycles are different from growth cycles. Thus, what has emerged in recent years is the recognition that business cycles, growth cycles and growth rate cycles all need to be monitored in a complementary fashion. However, of the three, business cycles and growth rate cycles are more suitable for real-time monitoring and forecasting, while growth cycles are suited primarily for historical analysis.

### Dating of Business Cycles and Growth Rate Cycles in the Indian Economy

For India, Chitre (1982) had initially determined a set of growth cycle dates. Following the classical NBER procedure, Dua and Banerji (1999) later determined business cycle and growth rate cycle dates for the Indian economy. These dates were further revised and reported in Dua and Banerji.

### Coincident Index and Reference Chronology

The timing of recessions and expansions of Indian business cycles is determined on the basis of a careful consideration of the consensus of cyclical co-movements in the broad measures of output, income, employment and domestic trade that define the cycle. A summary combination of these coincident indicators, viz., variables that move in tandem with aggregate economic activity, is called the *Coincident Index*, whose cyclical upswings and downswings generally correspond to periods of expansion and recession respectively.

Table 1 reports the business cycle chronology for the Indian economy since the 1960s and gives the dating of peaks and troughs as well as the duration of recessions and expansions. This shows that during the 1990s, the Indian economy experienced two short recessions – the first from March 1991 to September 1991

and the second from May 1996 to November 1996. Prior to these recessions, it experienced a very long expansion from March 1980 to March 1991.

Likewise, the reference cycle, derived from the central tendency of the individual turning points in the growth rates of the coincident indicators that comprise the coincident index, gives the highs and lows of the growth rate cycle. This dates the

slowdowns and speedups in economic activity. Table 2 gives the reference chronology of the growth rate cycle along with the duration of slowdowns and speedups in the Indian economy since the 1960s. While the economy experienced only two short recessions in the 1990s, it exhibited four slowdowns – March 1990 to September 1991, April 1992 to April 1993, April 1995 to November 1996, and September 1997 to October 1998. Thus, the growth rate cycle peaks led their comparable business cycle peaks, highlighting the distinction between a slowdown and a full-fledged recession. The historical chronology of business and growth rate cycles helps to design a system for the prediction of recessions and recoveries as well as slowdowns and pick ups. In fact, the reference chronology provides a test of the performance of leading indicators in anticipating turning points of the cycles.

### The Indian Experience

Leading indicators are designed to anticipate the timing of the ups and downs in the business cycle. They are related to the drivers of business cycles in market economies, which include swings in investment in inventory and fixed capital that both determine and are determined by movements in final demand. They also include the supply of money or credit, government

spending and tax policies, and relations among prices, costs and profits. An understanding of these drivers can help identify the predictors of the downturns and upturns. Remarkably, decades of experience of the researchers at ECRI have shown that in a wide variety of market economies, both developed and developing, similar leading indicators consistently anticipate business cycles, underscoring the fundamental similarity of market economies. Such robust leading indicators can be used as the foundation for reliable cyclical forecasts.



Fig. 2

A composite of the leading indicators yields the Leading Index, peaks and troughs in which anticipate or “lead” peaks and troughs in the business cycle. Also, peaks and troughs in the leading index growth rate anticipate peaks and troughs in the growth rate cycle, i.e. slowdowns and speedups in economic growth respectively.

The Leading Index for the Indian economy is described in Dua and Banerji . Before that, the government long dominated the “commanding heights of the economy” and the assumption of a free-market economy was questionable. For the first four decades after India’s independence, the government owned roughly half of the economy’s productive capacity. Even the private sector was hemmed in by myriad regulations and rampant distortions of the free market, such as controls on prices and interest rates and extensive licensing procedures for the establishment of new factories or expansion of existing capacity. Generally, there were major barriers to entry and exit in most industries, including the difficulty of laying off any part of the labour force regardless of the profitability. Under such circumstances, endogenous cyclical forces do not necessarily drive business cycles. It is thus understandable that the leading indicators that typically anticipate business cycles in market economies did not lead in a systematic manner.

In fact, Indian recessions before the 1990s were mainly triggered by bad monsoons, which cannot be predicted by leading indicators. In a sense, the emergence of the leads since the early 1990s is evidence that the free market is starting to dominate the economy. Like domestic growth, export growth is also cyclical, but is

driven by business cycles in the main export markets. Thus, in order to predict the timing of peaks and troughs in exports growth, it is logical to combine ECRI's leading indexes for those foreign economies with a real effective exchange rate, which determines the price competitiveness of Indian exports, to arrive at a leading index for India's exports, which leads turning points in Indian exports growth by an average of nine months. This leading exports index complements the leading index for the Indian economy, to provide the means to monitor cycles in domestic cycles and well as exports cycles.

### **Investor Psychology**

Investors make better decisions when they separate emotions from the thought process, but it's practically impossible to achieve the goal in perfection. Regardless of how hard one tries, emotions will always be present. The best an investor, or anyone who makes decisions about finances, can achieve is awareness of the ways psychology prevents optimal decision making. Here are some interesting aspects of psychology that hinder the best decision-making.

### **Recency effect**

We tend to remember better events that happened most recently. While at the peak of a bubble, like we've seen in real estate and stocks, several years of increases hide the reality that bubbles burst when high prices are not supported with fundamental value. Likewise, if you are asked to review your experiences at a restaurant, even if you have visit that restaurant for decades, your most recent experience at that venue will have the most weight.

**Here's how this can damage you:** In the midst of a recession, it seems like the stock market keeps getting lower. All we see is bad news like financial scandals and corruption. We forget that over the long term, the stock market has been the best way to grow your money. So we abandon the stock market and miss out on those gains when the economy rebounds.

### **Confirmation bias**

There are certain things we want to believe. Several years ago, a friend told me that "real estate always goes up." There's the recency effect again. Also, to believe that any investment can't fail, we must ignore information that does not fit in with that philosophy. We seek out the studies or opinions that match our own as we look for confirmation.

**Here's how this can damage you:** If you are looking to buy a house, it would be smart to look for reasons that the purchase will be financially sound over the long term. You will cite the usual positive aspects of home purchasing, including the fact that it's an asset likely to appreciate and you receive a small tax break on mortgage interest, but you'll likely ignore the fact that

you're likely to move out of the house before buying gains its advantage over renting.

### **Overconfidence affect**

Models of financial markets with overconfident investors predict that trading will be excessive. One recent study used a creative approach to see if overconfidence is related to high levels of trading. Many psychological studies have shown that men are more prone to overconfidence than women. If overconfidence causes overtrading, then men should exhibit their greater tendency toward overconfidence by trading more. The results of the study show exactly that-for a large sample of households, men traded 45% more than women, and single men traded 67% more than single women over the period of the study.

Is the active trading that overconfidence leads to actually 'excessive,' causing lower performance? A study of the trading activity and returns for a large national discount brokerage suggests that it is. For all of the households, returns averaged 16.4% over the period. However, those that traded the most averaged 11.4% in annual returns, significantly less than for an account with average turnover. Over the same period, the S&P 500 returned 17.9% on average.

### ***What, if anything, can investors do about the general tendency toward overconfidence?***

You can profit from this research only by heeding its message: Trade less. This is perhaps more easily said than done. Placing too much confidence in an analyst's buy/sell recommendation or earnings projection may lead to excessive trading even without any illusions about your own stock-picking abilities.

Other aspects of overconfidence are more subtle. People prefer to bet on the flip of a coin if it has not already been tossed. Psychologists relate this to a tendency for people to believe that they either have some ability to foretell the future or some control over the outcomes of future events.

Another behavior that is related to overconfidence in our abilities is the tendency to treat historical information as irrelevant and to place much more importance on current circumstances as a determinant of future outcomes. The psychological basis for such a tendency is called "historical determinism," the belief that historical events could or should have been predictable given the circumstances of the past. For investors, this translates to a belief that market events, such as the 1929 crash, could not have developed any other way.

Only if we determine that current circumstances mirror those of some past time period will we be inclined to give history its due. Our collective social memory may tend to emphasize things that are seen as directly causing past events, and exclude circumstances that suggest a different outcome. The cry of "this time it's different" has a special place in investment lore. It is perilous to ignore stock market history based on a belief that present circumstances make historical market performance irrelevant to current decisions.

### **Fear of Regret**

A second mental error that can affect decision-making is an excessive focus on the potential feelings of regret at having made a poor decision (or a 'good' decision that turns out poorly). This type of error is rooted in most individuals' (sometimes extreme) dislike for admitting they are wrong. The tendency to feel distress at having made a mistake that is out of proportion to the size and nature of the error is what psychologists label the "pain of regret." The fear of regret manifests itself when the potential regret from making an error has an influence on our decision-making that is out of proportion to the actual penalty an error would impose. Some behavioral models are constructed around the idea that people make decisions so as to minimize the potential regret that may result.

The fear of regret influences behavior when individuals procrastinate in making decisions. Studies have shown that people will postpone a decision, claiming that they are awaiting an upcoming information release, even when the new information will not change their decision (called the disjunction effect by psychologists). The fear of regret can play an important role in our investment decision-making in other ways as well. In stock transactions, acting so as to avoid the pain of regret can lead to holding losing stocks too long and selling winners too soon. When stocks go down in value, investors seem to delay the selling of those stocks, even though they likely have not met expectations. Selling the position would finalize the error and the pain of regret is delayed by not accepting the purchase as an error. Winning stocks, on the other hand, contain the seeds of regret. The sale of appreciated shares removes the possibility that those shares will fall in value along with the potential for regret should this occur before the shares are sold. Besides avoiding poor decisions from too much focus on the fear of regret, you may also be able to improve performance by exploiting pricing patterns that result from behavior rooted in the fear of regret. A general tendency among investors to hold on to losers too long will slow the price declines, since less shares are offered for sale. Similarly, a tendency to sell winners too soon will increase the number of shares for sale and slow price increases. Both of these effects can enhance opportunities for investors.

Strategies based on price momentum and earnings momentum seek to exploit the fact that price changes occur slowly, over a sometimes prolonged period of time. Studies show that stocks that have performed the best (or worst) over six months to a year are likely to remain good (or poor) performers over the next year. There has been considerable research over the years showing that firms that announce surprisingly good (or poor) quarterly earnings tend to outperform (or underperform) for up to a year after the earnings announcement.

While the success of momentum strategies may also be a result of other psychologically driven behaviors, a tendency to sell winners too soon and losers too late will, in general, make price adjustments to a new equilibrium level a more drawn-out process than it would otherwise

be. Investors can purchase stocks of firms that are in an established uptrend, with both earnings and price momentum, and hold them until the trend has reversed. For stocks that show a negative trend in earnings and price, the message here is: Get out. The deterioration will likely be longer and more severe than you think. Such discipline should reduce the tendency to sell winners too soon and hold losers too long, and improve investment results.

### **Myopic Risk Aversion**

The term "myopic risk aversion" refers to the tendency of decision makers to be shortsighted in their choices about gambles and other activities that involve potential losses. Much research has examined what types of gambles people will accept, the effects of how the possible outcomes of the gamble are presented, and whether people make consistent choices. As an example of how these results can apply to investment decision-making, consider an investor saving for retirement. Each year's investment in equities rather than a lower-risk alternative can be viewed as a single gamble. Unlike casino gambling, however, the expected payoff is positive, and the investor has the opportunity to invest in equities over a period of many years. Two leading researchers in behavioral finance have concluded that investors in this situation tend to hold less than the optimal amount of equities because they place too much emphasis on the potential loss from a single year's investment in equities. They term this shortsightedness myopic risk aversion. In one study, investors in a company retirement plan chose larger equity allocations after they were shown the actual results of investing in equities over many different 20-year periods. The research suggests that if investors focus on the distribution of outcomes for the whole period, they are more likely to make the correct decision."

### **Losing money is painful**

The brain reacts to losing money the same way it reacts to pain. As pain is something we are built to avoid, we also try to avoid any potential for losing money. On the surface, this sounds like it would be a good thing, producing decisions that are more likely to side with gaining rather than losing. What really happens is that if we are presented with a situation where we have an even chance of winning \$150 or losing \$100, we won't take the chance.

### **Here's how this can damage you**

The fear of losing money and experiencing the associated pain will keep us from taking risks. For people invested in the stock market, the pain experienced when reading those quarterly statements with negative returns causes many to sell at the wrong moment. They'll miss out on the market's rebound. While the stock market has a great track record over long periods of time, if you're only invested when the market is decreasing, your performance will never match the stock market.

### Conclusion

A good starting point for a list of psychological factors that affect decision-making is overconfidence. One form is overconfidence in our own abilities. A great number of psychological studies have demonstrated that test subjects regularly overestimate their abilities, especially relative to others. Studies also show that people tend to overestimate the accuracy of information. With respect to factual information, research subjects consistently overestimated the probability that their answer to a question was correct. You might expect that professional stock analysts are less prone to psychological biases than non-professional investors and the general public. With regard to overconfidence, however, this is not the case. A leading researcher found that when analysts are 80% certain that a stock is going to go up, they are right about 40% of the time.

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