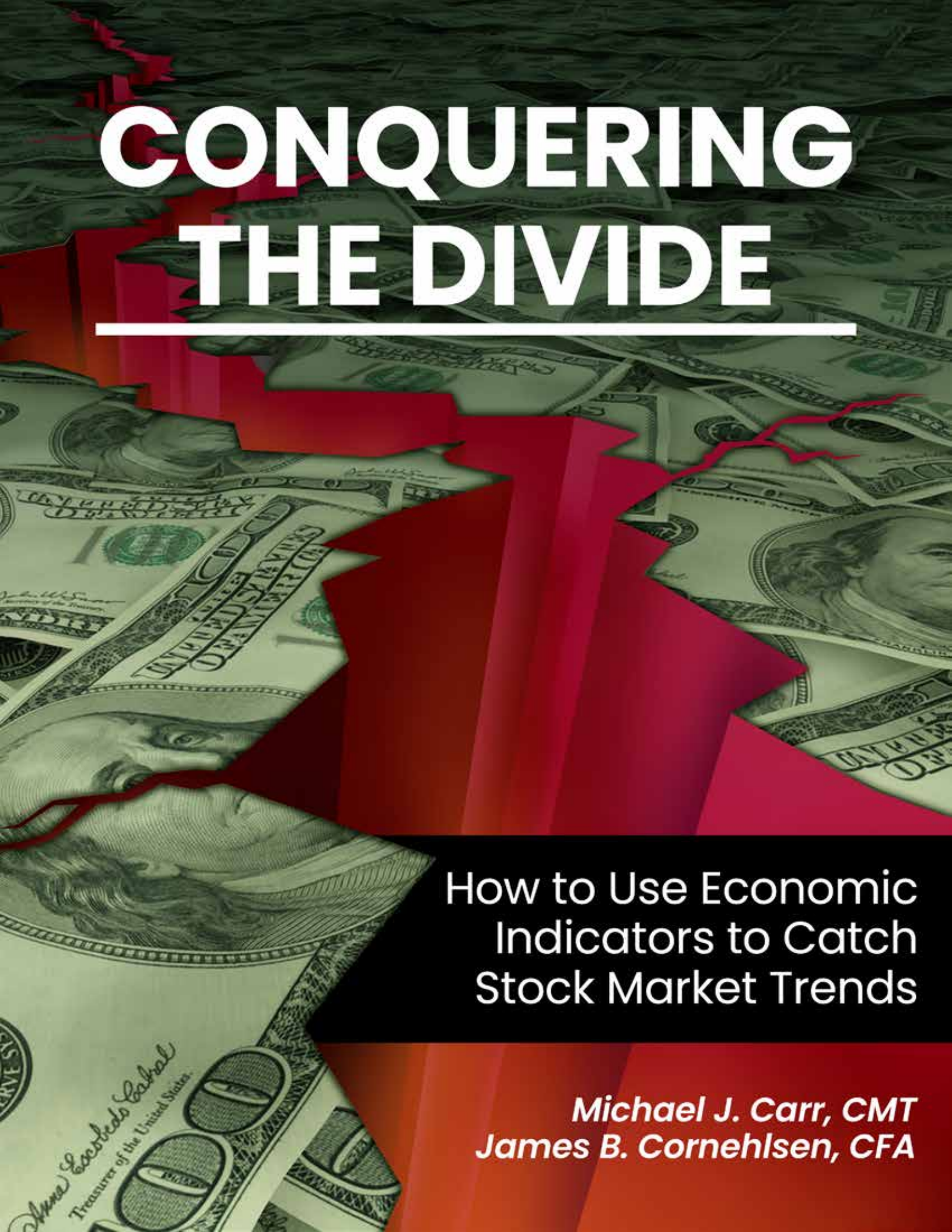

CONQUERING THE DIVIDE

How to Use Economic Indicators to Catch Stock Market Trends

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PART 1

Our goal is to provide you with a tool that will allow you to reduce the risk of your stock market investments. This tool will rely on economic indicators. Most analysts agree that the stock market looks ahead and today's prices reflect what will be happening in the economy a few months from now. Our research indicates that while the stock market does, in a way, predict the future health of the economy, some economic indicators actually do the opposite and help forecast the stock market.

These are actually fairly complex ideas, so in the first part of this book, we will explain exactly what we're trying to accomplish.

CHAPTER 1

It's The Economy Stupid — When to Buy Stocks for the Long Haul by Spotting Stock Market Trends with Economic Indicators

"IT'S the Economy, stupid" was a slogan James Carville, Bill Clinton's campaign manager for the 1992 U.S. Presidential election, used with great effectiveness to energize the campaign. Like any campaign manager in the 20th century, Carville wanted a simple theme to keep the campaign on track and the candidate on message. Simplicity and economics are rarely found together, but in this case, they combined to create the 41st President of the United States.

Economics is an appropriate tool for making decisions. In reality, it underlies many policy decisions at the national level. The dismal science, as economics is fondly called, is also a central theme in many international conflicts. However, all too frequently individuals look at economics as too complicated or too unwieldy to understand. Unlike the policy maker who knows they must embrace a study of economics to implement successful policies, the individual fails to embrace a sound and systematic approach to economics as a cornerstone of their personal investment policy. In this book, we will show that an understanding of economics is not only important to investment success, but we will also demystify the ideas that so many claim are too complex to be of practical use.

As James Carville contemplated the 1992 election, he understood that the nation's economy had already entered a recession. The press, which included many who were skeptical of the current administration, indicated that George H. Bush had not adequately dealt with the recession. Some claimed that as late as the summer of 1992, President Bush still failed to recognize that the economy was in recession. Carville seized on this and pounded home the message that the country faced the worst economic conditions since the Great Depression. His message resonated with the electorate and his candidate won the election. As we will demonstrate in this book, dealing correctly with a recession is not only the way to win in politics, but it is also among the surest way to win on Wall Street.

One difficulty we face is that economic data is not always clear at the time we make our decision. Although Clinton won the election, Bush was actually right about the economy. It was not the worst of times as the Democratic candidate proclaimed; the country was actually not in a recession during the summer of 1992, at least according to the official definition.

The National Bureau of Economic Research (NBER) is a private agency staffed by some of the greatest economic minds in the country. They are charged with, among other things, being the keeper of the official recession record. Meeting in secret, they study detailed economic data and pronounce the start and end of economic slowdowns. On April 25, 1991, they issued a press release which said that the economy had entered a recession nine months earlier, in July 1990. About a month and a half after the Presidential election, on December 22, 1992, the NBER announced that the recession had ended and that the economy had resumed growing in March 1991. In other words, it wasn't actually the economy that won the election for Bill Clinton. Instead it was the public perception of the state of the economy that was critical to his victory.

Success in politics is largely determined by understanding what the majority believes and shaping the candidate's message to address those beliefs. Populist appeal to the masses has long been recognized as a political tool. Surprising to many, public opinion has also long been understood to be a component of successful investment analysis.

In his classic 1936 work "General Theory of Employment Interest and Money," famed economist John Maynard Keynes explained how a beauty contest can be used to explain price changes in the stock market. Keynes wrote about a newspaper contest where competitors are asked to choose the six most beautiful women from a group of photos.

Most people will simply pick the six that they think are the most beautiful. More sophisticated strategies involve trying to figure out which women most people will think are the most beautiful. This recognizes the fact that the winner will be selected by correctly identifying the judge's choices and not based upon anyone's particular conception of beauty. In Keynes' words,

> "It is not a case of choosing those [faces] that, to the best of one's judgment, are really the prettiest, nor even those that average opinion genuinely thinks the prettiest. We have reached the third degree where we devote our intelligences to anticipating what average opinion expects the average opinion to be. And there are some, I believe, who practice the fourth, fifth and higher degrees."

Keynes reasoned that the stock market worked in a similar manner. Some people determine values for their stock picks based upon their own opinions while others base their investment decisions on what they think everyone else is thinking about the underlying value of the stock.

Economic analysis allows individuals to develop objective opinions about what others think the value should be. Most individuals believe that a recession has already begun when they notice that their friends, co-workers and family members begin losing their jobs. Some pundits say that a recession is when a neighbor loses their job and a depression is when you lose your job. Perception is more important than reality in these times, and investors need to understand the implications of the public mood almost as much as they need to understand the data. In fact the data is often so late that it is practically useless from an investment perspective.

Layoffs began rising much sooner than the date when the NBER officially announced a recession had begun in 1990. Astute observers would have noticed that the number of initial unemployment claims began rising sharply in November of 1989. By January 1990 over 730,000 individuals were filing for unemployment insurance. And yet, the recession itself would not begin officially for another six months, and the official recognition that the economy was in a recession would come nine months after that. Therefore, although the economy was in recovery by the summer of 1992, the discontent leading up to the 1992 election was palpable.

And thus brings us to the title of the book, "It's the Economy, Stupid." James Carville posted a sign in the headquarters' of Bill Clinton's Little Rock, Arkansas headquarters. The sign actually had three items on it.

1. Change vs. more of the same
2. The economy, stupid
3. Don't forget health care

All three were important to the candidate. Most political analysts felt that Clinton's true priority was third on the list. But the true objective of the election was to win, and nothing else was possible without winning. The economy was the key to winning, and that was the dominant message delivered to the electorate. Politicians know that the message needs to be simple in order to motivate action.

Unfortunately, economics is not as simple as politics. Because economics uses numbers it scares many a person away. The truth is that economics is equally about behavior and decision making. In fact, most of the Nobel prizes in economics awarded in the twenty first century have been awarded for work related to behavioral economics. As a result, economics is more accessible and quite frankly a more accurate science without all the mathematical theorems.

Economists, in their eagerness to become a REAL SCIENCE have gotten away from the scientific process,

the ideas that make science applicable to you and me in our everyday lives. In part, this book is an effort to bring the everyday back to economics. Specifically, we want to take what we can observe in the real world and apply it directly and tangibly to that world that we live in.

In this book, the most complex math that we will use is calculating percentages. In our money management practice, we use more complicated math, but you don't need that to make sound investment decisions.

Since this is not a political treatise and since the 1992 election is known for the second slogan we will confine our thoughts on that election only to that point, and besides this book wouldn't be very interesting to most people if we discussed the pros and cons of nationalizing healthcare or what do with healthcare costs.

And just to show you that we are bipartisan and politically agnostic - at least for this writing anyway - Karl Rove was equally as brilliant, concise, and able to use simple ideas to craft the successful Presidential election of George W. Bush. This book is all about taking data and simplifying it so you can use it in everyday life. For Karl Rove, this same idea – simplifying - is exactly what he did on the political front.

In a December 2006 Vanity Fair profile entitled "Karl Rove's Split Personality," Todd Purdum wrote, "For Rove, all politics is partitive, and there is almost nothing he can't explain by slicing up the electorate and slotting it into place. Divide and organize. Divide and categorize. Divide and conquer."

Effectively, Karl Rove made a career of analyzing economic and social data about the U.S. public and individuals to diagnose the current state of thinking by voters. He observed all kinds of trends. Rove studied what people watched on television, the kinds of cars they drove, and what beer they drank to draw conclusions about their political aspirations. Purdum noted, "In 2004 the Bush team identified which Web sites its potential voters visited and which cable channels they watched. It spent its money accordingly, advertising on specialty cable outlets such as the Golf Channel and ESPN, whose audiences tilt Republican."

Karl Rove did something surprisingly simple; he just sat and observed the data. To know a topic well, you need to observe it, watch it evolve, and understand what the data and the trend of the change is telling you. This was Karl Rove's specialty. Like his democratic counterpart, James Carville, he used simple themes to make political decisions.

In a PBS Frontline program, it was noted that:

> "In order to motivate them, (Republicans) they would have to find them. And finding Republicans and conservatives of all stripes had become Karl Rove's specialty. Karl did something that was ground breaking he looked at commercial marketing tools to help define these voting groups more and more. You can buy lists of how you use your American Express Cards and Visa. Somebody gets *Field and Stream*, they're more likely to be a Republican voter than Democratic voter. People who drink Coors beer tend to be Republicans. Someone drove a Volvo and went to yoga classes, they were a Democrat. Someone who watches CSI is more likely to be a Republican...Rove loves information. The more information he has the more comfortable he is making a decision. They called it "Metrics"... They used these metrics to raise money, sign people to the Republican party and get people to the polls."

As investors, we face the same challenge. Each day there are more and more economic numbers to wade through. We must also add to that the media's spin about each number, which can be up, down, and sideways, all at the same time. We can understand how all of this can make a person's head spin. Listening to, watching, or even reading the media reports can often leave you more confused than you were before you even heard the news story. That is why we believe you need a clearly defined systematic approach. You would not start baking a cake without a recipe. Nor would you set out on a cross country drive without a map. Neither Karl Rove nor James Carville would start a political campaign without knowing exactly who the potential electorate is that they need to influence to get their candidate elected. The question we face is how we can effectively use economics in the way that these political strategists used economics to devise a plan on how to invest.

In the remainder of this book, we will review the ideas of famous economist and highlight the practical ideas that they brought to light. Then we will discuss ordinary, okay maybe amazing, individuals that applied everyday economics to their own life and success.

It is human nature to simplify obscure and hard to conceptualize ideas. This process of simplification can guide us in the wrong direction. However, more often than not if we diligently and consistently apply what we know, we will come out ahead of the game.

CHAPTER 2

Defining Risk in Everyday Terms

When faced with risk, most individuals view it in the context of danger. Skydiving is risky because there is that element of danger, the very remote possibility that the parachute won't open. When we think about the risk of skydiving, we factor in that uncertainty opportunity, and an opportunity to experience some thrills. From our context in the investment community, risk is uncertainty. If we can better clarify the current surroundings, that may create a little less risk, or we can move to a position of less risk.

— Peter Bernstein, the author of *Against the Gods: the Remarkable Story of Risk*, expressed the idea that risk is synonymous with uncertainty, but it does not have to mean danger.

IN managing risk in our investments, we set out to measure the potential downside of an investment. Unfortunately, the downside potential is determined by the current state of the economy. Under certain circumstances, applying different levels of risk at different points in the business cycle can lead to very different outcomes. Take the case of Hurricane Katrina for example. It arrived with all the makings of a potential disaster for the nation's economy, in addition to being a disaster for the population of New Orleans. At the time, China and other emerging markets were growing their economies at a rate that was greater than 8% a year. The housing market in the U.S. was still rapidly increasing and individuals were taking money out of their homes, driving consumer spending at a very robust pace. More importantly, companies were still hiring, and the number of people filing for unemployment each week was below 300,000, a level considered to be normal. These strengths in the economy allowed us to weather Hurricane Katrina with no real damage at the national level despite the widespread devastation on the local level. Add a hurricane of that magnitude at a later point in the business cycle and it could have had enough impact to actually push the economy into a recession.

When thought of in a systematic manner, we realize that more things can happen than will happen – there are multiple possible outcomes to any scenario but only one can actually occur. In this example, we would need to consider if the hurricane is going to hit New Orleans straight on or come ashore slightly to the west or east. Will it come at peak tides or low tides, a factor that will dramatically alter its impact? The real question is "Can we even address all the possible outcomes?" Planning for every possibility is a problem because we cannot address all the possible outcomes given limited resources.

Therefore, if we don't consider the probabilities of trying to determine what outcome will happen, but think in terms of the framework of what the impact of something happening will be, this provides a much better way of managing risk. Again from Bernsteins' *Against the Gods, The Remarkable Story of Risk*, Bernstein cites a story about Blaise Pascal, which has come to be known as Pascal's Wager. Pascal, a marvelous mathematician, was drawn to gambling, women, and parties. As he continued with his personal excesses, at some point he reasoned that if he kept his life as it was, he might not pass judgment when God reviewed his case to enter heaven. Pascal had no way of intellectually determining the existence of heaven. He concluded that he could continue his excessive ways but if God did in fact exist, this behavior would greatly jeopardize his entry to heaven. But if God did not exist, he did not have anything to lose by continuing with his life of debauchery. His realization was that he could not define the probabilities of God's existence, but he could determine that if there was a God, the liability for ignoring his rules was much greater than he was willing to take. Pascal followed his analysis and became a priest.

It is very difficulty to think about something that you do not even know if it exists, or to ponder an event that might or might not occur. This is why it is important to realize that the impact is more significant than the probability of something occurring. The second thing we should realize is that the more uncertainty we can take out of the equation, the better. Observing economic factors and their relationship to the stock market is a significant step forward in risk reduction. But first we have to consider what factors are important.

When I (James) was a child of about 10, my family drove down from Connecticut to spend a week on the shores of North Carolina as part of a family reunion. It was a big trip, my mother had remarried the year before, and my brother and I were thrust into the "Brady Bunch" It was no longer just my brother and I, but the two of us and four sisters. We were sandwiched in the middle as far as ages went. So we piled all eight of us into one large Chevrolet station wagon and made the trip down to North Carolina. It was a long drive. But as soon as we got there all of us kids hit the beach and we didn't leave the sand and the surf until we had to pile back into the car to return north a week later.

We had three generations there and 20 people in all from the age of 5 to 87. The entire time was spent on the beach or in the water. As the week came to a close, the first of the families was departing and we were all together to take a group picture - where else of course but, on the beach. As we were milling around, the five youngest decided to get back in the water. They were all decent swimmers and had been in and out of the water all week long. As we were saying our good byes, one of the five comes tearing up the beach bawling and pointing out into the water. The other four kids were adrift much further out than where they should have been swimming. The rip tide had pulled them out.

Not thirty minutes earlier, there was no rip tide. I should know, I had spent more time in the water than anyone that week. And yet there it was. Five of the parents, even my uncle, who was dressed and ready for the drive home with his kids (they were the ones leaving early) jumped into the water. Some other adults on the beach jumped in as well. The rip tide was fierce, and some of the adults had to be helped by other adults. After 45 minutes, each of the kids and all of the adults were safely back on land. Tired, scared and having a wonderful story to tell.

And so, almost 30 years later I get to tell my story. In this case my story is to elaborate that 30 minutes before my brother, two sisters and twin cousins got caught in the rip current there was no current and yet later that rip current trapped kids and adults alike. What happened? What had changed to cause the RISK?

The rip current, in a non-scientific explanation is a current of water within a body of water that builds up and needs to be released. The build up of water is caused by waves, wind, and the shape of the beach. In a specific area, as conditions are just right the current builds up and captures water in a small area but is not released until the build up is so great that it escapes in one small spot, creating the rip current.

Over the course of 30 minutes these combinations must have lined up to create this risk. Interestingly, calm waters are a sign of a rip current. In other words, along the beach, if there are fewer waves in a certain area, this may reveal an underlying rip current. The color of the water also changes as sand gets dragged out with the current, changing the color of the water. Additionally, low tides or a shift of tides changes the contour of the beach and subsequently the parameters and the potential risk of a rip tide. Watching for these specific indicators will alert you to the developing risk. On the other hand, simply spending a day enjoying the beach and the water will not alert you to the possible downside.

Herein lies the punch line, risk is constantly changing. In the case of the rip tide, wind, the tide, and the contour of the beach all played a role. And if everything lines up just right, a different set of risks emerge. This same occurrence happens in all of our everyday lives, and specifically with regard to the economy and the stock market. In this book, we will focus on how the economy changes, revealing different risks and dangers. Our goal in this book is to help you create a way to diagnose those risks and dangers and better navigate them to get safely to your desired destination.

We believe that the result is that if we can identify and break down the system of prices, the underlying

forces of supply or demand, maybe we can mitigate some of the impact of market risk. Specifically, if we can identify interruptions in price, through measuring supply and demand, then we can diagnose the impact to lending, earnings, consumption, or capital spending.

CHAPTER 3

Economics Can Be Confusing

THE father of economics is not who people normally think of. Adam Smith is the first name that probably came to your mind. But it was in fact an Englishman of an earlier generation that originated the study of what we now know as economics. William Petty started the science in his book *Political Arithmetic*. Both Smith and Petty were English. Both trained at Oxford University although at different colleges. Brasenose College, not Balliol College, was William Petty's alma mater. To be exact, Adam Smith was Scottish, which the Scottish are quick to point out. And yet Adam Smith was in fact an Englishman. It was 1707 when the Kingdom of England was born following the signing of the Acts of Union in the year before. The treaty brought together England and the Kingdom of Scotland to form the Kingdom of Great Britain. So an Englishman Adam Smith was.

William Petty is believed to have written *Political Arithmetic* in 1676, exactly 100 years before Adam Smith published the historic book, *The Wealth of Nations*, which is commonly considered to be the first detailed description of modern economics.

Both Smith and Petty were philosophers. William Petty was a physician, professor of anatomy and music, and as if employment in those areas was not enough, he was also the Surveyor of Ireland. Petty made his money as an entrepreneur forming a company employing Oliver Cromwell's army to complete land surveys. For this idea, and by spotting the opportunity to use a ready supply of labor, he made a fortune. He did this while holding a full-time job as the official physician to Oliver Cromwell's Army, known in Ireland at the time as the Lord protector of England.

Both Adam Smith and William Petty were philosophers. However, the work that William Petty drafted in *Political Arithmetic* set the tone not just for economics, but the true usefulness of this book.

> "To express myself in terms of number, weight or measure; to use only arguments of sense; and to consider only such causes as have visible foundations in nature; leaving those that depend upon the mutable minds, opinions, appetites, and passions of particular men for the consideration of others.[1]"

Therefore, we are following Petty's guidance and setting out to use economics to quantify and analyze risk. This will help us to make sound decisions pertaining to investments in the stock market and leave opinions to the consideration of television analysts.

We would be negligent if we moved on before commenting on Adam Smith and his epic work, *The Wealth Of Nations*. Since 1776, the year the book was published, it has served as the definitive tome of economic thought. Started nearly 10 years before it was eventually published, Smith wrote the book to pass the time. For some, traveling through Europe inspired them to write journals to record the times they enjoyed, or to contemplate the meaning of life. For Adam Smith, traveling as a tutor with Henry Scott throughout Europe inspired his great work.

The idea of the "invisible hand" arose from the book. By allowing for competition, he theorized, prices would move to their natural level. Therefore, the market, or the forces within the market acted as if they were controlled by an invisible hand. Naturally, he concluded that there were natural forces within the market that drove the course of the market and subsequently drove the growth of mercantilism. This was the economic system that existed during his time. Mercantilism was based on national policies of accumulating wealth in the form of gold and silver through the establishment of colonies. These colonies would allow a nation to maintain a favorable balance of trade. But eventually, new markets would be needed.

Smith wrote, "As capitalists increase in any country, the profits which can be made by employing them necessarily diminish. It becomes gradually more and more difficult to find within the country a profitable method of employing new capital.[2]"

What we have here is the first recorded observation that within the market, there are cycles of growth, expansion, consolidation, and subsequent decline. Smith recognized that nothing continues to grow ad infinitum. And if that is the case, profits diminish as reality, and the normal course of the cycle kicks in to bring the equilibrium of the economy back to its natural place. Specifically, market forces automatically adjust prices for supply and demand.

Adam Smith is not known to have fully defined the concepts of supply and demand. Precisely, Adam Smith is credited with providing the mechanics of how mercantilists operated.

If we accept the belief in the invisible hand then we believe that the market will adjust to an equilibrium position over time. This means that there is a provider and a taker for every good and service, the one with the greatest volume or interest dictates the ultimate price and has the most influence. What made Adam Smith's work so profound was the simplicity of his system and how elegantly Smith explained his ideas in his book. As Smith stated, "When the price of any commodity is neither more nor less than what is sufficient to pay the rent of the land, the wages of the labour, and the profits of the stock employed in raising, preparing and bringing it to market according to their natural rates, the commodity is then sold for what may be called its natural price. The commodity is then sold precisely for what it is worth, or for what it really costs the person who brings it to market...[3]"

In an important contribution to society, Smith built a foundation for financial, entrepreneurial, and government actions. To this day, the prices of goods and services are set by how much the market will bear, unless of course the government enacts restrictions and sets prices. An entrepreneur's success derives from the value a product or service provides and what users are willing to pay for it. Consequently, we can monitor housing prices, and commodity prices used in manufacturing such as copper and steel, to gain an insight into stock market prices, and the general balance of supply and demand in the economy. It is the balance between supply and demand that determines the health of the economy.

An equally talented writer came along almost 150 years later. This time the view point was diametrically opposite to the writings of Adam Smith in *The Wealth of Nations*. While free markets were the inspiration of Smith's writings, the need for government intervention is at the center of the views expressed by John Maynard Keynes. While their viewpoints differ, their writing abilities were superior and this gave them great influence. The great American poet T.S Eliot recognized the talent of Keynes and wrote "in one area certainly, he had no reason to defer to any opinion: in epository prose he (John Maynard Keynes) had the essential style of the clear mind which thinks structurally and respects the meanings of words. "

John Maynard Keynes viewpoints, as expressed in the *General Theory of Employment , Interest and Money*, are in direct contrast to the classical and neoclassical schools of thought in economics. Just as the "Rumble-in-the Jungle" would pit two great heavyweight fighters with opposite styles against each other, the reader of Smith and Keynes would be struck by the different approaches each followed in pursuit of success. The freewheeling, brawling style of George Foreman proved to be no match for the finesse and power of Muhammad Ali. The battle between the freewheeling economy envisioned by Smith and the government-choreographed economy envisioned by Keynes is not yet settled.

Keynes believed that government intervention is required in order for economic stability to exist. The classical assumption that the market works guided only by an invisible hand is a misnomer Keynsians believe. Instead, they think of the market as being composed of a series of micro events that exert undue influence. Specifically, Keynes said, "In the long run, we are all dead," signifying that the short-period disturbances in market forces amounted to everything that mattered. The ultimate implications of this belief are that when left untouched, unregulated, and unsupervised – in a state of laissez-faire, the French term used to depict free trade - the economy would fall into disarray.

Keynes reached the peak of his influence during the Great Depression. The Roosevelt Administration aggressively intervened in the economy with mixed results. Modern-day economists are still in disagreement as to whether or not their actions helped or hurt the economy.

Beginning in the 1970's and flourishing in the 1980's and 1990's, laissez-faire was the rule and influenced the economy and politics of Ronald Reagan in the U.S. and Margaret Thatcher in Great Britain. The influence of Smith continued with Ronald Reagan's appointment of Alan Greenspan as chairman of the Federal Reserve. As a "Kitchen Cabinet" advisor to Ayn Rand as she wrote *Atlas Shrugged*, the moral defense of capitalism. The role of limited government action was a major theme of Rand's work. The influence of minimalist government intervention was a central theme during the stewardship of Greenspan until his resignation in January 2006.

Neoclassical thought, the adaptation of classical economics to account for market forces driving the allocation of scarce resources, thrived for several decades. The use of monetary policy, the government's action to change interest rates and impact the economy by varying the money supply, was a driving force in government policy under neoclassical economics. Looking back at this period, many consider it to be a time of over indulgence in many ways.

Destabilization in the economy could only be countered by government intervention according to Keynes - not just at the monetary level (adjusting interest rates and supply of money), but with fiscal policy (government spending) as well. The result is that government action or inaction can sway the direction and velocity of the economy. Specifically, monitoring interest rates, money supply, and tax policy can be used to spot changes in the economic cycle and alert individual investors to significant changes in the levels of prices, and aggregate levels of supply and demand in the economy.

Keynes contended that government action would work in conjunction with market forces. Regulation, and at times intervention, would maintain the ability of the economy to reach full capacity utilization and productivity, rather than just allowing market forces to select winners and losers. At the furthest extreme of this philosophy lies Marxism, which brings full regulation and control of the economy. This is beyond the scope and interest of this book, but without market forces there can be no stock market.

As Keynesianism flourished, an alternative was being offered by the Austrian school of thought, which believed that government action is in fact the root cause of destabilizing the economy. This philosophy suggests that booms and busts are not created by government intervention as Keynes suggests, but in fact are caused by artificially surprising interest rates and monetary policy. Specifically, Austrian economists analyze the business cycle to observe what causes growth, boom and busts. An ardent vocalist of the Austrian school is Ludwig von Mises.

An example of the type of thinking that defined the Austrian school can be found in a short excerpt from Mises: "An increase in the quantity of money or fiduciary media is an indispensable condition of the emergence of a boom. The recurrence of boom periods, followed by periods of depression, is the unavoidable outcome of repeated attempts to lower the gross market rate of interest by means of credit expansion. There is no means of avoiding the final collapse of a boom brought about by credit expansion. The alternative is only whether the crisis should come sooner as the result of voluntary abandonment of further credit expansion, or later as a final and total catastrophe of the currency system involved.[5]"

Mises built on the work of Eugen von Bohm-Bawerk, the founder of the Austrian school. Like many of his economic brethren, he bounced between academia and government posts. As an official in the Austrian Ministry of Finance he argued for balanced budgets (while writing in the late 1800's) and a stable currency tied to gold. This emphasis on stability became a cornerstone belief among followers that the value of the currency should be tied to tangible assets, most notably gold. If monetary policy is allowed to grow too voraciously, then government action leads to destabilization of the economy.

Destabilization in the economy brings about opportunity, albeit at the expense of others who are not aware

of the destabilizing forces or who were just too caught up in the frenzy of ever increasing asset prices to step away from the mouth that fed them. An example of this would be bubbles which form frequently in assets. The internet bubble and the subprime mortgage crisis were both attributable to government action – a rapid creation of money helped fuel the internet bubble and low interest rates combined with government-directed credit policies such as the Community Reinvestment Act contributed to the sub-prime crisis.

From the neoclassical offshoot of the Austrian school, we come next to a follower of Keynes, Hyman Minsky, who developed the "Financial Instability Hypothesis", which attempts to explain the swings that result in the boom and bust of the economy.

The basis of the "Financial Instability Hypothesis" is that you can never have too much of a good thing. It is like attending a great party with old friends. What could be better than good friends, good drink and good food? In this case, you enjoy yourself. The evening progresses and you wish it would never end. Despite getting older and realizing that you can no longer stay out as late as you'd like or drink as much as you had during the days of your youth, you continue to party. You rationalize - how often is it that this group of friends gets together? You are probably separated by distance, age, and now family. Carpe diem, or in this case seize the night. But as you realize while struggling through the next day, seizing anything with that much vigor can only come back to hurt you.

And that is a simplified version of Minsky's "Financial Instability Hypothesis". Specifically, he states that there are three levels of "indulgence" which he calls hedge, speculative, and Ponzi. Throughout a business cycle, we can observe levels of capital flow based mainly on the ability of the investor to pay for the debt on the investment. In the initial stage, which Minsky refers to as the hedge unit, (not to be confused with a hedge fund) the investor can pay for the loan to buy the investment from cash flow derived from other sources of income. In the second, phase, the speculative stage, the investor is not able to pay for the full cost of the loan. They are only able to make the interest payment from existing cash flow. To pay off the principal of the loan, the investor must see an appreciation in the value of the investment. Last, the Ponzi scheme is where the investor does not have sufficient cash flow to cover either the interest or the principal payment and is therefore completely reliant on the appreciation in the value of the investment to pay for the investment in the first place. Minsky summarized his belief eloquently in 1992.

"It can be shown that if hedge financing dominates, then the economy may well be an equilibrium-seeking and healthy. In contrast, as the weight of speculative and Ponzi financing increases, the greater the likelihood that the economy is a deviation-amplifying system. The first theorem of the financial instability hypothesis is that the economy has financing regimes under which it is stable and financing regimes in which it is unstable. The second theorem of the financial instability hypothesis is that over periods of prolonged prosperity, the economy transits from financial relationships that make for a stable system to financial relationships that make for an unstable system.

In particular, over a protracted period of good times, capitalist economies tend to move from a financial structure dominated by hedge finance units to a structure in which there is a great deal of activity engaged in speculative and Ponzi finance. Furthermore, if an economy with a sizable body of speculative financial units is in an inflationary state, and the authorities attempt to exorcise inflation by monetary constraint, then speculative units will become Ponzi units and the net worth of previous Ponzi units will quickly evaporate. Consequently, units with cash flow shortfalls will be forced to try to make position by selling out position. This is likely to lead to a collapse of asset values.[6]"

Minsky presented his original theory in 1974 and refined it over the years. Therefore this process was identified well before the housing/banking crisis that began in 2007. As you may know, this is almost exactly the way housing crisis unfolded. Investors, who originally purchased property with a conventional thirty-year mortgage and could pay the principal and interest, were enamored by the seemingly inability of the housing market to go down. With that came the development of the interest only mortgage. Although this was developed way before the crash, it became exceedingly popular in the last few years of the housing bubble.

As housing prices continued to go higher, speculators came in and financial entrepreneurs found ways to develop products that made it even easier to divvy up and segment the risk. Or so they thought. With the advancements came the option ARM, a loan that was based on an initial "teaser" rate that was well below the market interest rate. What the borrower did not pay in interest now, they had to pay later. Therefore, the investor was reliant on the future appreciation of the house to pay off the interest and the principal.

The relevance of all this theory to our effort to identify risk in the stock market, is that by observing the economy we should be able to identify the tendency to move from the hedge unit, to speculative units, to Ponzi unit and that should permit us to benefit as investors. More specifically, we may be able to avoid the risk that is inherent in the system that is being created in the marketplace.

Let me provide you a specific experience of my own (James). In two separate jobs, at two well-known investment banks I had started out working with Managing Directors who continued to add to my work load as I absorbed the material and provided exceptional quality work. Okay, the emphasis on exceptional is my own interpretation. Suffice it to say the Managing Directors seemed pleased because they kept loading me up with work. I adapted. First I just became more efficient. I found ways of doing things more quickly. After awhile, my innovations slowed and I resorted to working longer hours. At this time it was the late, roaring 1990s, specifically July of 1999. Companies were valued at extraordinary levels and the number of opportunities was great.

As July rolled around I wanted to spend time at the beach, or just outside, anywhere. Instead, I was hold up on the 16th floor on Park Avenue at an investment bank that no longer exists. In previous reports I had gone the extra mile, added one more piece of analysis. This night, it was past 10 PM. I had already listened to several quarterly conference calls that day and I needed this report by 6 AM the next morning. This time I did not go the extra mile. I took what my Managing Director had written three months before and updated the report with all new numbers from the quarterly update and the equivalent analysis to go with it. But I did not add anything extra. The expectations I had created before and the stability and confidence that I had provided to my Managing Director had cracked. He had expected something more from me as a result of the work I had provided earlier and this time it was below that standard, even though it was the standard that he had established in the last quarterly report. But it was not enough. And so each and every one of us experiences the "Financial Instability Hypothesis."

The significance of Hyman Minsky is that he is keenly aware of the business cycle. He offers a way to observe the shifts within the cycle and identify its specific stages. By observing these stages through out the economy, at all levels from the consumer to commercial, industrial to the individual, we can observe the scale and magnitude of the risk that is around us. Knowing when investors are extended and are "speculating" on the outcome of the market highlights extensive risk in the market. If risk is what we have, it is better left avoided.

PART 2

Now that we understand the goal, we need to step back and review economic theory. This is important to understand the indicator we'll develop in the next parts. Without an understanding of the theory, it will be difficult to rely on economic indicators to forecast the stock market. Since our goal is to develop long-term investment strategies, it will be important to stick with the indicators even when they deliver bad signals that result in short-term losses. Understanding the economic theory behind the models will help you to stick with the model in good times and bad.

CHAPTER 4

The Economy and the Stock Market

BEFORE delving into how to use economic indicators to help determine a strategy for investing in the stock market, we need to understand why economic activity should have an impact on the stock market. There are actually many similarities between economic forecasting and stock market analysis.

Unfortunately, economics is a discipline that is fairly difficult for many investors to grasp, the idea of applying this field to investing sounds like a burden that would just be too boring to actually do. These same investors, the average individual investor, tend to buy high and sell low. Without a well-defined process, it is all too easy to succumb to emotional pressure in the heat of the moment as stock prices rise and fall. The significance of economics is that this discipline can be applied to allow investors to identify and quantify the attributes that impact a company's revenue and earnings and ultimately a stock's valuation.

We don't mean to be insulting when we say that the average investor is prone to buying high and selling low. While the objective of successful investing is to do the opposite, studies show that the individual is very often not successful. One study, "Mutual Fund Flows and Investor Returns: An Empirical Examination of Fund Investor Timing Ability[7]" found that from 1991 through 2004 mutual fund investor timing decisions reduces their average returns by 1.56% annually. They found that investors tend to buy last year's winners and sell last year's losers at exactly the wrong time. The reality is that by the time a fund is featured on the cover of Money magazine, it is usually no longer a good buy.

The problem that most investors face is knowing when the price of an investment is too high. The great investors seem to know instinctively when something is priced at a bargain and should be bought or priced so high that it needs to be sold. Benjamin Graham, Warren Buffett, and Sir John Templeton somehow just knew what factors matter most in making something a good investment compared to the alternatives. Of course, there are a number of ready-to-go valuation formulas to plug information into, but if formulaic investing was easy then by now, we would all be retired millionaires living off of our investment income.

Another problem is that something that seems to be selling at a low price can always go lower. Investments with appealing valuation levels can continue to decline in value even as it reaches lower and lower levels of valuation. Pfizer, a well know drug company, was an industry leader in the late 1990s. New products and acquisitions combined to form a tremendously appealing company. Revenue and earnings grew, driving demand for the companies shares higher and higher going from $5 a share in 1994 to a high of $50 a share in 1990. However, the growth that drove the stock price higher stalled as the mammoth drug company found it more difficult to grow sales and earnings higher. As a result, the stock price declined almost due just to the fact that the company became too large to continue growing at a rapid pace. The price declined more than 75% to about $11. Along the way valuations went from more than 40 times earnings to less than 10. The dividend yield rose to 6.8%. Beginning in 2005, Pfizer was considered an appealing investment based on almost any measure of valuation. And yet the price of the stock continued to decline, falling from $30 a share to under $12 (see figure 4-1).

So how is an investor able to diagnose when a low valuation indicates that a stock is a good investment? Economics is rooted in price discovery, specifically in determining how the laws of supply and demand impact price levels. From this perspective, by understanding the broader drivers of the economy such as interest rates, job growth, and inflation, investors can gain a better understanding of the impact these factors have on an individual stock.

Figure 4-1: Pfizer continued trading lower as standard models indicated the stock was more and more undervalued. (Source: Trade Navigator)

The laws of supply and demand are a familiar concept. These forces are at work in setting the price of anything. As the supply of something increases, unless the level of demand increases, then the price should fall. A decrease in supply should cause an increase in price. In the stock market, the same rules apply. But supply of a particular stock is fairly steady. Occasionally a company may issue more stock or buyback some of its outstanding shares. These actions tend to have little impact on the overall supply, usually amounting to only a small percentage of the supply. That means the frequent, nearly continuous, changes we see in the price of a stock are due to changes in demand.

In Figure 4-1, the biggest driver of the decline on Pfizer's price was lower demand from investors. This meant that sellers had to lower the price they demanded as buyers were only willing to purchase the company at lower and lower prices. When a bottom was reached in early 2009 that indicated that at least for a little while buyers wanted to own Pfizer and were willing to pay higher prices to establish their positions. While it easy to understand that demand is driving the price swings we see in that chart, it is not as easy to see what ultimately causes the changes in demand.

Economists and academics like to say that the stock market discounts the future. Discounting means investors value stocks, or anything else they are trading in a market, based upon what is most likely to happen in the future, not what has happened in the past. So if we see the stock of Pfizer declining, investors are selling the stock because they believe that the company will make less money in the future than they did in the past, or they believe the economy will be doing worse in the next few months than it has done recently.

Current valuations are therefore a reflection of future expectations. This is where the cold and dismal science of economics meets the ebb and flow of human emotion. Future values are strongly influenced by hope and fear. At the extreme, hope leads to irrational exuberance and investors think this time is different. We saw this in early 2000 as the Internet was set to change the way that the economy functioned. This belief caused individuals to overlook historic valuation measures, relying on New Age valuation metrics. Well, this time was not really different. In fact, the attitude of many experts echoed those of 1929. One famous example from that time was Irving Fisher's October 1929 advice that everyone could build great wealth in the stock market by taking advantage of recent weakness. Fisher was probably the first economist to be widely quoted in the press. When asked about stocks days before the Crash, he said, "Stock prices have reached what looks like a

permanently high plateau." As the seriousness of the economic problem took hold, stocks would decline by nearly 90 percent and many investors lost all they had.

Future expectations of the health of an individual company are largely influenced by the perception individuals hold of the value of the overall stock market. While opportunities arise for individual investments all the time, they are more plentiful in bear markets when investors are more concerned about the risks of the stock market than potential rewards. Likewise, it is more difficult to find good buying opportunities as the valuation for the overall market increases. History does show that the greatest potential rewards exist when the economy declines during a recession and fear about the future of individual companies and the economy as a whole increase. In other words, the best returns for the stock market occurred after a significant decline in the economy resulted in low valuations. The five best rallies for the Dow Jones Industrial Average occurred after declines in a recession and resulted in returns of 344.5% from 1923 to 1929, 294.8% from 1990 to 1998, 150.6% from 1984 to 1987 and 144.4% return from 1903 to 1906.[8]

Capturing such large returns seems easy; all we need to do is buy and hold. However, it is made difficult by our own emotions and fear sets in after the market rebounds a little from its lows. Many investors will sell at that time with a small profit, and miss out on the large gains that follow. Without a process, it is too easy to succumb to emotional pressures and miss the greatest investment opportunities. While it may seem easy to avoid the emotional tug of war as you read this book on a beach or at a coffee shop, just wait until you are in the middle of a declining market to see how easy it is to have your rational thought processes derailed. There are times when a decline in the market, and in particular in your own investment portfolio, can hurt so much that physically you feel impaired. This book should therefore allow you to avoid those physically debilitating emotional stints that hinder sound investing and that all too frequently result in buying high and selling low.

The significance of such a process is that you identify the quantifiable attributes that impact revenue, earnings and valuation. Understanding how interest rates, inflation, new orders and job growth drive fundamentals provides the individual investor with the ability to compete with those investors that intuitively know what makes a good investment. If nothing else, the system keeps you distracted by conducting the analysis rather than dwelling on missed opportunities and bad decisions.

By understanding the macro perspective, we can better see the opportunities in sectors, industries and countries. For example, during the height of the Internet bubble, other industries were expensive by comparison and had relatively lower growth rates but still enjoyed growth in sales and earnings none the less. Many small cap stocks, real estate investment trusts, healthcare, and financial companies largely avoided the devastation after the internet bubble. Table 4-1 shows a few of the returns available to investors from the market peak in 2000 until the bottom in late 2002.

	Returns
Nasdaq 100 tech stocks	**-83.6%**
Morgan Stanley REIT Index	**+66.6%**
Berkshire Hathaway (Financial stock)	**+81.1%**
Ten-year Treasury Bonds	**+34.8%**

Table 4-1: Sample returns after the stock market peak in 2000 until the bottom in 2002.

While economic analysis as a tool is significant, it is not a silver bullet. At the time highlighted in the table, astute investors would have spotted adverse hiring trends and excess capacity in technology while lower interest rates increased the profitability of financial companies and made real estate a more attractive alternative to stocks. Economics provides a way of determining when the stock market and different sectors entails heightened risk. Choosing the specific investments that have less risk and the best opportunity are another skill entirely.

The Intelligent Investor and *Security Analysis*, both by Benjamin Graham and the latter with David Dodd, are among the most influential books ever written on investing. These books represent one of the first attempts to quantify investment decisions and create a profession out of investing. What is often forgotten is that in all of Graham's talk of long-term investing there is an important discussion on altering the risk exposure of a portfolio to adapt to the level of risk in the market. What Benjamin Graham fails to discuss are the specific steps to take to shape a portfolio for higher and lower risk levels.

Specifically, what Graham does recommend is altering the risk exposure to the market by varying the equity exposure for equities between 25% of the portfolio during risky times and increasing the portfolio to a maximum of 75% equities in less risky times.

> "We have suggested as a fundamental guiding rule that the investor should never have less than 25% or more than 75% of his funds in common stocks, with a consequent inverse range of between 75% and 25% in bonds. There is an implication here that the standard division should be an equal one, or 50-50, between the two major investment mediums. According to tradition the sound reason for increasing the percentage in common stocks would be the appearance of the "bargain price" levels created in a protracted bear market. Conversely, sound procedure would call for reducing the common-stock component below 50% when in the judgment of the investor the market level has become dangerously high.[9]"

Referring to the "judgment of the investor" is a dangerous statement. It leaves for interpretation exactly what that judgment should be. Graham would argue that the valuation of the market and the valuation of a specific investment should dictate the exposure to the market. Basing the decision solely on valuation is first of all difficult to calculate. Secondly, the market can remain in an overvalued position for long periods of time. Finally, using a subjective measure of valuation means that there is no way to validate your conclusions prior to acting on them.

Determining the valuation of the market, or a specific investment should be easy given a numerator and a denominator. Unfortunately, there are many ways to calculate valuations. You can use price to sales, price to earnings, or price to cash flow. Some analysts use price to replacement value or they compile a discount cash flow model. Most of the time, each of these formulas would suggest a different value. Additionally, the time period used in each calculation can vary among analysts and skew the returns. For example, you can use forward numbers, which are revenues or earnings that analysts project for the future based upon the past and their best guess as to what the economy holds going forward. Or you can use current numbers based on what companies are reporting in their latest financial statements. You can also base the valuation calculation on some other historical number or average historical number. Each of these choices results in a different valuation. Finally, within those financial statements are reported numbers, operating numbers. or the GAAP number based upon Generally Accepted Accounting Principals. So what would seem like a simple formula quickly becomes a problem to calculate.

As an example, in late 2009, the S&P 500 is trading near 1080. This is the price we will use in finding the P/E ratio. According to Standard and Poor's web site, the operating earnings were $39.79 a share. As reported earnings per share were $7.51 and estimated earnings for the next twelve months ranged from $44.59 to $65.69. Based on these values, the P/E ratio of the S&P 500 at that time was somewhere between 16.4 and 144. So the market is somewhere between fairly valued and historically overvalued, and the individual is left without any clear guidance from this valuation model.

Even after you determine the valuation method you want to use, the investment can remain over valued or undervalued for long stretches of time. For this purpose, we will use the valuation criteria used by Robert Shiller, an economics professor at Yale University. Professor Shiller believes that you should normalize the reported earnings of the companies in the S&P 500 over the previous 10 years, and use this value to calculate the P/E ratio.[10] He reports that the average P/E ratio is 16.3 times the average of earnings over the last 10 years, compared to a mean of 15.6 times earnings. The maximum is 44.2 times earnings hit during the Internet bubble and the low was 4.78 times earnings during December 1920.

For further analysis, we can break the data into quartiles, which means we group the data into four categories. We find that the low valuations occur below 11.5 times earnings and the top quartile is above 19.5 times earnings. Based on the top and bottom quartile, we can look to see how long the S&P 500 stayed undervalued (below 11.5 times earnings) and overvalued (above 19.5 times earnings). There were six times since the 1800s that the market was undervalued and six times when the market was overvalued. On average the market was overvalued for 61 months, but this varied from 14 months to 186 months. Conversely, the market was undervalued on average 55 months, but this lasted as little as 12 months and as long as 126 months. Writing years earlier, Graham demonstrated that he was aware of this problem, as he stated "But we must point out that even prior to the unprecedented bull market that began in 1949, there were sufficient variations in the successive market cycles to complicate and sometimes frustrate the desirable process of buying low and selling high. The most notable of these departures, of course, was the great bull market of the late 1920s, which threw all calculations badly out of gear. Even in 1949, therefore, it was by no means a certainty that the investor could base his financial policies and procedures mainly on the endeavor to buy low levels in bear markets and to sell out at high levels in bull markets."[11]

Consequently, changing the portfolio exposure to the stock market based upon valuation would not impact the portfolio in a positive way for perhaps several months, if not years. While the investor will never see immediate results by reaction to changes in market valuation, the investor would still be very likely to benefit from these changes. Benefits accrue over the long run by avoiding significant risks.

Just looking at valuation we are unable to verify the results. What helps is to understand why valuations stay elevated (or undervalued) for long periods of time. Tim Hayes says it best in *The Research Driven Investor*, "But while history rarely if ever repeats itself in exactly the same way, human nature is content from generation to generation. And human nature, including fear and greed, pessimism and optimism, is what makes markets rise and fall, and economies expand and contract." What we are left with is the problem of determining what drives human nature. To quantify this we go back to the words of William Petty, the founder of economics, whose goal was *"to express myself in terms of number, weight or measure."* Therefore the challenge is to determine what factors, what numbers, drive pessimism and optimism in humans.

Benjamin Graham is steadfastly against the idea of forecasting. As he wrote in *The Intelligent Investor*, "We are equally sure that if he (the investor) places his emphasis on timing, in the sense of forecasting, he will end up as a speculator and with a speculator's financial results." Almost any forecast has an equal probability of being wrong as it does of being right. And therein lays the problem. Economic analysis generally has a terrible record of forecasting, especially at market tops or bottoms. However, if one uses the same data to gauge the level of risk and apply the energy to risk exposure rather than the future course of the market, investment returns are likely to improve.

Let's try and take a simply example. You deal yourself five cards from an ordinary deck of 52 cards. One is the queen of diamonds. That means that that there are 47 cards left in the deck and three of them are queens. I can't tell you when the next queen is going to be drawn, but I can tell you what the probability is of a queen being drawn next. It is not very likely, actually a 3 in 47 chance. However, as we deal ourselves more cards and do not pull another queen, the probability increases that we will draw a queen on the next card. This is the benefit of applying economic analysis to fundamental valuations.

Our endeavor is to find those tools that help us select, sell and monitor our investments accurately. If that takes fundamental valuation, economic analysis, quantitative analysis, and technical analysis we are willing to use all of those approaches to enhance the likelihood of success of our decision making. It is for this reason that if we can enhance our decision making processes we can make better investment decisions, or in the very least, make decisions with risk in mind.

Benjamin Graham and every other great investor realized just that—believing and understanding that well thought out and researched tools can help in sound investment decision making. Even more importantly, he realizes that human emotion if not checked and specifically controlled can wreak havoc on a portfolio, "It is

for these reasons of human nature, even more that by calculation of financial gain or loss, that we favor some kind of mechanical method for varying the proportion of bonds to stocks in the investors portfolio. The chief advantage perhaps is that such a formula will give him something to do. As the market advances he will from time to time make sales out his stockholdings, putting the proceeds into bonds; as it declines he will reverse the procedure. These activities will provide some outlet for his otherwise too-pent-up energies. If he is the right kind of investor he will take added satisfaction from the thought that his operations are exactly opposite from those of the crowd.[12]"

The work of Benjamin Graham defined investing as a profession. He quantified and developed a process for investing. Adding economic analysis to his fundamental work on valuations confirms an investor's valuation work and can improve the risk management characteristics of an investment portfolio.

CHAPTER 5

The Economy Matters...In the Long Term

OVER the long term, stock market prices are generally believed to grow at a rate equal to the growth rate of the economy, plus the rate of inflation, and the value of dividends paid. This means that we should see a strong relationship between gross domestic product (GDP), which is the broadest measure of economic growth, and the stock market. That idea is illustrated in Figure 5-1.

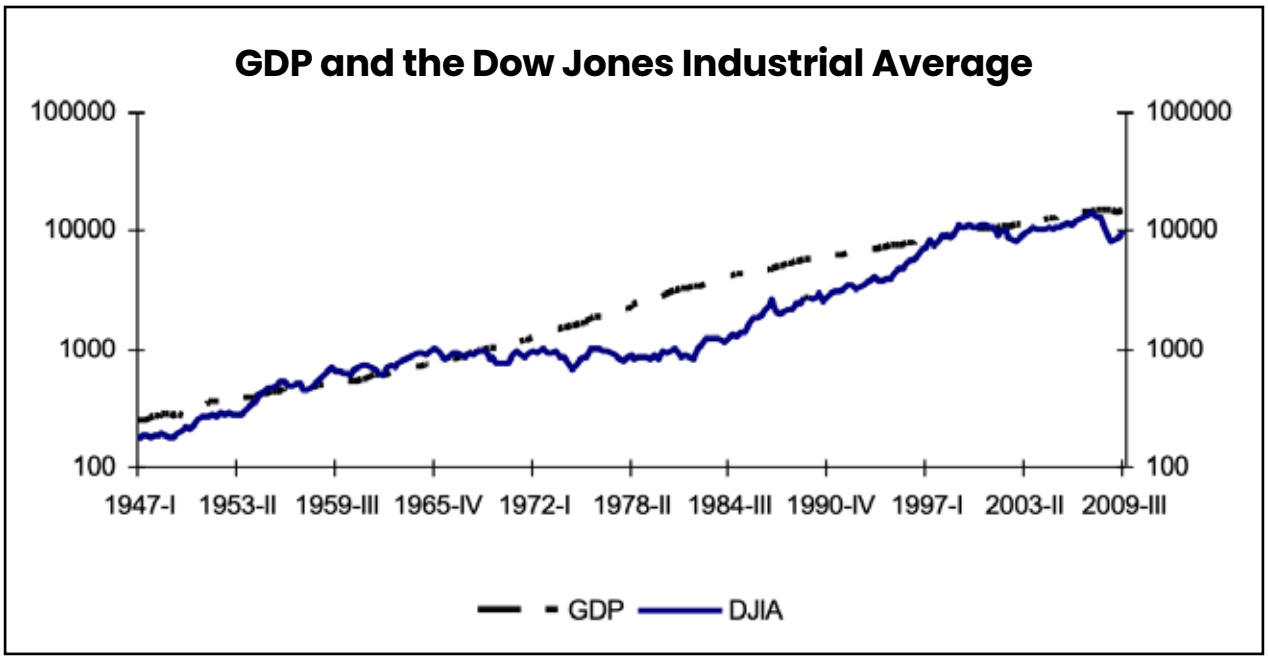

Figure 5-1: This chart shows the close relationship between the growth of nominal GDP and the long term uptrend in stock prices. This chart begins in 1947 and is updated through the third quarter of 2009. (source: Bureau of Economic Analysis and Dunn Warren Investment Advisors)

We can see in the figure that both data series exhibit an upward bias over the long term, which is measured in decades. However, over the short term, measured yearly in this case, that correlation breaks down. We can see from the figure that stocks can be overvalued relative to GDP as they were in the 1950's or undervalued as they were throughout most of the 1980's and 1990's. Many researchers have concluded that there is no short term relationship between the two variables. As an example, "research conducted by the Brandes Institute reveals that annual changes in GDP from 1929-2008 were a poor predictor of both concurrent and subsequent stock market returns.[13]"

Digging deeper into the idea of short term relationships, we often see the stock market react with a large move to economic news immediately after the news is released. One such news report is the unemployment rate, which is released on the first Friday of every month. If we bought the market at the open on those days, and sold on the close, we would see a significant increase in volatility as compared to a normal market day.

For this test, we will assume that we are buying and selling 100 shares of the SPDRs, an exchange traded fund that mimics the holdings of the S&P 500 stock index. The test period ran from January 1990 through the end of October 2009. We would find that on 50.4% of all trading days, the market closed higher. On

average, we would have experienced a very small loss of 0.013% per day. Taking that same trade only on the days when the unemployment report is released, we see that the market is only up about 48.1% of the time, but the average trade delivers a win of 0.06%.

The important part of this test is not the winning percentage or the average profitability. It is the rather surprising fact that the market is about six times more volatile when the employment report is released than it is on other days. Although we would not attempt to trade on such a short term basis, clearly someone is, actually a lot of market participants must be reacting to the news creating the additional volatility.

This demonstrates that the economy matters. With each bit of news, traders try to position themselves to take advantage of the short term changes in perceptions associated with the state of the economy. These short term swings do in fact contribute to longer term changes in consumer sentiment, a valuable economic indicator. Over the long term, consumer sentiment reflects the desire and the ability to spend money. The level of consumer spending ultimately drives corporate profits which in turn contribute to the growth of the economy as measured by the GDP, and the growth of the economy is a key determinant of the value of the stock market.

While it may be possible to develop a trading strategy that profits from large one day moves related to economic indicators, we feel that our time is better spent evaluating the impact of these indicators on the cyclical trend of the stock market, which reflects the underlying business cycle. Cyclical trends can last from a few months to a few years and are where the majority of market movement occurs.

When it comes to trading, we like to follow the advice of Jesse Livermore who was immortalized in Edwin Lefevre's classic book, "*Reminiscences of a Stock Operator.*" Livermore, in the guise of a fictional trader named Larry Livingston explains the secret to long term investment success:

"After spending many years in Wall Street and after making and losing millions of dollars I want to tell you this: It never was my thinking that made the big money for me. It always was my sitting. Got that? My sitting tight! It is no trick at all to be right on the market. You always find lots of early bulls in bull markets and early bears in bear markets. I've known many men who were right at exactly the right time, and began buying and selling stocks when prices were at the very level which should show the greatest profit. And their experience invariably matched mine – that is, they made no real money out of it. Men who can both be right and sit tight are uncommon. I found it one of the hardest things to learn. But it is only after a stock operator has firmly grasped this that he can make big money.[14]"

We look at economic indicators as a valuable tool in telling us when to sit tight. If they are in agreement with the general trend of the stock market, we will probably do more harm than good to our investments accounts by trading.

CHAPTER 6

Diagnosing Market Risk and Taking Advantage of Opportunities

STUDYING the overall economic conditions can help individual investors identify times of greater risk. If you can avoid those downturns, you can decrease the potential risk and increase the potential rewards in your portfolio. Conversely, you can take advantage of upturns by realizing that after investors have begun fearing the worst, the economy generally begins showing signs of stabilizing, and the market often improves fairly quickly. The market is driven by emotion and if we can understand that which drives emotion, we can better understand the market.

The greatest declines in the market have occurred during times of recession. There are many ways to define what constitutes a market decline. We will use the definition of a bear market used by respected market research firm Ned Davis Research. They define a bear market as a 30% drop in the Dow Jones Industrial Average over the course of 50 days or a 13% decline after 145 days. By this measure, the average bear market declined 30.9% and the median was 25.2% between 1901 and 1998.[15] Adding the last two declines which were caused by the Internet bubble and the housing market bubble, we see that the average decline since 1948 is 22.5% and the median is 20.3%.

We decided to look at this data a little more closely. We separated the declines into those that occurred during a recession and those that took place during times of economic expansion. During a recession, the declines averaged a loss of 26.7%, and the median was minus 21.2%. This contrasts with declines outside of the recession periods which averaged 16.1% with a median loss of 19.3%. The spread also seems to be greater during a recession. During a recession, the most severe losses took place in 1974 when the market fell by 45% and in 2008 when the decline was a staggering 53%. The greatest decline outside of a recession was a loss of 36% during 1987.

Knowing that a market loss is more severe during a recession, it becomes even more worthwhile to understand what economic factors may signify greater risk to the stock market. Some factors have a more meaningful leading impact to the market than others. The Conference Board's Leading Economic Indicator is composed of:

- The interest rate spread
- Building permits
- Stock prices
- The number of weekly initial unemployment claims (inverted)
- The weekly average number of hours worked in manufacturing
- An index of supplier deliveries (vendor performance)
- Manufacturers' new orders for consumer goods and materials
- Manufacturers' new orders for nondefense capital goods
- Real money supply
- Consumer expectations

Other groups use different forecast to gauge the future of the economy. For example, the Economic Cycle Research Institute seems to use money supply, unemployment filings, commodity prices, housing starts, interest rates, and stock prices. Ned Davis Research has identified nine factors they consider to be important, including weekly new lows versus new highs on the New York Stock Exchange; S&P 500 trend reversals; the

40-day TRIN (TRIN is a technical stock market indicator which compares the number of new lows to new highs relative to advancing volume divided by declining volume); a stock market sentiment indicator called the New York Stock Exchange member short ratio; bond yields relative to the earnings yield of the stock market; composite bond yield trend reversals; announced reversals in the Prime Rate; and the CRB Index, a measure of commodity prices.

Ned Davis Research is looking at monetary and market related indicators to measure the risk of the stock market whereas The Conference Board is looking at indicators derived solely from economic activity. The Economic Cycle Research Institute is using their weekly indicator to measure the economy, but believes that the rate of growth or decline in this indicator can be used to measure risk to the stock market. In later sections of this book, we will take a different approach. Our efforts will specifically look at economic factors that would measure the risk to the overall stock market.

Economic indicators can highlight a risky environment, but they can also point to times of economic improvement. It is actually when the economy is improving that the stock market has the best opportunity for sustainable growth. Indicators of economic strength would include an increasing value of the Institute of Supply management (ISM) price index or the Commodity Research Bureau Futures Price index. Ned Davis Research found that stock prices increased on average 25% per annum when the ISM price index (previously known as the National Association of Purchasing Managers Price Index) is below 50. Basically, their research found that as the economy is improving and prices are stable, the stock market performs better than in other time periods.

Consumer confidence is also measured by economists. We can see that for both downturns and upturns, economic statistics help determine the forthcoming direction of consumer confidence. Tim Hays states it clearly when he wrote in *The Research Driven Investor* that, "During periods in which the market rises unimpeded by anything more than a correction, confidence builds, risk aversion fades, and eventually a state of complacency is reached in which the market is viewed as invincible, the point at which, in reality, it is most vulnerable. And the opposite applies to market declines.[16]" It is at times like this that the importance of being able to recognize economic swings is critical to reducing risk and maximizing potential rewards for stock market investors.

While economic swings impact consumer confidence, changes in the economy lack the ability to directly impact stock prices over the long term. To understand this relationship we must first think about the value of an investment. The value of an investment is comprised of the dividend payment and the growth of that dividend payment overtime. This is the driver of any investment whether it is a stock, a bond, or real estate. The value is driven by the current income the investment creates and then the growth of that income over time. In this regard, the price of an investment is hardly impacted by short term changes in the economy.

If we look at the value of the S&P 500 since 1871 we can decompose the returns for the S&P 500 into three factors. The dividend yield, the growth of earnings and the price paid for a stream of earnings versus the price sold. The average dividend yield of the stock market as a whole has varied between 1% and 8% since 1871, while earnings for the S&P 500 have grown at a consistent rate of 6% on average. But the growth in earnings in any given year increased by as much as 30% and declined by more than 50%.

The biggest factor impacting investment returns is the change in value that investors are willing to pay for a dollar worth of earnings. And this is completely driven by confidence, which is a quantitative measure of the amount of fear and greed in the market. As confidence builds and momentum improves in the stock market, investors are willing to give a stream of earnings a higher value and they also tend to predict higher growth rates for those earnings into the future. Conversely, when confidence declines, investors expect slower growth—or even a decline—in actual earnings and at the same time the amount they are willing to pay for those earnings also declines. But the data back to 1871 shows that earnings grow at a steady rate over the very long term and this steadiness deserves a constant valuation. However, we don't see that in the real world. Therefore, a change in the economy while impacting the short term earnings picture and short term valuation

of stocks, keeps the long term fair value untouched. In other words, declines have always been followed by increases in economic activity – recessions follow expansions and expansions follow recoveries.

Consequently, understanding when the economy is weakening should be a way to identify declining investor confidence. Other researchers have found that when confidence wanes, the amount investors are willing to pay for a stream of future earnings declines. By identifying those factors which have the greatest impact on confidence, we should be able to help mitigate the risk of our stock market investments.

We tried to find these factors by running a series of tests on economic indicators. We completed a large number of linear regressions on dozens of economic variables (details on the indicators we examined are in the Appendix). Linear regression is a mathematical technique which is used to identify the relationship between two data series. The tests are run to see if one variable has a quantifiable impact on the other. In our case, we looked at the impact the economic data series had on stock prices as measured by the S&P 500.

One potential pitfall of running a large number of tests is that superior results can be obtained by data mining. It has long been said that if you put a thousand monkeys in a room with a thousand typewriters, eventually they will reproduce the works of William Shakespeare. This is called the infinite monkey theorem, and the same thing can happen with numbers – if you run enough tests on enough data, you will almost surely get the desired result. This is data mining.

To avoid this potential problem, our testing is grounded in the scientific method. We began with a hypothesis that the stock market is driven by the economy. This is widely accepted as being true and supported by economic theory. Our tests were therefore intended only to find which economic series were the best predictors of future stock market returns.

Regressions were a starting point. That is using statistical analysis to determine the relationship between a dependent variable on one or more independent variables. After finding the most promising indicators, we looked at signals, meaning those times when a change in direction or acceleration from an indicator marks a change in the level of risk in the stock market, most often using the S&P 500 as a proxy for the stock market. When looking at these returns it is not enough to look at the potential returns and how frequently indicators are in a given state, but also how frequently or infrequently that indicator is correct. Inevitably an indicator is inaccurate and it reveals a level of risk in the market that may not come true. For this you want to evaluate how frequently the indicator reveals a false positive.

Because indicators produce false positives, indicating continued growth or a decline when in fact that is not occurring, you can do several things to mitigate this problem. You can diversify your indicators, you can confirm the strength of the indicators move, and you can look for confirmation from other indicators. By taking these three steps, you can mitigate the reliance on one indicator and make the overall analysis more robust by gaining confirmation and confidence in your conclusion.

Economics is not clairvoyant and it certainly does not produce infallible forecasts. The problem with forecasting is that once a forecast is made, the investor looks for indicators to confirm the opinion. Very often the investor becomes biased by the forecast and ignores evidence that contradicts their expectations. The best investors don't fall into this trap and actually look for indicators that can disprove their current market forecast.

John Hussman, founder and portfolio manager of Hussman Econometrics, explained this well in one of the weekly commentaries posted on his website,[17] "If an investor consistently takes positions based on forecasts, and changes those positions only when the market proves those forecasts wrong, that investor's life will predictably be dominated by hope, uncertainty, disappointment, reaction and frustration. If an investor constantly takes positions by responding to opportunities and conditions as they develop, with equanimity to what will happen next, making a habit of purchasing favorable value or early strength, and a similar habit of selling overvalue and early weakness, that investor's life will most probably be dominated by a sense of peace and control. Though it is not obvious which investor will have better results, my own opinion on that should be fairly clear. "This doesn't mean that an investor who responds – rather than reacts – will know what

will happen next. Rather, it means that this investor will be able to accept what happens next, knowing how to respond whatever the outcome. The point is to live in reality, and to take the next action from where one stands, without ignoring inconvenient aspects of reality in the hope of justifying one's position, and without wishing for the starting point to be somewhere else. The greatest source of human frustration is the desire for reality to be something other than it is."

Managing risk is best done by diagnosing the current state of the market and reacting to opportunities as they present themselves. Economic analysis can provide the tools to take advantage of the prospects that occur.

One example of a sound analytical methodology that can be applied to understand the stock market is found in *The Research Driven Investor* written by Tim Hayes, Director of Research for Ned Davis Research. Within the book, Hayes looks at a variety of analytical tools and indicators that can be used to form a model that diagnoses the current state of the market. He makes it clear that the market doesn't try to decide who is right or wrong; the market simply decides who makes money.

The first step to being right in the market is to do your homework. Super investor Peter Lynch is fond of saying, "People spend more time and effort to buy the right refrigerator than they do to buy the right funds." Unfortunately, investors often jump into investments without understanding what they are buying or even asking the right questions to help them gain that level of understanding. To help investors avoid this pitfall, Tim Hayes advocates researching indicators that will help an investor recognize pitfalls and opportunities in the market. He writes, "In order to beat the market, you must first understand it. And to gain that understanding, there are two approaches you can take – bottom-up or top-down. For the vast majority of individual investors, the top down approach is preferable…It (top-down approach) generally is easier than bottom-up analysis. The information available to the top-down analyst is far more expansive and readily available that the information needed by the bottom-up analyst.[18]"

With a top-down approach, the investor begins by trying to understand the degree of risk in the market. This is the opposite of what most individuals do. The time spent on individual investments far outweighs the time they spend trying to understand the current state of the market. While they may pick a good company, the majority of stocks follow the general trend of the market and by ignoring the degree of risk in the market, the average individual is increasing the degree of risk they are accepting.

Fundamental, technical, quantitative, and economic analysis all have their strengths and limitations in understanding the stock market. Used together, investors maximize their benefits. Fundamental analysis focuses on understanding the fair value of an investment. In *The Research Driven Investor*, the historical context and importance of identifying excessive valuations is the clear take away. From this perspective historical price to earnings ratio for the S&P 500 as well as applying the dividend discount model has significant merits. Additionally, a "user friendly" alternative is comparing the 10-year government bond yield to the S&P 500 earnings yield and looking at times of greatest risk. This measure would have flagged the early 1960's, the mid-1970s and the late 1990's as excessive valuation periods. If heeded, investors would have changed their investment stance to position themselves for the heightened risk in the stock market.

Fundamentals offer an insight into what is happening in the market. Economic analysis extends that insight. Through this process, the individual investor is trying to understand what the current economy says about current human behavior and how it relates to the current stock market environment. Emotions have developed in humans so that we may better react to what is happening around us. Yet emotions can also burden us with greater tension. Dr. Paul Ekman, a professor of psychology at the University of California Medical School in San Francisco believes that emotions can create one of three inappropriate reactions. The one that is most important to investors is feeling the wrong intensity – "worrying is justified, but we overreacted and got terrified." The best way to prevent this is creating a framework where we understand what might cause our fear and preempt that fear from happening.[19] While you can't always preempt fear, when it comes to investing you can take steps to do just that. A top down approach to your analysis should help alleviate fear and help prevent making decisions at the wrong time.

In his book, Hayes demonstrates that most investors make decisions at the same time. He quantifies this with the volume thrust indictor. This indicator looks at the daily ratio of the volume of advancing stocks to declining stocks. When it is equal to 9:1, almost all of the activity is to the upside and the market tends to enjoy at least a brief up move. Reviewing data from March of 1987 to March of 2000 Ned Davis research concluded that profitable trades occurred 49% of the time creating a gain per annum of 19.3% verse a buy-hold gain of 3.9%. This indicator is also known as a 9-to-1 up day and has also been extensively researched by Paul Desmond.[20]

This degree of conviction can also be found in a declining market. The 9:1 down day usually signifies further deterioration. Desmond also found that 9:1 down days almost immediately followed by a 9:1 up day are indicators of a market bottom. This technique looks at volume, which is one way to determine the level of supply and demand that exists in the market. As we have indicated, economic analysis is driven by the analysis of supply and demand. Consequently, this indicator reveals a simple way of discerning dramatic changes in demand characteristics within the stock market. It also highlights the importance of psychology in determining the trend of the market and illustrates how psychology can be revealed with indicators.

In this book we are specifically looking for indicators of the economy to give us a better understanding of the underlying health of the stock market. This is not a new idea. Hayes places a great deal of emphasis on the concept of confirmation. He cites the Dow Theory as one example of this idea and the Dow Theory is probably the first attempt to apply economic indicators to the stock market.

Charles Dow, the founder of *The Wall Street Journal*, developed the Dow Theory based upon his observations of the stock market and the economy in the late nineteenth century. He believed that the movement of railroad and industrial stocks reflected the state of the economy and could be used to predict future trends in the stock market. Dow's work was refined by later editors of The Wall Street Journal in the first decades of the twentieth century. William Hamilton eventually presented the first comprehensive explanation of the theory in his 1922 book, *The Stock Market Barometer*.

Dow Theory can be reduced to a set of assumptions. The first one is that the averages discount everything and that markets move in trends. The primary trend is discerned from the direction of the Dow Jones Industrial Average (DJIA) and the Dow Jones Transportation Average (DJTA). An uptrend is defined by higher highs and higher lows; a downtrend consists of a series of lower lows and lower highs. The market trend is defined by the direction of the indexes when they confirm each other – an uptrend occurs when both are in an uptrend. A trend is assumed to be in effect until it gives definite signals that it has reversed. There is much more to the Theory, but these are the basic assumptions. The important point is that the relationship between the economy and the stock market has been recognized since the 1800's.

The significance of formulating a strategy with research and gaining a historical context is beneficial in combating the emotions that strike investors. Whether the emotion is fear or greed, mastering an effective strategy for diagnosing the market is evident. Eliminating emotional triggers completely is impossible, but diagnosing the market so that the probabilities and market sentiment are in your favor is certainly achievable as Hayes indicates in page after page of *The Research Driven Investor*.

While providing the tools and the system to give you an indication of what methodology might be best, we believe that focusing on economics to manage risk provides a methodology that will allow you to avoid the hype of the moment. The end result is that you can determine for yourself an assessment of the current market sentiment. "The major benefit of a sentiment assessment is that it can enable you to place the current market action in the framework of risk and reward. It can help determine whether a favorable risk/reward balance warrants an aggressive approach or whether an unfavorable risk/reward balance warrants a high cash position."[21]

As humans we are all prone to swings in emotion from optimism and greed to pessimism and fear. We are also capable of creating a discipline to avoid those traps. Our ability to avoid emotional traps in investing is reliant on obtaining data and applying the tools to develop an analytical view of the market. This allows the individual investor to build an effective diagnosis of the current market environment.

PART 3

In this section, we walk through the process of applying economic theory to stock market analysis. After we build the bridge from theory to application, we can build a model to help us make investment decisions.

CHAPTER 7

Modeling the Economy – Developing a Framework to Define Success

ECONOMISTS have long sought to understand the business cycle so they could forecast turning points. There is also a belief that if we can forecast the cycle, we might be able to repeal it and eliminate the busts that cause so much pain. While it is unlikely that we will ever be able to do that, in developed economies, there are a number of government programs in place to minimize the pain of a downturn. Understanding the causes of the downturns of the past has allowed policy makers to avoid making the same mistakes which caused mild recessions to turn into severe depressions.

We are trying to do the same thing – learn from the experience of others to allow us to take a step forward in forecasting. We are not actually trying to forecast the economy as much as we are trying to determine the impact the economy has on the stock market. In the end, the goal is the same. We are trying to minimize the pain of a downturn in stocks just as government policy makers are seeking to minimize the pain of an economic downturn.

It may be easier to find success in the stock market than it is in the economy. Over time, the science of economics has performed rather poorly in finding ways to accurately diagnose the onset of a recession. The official announcement that we are in a recession comes months after it has started and sometimes it has even ended by the time economists agree that one has started. It seems that computers, theories, and the army of economists offering analysis over the years have not provided much benefit to the study of business cycles. Econometrics, the use of statistical analysis for economics, provides little improvement to the study of the business cycle. Econometric models miss turning points because they are based on the past and no two recessions are ever exactly alike. However, economic indicators are dynamic, they move over time while most econometric models are static and cannot adapt to the changes through time. As economic, employment, and inflation cycles differ over time, complex econometric models have not been able to keep up with the changes that occur during each cycle.

Economists have long recognized this. In the early 1970's, economist Victor Zarnowitz wrote, "Neither econometric models nor the art of forecasting economic turns, have done particularly well historically to provide warning signs of economic declines. During the course of the business cycle, economists go through a pattern of depicting the current state of the economy. During the end of the business cycle, economists start believing there is a possibility of a downturn in the economy. Then the discussion centers on a probability of a recession. Finally, the certainty of a turning point is upon them, and economists exclaim the dire nature of the situation.[22]"

A great example of the fallibility of economists comes from one of the most noted economists of our time. During the lead in to the most recent recession that began in December 2007, former Fed Chairman Alan Greenspan was quoted multiple times commenting on the chances of a recession:

> February 26, 2007 - Greenspan told a business conference that it's difficult to forecast the timing of recessions but that it was "possible" that one could occur later in the year, the Wall Street Journal reported.
>
> September 28, 2007 - In an interview with the BBC, Greenspan brought up the "R" word, actually saying that there was a "50-50 chance of a recession."

The National Bureau of Economic Research concluded that a recession began in December 2007. They made this determination in late-November 2008.

February 15, 2008 – Speaking at Cambridge Energy Research Associates' annual energy conference in Houston, Greenspan said "We're clearly on the edge, it's 50% or better" chance the economy will slip into recession.

September 14, 2008 – In an interview with George Stephanopoulos on the Sunday morning news show "This Week," he said, "This is 'by far' the worst economic crisis I've seen in my career."

By September 14, 2008, the Dow Jones Industrial Average was about 20% below its peak. It would fall another 40% in the next six months. This would actually have been a pretty good stock market call, if you were acting only on this statement. However, there are few who would call Greenspan a great stock market analyst after he famously cautioned stock market investors that prices might be too high in a December 1996 speech:

"Clearly, sustained low inflation implies less uncertainty about the future, and lower risk premiums imply higher prices of stocks and other earning assets. We can see that in the inverse relationship exhibited by price/earnings ratios and the rate of inflation in the past. But how do we know when irrational exuberance has unduly escalated asset values, which then become subject to unexpected and prolonged contractions as they have in Japan over the past decade?"

He would be proven right a little more than three years later when the tech bubble burst and stocks crashed. But from the time of his speech, the NASDAQ Composite Index had gone up by 299%. But since leaving the Fed, his forecasting ability does seem to have improved. On August 2, 2009, retuning to "This Week" with George Stephanopoulos, Greenspan commented that "'We've already seen the bottom. It strikes me that we may very well have 2.5 percent [growth in GDP] in the current quarter." Every economist seemed to agree with Greenspan that growth had returned to the economy.

Forecasts and econometric models, even for those such as the Fed Chairman with access to the best data in the world, therefore provide a poor framework for diagnosing the state of the economy. In more precise research, Victor Zarnowitz, an economist at the very well respected University of Chicago and a member of the National Bureau of Economic Research which is the organization that officially determines when a recession occurs, concluded that forecasters have offered a poor predictive record in understanding the economy. Specifically, he wrote, "Accuracy tends to diminish steadily as the forecast span increases. Business economists' forecasts of GNP and industrial production, for example, are typically better than various types of extrapolation over periods from one to three quarters ahead. Forecasts for four quarters or more ahead, however, are generally not superior to simple extrapolations of the recent trend.[23]"

We agree with Zarnowitz and conclude that it is therefore better to utilize a dynamic approach. A dynamic approach recognizes that (1) the weight of the most important factors changes over time, (2) the relative importance of the depth or decline in each factor varies over time, and (3) the number of factors that produce the turn in the economy actually varies each time. As we move forward, we will seek to incorporate this very important idea into our modeling process. It is also important to keep in mind that constantly changing the variables in a model is actually curve fitting the data to the recent past. The optimum trade-off requires using a diverse set of variables that has worked well, but not perfectly, in the past.

An excellent economic model is described in the book *Beating the Business Cycle - How to Predict and Profit From Turning Points in the Economy* by Lakshman Aschutan and Anirvan Banjeri, the Managing Director and the Director of Research, respectively, of the Economic Cycle Research Institute (ECRI). In their own words, "we will describe a cyclical framework for viewing the economy that relies on an array of objective indicators that, if used properly, warn of turning points before they happen."

ECRI is one of the most successful forecasters in the world. They have a long history of success and have been the home to some of the greatest economic minds since the end of World War II. To accomplish their goal, ECRI relies on a dynamic approach using a variety of indicators to diagnose where we are in the business cycle. ECRI uses three broad characteristics of the business cycle to depict the state of the economy.

This in turn provides a framework for making sense of the continuous flow of economic information. They call their broad framework the Economic Cycle Cube. The Cube represents inflation, employment, and economic growth. Each of these is then covered by a leading index designed to forecast the future trend of the characteristic being studied.

The Weekly Leading Index (WLI) represents a measurement of current economic growth. This index is an aggregate of seven economic indicators. Each of these is deemed leading in nature and is expected to turn lower ahead of an economic decline. Research shows that recognizing a slowdown in the growth rate of the economy is made easier with a collective combination of indicators since relying on a single indicator can lead to frequent false signals. An aggregate indicator better represents the broad nature of the economic environment. Wesley Mitchell, one of the founders of the National Bureau of Economic Research, stated that "It is because of the past shortcomings of the most trustworthy indicators we have been able to find that we think it unsafe to base judgments of current conditions upon the behavior of any one series, or of a few series. The likelihood of being misled is reduced, though not eliminated, if one uses a considerable number of series, each with a good past record as an indicator and representing in the aggregate a wide range of business activities."

It is important to realize that one of the first things ECRI does is to make a distinction between the business cycle itself and the growth rate of the business cycle. ECRI distinguishes between the growth rate and the business cycle because the economy has evolved. In the past, economists felt that it was enough to know whether the economy was growing or contracting. If growth was positive, that was all they needed to know to see that the economy was expanding. A recession was marked by a contraction in GDP. Now, even a slow down from 5% growth to a level of 1% can mark a recession if individuals, businesses, and investors react as if it is a significant decline in the rate of change in the economy. Given the complexity of the modern global economy, the question becomes whether or not economic growth is expanding rapidly enough to support the growth in population or if the rate of growth is increasing at an unsatisfactory level below the long term trend line.

The swings that result in changes in the business cycle directly bear on corporate profits. Whether it is employment, inventory, or credit, these factors weigh heavily on the corporate bottom line. This is because investors view the value of their investment as the result of future profits. As the outlook for the future diminishes, the impact is felt in lower stock prices. Therefore as indicators influence the economy, they have an almost equal impact on the stock market.

In a Wall Street Journal article just before the stock market's collapse in October 1987, one of the founders of ECRI chronicled this relationship. "The consensus also anticipates not only a further climb in interest rates but a continuing pickup in inflation, which has in fact been slowly worsening for roughly a year. Initially, it should be noted, such a development could facilitate company efforts to push up prices and thus profits. But the coin's less attractive other side is that eventually company costs, such as for financing, labor and material, could climb as well, and this ultimately could depress profits. This is a key reason why profits often begin dropping before, rather than with the start of, a downturn in the business cycle." Geoffrey H. Moore made these comments in an article called *Stocks May Face More Than a Correction — Past Suggests Recession Is a Possible Scenario*. Four days later, the stock market had one of the worst crashes in history as the S&P 500 declined about 20% on October 19th 1987. This is an excellent example of economic variables can be used to understand the likely direction of the stock market.

More important than the absolute value of an economic indicator is the rate of change of that indicator. The growth rate cycle is the change in the rate of change over the course of the business cycle. Peaks in the growth rate happen before a turn in the actual business cycle. Conversely, a trough in the business cycle occurs before the business cycle bottoms. This idea can be understood by picturing a yo-yo. As a child we might have spent hours thrusting the yo-yo outward, watching it stop momentarily, and the seeing it retrace its move as it rewound itself. The yo-yo looks as though it stalls at one point because the rate of forward motion ceases, although the yo-yo actually continues to move but at a slower pace. It then reverses, and we can again see the strength in the momentum as it recoils. The economy works in this same manner. Before there is an actual

turn upward, the rate of decline slows until a few indicators start to improve, then increase. While the overall economy may continue to decline, it no longer falls at the same rate. This action of a slowing decline is the first step to seeing an improvement in the economy.

The growth rate cycle therefore leads the ultimate peak or decline in the business cycle. As investors start to see the rate of decline diminish investors begin to ponder if the aggregate future earnings of the market may improve. Aschutan and Banjeri explain this by saying "The growth rate cycle, however, is important. There is a one-to-one correspondence between growth rates cycles, while not useful for anticipating recessions and recoveries, is important to equity investors in evaluating the movement of the market." This is the link that bridges their economic analysis to the stock market as a whole.

Most researchers, including ECRI, have found that some economic indicators are more important than others, which means they have a better forecasting record over the long term. For example, Aschutan and Banjeri cite employment data, monetary measures, and international trade as leading indicators of inflation. In the case of employment, the number of people filing for unemployment claims tends to lead the employment cycle. As another example, demographics and interest rates lead home prices. To show that no relationship is truly straightforward, we can look a little deeper at factors impacting home prices. A growing number of potential homeowners combined with lower interest rates should increase the value of homes. More retirees looking to downsize and sell large homes could lead to a decline in the price of those homes and an increase in the value of condominiums. Aschutan and Banjeri point out that, "While it is impossible for us to know which individual driver will take the lead at the next turning point, together they can detect early signs of an upcoming turn in the economy with near certainty.[24]"

We have long used a technique similar to the one employed by ECRI in our investment advisory business. Financial planners and investors often ask us if each recession is different, how a basket of indicators can prove responsive to a change in the economy. The answer is that all recessions and upturns are different, but as much as they are different, they are also the same, because durable changes in the economy usually move in a known order at turning points. Specifically, economic indicators move in pronounced, pervasive and persistent patterns. ECRI refers to this as "the three P's". The turning point is more predictable when the three P's coexist.

Pervasiveness measures the breadth of the economic cycle downturn. Generally what happens is that a slowdown (or upturn) moves from one sector of the economy or from one country to another. With the right indicators, economists can track this movement. Even before the Great Depression, this relationship was recognized by W. C. Mitchell who exclaimed "Yet all business enterprises are so bound to each other by industrial, commercial, and financial ties that none can prosper and none can suffer without affecting others...One series, for example, embraces wheat farms, elevators, railways, flour mills, wholesale dealers in provisions, bakeries, and retail distributors. Each set of members in such a series is dependent upon the preceding set for its chief supplies and upon the succeeding set for its chief vent.[25]" As the downturn becomes more wide spread (pervasive) it becomes evident in the activities of banking, inventory, manufacturing and employment. Even if these areas were not the origin of the problem, the issue saturates the economy until it becomes a greater problem. But before the press and corporate America pick up on the overall morass, it is evident in common indicators of the economy.

It may help to clarify the idea of pervasiveness and its impact on the business cycle with an example. In manufacturing, or any business for that matter, business managers increase orders for raw material or hire more people to meet an increase in consumer demand. Inventory management systems and tracking systems have reduced the variability of these cycles compared to cycles before World War II. However, it can take months to build a new factory. Before new systems are put in place to increase the supply to match the new demand, prices increase as a natural tendency from the increased demand. Eventually as the new supply enters the market, the increased productivity reduces the price that was previously charged. Once prices fall in one area, it travels like a virus to other areas of the economy because the demand for raw materials that are used in several industries, or the demand for labor, is no longer as great.

This same occurrence is seen for banks. Lines of credit from banks, when loose, provide a great deal of

leverage for companies willing to take on a greater degree of borrowing. Once banks reign in this credit, corporations can no longer invest in capital goods at the same rate. This is exactly what precipitated the Great Recession that spread around the globe starting in 2007. As banks realized that increasingly the credit that was being issued was too risky, bank mangers pulled in lines of credit and stopped issuing new credit.

An indicator is pronounced if it moves by a significant amount. No indicator moves in one single direction. If an indicator begins to improve it may do so in fits and starts. The number of people that get hired will lead to slow improvement in the unemployment rate. After a time, it will then accelerate quickly as new opportunities arise. As the new jobs are absorbed the improvement in productivity slows only to resume its upward path with a new plant opening or a new product coming on line that requires more productivity to manufacture. Therefore, at times a decline may just be a stall in the greater trend. However, if after a move higher, the downward move is larger than the previous move, this gives the analyst a sign that the pronounced downward move is the start of a new trend and adds greater confidence in the analysts' diagnosis of the state of the economy.

Persistence is the last analytical attribute identified by ECRI. Persistence refers to the time in which it takes an indicator to turn down (up). If an indicator declines over a two month period this would not be as strong a signal as if the indicator has declined for six months.

Looking for all of these attributes can help avoid false moves. Better yet, pervasive, pronounced and persistent movements in economic indicators help to detect divergences in the economy and growth cycle. This is relevant, as Aschutan and Banerji state "Following these many cycles can help you foresee when the behavior of the economy will depart from the norm propounded by the pundits. For Investors, the best opportunities are often created by such divergences, which blindside even sophisticated financial professionals.[26]" If each of these attributes are present, this is a much stronger signal than if a sharp decline happens in one month only to rebound sharply in the next month.

All of the work presented in *Beating the Business Cycle*—and in this book—is an extension of research that started back during the early 1900's. It was Wesley C. Mitchell that brought business cycle analysis to the forefront before the Great Depression. Along with Arthur F. Burns, who later become a Fed Chairman, he was a cofounder of the National Bureau of Economic Research (NBER). NBER is the non-government institution responsible for dating economic recessions. For its early years and through the 1960s it seems as though there was a focus on leading indicators and their impact on the business cycle. However, as computers and econometrics pervaded the field of economics, NBER seemed to move away from its reliance on leading indicators.

Mitchell was one of the first individuals to apply a discipline to economic cycle analysis. "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 recession, contractions, and reversals which merge into the expansion phase of the next cycle; this sequence of changes is recurrent but not periodic; in duration business cycles vary for more than one year to ten or twelve years; they are not divisible into shorter cycles of similar character with amplitudes approximating their own.[27]"

At the request of then U.S. Treasury Secretary, Henry Morgenthau, Mitchell and Burns set out to identify variables that would indicate a downturn and upturn in the economy. This was published in 1938[28]. As a follow-on study, in 1946, Mitchell and Burns published *Measuring Business Cycles*, which was an effort to derive a theory about the causes of economic cycles.

The breadth of the research conducted by Wesley Mitchell is impressive. From the early 1900s Mr. Mitchell looked backed over 127 years identifying 32 cycles. On average the length of each cycle lasted four years, and two –thirds of the time the cycle last between three to five years.

Another notable figure in the study of business cycles was Victor Zarnowitz, whom we have already quoted in this book. He was also part of NBER and worked with the Conference Board until his death in February 2009. He joined the Conference board in 1999 and worked on the Leading Economic Indicators (LEI) and

the Consumer Confidence Index. As part of NBER, one of the last decisions he participated in was dating the start of the recession beginning in December 2007. It is said he worked up until the last day of his life on what he loved – the study of business cycles.

The work of Mitchell and Burns was continued by one of their students, Geoffrey Moore. Mitchell and Burns first drafted a list of important economic indicators in 1938. Moore continued to update the list in 1950, 1960, and 1966 and as he developed the Center for International Business Cycle Research at Columbia University. Each list of indicators classified them as leading, lagging, and coincident indicators. Each list was derived by determining the (1) economic significance, (2) statistical adequacy, (3) historical availability to provide analysis over several business cycles, (4) cyclical timing record, (5) smoothness, and (6) promptness of publication.[29] In 1958, the list consisted of eight indicators:

1. Sensitive Commodity Prices
2. Average workweek
3. Commercial and industrial building contracts
4. New Incorporations
5. New orders
6. Housing starts
7. Stock Prices
8. Business Failures

It was this work that prompted *The Wall Street Journal* to call Geoffrey H. Moore "the father of leading indicators." After working within multiple government agencies and at the NBER, Moore subsequently founded ECRI. It was there that Aschutan and Banjeri became pupils of Moore and subsequently have continued the extraordinary research on leading economic indicators.

The record of ECRI and its predecessor *Center for International Business Cycle Research* is commendable. They have correctly predicted the last three recessions and their indicators would have worked for each of the recessions dating back to 1948. As one example of their work, in April 2001, after ECRI had correctly indicated that a recession was underway, the Conference Board said: "No recession is on the horizon." ECRI's indices for other economies have also fared well. For instance, it correctly forecasted the Japanese recessions that started in 1997 and 2001.[30]

Relying on an index, Moore has been much more successful than the better known Greenspan. In March of 1990, *The Wall Street Journal* wrote:

> "Geoffrey Moore, who at 75 years of age has had a hand in declaring many modern recessions, gives his opinion even without being asked. Mr. Moore, director of Columbia University's *Center for International Business Cycle Research*, recently noted the *center's* employment index has begun signaling recession. Mr. Moore made the announcement at a news conference launching a statistics-marketing effort for the *center's* 30 or so proprietary indicators. Newly pessimistic, Mr. Moore puts the odds of a recession at two-to-one in the first half. "If we escape recession in the first half, I'd change the odds to fifty-fifty in the second half.[31]"
>
> "There have been eight recessions since 1948, and only once — before the 1948-49 slump — has the Commerce index flashed a warning earlier than the long-leading composite. The Columbia indicator signaled the latest recession of 1981-82, a particularly severe downturn, by 10 months, while the Commerce index gave only three months' warning. Two of the four components of the long-leading composite are already components of the Commerce index — the broadly defined money supply, adjusted for inflation — what economists call real M2 — and the number of new housing units authorized by building permits. The remaining two components are a monthly average of the Dow Jones 20-bond price index, which appears daily in this paper, and a new statistical series developed at the Columbia center that provides a ratio of price to labor costs in manufacturing.[32]"

The NBER indicated months later that the recession began in July of 1990, which meant that as Moore spoke in the spring of that year, he was very accurately assessing the state of the economy. .On average, Moore's index was able to provide ten months advance warning for recessions between 1948 and 1981, even correctly foreseeing the double dip which occurred in the 1980's.

Moore and now ECRI include the stock market as a leading economic indicator. However it is plagued with false indications. Jeremy Siegel, the well known University of Pennsylvania economics professor, noted in *Stocks for the Long Run*, that since 1948, ten recessions were preceded by a stock market decline, by a lead time of 0 to 13 months (average 5.7 months), while ten stock market declines of greater than 10% in the Dow Jones Industrial Average were not followed by a recession.[33]

The false signals can also incorrectly forecast a recovery as they did in 2001 when the stock market rallied just as a recession began, falsely predicting a turnaround in the economy. This confirms that even though the stock market is usually a reliable leading indicator, all indicators will at times provide false indications, otherwise known as false positives. As another example, an inverted yield curve is a common indication of an economic recession. Yet in the 1990-91 recession, the yield curve failed to indicate the start of a recession.

The success or failure of just one indicator is evidence that not only is it important to have a basket of indicators, it is also important also to have the breadth of information provided by an approach similar to the 3 Ps used by ECRI.

While some indicators fail, it is unlikely for a group of indicators to all fail at the same time. Therefore creating an aggregate index offers redundancy. Much like NASA and the military build redundancy into their training, incorporating multiple leading indices into an economic indicator creates redundancy in diagnosing the state of the economy. Aschutan and Banerji elaborate this point by saying "By its very nature, the complexity of the economy means that there is neither a Holy Grail nor an exact science to cycle prediction. Because of the variety of durable feedback mechanism, a broad spectrum of indicators is needed to represent the various drivers of the economic cycle.[34]"

There of course are differences from one cycle to the next, but it is the commonalities that enable a disciplined analyst to approach each cycle with a plan. Each recession contains a pattern that is similar to past recession. This enables the analyst to diagnose the cycle.

In the most recent recession that started in 2007, everyone recognized how sweeping the recession was in its global impact. Prior to the recession, many commentators had speculated that countries, especially China and other Asian countries, were insulated from the ups and downs that would impact the rest of the world. This turned out to be far from the truth as every country was impacted to some degree by the recession.

What is more interesting is that the global economy has actually been very interconnected long before 2007. A financial crisis can certainly hit one geographic area without impacting others, but you can go back to the 1800's to see that there were more connections between countries than previously thought. Mitchell wrote about this in 1927, stating "It has long been recognized that the great financial crises have an international sweep. Thus the conspectus shows that England and the United States shared in the crises of 1815, 1825 and 1837; that England, the United States and France (which now is represented in the annals) shared in the crisis of 1847; that these three countries, and Germany also, shared in the panic of 1857; that England, the United States, France, Germany and Austria shared in varying degrees the crisis of 1873. To these familiar facts our annals add that all five countries had mild recessions in 1882-84. Of the 17 countries included in the annals after 1890, 10 had recessions in 1890-91, 15 had recessions in 1900-01, 15 in 1907-08, 12 in 1912-13, 11 in 1918, and 14 in 1920. Further, the countries which escaped a share in these world reactions usually owed their exemption to an earlier turn for the worse. Thus South Africa and Japan had no recession in 1900-01 because they were already suffering from depression. The three countries of our 17 which escaped in 1920 were Germany, Austria and Russia. The three countries of our 17 which escaped in 1920 were Germany, Austria and Russia.[35]"

While these links between countries and the concurrent downturns in their economies go back to the

1800's, it is evident that these tendencies have only grown greater as the years have passed. The only way that countries diverge from the global economy is based on the percentage of economic growth coming from farming. The greater the percentage coming from agrarian practices, the more likely that the country would delink from the rest of the globe. However, agrarian societies tend to be the least developed nations.

No two business cycles are ever alike. A decline may start in one country and migrate to another. Or it starts in one industry and jumps to another. This is what makes forecasting a downturn so difficult – there are so many variables involved. Additionally, forecasts are often made based on the emotions arising from the current situation. By applying a systematic process to observing the economy, most of the emotional errors can be eliminated in the diagnosis of the state of the economy.

Individuals, businesses and investors get caught off guard because of human nature. People usually make forecasts based on a simple extrapolation of the recent trend. This is known as "persistence bias", when individuals think that recent past performance will simply extend into the future. If the trend is good, then individuals create an expectation for continued improvements. Emotional feelings are not limited to booms. Emotional excesses portrayed as pessimism and anxiety also occur at the bottom. This makes diagnosing a turning point particularly difficult, which is all the more reason to have your own process to analyze the current state of the economy.

In *Beating the Business Cycle*, Aschutan and Banjeri say "At turning points, if you wait for general perceptions to change before you act, you will miss the boat. Making this mistake will cost you dearly. Yet the momentum of the pack will exert incredible pressure on you to do just that." Momentum is very important and can benefit investors immensely. Momentum used at the correct times is extremely powerful. However, at turning points momentum tends to be extremely disruptive. This is because that same energy that worked to benefit you now works against you. This same force of nature occurs with economic indicators. The same force that drives indicators higher also causes them to turn. Failing to notice these changes can lead to poor outcomes when investing.

Beating the Business Cycle emphasized the need for a disciplined approach to analyzing the economy. We, of course, want to take this one step further to analyzing the stock market. The importance of the work of W. C. Mitchell, Arthur Burns, Geoffrey Moore, Lakshman Aschutan, and Anirvan Banjeri is that they highlighted the risk in leaving things to emotion or creating a model that is not dynamic to change with the times. No two business cycles are alike. But what all too often results is the underestimation of risk.

To conclude on the importance of risk management, Aschutan and Banerji say "the underestimation of risk is itself cyclical. During longer expansions, like the one we experienced the 1990s, optimism spreads as memories of past recessions fade. With optimistic assumptions bolstered by a history of continued growth, people become increasingly dismissive of risk. This causes the economy to behave in a boom like fashion, further reinforcing such wishful thinking.[36]"

The pursuit of a simple model is within our reach. We build upon the work of these economists but cannot wholly incorporate it into our work because they all conclude that the stock market is a valuable leading economic indicator. We can't use the market itself to identify risk in the market, so will need to find other indicators that can be applied by the individual investor.

> "No two business cycles are entirely alike, of course; indeed, each has some unique features. Yet they also have many common and apparently systematic characteristics and are clearly distinct from the much less synchronized and smaller movements of shorter duration (which are partly episodic-irregular, partly periodic-seasonal)."
>
> - Victor Zarnowitz, *Signals and Confirmations of Economic Change*, University of Chicago, Selected Papers Series No. 46, Booth School of Business

CHAPTER 8

Making Economics Understandable

MANY of those who took an economics class at some point in their lives may think of the subject as boring. It is difficult to argue with them by pointing to the classic textbooks in the field, but there are several leading economists who apply the principles of their field in unique and interesting ways.

Thomas Sowell is known as an economist and philosopher and with his writing he often makes the difficult easy to understand. One story he uses illustrates the relationship between the prices of ice cream and baseball gloves. Sowell finds a key insight in the work of Nikolai Shmelev and Vladimir Popov, who were economists in the old Soviet Union, functioning within the framework of Communism. "Everything is interconnected in the world of prices, so that the smallest change in one element is passed along the chain to millions of others."

As Sowell explains, "What does that mean? It means that a huge increase in the demand for ice cream can mean higher prices for catchers' mitts, among other things.

When more cows are needed to produce more milk to make ice cream, then fewer cows will be slaughtered and that means less cowhide available to make baseball gloves. Supply and demand means that catchers' mitts are going to cost more."

Our research has found that it's not just prices that are interconnected in an economy: just about everything is related in some way to everything else. For example, if Congress were to pass a law subsidizing the cost of producing ethanol-based fuels, we would see the price of grains rise and a large increase in the construction of processing plants in rural America. While initially the increased grain prices would boost farm incomes, eventually they would hurt urban consumers who end up paying more for food. Cutbacks in these households lead to lower demand for grain products and as prices fall in response, the half-completed processing plants are no longer profitable.

We could continue with that example to highlight a vast number of unintended consequences and unconsidered interconnections, but the point is easy to see – the economy is impossible to understand in isolation. Our goal is to reduce the amount of complexity and draw meaningful data out of the myriad statistics available to the analyst.

Just as no investment analyst is required to develop a theory from scratch, aspiring economists can also stand upon the shoulders of giants and expand the body of knowledge that already exists. Joseph H. Ellis wrote *Ahead of the Curve: A Commonsense Guide to Forecasting Business and Market Cycles*, a book that brings great clarity to the interactions between the economic cycle and the stock market.

The business cycle has existed since the time of the very first transactions. In ancient times, business depended on agriculture. Some years the weather was great and harvests brought more than enough to prosper for another year. Other times, some type of catastrophe would befall a village and the crop would be less than expected or destroyed completely. This led to difficult times. That cycle of good times and bad times continued even as reliance on agriculture decreased. Good times, known as booms, were almost always followed by busts, or more challenging economic circumstances.

By the 1800's economists were seeking to quantify this phenomena. A French economist, Clement Juglar, found that there seemed to be a recurring pattern to the booms and busts and he identified a cycle that lasted about 8 to 11 years. Researchers liked the idea of finding regularity within something as complex as the economy, and several other overlapping cycles were eventually identified, and brief explanations for each were offered:

- The Kitchin cycle of 3–5 years was based on the idea that it took that long to work through an excess of inventory which inevitably resulted in the good times
- The Juglar cycle of 8–11 years was caused by capital investment. In good times, businesses invest too much in their production capacity and then spend several years under investing to compensate for their excessive optimism.
- The Kuznets cycle of 15–25 years is tied to infrastructure investment which follows the same pattern of overbuilding and pessimism seen in capital investments.
- The Kondratiev wave or long technological cycle of 45–60 years was identified by another Soviet economist and expected an incredible boom (like the 1920s) to be followed by a severe bust (like the 1930s)

These cycles interact with each other and cumulatively form what we call the business cycle. While they don't actually follow the fairly precise timelines offered by their discoverers, they do occur over and over again. We now take it as a given that a period of under investment in a sector or an economy will follow a period of over investment. This is explained by the ideas of Austrian economist Joseph Schumpeter, who explained that the Juglar cycle actually consisted of four distinct stages: expansion, crisis, recession, and recovery. These cycles and Schumpeter's stages provide a useful framework to think about the economy.

Since the end of the Great Depression, governments seem to have done all they can to minimize the downside of the business cycle. While there have been some successes in reducing the suffering caused by unemployment and lower incomes, they have not succeeded in fully repealing the cycles. Busts still follow booms, but in most developed economies the busts seem to be shorter and less severe than in the past.

The business cycle is the starting point of Ellis' work. He worked as a Wall Street analyst for a number of years and was ranked as the top retailing analyst by Institutional Investor for over 18 years. He covered such companies as Lowes, Home Depot, and Starbucks and had an opportunity to directly observe the impact of the consumer on businesses and vice versa. What he saw in his career allowed him to conclude that there is a definite link between the consumer and both the economic and the stock market cycles. He also came to the conclusion that the individual investor could profit from understanding how the economic and market cycles relate to each other.

To link the economic cycle with the stock market cycle, Ellis suggests the best approach is to gain a thorough understanding of an economic indicator known as real consumer spending. Real consumer spending is tracked and reported by the Bureau of Economic Analysis. It is defined as spending after the impact of inflation is removed. Like many economic data series, it is available monthly. For investors accustomed to seeing data change in less than a second in the stock market, economic data seems relatively slow and many wonder if is useful given how infrequent the reports are.

The truth is that the long term trend of the stock market changes very slowly. Bull and bear markets last for years, on average. These trends are driven by the economic cycle, where most data is reported monthly or quarterly. Economic trends drive earnings growth and declines in many companies. Economic trends also drive multiple expansions in the stock market, where investors are willing to pay more for a dollar of earnings, and this is a large driver of bull market gains. Multiple contractions occur when investors value a dollar of earnings at a lower price, and are a contributing factor to bear markets.

Just as stock market investors change their spending habits in response to the economy, so do consumers. Since real consumer spending represents about two thirds of the entire US economy, these changes in consumer behavior have a large impact on the economy and stock prices. Consequently, understanding the drivers of consumption will allow us to better understand the swings in the economy.

One of the first points Ellis makes is in his book is the importance of real consumer spending. Specifically, he states early on in the book that "Forecasting uptrends and downtrends in consumer spending is often another useful key to forecasting the stock market. If consumer spending (A) drives the economic and

corporate-profit-cycle (B) and if the stock market (C) is a sensitive predictor of (B), then (A) and (C) are causally linked. This is not to suggest that uptrends and downtrends in the stock market are not also driven by a myriad of other psychological and valuation factors."[37]

In summary, his hypothesis is that consumer spending is the cornerstone of economic analysis. While he fully acknowledges that in any given cycle many different factors affect the stock market, it is his opinion that consumer spending is the one factor that consistently has the greatest impact. He concedes that earnings growth is paramount to stock market valuations, but demonstrates that earnings growth is driven by consumer spending. As consumer spending increases, they buy more goods and services that are offered by corporations and corporate earnings grow as direct result of the increase in sales.

Inflation, interest rates, wages, and the stock market all coexist within the overall economy. It is best to understand that each is an input that can be useful to diagnose the general state of the economy. A very eloquent illustration of this coexistence is offered by Ellis in a single diagram he calls, "Chronology of the Economic Cycle" (see Figure 8-1). The chronology depicts the impact of economic factors to real consumer spending. Individual earnings and consumer borrowing are the biggest factors impacting consumer spending. Additionally, the stock market has a tangential impact to real consumer spending, while consumer spending in turn impacts industrial production. The figure is one of the best descriptions of the inter-workings of the economy. From this perspective we can also see what may drive economic recessions. This would include inflation, interest rates, the rate of consumer borrowing, capital spending, inventories, corporate profits, and the stock market.

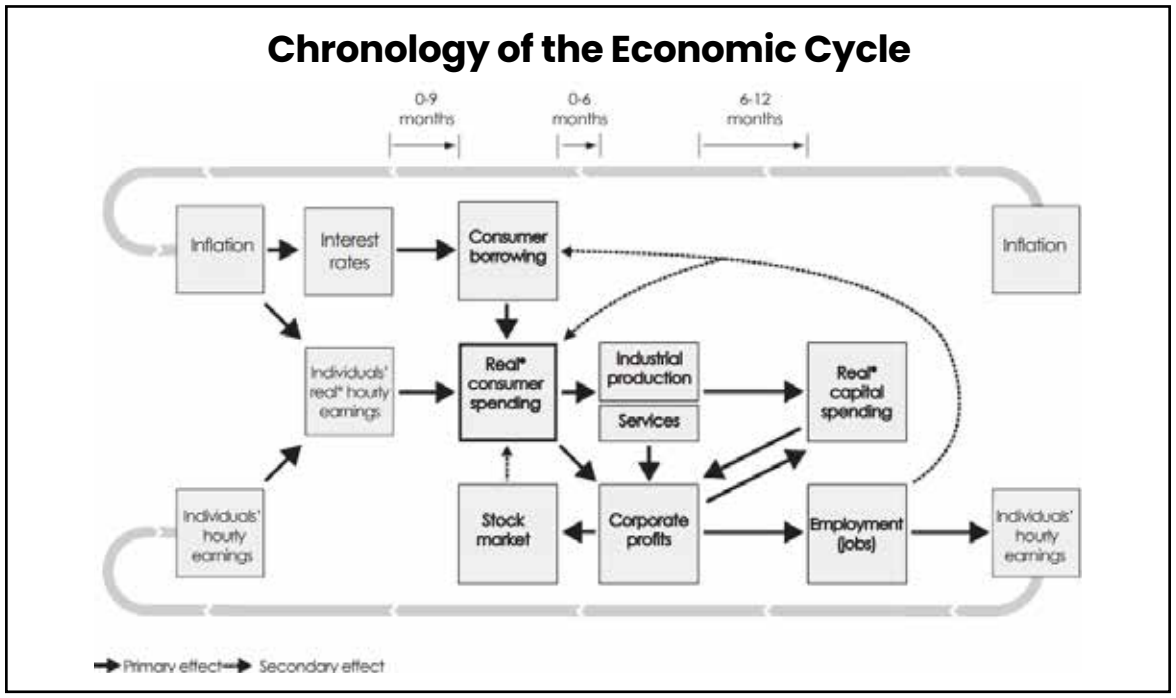

Figure 8-1: Real consumer spending is at the center of economic activity. (source: http://www.aheadofthecurve-thebook.com/02-01.html)

While Ellis highlights the importance of real consumer spending as the central focus of the economy, each and every one of the indicators can act as a trigger for causing a downturn in the economy. The most recent recession in 2008 was clearly driven by excess consumer borrowing and borrowing in general. Individuals and banks were extremely leveraged and as asset prices declined this exposed those that had excess debt. As Warren Buffett is fond of saying, "You only find out who is swimming naked when the tide goes out."[38]

In 2000 real capital spending seemed to be the culprit behind the recession. Capital spending decisions are made based on current demand. As demand is strong, companies expand capacity to ensure that orders are fulfilled, otherwise they risk losing a potential sale. First, the U.S. experienced an extended period of time

when production grew in excess of 8% from 1992 to 2000. Capital spending peaked at a growth rate of more than 12% in 1998 and began declining well in advance of the recession that would start in 2001.

The recession in 1990-91, just like the 2008 recession, was attributable to excess borrowing. While abrupt, the recession was less severe than the later one because it impacted some countries and industries harder than others. In 2008, the effects would be widespread and leave on area of the world or business sector unscathed. In the 1980's employment was consistent and real hourly earnings actually declined for most of the 1980's. But consumer spending grew as widespread availability of easy credit increased individual's ability to spend. Once banks discontinued their easy money policies, the recession began.

Before 1990, recessions were usually due more to changes in inventory cycles, the economic cycle identified by Kitchin in 1923. Researchers found that GDP declined an average of 1.4% during the recessions from 1952 to 1982 due to changes in inventory investment. However, the recession in 1990 and 2000 saw declines of only 0.8% and 0.7% respectively.[39] The lower declines indicate that companies have improved their ability to manage inventory. Additionally, the U.S. economy has moved to a service based economy. While the role of inventories in services industries is less important than for manufacturing, the inventory cycle is still very march a part of our economic and stock market cycle. This is because even service businesses must maintain at least some inventory and they have to keep up with an ever-increasing demand for goods. For a business that provides services, just like a manufacturer, trying to predict the turning point, just like trying to predict the impact spot of a bolt of lightening in a summer storm, is futile. Therefore, at any given point a business may be left with too much inventory, just as demand begins to decline. The only way for a company to work down inventory in that environment is to reduce prices and therefore earnings are greatly impacted. As we pointed out, a decline in corporate earnings drives the stock market and economic cycle down.

Inflation was a clear driver of the recession in 1974 and 1980 as consumer prices grew in excess of 6% annually prior to the recession in 1974 and close to 10% in 1980.

Ellis shows how tops in the business cycle begin with a decline in consumer spending that leads to a slowdown in corporate earnings growth. Coincident with this earnings decline is a drop in investor sentiment, which Ellis contends is supported by an analysis of consumer sentiment indicators. Additionally, other evidence of an impending recession starts to pile up, and the outlook for the stock market falters. After some time, as we near the bottom of the business cycle, real consumer spending improves, corporate earnings improve, and the emotions of investors improve. Ellis presents a visual case (Figure 8-2) that bear markets begin just as the year-over-year growth rate of consumer spending begins to slow. Conversely, stock markets rebound as the rate of decline in consumer spending starts to ebb.

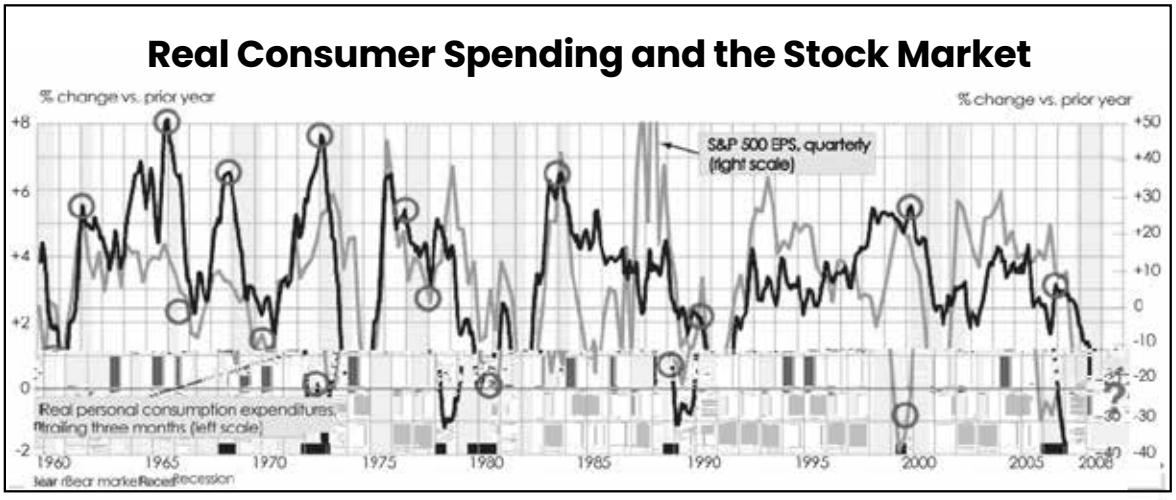

Figure 8-2: The beginning of a bear market is indicated by the upper band of circles in this figure, which represent peaks in consumer spending rates. (source: http://www.aheadofthecurve-thebook.com/08-04.html)

One of the nice parts of Ellis' work is how he identifies a simple relationship between the economy and the stock market. While others have attempted to do this over the years, they are often economists by training and enamored of statistical theories and advanced mathematical modeling techniques. We were inspired to develop a middle ground, an easy to follow model with fewer indicators than Martin Zweig used and more statistically rigorous than the approach used by Ellis. Martin Zweig was the author of *Winning On Wall Street*, a definitive book on spotting market trends first released in 1986. Martin Zweig was a professor and hedge fund manager utilizing his expertise in the economy to apply it to investing.

To uncover what impacts spending, Ellis looks at wages. It is obvious that one driver of personal consumption would be an increase in average wages. The logic is simple - with higher wages, individuals have more to spend. Economists argued that spending could be supported by a theory known as the wealth effect even if wage growth was minimal. Under this theory, increases in stock prices or home values make consumers feel wealthy and this leads them to spend more. In the end, this belief is likely to be deceptive.

Real consumer spending is defined as total personal income from all sources minus personal taxes and savings. Only real wages have the power to sustain consumer spending in the long term since debt will eventually have to be repaid and feeling wealthy is not enough to pay the bills. As we saw in 2008, increasing stock prices, home prices, and easy access to debt only last for so long before the song ends and the chairs are pulled out from underneath us.

One way that governments can increase spending is to decrease taxes, since lower taxes should increase spending by definition. If we look at the trend in tax rates in the United States since the 1960s, we see that they have generally been declining. Unfortunately, as tax rates have declined, so too has the rate of savings (see Figure 8-3).

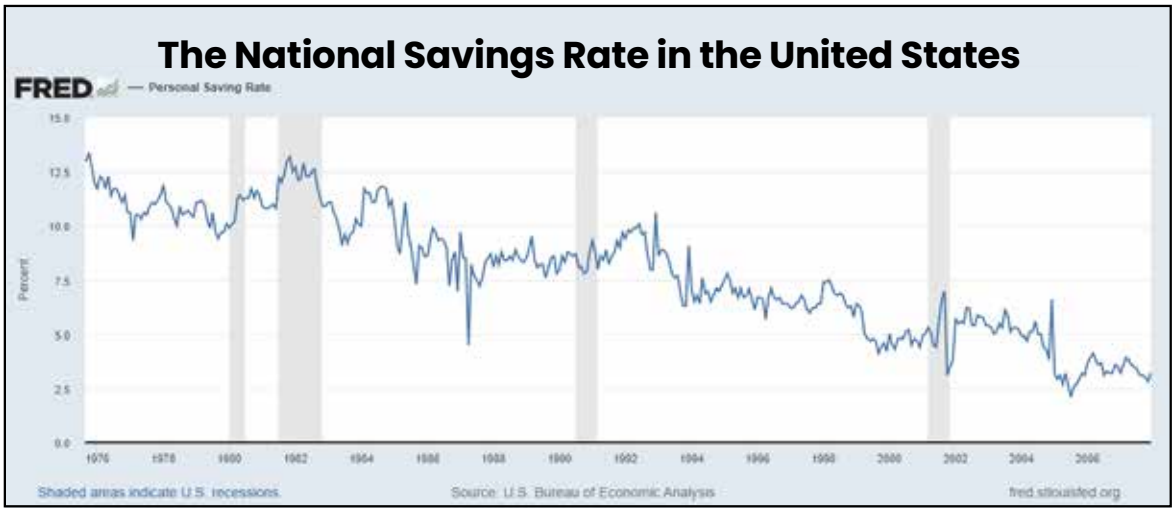

Figure 8-3: The U.S. savings rate has been declining since the 1980s. (source: research.stlouisfed.org)

As the economy entered a recession in 2008, the savings rate started to increase. This reduced spending, which may have increased the severity of the recession.

The link between real consumer spending and the stock market is tied to several other economic indicators. Average hourly earnings and the number of hours worked are the direct inputs into total wages, the first factor economists use to calculate spending. In addition, the overall amount of economic activity is dependent upon the number of people earning wages. Therefore, we can argue that the unemployment rate should be an important economic indicator.

Looking at real hourly earnings growth more closely, we can see that inflation is an underlying driver of earnings. Inflation is a way to measure the purchasing power of a dollar. If the price of milk, eggs and gas is increasing, the value of the dollar individuals receive in wages declines. With an increase in inflation, real wages

decline and the driver of consumer spending declines. Often, raises are tied to inflation by employers and employees.

There are limits to how closely wages and inflation can be tied together. Israel offers a classic case study of what happens when wages and prices are exactly matched. By the 1960's almost all prices and wages were linked and as prices rose, wages rose by an equal amount. Globally, inflation accelerated in the 1970's, and Israel saw one of the steepest rises with the annual rate increasing from 13% in 1971 to 111% in 1979. By 1984, it reached 445%. Yet the economy was not really suffering as real spending had increased by 28% during the early 1980's.

The hyperinflation made it difficult to trade in the global economy and Israel had to break the back of inflation by freezing wages and prices and allowing the free market to set prices going forward. In the U.S. economy, we see that inflation has a large impact on wages, but increases in wages tend to lag the rate of inflation. This leads to substitution spending, forcing consumers to choose cheaper items in some instances and helping to create a rotation of winners and losers among individual companies in the stock market. While inflation can lower the spending rate, consumers are often able to adapt and in the data, we see little impact on the real rate of spending.

Additionally, debt and the amount of loans individuals can receive also drives consumption and consumer spending. Beginning in 2001, the Federal Reserve created "easy money" by lowering interest rates and reducing the reserves banks had to maintain. This increased the availability of credit and fueled growth in borrowing. Later, we learned this could be a bad thing as credit markets collapsed seven years later in 2008. This didn't come as a surprise to Ellis, who had looked at the data from previous business cycles. He noted "and this is important - this differential (the difference between consumer spending minus real hourly average earnings represented by job growth and borrowing) inevitably disappears at the end of each cycle when growth in employment and increases in consumer borrowing disappear; this results in a rapidly falling rate of growth in real consumer spending as it returns to the underlying rate of growth in real hourly earnings of the employed."

The importance of interest rates as a leading economic and stock market indicator is driven by the fact that it impacts consumer spending. This is particularly the case with large purchases such as a home or an automobile. Expectations of higher interest rates can lead to an increase in current spending. If consumers think rates will drop significantly, they may defer large purchases. The Federal Reserve uses interest rates as a tool to drive the economy. If they think the economy is slowing, they may decrease rates to stimulate demand. This makes it less expensive for consumers to borrow, but if they think more rate cuts are on the horizon, consumers may wait for still lower borrowing costs. The various factors working together make it difficult to understand the impact of interest rates on the economy or the stock market. Knowing that interest rates are a factor in real consumer spending makes it easier to use this economic indicator in an analysis.

In addition to defining what drives the economic cycle, Ellis does some debunking of widely held beliefs as he dissects an underlying view of supply side economics. Supply siders contend that supply creates demand. In his work, he visually demonstrates that changes in consumer spending drive changes in real capital spending, in other words demand creates supply. The figures he provides clearly show that capital spending lags changes in the rate of change in consumer spending. He uses this as a key example to show how important consumer spending is to the overall economy and the stock market in particular.

The relevance of Ellis' analysis is particularly important to understand the relationship of the nature of indicators to economic growth. Some factors clearly have a leading role while others are coincident with growth or decline, and others lag the economy. The chronology of the economic cycle, as shown in Figure 8-1, helps visualize the economic cycle. Understanding these relationships provides a disciplined investment process as well as a way of thinking critically about what the media commonly attributes to changes in the economy. True leading indicators include consumer spending, real hourly earnings, and interest rates. Conversely, consumer confidence and consumer spending are coincidental indicators.

Distinctions should be made between lagging and leading indicators. Employment and capital spending are

lagging indicators. The widely followed unemployment rate is actually a lagging indicator, which means it will continue rising as the economy recovers and should start to fall after the economy peaks.

The nature of leading indicators shows that there are four periods within an economic cycle. These periods are distinguished by the nature of the convergence and divergence of leading and lagging indicators. Convergence means that the leading and lagging indicators are both moving in the same direction; divergence means that the two groups of indicators are moving in opposite directions.

Economic growth begins as both the leading and lagging indicator are moving higher at the same time. Once the leading indicators begin to decline and the lagging indicators continue to increase, the economy and stock market should both continue to grow but at a more fragile pace. Period three is signified by the leading and lagging indicators both showing declines. The last period is indicated by the leading indicators increasing while the lagging indicators continue to decline. The most important points to note are the divergences, where the leading indicators move one way and the lagging indicators move another way. Most specifically for our purpose, the stock market and economy will diverge at times and the stock market will move in a different direction from the leading indicators. It should be noted that for economic analysis the stock market is a leading indicator in and of itself, and is included in many economic indexes that are designed to show growth in the economy. Because the stock market is a leading indicator, it limits the indicators that are relevant for diagnosing the state of the stock market.

Coincident indicators turn at the same time that the economy turns. Consumer confidence is a widely cited example of a coincident indicator. Plotting consumer confidence indexes against consumer spending reveals that theses are coincident indicators. The University of Michigan Consumer Sentiment Index and the Conference Board Consumer Confidence Index are examples of the most popular coincident indicators. The index surveys a group of individuals about their current situations and expectations of future economic conditions. The belief is that the surveys take a snapshot of what the consumer is thinking today. Consumers, not unlike weatherman, face a number of problems with forecasting. There are just too many variables to predict what is going to happen a week from now, a month from now, or several months from now. What normally occurs is that if trends have been good (or poor) the individual believes that the conditions will continue in that same direction. Unfortunately turning points, which matter most, are often overlooked.

To best identify a turning point in economic data, many economists look at the year-over-year rate of change in the value of an indicator. Turning points are foreshadowed when using the right indicator with year-over-year growth. Most data presented by the press is shown on a quarter over quarter basis. It is generally considered better to use rate of change over a 12-month period to smooth out changes due to seasonal factors. This is commonly done in the stock market where earnings are looked at on a year-over-year basis. The easiest way to understand why this is important may be to consider the case of Wal-Mart or any other retailer. In August, they may see a surge in sales related to back to school shopping. It makes more sense to compare that with the sales from a year ago rather than the three months of the summer when fewer people were shopping. Likewise in December, Christmas sales contribute a great deal to a store's profitability for the year and comparing them with the previous quarter would give a misleading view of how the retailer is actually doing.

Having a framework and system for analyzing economic data is essential to foretelling turning points in the economic cycle. Using graphs that present the percentage change verse the prior year are particularly useful in this regard. Now all that is left to do is to determine the most important indicators to follow.

The "great recession" as the 2008-2009 downturn has been called, prompted a discussion among stock investors about the usefulness of buy-and-hold philosophies. The central problem with the buy-and-hold philosophy is that over very long periods of time, individual stocks and market indexes seem to only go up and a critical analysis of the frequent dips and troughs is forgotten. Buy-and-hold policies are destructive to wealth because of the cyclical nature of the economy and the stock market, which makes capital appreciation

unpredictable and difficult to capture in the short term. Applying an analysis which includes the rate of change in economic indicators over a year provides an especially insightful viewpoint of how cycles can provide opportunities for improving investment performance.

Ahead of the Curve provides an "accessible and pragmatic" approach to analyzing economic indicators as they apply to the stock market and offers a disciplined structure to analyze this relationship. The discipline comes by first realizing that there is a strong correlation between the economic cycle and the stock market. The next step is to find the key driver of the relationship. Ellis concludes that consumer spending growth is the link between the two and he visually demonstrates that as the rate of growth in consumer spending nears a high from an historical perspective, the stock market normally begins to falter. No matter what the reason for this relationship is, as the rate of growth in consumer spending exceeds 4% to 6%, we consistently see a peak in consumer spending, a subsequent decline of corporate earnings, and a fall in the stock market.

In the next chapters, we build on the idea of finding economic indicators which lead the stock market and try to find a way to use them to minimize stock market risks.

CHAPTER 9

Bull and Bear Markets Are Different

WHILE we are most concerned with the economic trend, we are evaluating the impact of that trend on the stock market. To do that, we need to determine whether the stock market reacts differently to economic indicators based upon whether stocks are in a bull market or bear market. That requires just a brief analysis.

We are not offering a profound insight when we say that the stock market goes up and down. This is simply repeating the famous market call of the legendary banker J. P. Morgan who, when asked what the market would do the next day, said, "It will fluctuate." The question we face in identifying indicators to help us recognize a time of risk in the stock market is whether or not those fluctuations are significant.

Day traders hold their investments for minutes, or even seconds in some cases. We don't believe that economic analysis adds much value in this time frame. At the other extreme is the one decision investor who is convinced that over the long term, stocks will only go higher so there is no need to react to down moves. We believe that the pragmatic approach to stock market investing lies in the middle.

Hyperactive trading often only benefits the online broker executing the trades – even those small commissions add up over time. On the other hand, while every investment is bought believing that it will go up, the economy evolves and management in a company changes – these variables impact the long term prospects of even the best companies. As an example, consider RCA which was once the leading electronics company of its day and today barely exists. Its stock is a symbol of the bear market that characterized the Great Depression.

Between 1924 and 1929, RCA's stock price increased by 936%, delivering an average annualized return of about 60% to investors. Over the next three years, it fell by 97%. We saw the same types of spectacular rises and falls in the internet bubble, or in the subprime housing crisis. Stock prices are volatile, and they seem to fall much faster than they rise.

The speed with which they seem to decline is the major difference between bear markets and bull markets. Most stocks will rise in a bull market, and most will fall in a bear market. Diversification does little to shelter a portfolio from the larger trend in the market. And there is really no such thing as a one decision stock which can be bought and set aside. All stocks need to be periodically evaluated in light of the current economic conditions, broad stock market trends, and the underlying state of the company's business.

First, we want to see which indicators did a good job identifying bear markets. For our purposes, this will mean that the economic indicator turned lower before stocks began a bear market. We will start with the definition of a bear market used by respected market research firm Ned Davis Research. They define a bear market as a 30% drop in the Dow Jones Industrial Average over the course of 50 days or a 13% decline in the average after 145 days. By this measure, the average bear market declined 22.5% and the median was 20.3% since 1948. The median is the halfway point in the data, with half of the declines being greater than that value and half being less. Given the wide range of bear markets, it offers a more reliable estimate of the damage that would be done to an individual investor's portfolio.

We then looked at how often the economic indicator peaked in value ahead of a bear market and how often an indicator peaked ahead of a recession. This is shown as the "% Bear/Recessions Lead" in Table 9-1. The "Bear" and "Recession" columns in that table show the number of months for the average lead or lag in the indicator. As an example, we see that the Baa Corporate Bond Spread turned lower five months ahead of a bear market and one month ahead of a recession. It turned ahead of the bear market or recession 58% of the time.

Bear Market Indicators

Economic Indicator	Bear	Recession	% Bear/ Recessions Lead
New Orders (Durable Goods)	3	3	100%
Hours Worked	-2	2	92%
ISM Manufacturing	3	5	82%
Consumer Confidence	2	-1	67%
Baa Corp Bond Spread	5	1	58%
Unemployment Filings	-3	0	58%
Housing Starts	4	4	57%

Table 9-1: This table shows the reliability of several economic indicators in turning lower before the start of a bear market. (source: Dunn Warren Investment Advisors)

A similar approach was applied to find economic indicators which turned higher ahead of the start of a bull market. Again, we started with the definition of a bull market used by Ned Davis Research. A bull market occurs whenever there is a 30% increase in the Dow Jones Industrial Average over a fifty calendar day period or the averages goes up by at least 13% over 155 calendar days. The results are shown in Table 9-2.

Bull Market Indicators

Economic Indicator	Bull Mkts	% Bull Mkts Lead
New Orders (Durable Goods)	5	100%
Aluminum	-3	75%
New Orders (Non-Defense)	2	75%
Consumer Confidence	1	56%
Baa Corp Bond Spread	1	52%
Export (Goods)	2	50%
Import (Services)	-1	50%
ISM Non-Manufacturing	2	50%
ISM Manufacturing	-2	47%

Table 9-2: New orders of durable goods is a reliable indicator of an impending bull market according to the data in this table. (source: Dunn Warren Investment Advisors)

Table 9-2 shows the problem with using averages. The price of aluminum offers a great indicator that the bottom is in, and was right 75% of the time. However, on average it missed by the bottom and offered a signal

three months late. We can see that when it is wrong, it is actually very wrong in the timing of the signal. This highlights the importance of looking at multiple indicators and never relying on a single piece of data to make any investment decision.

We find that the new orders of durable goods indicator is at the top of both lists. The ISM Manufacturing Index offers ample warning ahead of stock market tops, on average, and is fairly reliable at market bottoms. The same can be said of Baa Corporate Spreads. These three indicators appear on both tables and will be examined in more detail.

In considering how to apply economic indicators to apply for stock market timing strategies, we focus on risk. We would prefer to avoid significant declines, even if that means we are late increasing our exposure to the stock market after a bottom. In this regard, we share at least a small degree of similarity to the great investor Warren Buffet who offers two simple rules to investment success:

"Rule no. 1: Never lose money.

Rule No. 2: Never forget rule No. 1"

We do lose money on some investments. Everyone, including Buffett, does. While no investor or indicator will ever be infallible, we do focus on the risk and look to economic indicators that will help us become just that.

CHAPTER 10

Finding Significant Economic Indicators

IN attempting to find stock market timing tools, there are a number of possible data series that can be used. Government agencies and private organizations track almost everything that can be counted. The challenge is to find the proverbial needle in the hay stack and identify indicators that reliably turn ahead of the stock market. Ideally the indicator would offer a signal in advance of a bull and bear market, but that may not be possible and we will focus on the risk aspects.

Spotting a potential bear market early and avoiding losses can actually be more meaningful to the individual investor than being able to perfectly time stock market bottoms. That is because losses actually hurt an account more than most people realize. If you were to lose a third of your account balance, you need a 50% gain to get back to even. Using an economic indicator to signal that there is excessive risk in the market might allow you to get out with a 10% loss, meaning you would only need an 11% gain to get back to even. We think that focusing on risk has the most to offer an investor.

We began with a list of several dozen economic indicators. The complete list and a brief explanation of each indicator can be found in Appendix A. Our goal is to find no more than four significant variables that can be followed by individual investors in less than an hour a month. To do that, we need to identify potentially significant indicators and then test them. We will follow a well defined process to see which economic indicators offer the greatest value.

Some math will be required and we will attempt to make the process as painless as possible, but we need to provide enough detail so that you can have confidence in our results. In our initial screening, we will use a mathematical technique known as linear regression. This tool is commonly used by researchers in many fields to determine if a significant relationship exists between two variables. In our case, we are trying to identify economic indicators which show a strong, recurring, and significant relationship with stock prices. The specific details on how to run a linear regression and assess the results are available in any statistics textbook; however a brief overview is necessary here.

Most of the analysis we discuss looks at one variable at a time. However, to see if an indicator has an impact on the market (which usually means a broad index such as the S&P 500), we use a tool from statistical analysis called regression. Visually speaking, a regression analysis is a linear line that represents the relationship of two or more variables. Higher levels of statistics often use nonlinear representations, but for our purposes it is sufficient to stick with the simple lines.

To illustrate a linear regression let's take ten individuals and compare their height and weight and graph them. A hypothetical sample population is in Table 10-1.

Sample Height and Weight Data

	Height	Weight
1	70	139
2	68	135
3	66	135
4	64	132
5	66	138
6	72	148
7	72	140
8	74	146
9	74	147
10	76	149

Table 10-1: This represents a small group of heights and weights. We will use simple linear regression on the data to see if there is a relationship.

After measuring the data, the next step is to plot it on a graph. This is shown in Figure 10-1 where we have plotted the heights along the horizontal line (or x-axis) and the weights on the vertical line (or y-axis).

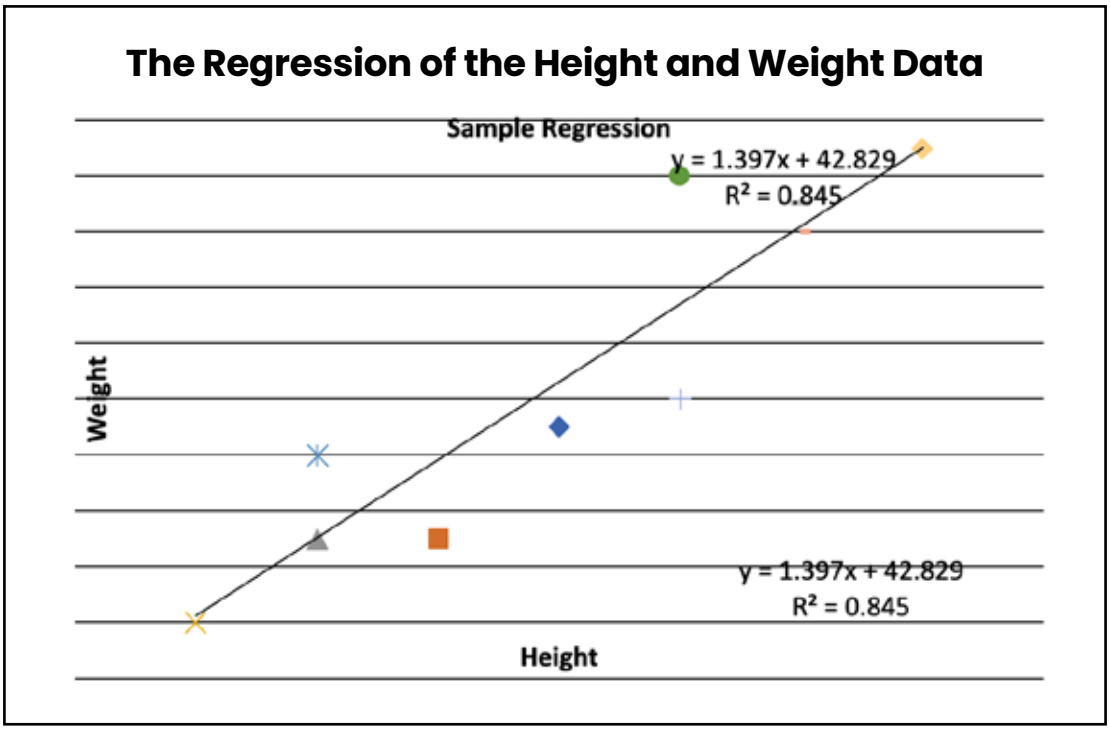

Figure 10-1: After plotting the data, the mathematical relationship between height and weight in this example can be found.

A line is then drawn to describe all ten individuals in the best mathematically precise terms. The line is actually the one that best fits the data, but the math for showing that is more than we need to know for this chapter. If we were to graph the line for the height and weight data in Table X-1, it would have an equation where we would start at the vertical point of 42.829. Then moving up and to the right we would place a point 1.397 pounds higher for each additional inch. Put into mathematical terms, this would give the formula for a line, Y=1.397X + 42.829.

The first thing we can take away from this analysis is that as the individual's height increases their weight tends to increase. But as you can see, three points' falls below the line, indicating that individual's weight does not increase at the same rate as other individuals. Conversely, we see that 3 points lie above the line. Regression analysis is a way of comparing and representing how observations are related and how best we can represent those relationships.

While this technique has been well known for several centuries, a useful economic application was first observed by another classical English renaissance man, Francis Galton. A cousin of the biologist Charles Darwin, Galton was recognized to be a genius early I his life. He mastered reading in the ancient languages of Greek and Latin by the time he was six years old. He studied to be a doctor at King's College London Medical School. However, his true interest was in math, and he earned a degree in this subject from Trinity College in Cambridge, England.

Galton made numerous contributions in the fields of biology, meteorology, and psychology. However it was in his pioneering study of historiometry where Galton made a key insight into the application of linear regression. Historiometry is the historical study of human progress or individual personal characteristics, using statistics. It was here that Galton first noticed the characteristic of regression to the mean, or as he referred to it "regression toward mediocrity." Galton found that a son's height tended to move closer to the height of the

general population when compared to the father's height. Simply put, taller parents had, on average, shorter sons, and vice versa. Regression analysis was well suited to study this observation. We find the same thing in economic analysis – deviations from the mean tend to be short-term and we expect them to reverse over time. Therefore we find that fast economic growth is usually followed by slower than average growth and we have a statistical model of the business cycle.

To avoid the problem of data mining, we began all of our tests with an expected relationship in mind. Economic indicators should rise and fall along with the business cycle. All of our testing followed the general principles of the scientific method. We began with a hypothesis, which is an assumption of the relationship we expect to find. We then used Microsoft Excel® to find the regression equation and then completed several tests to assess the statistical significance.

We repeated this process for several leads and lags. When we lead an indicator, we are looking at the relationship of that indicator to stock prices at various times in the future. For example, with a three-month lead, we are trying to see if the indicator turns ahead of the market over that timeframe. Leading indicators will offer an early warning signal that the direction of the stock market is likely to be due for change. With lagging indicators, we are looking for a statistically significant relationship that shows the stock market will turn ahead of the indicator.

In this example, we will look at the unemployment rate. Although widely followed in the media, we believe that unemployment is a lagging economic indicator. In other words it will continue declining after the business cycle peaks and it will increase after the economy bottoms. As a lagging indicator for the overall economy, we would not expect this economic data series to have any predictive value for the stock market.

We started the regression analysis by placing the raw monthly data for the S&P 500 and the unemployment rate into a spreadsheet. We then calculated the 10-month rate of change in each series. Using a rate of change helps to take away some of the volatility that is seen in month-to-month changes. As an extreme example of monthly volatility, the Dow Jones Industrial Average fell by more than 35% from high to low in October 1987. Using closing prices, the decline was nearly 25%.

Our goal is to find indicators that have predictive values in the stock market. Excessively volatile data would lead to a large number of trading signals. Inevitably, a number of those signals caused by volatility would be quickly reversed, sometimes within the next month. A reliable and useful indicator should minimize the number of signals because each time a trade is entered, transaction costs are incurred and there are potential tax liabilities created. Smoothing the data by using a 6-month rate of change decreases the chance that a signal will be quickly reversed. The alternative to using 6-month rate of change is a 12-month rate of change. While 12-month rate of change provides a good descriptive comparison of change, we found that inflection points typically happen in less than a year. Therefore, we chose to use a 6-month rate of change to smooth out volatility and avoid seasonality, while capturing inflection points.

After smoothing the data, we found the regressions with the economic series leading the S&P 500 by three, six, and none months. Lagging relationships over those same time frames were also examined. A seventh analysis looked at the coincident relationship. One example of this technique can be seen in Figure 10-2, which shows the relationship between the unemployment rate and the S&P 500 when the unemployment is lagged by nine months.

In the figure, the dots represent the unemployment rate. The horizontal axis shows the si10-month rate of change in the monthly returns of the S&P 500. On the vertical axis are the values of the 10-month rate of change in the unemployment rate. In this example, unemployment is lagged by nine months. After plotting the data, the software does the rest. In the linear regression process, the spreadsheet software finds the straight line which best fits the data. In this case, we see that line in Figure 10-2. It shows an inverse relationship between unemployment and stock market returns – as unemployment falls, average stock market returns increase and vice versa.

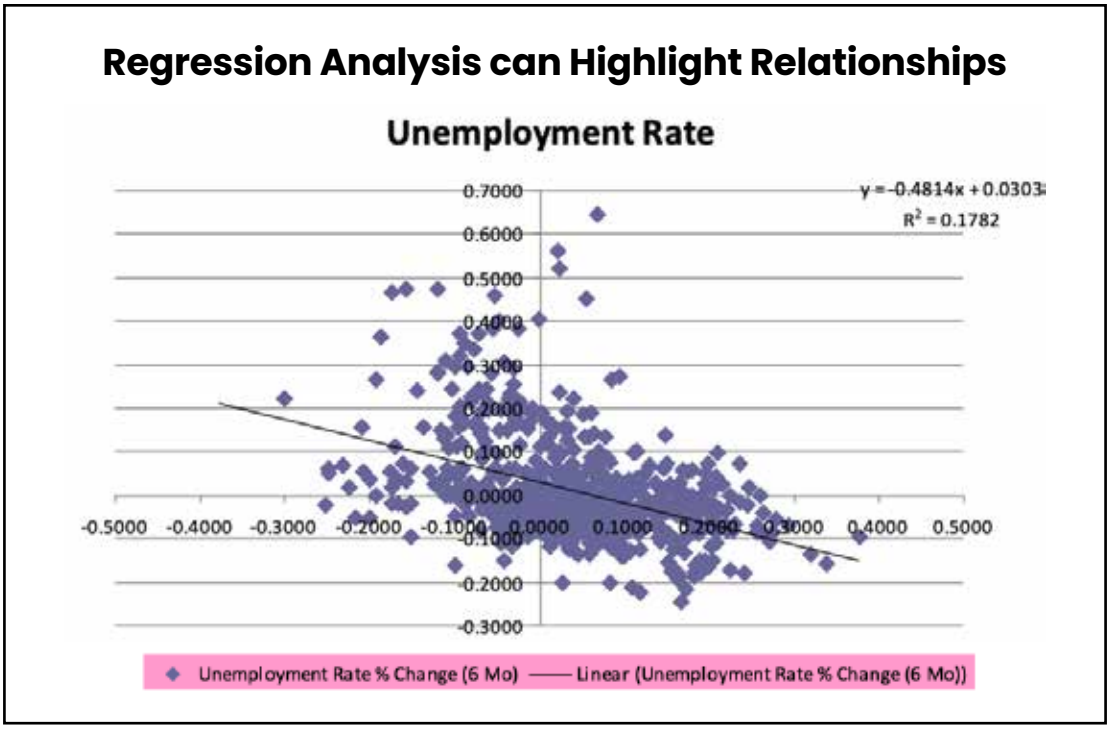

Figure 10-2: The unemployment rate is plotted in this diagram and shows that stock market returns generally increase as the unemployment rate declines. (source: Bureau of Labor Statistics and Dunn Warren Investment Advisors)

The correlation coefficient expresses the relationship as a single variable. In this case, it is determined to be 0.1782. That means that about 17.82% of the movement in the stock market can be explained by the movement in the unemployment rate. This is actually a fairly high value and would be very meaningful if we had identified a leading relationship. Unfortunately, it explains the past movement of the stock market. The correlation coefficients of all seven linear regressions are shown in Table 10-2.

In Table 10-2, we see that the correlation coefficients are very small when we look at the unemployment rate as a leading or coincident indicator. Each time period shows a value less than 0.04, meaning that less than 4% of the stock market's movement can be explained by there is no hard and fast rule as to what the right number should be, we don't think it's worth doing additional research on any indicator that fails to have a correlation coefficient of at least 0.10.

As a lagging indicator, the unemployment rate does quite well. At six months, more than 22% of the stock market's

Examining the Link Between the Unemployment Rate and the Stock Market

Lead (+) or lag (-) time	Correlation Coefficient
+ 9 months	0.0347
+ 6 months	0.0262
+ 3 months	0.0030
Coincident	0.0265
- 3 months	0.1396
- 6 months	0.2232
- 9 months	0.1782

Table 10-2: The unemployment rate has little predictive value for the stock market investor. (source: Dunn Warren Investment Advisors)

movement can be explained by this variable. Unfortunately, we cannot make money with lagging indicators and therefore will not be using this indicator as a possible predictive tool.

This level of analysis was completed for each of the economic data series that we studied. The results are presented in Appendix B. While we wanted to find leading indicators, we knew it was important to look at indicators which were assumed to be coincident and lagging. We wanted to base our results on analysis, not conjecture. Therefore it was important to us that we test the idea that the unemployment rate is a lagging indicator. That will ultimately lead to greater confidence in the model we develop.

After finding that some relationships show a strong correlation, the next step in our analysis is to determine if that correlation is truly significant or if it is just something we found by chance. We did this with several statistical techniques, but will only detail one as an example. Although this chapter is short, there is probably too much math for most people and we don't want to bore our readers but must define one more concept.

The P-value is commonly used to determine a relationship is statistically significant or due to chance. We want there to be less than a 3% chance that the correlation coefficient has found a relationship in that data that exists only by coincidence. This gives us a 97% confidence level in our regression testing. Additional statistical tests were used to confirm this.

We use the P-value in an effort to avoid using a relationship that occurs solely by chance – where we randomly came to a conclusion that we could not replicate in the future. The p-value assigns a value, specifically a probability to the opposite or alternative finding, of what we were looking to find.

For example, if we are testing to see how many heads or tails we get when we flip a coin fifty times, we could find that tails come up 45 times the first time that we run the test. For future tests, our premise might be that we expect tails to occur 45 times for every 50 flips. Mathematically, this is called the null hypothesis – a statement which answers the question of what the probability of the observation happening again if our original premise is true.

After multiple tests, we find that getting 45 tails in 50 flips is much more difficult than we originally thought. You can try it yourself, but we will give you a quick answer, the more often you flip a coin you will find that the probability of flipping 45 tails out of 50 tosses becomes very, very small. Since the P-value measures that probability – the probability of flipping 45 tails - the smaller the P-value, the stronger the evidence against getting 45 tails. We would expect to find a very small P-value in this experiment

P-values therefore help us determine if the observations we have relative to the relationship between an economic indicator and the stock market are by chance. If they are not, then we can expect for them to reoccur in the future and we can use them to identify the relative degree of risk in the stock market.

In sum, we want to find economic variables that explain at least 10% of the stock market's future movement and we want to be sure this relationship is not just due to chance. The next chapter will dig a little deeper into some leading indicators.

CHAPTER 11

Reliable Leading Indicators

AFTER deciding on the mathematical tools we'll use to find economic indicators that should work, we need to spend just a few seconds define reliable and leading. For our purposes, reliable means that results can be reproduced over different time frames. We don't want to find something that works with pinpoint accuracy in the 1980's but failed to work at all over the next twenty years. In terms of leading, we will look for economic indicators that lead stock market turns by three months.

The results from our regression analysis for reliable leading indicators is summarized in Table 11-1. We are using a correlation coefficient to demonstrate reliability in this case. In addition, the indicator must show that the correlation is statistically significant at the 97% confidence level.

Reliable Leading Indicators

Indicator	Correlation coefficient with three months lead
Aluminum Prices	0.3011
Retail Sales (Non Food Services)	0.285135
New Orders (Durable Goods)	0.252873
ECRI Weekly Leading Index	0.240583
Baa Corp Bond Spread	0.220854
New Orders (Non Defense)	0.18647
Building Permits	0.128911
Housing Starts Total	0.12102
Export of Goods	0.109515
ISM Non Manufacturing	0.106847
Consumer Confidence	0.074247
Industrial Production Index	0.073148
30 Yr Conventional Mortgages	0.070142
ISM Manufacturing	0.065492
Steel Prices	0.060888
Total Business Inventory	0.056718
Import of Services	0.051102
Import of Goods	0.050886

Table 11-1: Eighteen indicators tested well for leading the stock market. (source: Dunn Warren Investment Advisors)

At this point, we can take all of the indicators that passed the first screening and create a multivariate regression model. That would result in an indicator roughly equivalent to The Conference Board Leading Economic Index. The problem with this approach is that it requires too much work for the average individual investor. Our goal is to deliver something that can be maintained with very little work, adding up to less than an hour a month. Therefore, in addition to be statistically reliable, the data must be readily available.

We also want our final product to be timely. One problem encountered with using economic data is that there is lag in collecting and reporting economic data. For example, the Gross Domestic Product is the broadest measure of economic activity. An initial estimate is provided about a month after the quarter ends and it is refined in each of the next two months. The final number, at times, looks significantly different from the initial estimate.

That actually highlights another problem with economic data – it is frequently subjected to revisions. As time passes, the organization responsible for maintaining the data series is able to obtain more accurate input. They use this to go back and correct the initial reports. Since these revisions can be significant, that presents a problem to using historical data. The data available to researchers is the revised data, and the stock market most likely responded to the original estimate of the data.

We also need the data to be readily available to the individual investor. That means, to us, that the historical series should be freely available for downloading from a web site. This eliminates any subscription services from our consideration. However, for those willing to go to the additional expense, tracking some of these indicators, such as the ECRI Weekly Leading index, would be worthwhile.

The data we use for a stock market timing model must also show an internal consistency with other available data. For example, the price of aluminum is at the top of the list on a statistical basis. It is an industrial metal and it should reflect the ups and downs and manufacturing. As such, we were expecting to see a coincident relationship between aluminum prices and the stock market, or perhaps slight lag. Our testing included other metal prices to ensure that a logically consistent relationship was identified – we should see the same degree with nickel or steel for example. We do not see a significant leading relationship for nickel, in fact we find that they turn coincidentally or at a slight lag to the stock market as we expected. The correlation of steel prices is dramatically different than the value for aluminum, a cause of concern because logically they should be very close to each other. Therefore, although the price of aluminum passes our statistical screening, it does not pass our logic test and we do not give this economic indicator further consideration in our model development.

Having thus eliminated the economic series with the highest correlation on our list, we turn to Retail Sales. This report is frequently revised and that is a factor that is of concern. However, the data series only goes back to 1992. It has a very promising record since that time, but the length of the history is not sufficient to include it among our top indicators given that has only been available for two complete business cycles.

New Orders of Durable Goods is the highest ranked data series that is collected and reported on a regular basis. The fact that a derivative series, new orders excluding goods for the defense industry, also tests well shows us that it is a reliable economic indicator. We prefer the broader series since defense orders are a reflection of government spending, which makes up a large part of the economy. There is no problem that we can find with the data series, and it will be one that we subject to further testing. That test will consist of a simple assessment of its use as a stock market timing indicator. The test and results will be presented in a later chapter.

The ECRI Weekly Leading Index was eliminated from further consideration because it is only available by subscription. Additionally, because it uses the stock market as a component of the aggregate index, we thought it best to pass on using an index that uses the stock market as an input.

The Baa corporate bond spread is found by subtracting the yield on Treasury bonds from corporate bonds of the same maturity. Baa is a reference to the credit quality determined by Moody's. Baa is equivalent to Standard and Poor's BBB rating. In these bonds, the rating agencies believe that corporations have adequate

means of repaying the loan and the debt. However, during times of economic weakness, may have a chance of default. These are the lowest rating of bonds that are still classified as investment grade. It uses market data – the prices of bonds are set in real time by traders and are readily available. This indicator could actually be calculated daily, or intraday. Bond market participants are putting real money at risk, and that makes this an interesting indicator since it reflects the emotions of the market as the other numerous economic reports are digested by traders. It also means it should offer highly valuable insight into the prospects of the economy over the next few months and deserves further testing.

Building permits, housing starts, and exports all offer slightly different perspectives on the economy. However, in a sense they are redundant to the information obtained from the new orders of durable goods. They all provide a macroeconomic insight into the state of the business cycle. Fewer people will want to build a new home and make big-ticket purchases of durable goods ahead of a downturn. This will also be reflected in a slowdown in exports, which are created by workers who have turned pessimistic and stopped making those large purchases. All four indicators will show the ebbs and flows of the economy with varying lead times. All four are reliable and freely available. For the industrious investor, all four are worth tracking. However, for our purposes, we will only need one of the four and are already using the new orders indicator which demonstrated the strongest correlation with the stock market.

The ISM nonmanufacturing and manufacturing indexes are different than most of the other economic indicators in the table. Like Baa spreads, they reflect the real time inputs of participants in the economy. They are reported in the first week of each month – the manufacturing report is released on the first business day of every month and the nonmanufacturing report is released on the third business day of the month. Both reports reflect data from the previous month, making them among the timeliest economic reports.

The nonmanufacturing report only has history to 1997, making the manufacturing report the better choice for our analysis. These reports are published by the Institute of Supply Management and fully described on their web site. It is worth reading their description of the manufacturing report:

> The Manufacturing ISM Report On Business® is based on data compiled from purchasing and supply executives nationwide….Survey responses reflect the change, if any, in the current month compared to the previous month.…The diffusion index includes the percent of positive responses plus one-half of those responding the same (considered positive).
>
> …Diffusion indexes have the properties of leading indicators and are convenient summary measures showing the prevailing direction of change and the scope of change. A PMI reading above 50 percent indicates that the manufacturing economy is generally expanding; below 50 percent indicates that it is generally declining. A PMI in excess of 41.2 percent, over a period of time, indicates that the overall economy, or gross domestic product (GDP), is generally expanding; below 41.2 percent, it is generally declining. The distance from 50 percent or 41.2 percent is indicative of the strength of the expansion or decline. With some of the indicators within this report, ISM has indicated the departure point between expansion and decline of comparable government series, as determined by regression analysis.
>
> …These responses are raw data, never revised, and not seasonally adjusted since there is no significant seasonal pattern.[40]

Please note that PMI refers to the Purchasing Managers Index, which was what the ISM was called before September 2001.

It is important to note that these are diffusion indexes, which react quickly to changes in the trend. The reports are also designed to lead the economy. Our analysis confirms that they do so. In addition, this indicator avoids the problem of frequent revisions that affect many other economic data series.

We now have three economic indicators to take the next level of testing. That will serve as a starting point to develop a stock market timing indicator and allow us to demonstrate the techniques that you can apply to create your own indicators.

PART 4

Armed with an understanding of economic theory and the business cycle, it's time to see if those ideas can be applied to the stock market. In this section, we will show how individual economic indicators can be used as stock market timing tools. We then combine several indicators into a timing model. The methods we describe in this section can be applied to create your own models.

CHAPTER 12

Applying Economic Analysis to the Stock Market

THE course of a business cycle is driven by a multitude of factors. Inventory levels, the availability of credit, employment rates, and many other variables act together to drive the ebb and flow of cycles. There is a long history of research into the business cycle, and some of it is interesting even if it's not very useful. We can find papers where the weather, solar flares, and cycles of the moon have all been blamed for the vagaries of the business cycle.

If we look at the research completed by Wesley Mitchell, a pioneer in business cycle research, we find that a good indicator for tracking the changes of the business cycle must be relevant, have statistical significance, and respond in a timely manner. The Institute of Supply Management developed an index to do just that. The *ISM Manufacturing Report On Business®* (ISM) dates back to 1931, excluding four years during World War II when it wasn't compiled. It provides a comprehensive view of the manufacturing industry. As a long standing indicator, it has historical relevance. As an aggregate of ten factors, it is all encompassing.

The ISM for the previous month is provided on the first working day of the following month. This is one of the earliest reads available on the state of the economy. Publishing an index quickly that also contains a substantial amount of information is important for a potential stock market indicator. Investors want to understand what can drive the future aggregate earnings of companies in the market. The ISM provides a timely and dynamic overview of manufacturing.

The ISM is beneficial because it is both comprehensive and it directly follows how the business cycle impacts corporate earnings. The ISM tracks the oscillations of corporate demands for inventory and employment. This is done with a simple set of questions. Members of the ISM Business Survey Committee receive a questionnaire each month that asks them to identify any month-over-month changes that they have observed in each area of their business. Specifically, we see the level of production as well as the rate and direction of changes impacting the manufacturing industry. Questions on the ISM survey cover the following:

- New Orders
- Production
- Employment
- Supplier Deliveries
- Inventories
- Customer Inventories
- Prices
- Backlog of Orders
- New Export Orders
- Imports

The index itself is a combination of ten separate diffusion indexes. A diffusion index determines if a change occurs and if so to what degree across the sample the change is occurring. Geoffrey Moore presented the benefit of diffusion indexes by saying, "One of the uses to which diffusion indexes can be put is to show the general consensus of movement of a group of economic series that are incommensurate—for example, the

eight leading indicators. This is done by counting directions of change and ignoring magnitudes of change, except insofar as magnitude is taken into account by smoothing or other devices that determine what magnitudes of change are to be counted.[41]"

A diffusion index is designed to determine how widespread a change in something is dispersed, or "diffused" in a group. If all of the members of the group are asked if something has changed and in which direction, they have to answer in one of only three ways: it has not changed, it has increased, or it has decreased. For example, if we ask ten people whether they think traffic on the highway has changed this month, they can only have one of those three answers.

Every month, hundreds of participants take the ISM survey and provide information on whether or not they have seen a change in some part of their business, such as new orders. The final ISM indexes are calculated by taking the percentage of respondents that say there has been an increase and adding it to one-half of the percentage that reports no change. As an example of how a diffusion index is calculated, if 20% of the respondents report there was an increase," 70% say there is no change, and 10% note a decrease, the diffusion index would be equal to 55% (20% + [0.50 x 70%]).[42]

A reading of 50% means that there has been "no change" from the previous month. An index of 60% indicates a faster rate of increase than an index of 55% because the increased activity is becoming more dispersed. An index of 35% shows a faster rate of decrease than an index of 40% since the decreased activity is becoming more dispersed. A value of 100% means that all of the survey respondents are seeing an increase in activity while 0% would show that all of the respondents reported decreased activity.

There are two ways to look at the indicator. First, a decline either month-over-month or in the last twelve months might prove to be the beginning of a decline in manufacturing and subsequently in the stock market. Second, because the stock market is forward looking, any reading below 50% on the ISM indicates a contraction and is a warning sign for the stock market because this reflects poorly on the prospect of future earnings potential for companies.

We found that taking the year-over-year change for the indicator and watching for a subsequent decline is often the most beneficial way of looking at an indicator. However, in the case of the ISM, because it is a diffusion index, we found that this type of analysis is already built into the index. Therefore, simply looking for a drop in the index below the 50% value is the most valuable way to use this indicator.

This is not to say you should not be concerned about a decline in the value over the last 12 months. Often times a year-over-year decline is a precursor to an economic slowdown. But because this signal occurs with such a long lead time, it can also mean you miss out on a great deal of upside returns that are still available from the stock market. This interpretation has also provided more false positive signals, which means it is indicating

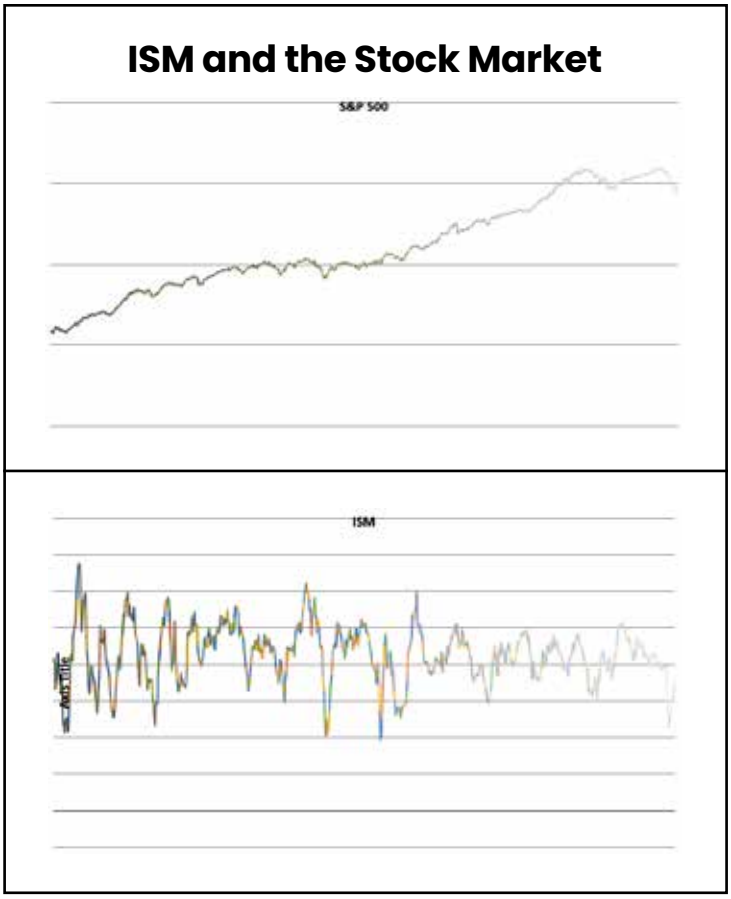

Figure 12-1: Visually, we can see that the ISM tends to peak ahead of the stock market. (source: Institute of Supply Management and Dunn Warren Investment Advisors)

a slowdown when in fact the economy has simply stalled before resuming its advance.

The data for the ISM report that we obtained goes back to 1948. During that time there were ten recessions that we could analyze. There was an eleventh recession which began in June 1948 and we did not have enough lead time for the indicator to complete an analysis. For nine of the ten recessions that we could analyze, the ISM declined before a decline in the stock market. Since our primary purpose was looking for a leading indicator that would decline before the stock market declines, this test was successful. We also found that the ISM declined ahead of a bear market in five of the seven times that there was a bear market.

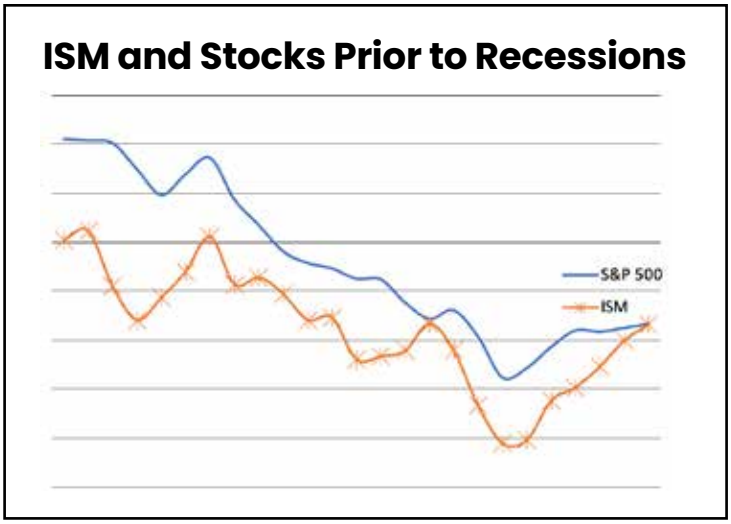

Figure 12-2: ISM falls into negative territory long before stocks do in recessionary environments. (source: Institute of Supply Management and Dunn Warren Investment Advisors)

The ISM responded with much more conviction during recessions than in bear markets. On average, the indicator declined five months before a decline in the stock market. However during a bear market which did not accompany a recession, the ISM only declined three months ahead of the decline in stocks. We also found that the declines that occurred prior to a recession preceded the decline for the S&P 500 as we can see in Figure 12-2.

The ISM can be used to develop a simple stock market timing model. The value of the market timing indicator is determined by the following rules:

- When the ISM is above 50% the indicator is equal to +1.
- When the ISM falls below 50% the indicator goes to -1.
- The indicator value goes back to one when the ISM is at a higher level then it was two months ago.

For example, when the ISM is 53% the indicator value is +1. When it falls to 49%, the market timing indicator goes to -1. If the ISM continues to go to 33%, the market timing indicator remains at -1. If the ISM then increases two months later to 35%, that increase raises the market timing indicator value to +1.

The buy and sell rules are also simple and straightforward:

- Buy when the market timing indicator value goes from -1 to +1.
- Sell once the market timing indicator value declines from +1 to -1.

This simple model shows the potential value of incorporating economic data into your stock market investment strategy. Following these rules, beginning in 1948 with $100,000, an individual would have accumulated $11,721,897. This compares to a buy-and-hold strategy for the S&P 500 that would have frown to $5,901,962. The average annualized rate of return increases to 8.2% using the ISM indicator, compared to an annualized return of 6.9% for the buy-and-hold strategy. These results are summarized in Table 12-1.

For this test, we accumulated 578 months of data. The indicator changed the direction of its signal in 95 of those months, or 16% of the time. There were times when the indicator did not change direction for years. Seven times the indicator flip flopped and reversed its signal from one month to the next. Eight times the market indicated a sell for two months and then went back to a buy signal. Additionally, the indicator signaled a sell for three months eight times before returning to a buy signal. Therefore, we would say in total that there were 23 times over the course of more than 48 years when the indicator made abrupt moves.

The Value of Economic Indicators to the Stock Market Investor

Buy & Hold - Value of $100,000 Investment	**$5,573,873**
ISM Indicator - Value of $100,000	**$11,721,897**
Buy & Hold - Growth on $100,000	**5,474%**
ISM Indicator - Growth on $100,000	**11,622%**
Buy & Hold - Annualized Growth from 1948	**6.9%**
ISM Indicator - Annualized Growth from 1948	**8.2%**

Table 12-1: Simple market timing rules based upon the ISM indicator can lead to significantly better long term investment results. (source: Dunn Warren Investment Advisors)

While there were some very short trades, the ISM proved to be a good diagnostic tool for stock market risk and reward. First, there were nine periods when the market declined over 10% when the ISM indicator indicated a buy. Four of those nine times, the S&P 500 declined more than 20%. This occurred in 1962, 1974, 1987 and 2002. During these declines the market declined 22%, 20%, 28%, and 24% respectively. All but one of those times, the market rebounded shortly after the decline to move to new highs. The first three periods rebounded within a year and a half. Only in 1987 did it take considerably longer to reclaim the original value. In 1987 it took just over three years to regain the value.

On the flip side, there were five times that the ISM indicator missed 10% moves or more. Those times the ISM missed a 12% increase in 1967, 11% in 1970, 12% in 1985, 11% in 1989, and 10% in 1996. All together, the market timing indicator provided only five false negatives out of 95 signals, meaning that it gave the wrong guidance just over 5% the time.

On the positive side, there were eight instances where the S&P 500 increased 30% or more when the ISM indicator was favorable. This simple market indicator also avoided four significant declines of 15% or more. Specifically, in 1973, 1981, and 2000 and in 2007/08, the ISM indicator avoided these bear market losses.

In addition to stock market timing, the ISM is also useful as an inflation gauge. The Economic Cycle Research Institute completed their own study of the ISM, and reported that, "In a new study, New York's Economic Cycle Research Institute found that the National Association of Purchasing Management's composite index was the best inflation bellwether among 16 regularly released market-sensitive indicators. [The Institute of Supply Management was previously known as the National association of Purchasing Managers.]

The study showed that the monthly purchasing-managers' composite index, which measures activity in the U.S.'s manufacturing sector, provided an easily accessible, consistent lead on inflation that didn't miss turns in an inflation cycle. The institute based its evaluation on criteria such as reliability, consistency, the length and variability of lead time, the ability to avoid false alarms about a turn in the inflation cycle, and promptness of data availability. It looked at indicators found by the Federal Reserve to incite the most rabid trading frenzies upon release. The study also found that the unemployment rate was a relatively high-quality leading indicator of inflation.[43]"

Therefore, we have an indicator that meets all of the criteria we identified for a good data series – it is easy to obtain, easy to calculate, and simple to follow. The result is an indicator that provides a good tool to diagnose the state of the economy for use with the stock market. However, we never want to rely on a single indicator since it can fail at any time. We need to examine other economic indicators to see if can create a robust and easy to follow model.

CHAPTER 13

Using Bond Yields to Improve Stock Market Performance

WHILE bonds have a price, they are most frequently quoted in terms of their interest rates or yields. That is because this is the best way to compare them relative to other bonds due to the complexity of the different structures that bonds have. For example, you have short duration bonds versus long duration bonds, government securities, mortgage backed securities, municipal bonds, corporate bonds and high yield (junk) bonds. By quoting interest rates, we get all of those characteristics reduced to a single number and can make the decision of which bond is most appropriate to purchase based on risk and reward.

Ideally you should look to purchase a bond with the greatest interest rate and the lowest level of risk. Often this means buying a bond below its par value (the price that will be repaid to you once the bond matures), which also means it has a higher interest rate compared to when it was issued. But first you would need to determine that the probability of the issuer defaulting is lower than the market is anticipating.

Before trying to create a stock market timing indicator based on bond yields, we need to quickly review the mechanics of a bond. Interest rates increase (or decline) as the price of the bond falls (or rises.) This is called an inverse relationship. As the price of the bond falls, interest rates increase and make the investment more appealing in part because it now has a higher interest rate. Once the price of the bond falls to a certain level, interest rates will have increased enough to begin rewarding the investor for taking on additional risk.

Although few people had heard of bond rating agencies just a few years ago, the turmoil that was caused by ratings on troubled assets like mortgage-backed securities and credit default swaps has thrown a spotlight on these companies. The three largest of these agencies are Standard and Poor's, Moody's, and Fitch. Each has their own grading system and methodology. For example, Moody's and S&P assign a rating of AAA for the highest quality corporation or bond. Conversely, lower risk bonds, or companies with an adequate capacity to pay interest and principal but which are more vulnerable to adverse economic conditions, are given a rating of Moody's Baa / S&P BBB. Ratings below Moody's Baa / S&P BBB are considered non-investment grade or "junk" because the risk of default is considerably greater.

In the market, the interest rate on individual bonds depends upon inflation, money supply, the probability that the issuer will default, the strength of the economy, and the duration of the bond (which refers to the length of time that the bond will be outstanding). With so many different variables, when the interest rate on a bond changes, it is difficult to determine what actually caused the move. However, there is a way of isolating the cause of the rise (decline) in interest rates. By comparing interest rates and the change in interest rates relative to different types of bonds, we can usually isolate those reasons. Specifically, when comparing a government bond to a corporate bond, we can determine the chance that a company may default. This is because a government bond issued by the U.S. Treasury is thought of as having a very low probability of defaulting. Although that probability of defaulting may have increased during 2009 as the government printed an extraordinary amount of money and issued unprecedented amounts of debt to stave off a depression, it is still likely, although maybe more difficult, that the government will be able to repay its loans. If the interest for a corporate bond is rising compared to a government bond, investors fear that something is wrong with the company. They sell the bond until the interest rate increases enough to compensate an individual for taking on the additional risk that comes with purchasing that corporate bond.

In addition to determining the level of risk and reward for an individual corporate bond we can do the same thing for a broad category of bonds. Each of the bond rating agencies, Moody's, S&P, and Fitch, provide a list of all of the bonds within each credit rating. This information is used to create indexes that show the average yield for bonds of a certain rating. From there, we can track the market interest rate for a given level of risk. Using this data, we can determine the overall systemic level of risk by the direction of interest rate moves. This leads us to our next indicator. The Baa spread is the difference between the interest rate for bonds that Moody's classifies as Baa (meaning they have adequate capacity to pay interest when it's due and should be able to repay the principal at maturity, but companies with this rating are more vulnerable to adverse economic conditions) and the rate on the 10 year government bond rate. By making this comparison, we are able to determine the level of risk that investors are willing to take because the difference in the yields should vary based on the economic conditions. This is also known as systemic risk.

Going back to 1919, we can see that the average spread over 10 year government bonds is 1.78% and the median is 1.70%. When this spread increases from the level it was at 12 months ago, this is indicative of riskier economic conditions.

CREATING AN INDICATOR

There is potentially a great benefit in comparing the interest rate of Baa bonds to a government bond. However, in order to complete this exercise, we need to first obtain the two series of data. You can obtain both series at the economic research site of the St Louis Federal Reserve (http://research.stlouisfed.org/fred2/.) Specific web site addresses are found in Appendix A. Some of the data is shown in Figure 13-1.

We obtained the monthly interest rates going back to 1919 for both the Baa-rated bonds and the 10-year government bond. You can complete this analysis on a daily or weekly basis, rather than just monthly. Once you are comfortable with the monthly analysis, you can choose how frequently you would like to calculate the analysis and test whether or not it matters. Although stock traders are becoming more and more short-term oriented, the economy changes slowly and you find that there is no benefit to use data that is more frequent than monthly.

After obtaining the data, the second step is to subtract the 10-year government bond rate from the Baa interest rate. You can easily do this in an excel spread sheet. Third, we will take the 12-month percentage change. When using economic data, we generally prefer to look at in this way. Using the 12-month percentage change makes diverse data comparable and helps to reduce the dramatic fluctuations sometimes visible in the raw data.

Once we determine whether the rate of change is increasing or decreasing we can find a simple market timing indicator value for the analysis. The indicator receives a score of -1 if the 12-month change is positive (above 0) and receives a score of +1 if it is negative (below 0.) The indicator value changes when the 12-month rate of change goes above or below 0.

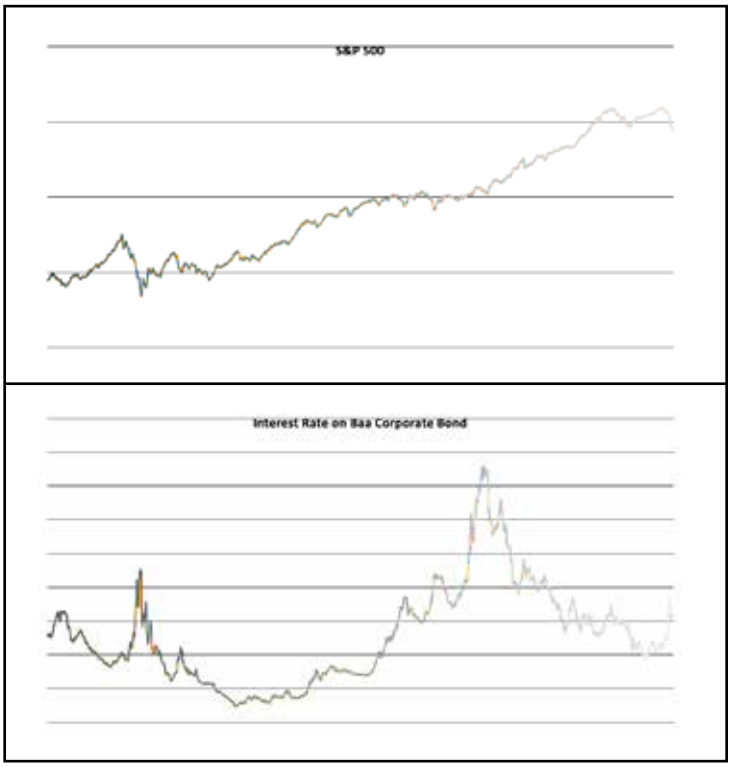

Figure 13-1: We can see that moves in the interest rates on corporate bonds are correlated with moves in the prices of stocks. (source: http://research.stlouisfed.org/fred2/)

We have made the indicator easy to calculate, just applying a -1 or +1 depending on if the 12-month change in the spread is positive or negative. If the spread is positive, our indicator reflects a score of -1, indicating we should be out of the market because investors are demanding a higher level of reward for taking on greater market risk.

By following this rule, we can see that the individual investor could obtain some very good, long term results. Beginning in 1919, a $100,000 investment would have grown to $9,508,408 with a buy-and-hold strategy in the S&P 500 (and predecessor indexes identified by Professor Robert Shiller). However, by following just this simple market timing rule, the investment grows to almost three times that value, reaching $26,279,630. Annualized, this is a return of 5.2% for the buy-and-hold investor compared to a return of 6.3% for following the indicator. The results are summarized in Table 13-1.

Buy & Hold - Value of $100,000 Investment	**$9,508,408**
Indicator - Value of $100,000	**$26,279,630**
Buy & Hold - Growth on $100,000	**9,408%**
Indicator - Growth on $100,000	**26,180%**
Buy & Hold - Annualized Growth from 1948	**5.2%**
Indicator - Annualized Growth from 1948	**6.3%**

Table 13-1: Completing a single calculation a month has the potential to dramatically improve an investor's performance. (source: Dunn Warren Investment Advisors)

Over 90 years, 1073 months of data were collected. During that time, there were only 76 changes in the indicator. The indicator would have allowed you to avoid five declines of 20% or more in 1921, 1932, 1938, 1975, and 2008. The worst of these was during the Great Depression in 1932 when significant losses were avoided. Conversely, there were three instances when the market increased over 10% in 1958, 1982, and 2000 when the indicator missed the upturn. Twice since 1919, the indicator failed to avoid decisive declines in the market. In 1933 the S&P 500 declined 17% and in 1942 the S&P 500 declined 33%. It took nine months to get back to the peak value in 1933. In 1942 it took 69 months to get back to the initial value at the peak.

On the upside, the Baa spread on average begins to decline one month ahead of an upturn in the S&P 500. In Figure 13-2, we can see that on average, the Baa spread began declining in month 19, while the S&P bottomed in month 20, before it began increasing. This is the aggregate performance over 29 bull markets. Also of interest, the S&P 500 increased over 40% from the bottom in aggregate as it moved from a relative value just below 90 to a value of 130.

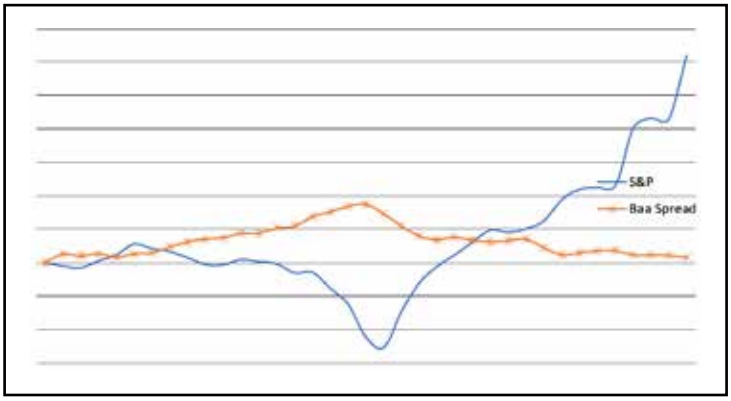

Figure 13-2: The Baa spread shows a tendency to peak just ahead of stock market bottoms. (source: Dunn Warren Investment Advisors)

The Baa spread is a very dynamic and worthwhile stock market indicator. It offers timely signals, and it can even be calculated daily, weekly, or in our example, monthly. It provides a sense of the state of the economy.

Lastly, the Baa spread is a reliable indicator of investor's willingness to take risk. Rather than just taking a survey of the opinion some people hold about the state of the economy, this indicator identifies where people are placing or withdrawing their real money. Consequently, we can see that there is an advantage to using the Baa spread in diagnosing the state of the economy and using it to identify the impact of the economy on the stock market. We can understand why it moves in advance of the stock market and logically it makes sense that this indicator leads changes in the stock market.

CHAPTER 14

Durable Goods – Watching What the Consumer Does

BUSINESS cycles turn up or down for many reasons. We'll never know in advance the reason for any individual turn in the cycle. It may be that the Federal Reserve tightens the money supply too soon or too early. Financial institutions may become overleveraged and the markets turn against them. The consumer may become overly optimistic or exceedingly pessimistic and rein in their spending. To spot the turning point, it would be best to have as many indicators that you can gather and analyze to help you identify incremental improvements or deteriorating conditions in diagnosing the state of the economy. Another advantage to having multiple indicators is that we would be better able to gain insight into what is currently impacting the economy. New Orders of Durable Goods (New Orders) portray a wide variety of economic factors in a single number. This economic indicator enables us to follow the flow of money from the consumer to the manufacturer.

First, let us explain what New Orders represents. The government has tracked New Orders for years. Currently, the Census Bureau, that well known agency under the Commerce Department, tracks New Orders and has done it the same way since 1992. The Census Bureau offers a wide variety of economic data that can be used to spot trends in the business cycle. They also track demographic data – and population trends are useful for those wanting to undertake long term economic analysis.

New Orders tracks the purchase of goods that are expected to last more than three years. Yes, defining what will last for three years can be difficult, especially if you have had the same running shoes since 1998. But in actuality, this generally means the purchase of machinery, appliances, or automobiles—the kinds of things that are built to last. Durable goods can be finished goods for consumers, like washers and dryers, or the machinery and tools that are used by manufacturers to create consumer products. The data on New Orders includes such goods as the most basic of products like raw steel and industrial machinery to the most technical of products like airplanes and computer equipment. However, because these are large items and they are purchased infrequently, the numbers tend to be more volatile than many other economic indicators. For this reason, rather than watching the absolute value of the indicator, it is more important to monitor the trend and look at the year-over-year percentage change in New Orders.

The trend in New Orders is a direct reflection of consumer confidence. To purchase electronics and appliances, individuals have to feel secure about the stability of their income, their job prospects, and be optimistic about their future in general. If individuals feel like they have the assurance that they will have the income to fund larger purchases, they make those purchases.

A second economic factor captured in New Orders is the confidence of companies in the future of the business cycle. Large and small companies need to be able to manufacture enough durable goods to satisfy consumer demand. To supply the increasing demand for goods in an economic upturn, companies need to make sure that they have enough manufacturing capacity of their own to fill the orders. This requires companies to purchase manufacturing equipment to keep up with demand.

New Orders requires real consumer spending, which requires consumer confidence, and that drives industrial production. Furthermore, New Orders drives real capital spending by businesses which should lead to improved corporate profits. As corporate profits improve, companies increase their confidence in the future and increase their level of capital spending. Improved profits should also lead to higher stock prices, and taking advantage of the trend in the stock market is our ultimate goal.

We can see that New Orders is a central measurement of the economy and should offer great insight into the business cycle. However, if divergences start to develop between the economy and the stock market, we should expect to see a turn in the business cycle. This is evidence that the cycle outlined above has become disconnected from its regular pattern, as it does during a recession, for example. As observers of the economy, we should realize that this disconnect has occurred and following New Orders should be a valuable tool in our effort to diagnose the state of the economy.

Geoffrey Moore, a pioneer in researching how to forecast the business cycle, first included New Orders as part of his list of leading indicators in 1958[44]. Over the years, how the index has been calculated has repeatedly been changed, so it is difficult to link the changes in index from one calculation series to the next. As an example of the way it's been changed over the years, the company size was once the most important factor in deciding which orders would be included. Beginning in 1962, only companies with more than 1,000 employees were included in the calculation. As economists realized the important role of smaller businesses in the economy, starting in 1975, 1,000 companies that had between 100 and 1,000 employees were included along with the larger companies.

An additional complicating factor in linking earlier versions of the data together is that prior to 2001, data was segmented by SIC Code (Standard Industrial Classification). Since 2001, orders have been segmented by NAIC (North American Industrial Classification) codes. The Census Bureau made this change to allow for more detailed analysis of the underlying data, and they explained how these changes were completed to create a new series. But the link to historical numbers is difficult, if not impossible, to complete.

To illustrate how closely New Orders is linked to the stock market, we have an example in Figure 14-1. In 2000, the S&P 500 reached a new all time high in March and seemed to recover and be making another run at a record from July through September. However, New Orders declined significantly in July of 2000, just as the market neared a peak, and almost three months before it failed in its attempt at a new high in September.

Putting the economic news into historical context, we offer the following quote from *The Wall Street Journal* highlighting the slowdown in New Orders:

"New Orders for durable

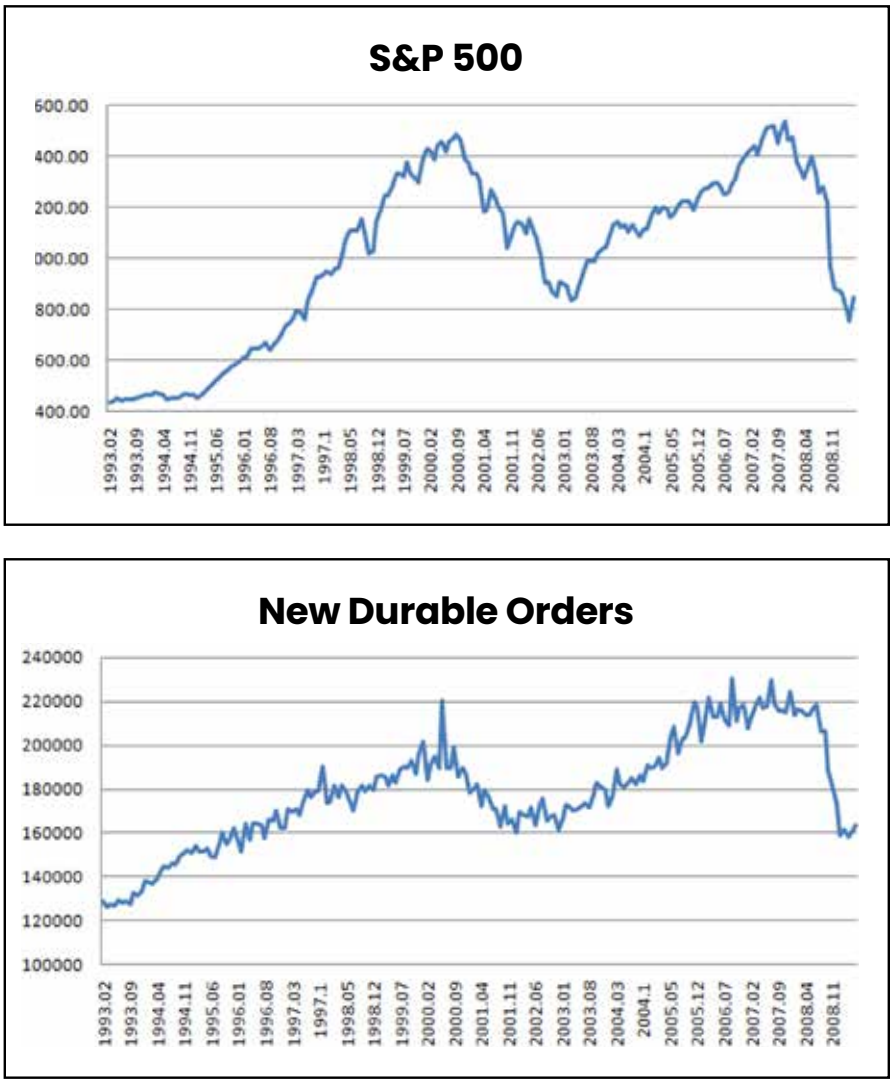

Figure 14-1: Peaks in New Orders tend to occur prior to significant tops in the stock market. (source: Census Bureau and Dunn Warren Investment Advisors)

goods, one of the government's most volatile economic gauges, plummeted at the sharpest pace on record last month, but analysts said the report wasn't as dire as it appears…Elsewhere in the report, the government said orders for transportation equipment fell 31.7%, another record drop, after increasing 41.7% in June. The closely watched nondefense capital-goods category, which offers a good estimate of the pace of business investment in new plants and machinery, fell 3.8% in July after climbing 8.3% in June.[45]

The report is more optimistic than the facts warranted. This is an excellent example of how economic reporting is actually influenced by sentiment. Everyone still expected the economy to come roaring back at this point, after all it was the beginning of a new age thanks to the internet. The meaning of bad news was lost in that time, and almost everything was looked at through an optimistic lens.

New Orders proved useful in 2007 as well. The S&P 500 peaked in October of 2007. However, when New Orders was reported in September for August, the slowdown in the economy appeared to be already beginning. This decline foretold the impending recession in the economy that was officially to begin three months later in December. Again, *The Wall Street Journal* noted the news:

"Orders for durable goods such as computers and machinery tumbled in August, raising concerns that business spending may slow.

The Commerce Department said orders for durable goods, which are items designed to last three years or more, fell 4.9% last month. Analysts had expected orders to decline, considering July's especially strong 6.1% gain.[46]"

The reporting again reflected the nation's mood. There is a more pessimistic tone in this report than we saw in the 2000 example. The simple point here is that you cannot rely on media reports to assess economic news. You need to complete your own, unbiased analysis to understand what the numbers are saying if you want to use economic indicators to help you profit from the sock market.

Time spent looking at the New Orders report could certainly have been profitable. The technology heavy NASDAQ 100 Index declined by more than 83% its peak in 2000 to the trough in the fall of 2002. In 2008, the S&P Banking Index would bear the brunt of the bear market, declining almost 89% from its 2007 high before bottoming in March of 2009. In both cases, New Orders would reach a business cycle peak three months ahead of the top in the broad stock market, represented by the S&P 500 Index.

CREATING AN INDICATOR

When analyzing economic indicators, we usually like to look to the percentage change over the pervious 12 months to evaluate the strength weakness that the indicator is showing. The only exception to this is the ISM index which behaves differently than other economic data because it is a diffusion index. With the New Orders data series, we want to create a simple indicator that will help time turns in the stock market. The market timing indicator will use values of +1 or -1. If the year-over-year growth rate in New Orders is positive, the indicator will have a value of +1. Negative year-over-year changes in New Orders will result in the timing indicator being assigned a value of -1. It will be on a buy signal when the value is +1 and selling when the rate of change is 0% or below.

We used the data series maintained by the U.S. Department of Commerce as provided on the St. Louis Federal Reserve web site, which is the same data collection process we used for the other indicators tested. We have input back to February 1992, when the NAIC reporting standard was initiated by the Census Bureau. Calculating the 12-month rate of change over that time, we collected 195 months of data. During that time period, a $100,000 investment in the S&P 500 would have grown to $194,874, without transaction fees. Following the New Orders indicator, buying the S&P 500 only when the 12-month rate of change is positive, improves the return on the initial $100,000 investment to $365,796. Although this does not include transaction costs and taxes, it is $170,922 greater than the buy-and-hold strategy. Specifically, by using the indicator, the total return would have been 266% versus a 95% return attainable from buying

and holding the S&P 500. On an annualized basis, this represented a 7.3% rate of return on your initial investment, compared to the buy-and-hold return of 3.1% per year in the S&P 500. The results are summarized in Table 14-1.

The New Orders Indicator Can Improve Investment Results

Buy & Hold - Value of $100,000 Investment	**$194,874**
Indicator - Value of $100,000	**$365,796**
Buy & Hold - Growth on $100,000	**95%**
Indicator - Growth on $100,000	**266%**
Buy & Hold - Annualized Growth from 1992	**3.7%**
Indicator - Annualized Growth from 1992	**7.3%**

Table 14-1: A relatively simple to calculate indicator can beat buy-and-hold investing. (source: Dunn Warren Investment Advisors)

There were two periods during this time when the S&P 500 declined by more than 10%, and the New Orders indicator did not avoid the correction. In September and October 1998, the S&P 500 declined 12.1%. Then again in August 2002, the S&P 500 declined 10.9%. However, investors utilizing this indicator would have recouped their losses in 1998 only four months later; and in 2002, it would have also taken only four months to recoup those losses.

Heeding the sell signals the indicator offered would have allowed you to avoid a 31.7% decline between September 2000 and July 2002. The indicator would have again provided a timely signal and helped in avoiding declines from January 2008 until March 2009. During that time the S&P 500 declined by 48.8% while this timing system would have been in cash.

There were several times when the indicator provided incorrect diagnoses of the state of the economy as it pertains to the S&P 500. Specifically, in 2002, New Orders began to improve well ahead of the improvement in the S&P 500. After New Orders turned positive in August 2002, the S&P 500 continued declining by about 20% into the October bottom. While the signal was definitely early, no indicator will ever be able to provide a perfect mechanism to time the stock market. This indicator in particular is expected to highlight favorable and unfavorable economic conditions that could drive the general direction of the S&P 500. Although it will sometimes be early, as it was in 2002, you should be able to rapidly recoup those losses after only a couple of months. That was the case in 2002, when those losses were erased over the next seven months.

The indicator missed the stock market bottom in early 2009. New Orders was still down over the prior 12 months as the stock market reached its low in March, and as a result, the diagnosis this timing tool offers for the state of the economy was still weak as the market rebounded in the spring and summer of 2009. Again, it highlights the fact that no single tool will ever allow to perfectly time market tops and bottoms.

Over the years, monitoring the New Orders report has provided an exceptional tool to avoid two of the greatest declines in the stock market since the Great Depression. In addition, New Orders has generally provided good insight into when the economy was beginning to improve, and this economic series has offered a valuable input to the stock market investor.

CHAPTER 15

A Composite Model

WE have seen in previous chapters that we can use the Baa Corporate spreads, New Orders, and ISM Index to develop successful stock market timing models. The fact that each model is simple to calculate and easy to implement is an important consideration for the individual investor. The question is whether or not the indicators can be combined to create an even more powerful timing system. In this chapter, we will attempt to combine the three indicators into a single system.

Our primary goal in this book has been to help prepare individual investors to think for themselves. Economics is an important, but often overlooked, component of stock market analysis. We have tried to present enough information that you can understand the concept of why a basic knowledge of economics is important to the individual investor, and we have attempted to demonstrate how that knowledge can be applied to the study of the stock market in pursuit of profits. We will continue trying to meet that objective in this section, providing enough detail so that you can apply these ideas to other indicators and build a market timing model with the same logic.

In a standalone basis, rules for each of the three indicators have already been developed in previous chapters. We will use those rules as a starting point. Those rules were:

- For the New Orders data series, if the year-over-year growth rate in new orders is positive, the indicator will have a value of +1. Negative year-over-year changes in new orders will result in the timing indicator being assigned a value of -1. It will be on a buy signal when the value is +1 and a sell signal when the rate of change is 0% or below.
- For Baa Corporate Spreads, we will apply the same general idea. The indicator will receive a score of -1 if the twelve-month rate of change is positive (greater than zero) and we will assign a score of +1 if the rate of change is negative (below zero). An indicator value of +1 will be used as a buy signal and -1 will be the sell signal.
- The ISM Manufacturing Index had the most complex rules. When the ISM index is above 50% the indicator is equal to +1. The indicator will be assigned a value of -1 when the ISM falls below 50%. The indicator value goes back to +1 when the ISM is at a higher level then it was two months ago.

For our composite indicator, we will combine all three rules into a single indicator which can have a maximum value of +3 and a minimum value of -3. Defining buy and sell rules now becomes slightly more complicated than in the binary decision systems we designed in other chapters. A binary decision model only offers two choices; in our examples we are either invested in the stock market or in cash. We did not employ a short selling strategy for two reasons. First, in our experience we have learned that many individual investors do not like to enter short positions. This may be changing with the availability of inverse exchange traded funds, but we still believe that short trades are not appropriate in most individual's accounts. The second reason is that we were developing long term systems and the stock market has exhibited a long term upward bias. That has made it very difficult to devise successful strategies that involve short selling for long holding periods, especially when using monthly data to generate the signals. We will continue with that approach going forward, short selling will not be considered when building a composite model.

We are still left with a fairly complex decision in determining when to give a buy signal for the stock market and when to move to cash. We have seven possible values that can result from our combination of rules. To determine buy and sell criteria, we will look at a frequency distribution table (Table 15-1). This table shows the

percentage of the time that composite model gives a particular value. As expected, over the long term (a data sample of nearly 14 years), the market has rarely been extremely bearish. All three indicators gave a value of -1 less than 5% of the time. On the other hand, all three were on simultaneous buy signals more than a third of the time.

Looking at the frequency distribution, we can use the same buy and sell rules that we employed in previous models. We will buy if the model adds up to a value of +1 or greater and sell when it reaches a value of -1. A quick way to gauge a model's effectiveness is simply to evaluate it when compared to a buy and hold strategy. In this case, we find that that the simple rules would have more than doubled the performance of the buy-and-hold strategy. But this would have been accomplished with much less risk exposure – the model was only in the market about 70% of the time, holding cash the rest of the time.

Value	% of observation
-3	4.79%
-2	0.00%
-1	25.75%
0	0.00%
1	34.73%
2	0.00%
3	34.73%

Table 15-1: We can quickly see from this table that the market is rarely extremely bearish. (source: Dunn Warren Investment Advisors)

The biggest advantage obtained by following the composite model was in avoiding bear markets. These rules avoided almost all of the declines endured by buy-and-hold investors in the aftermath of the internet bubble, exiting a little late in December 2000 at a price about 15% below the stock market peak. It reentered early, in December 2001 and suffered through a series of whipsaw trades. In the end, if you had been following this model, you would have seen your account equity decline by about 20% during this bear market. The S&P 500 fell a little more than 50% during that time.

These rules also dictated a move to cash in August 2008 and moved back into the market near the bottom in March 2009. The stock market peaked in October 2008, so the exit signal was a little early. But investors sidestepped nearly the entire devastating decline which took more 57% off the value of the S&P 500.

Those two examples illustrate what is perhaps the most significant advantage of this model – it identifies periods of high risk and helps the investor avoid losses.

This chapter presented the basic steps followed to create a composite economic model. This procedure would be followed to add more indicators, and to vary exposure to the stock market. As an example of varying the level of risk exposure to the stock market, we can see by referring back to Table X-1 that the model is moderately bullish about a third of the time with a value of +1 and extremely bullish about a third of the time with a reading of +3. This could be used to fine tune the investment selection process. In extremely bullish periods, small cap stocks might be expected to outperform large cap stocks, and instead of investing in the S&P 500, investors could use a mutual fund or exchange traded fund that mimics the S&P 600, a more aggressive index.

Instead of moving to cash, investors could use a similar model to find opportune times to invest in bonds. While generally thought of as safer than stocks, fixed income investments are actually almost as volatile as the stock market. The process outlined in his book could easily be used to identify key economic indicators for bond market timing and applied to increase returns for the times when the stock model advises holding cash.

After reviewing the performance of a composite model, we are left to consider whether this approach is worth the additional effort when compared to using a single indicator or even a buy-and-hold approach. First, let's address the idea of buy-and-hold investing. As investors following this approach learned in 2008, this idea is designed to obtain market returns. In a bear market, the goal of the buy-and-hold investor is to lose as much as the overall market, actually a little more when fees are considered. Some degree of active management is probably preferable to most investors who now understand that markets can suffer severe and protracted declines.

If we assume that applying economic indicators is a worthwhile approach to reducing stock market risk, we are left to assess whether the time and trouble of using multiple indicators is preferable to a single indicator. When we look at the improvement over buy-and-hold offered by the individual indicators, we see that there is a slight gain from ISM and the Baa Corporate spread. We also observe that New Orders for durable goods nearly doubled the average returns, performing almost as well on a standalone basis as the composite model did. Some might be tempted to track only one indicator and hope for the best.

That would be a mistake, in our opinion. The durable goods orders could provide a false signal. The composite model could also provide a false signal. But the odds of a false signal are reduced by the inclusion of multiple indicators. All three measure different aspects of the economy, and individually, each offers valuable insight into where we are in the business cycle. Given the potential risk of following a single indicator and the relatively small increase in effort to follow several, it seems prudent to use a composite indicator.

In our case, the composite model will consist of ISM, New Orders, and Baa Corporate Spreads. Each indicator will be equally weighted. The model will be updated monthly and will be bullish if the score is greater than 1, bearish when the score is less than zero. Applying the indicator to a stock selection process will be the next step in using the economy to diagnose the state of the business cycle.

CHAPTER 16

An Advanced Application – Building on the Basic Idea to Identify Risk in the Stock Market

TO help us manage investments, we prepare a detailed monthly report on what we call the Economic Market Indicator (EMI). The EMI consists of sixteen different economic series that are combined into a single indicator. The process for determining the value of the EMI is similar to what we've shown in this book. This is not an infallible market tool – it can be wrong and cause us to be overly cautious or too aggressive in our investment selection. We view the EMI as only one input. We also look to fundamental analysis of each potential investment as a risk management tool. Finally, our investment combines these two techniques with relative strength analysis. While the process is complex, we consider the economic indicator to be our starting point.

The report from June 2009 is reproduced below with some additional detail added to help explain the different parts of the report. It is comparable to the ideas we have presented in this book, just more extensive. It is also only piece of the investment puzzle that we look at in our decision process.

It begins with a summary:

Executive Overview

The Economic Market Indicator (EMI) stands at 80.07, up from 78.57. More importantly, the rate of decline in the index has subsided considerably. The rate of decline stands at **minus 10.2%** compared to the worst reading as of January 2008 of **minus 15.0%**.

The United States should climb out of recession shortly. While economic statistics are still down relative to 6- and 12-months ago, the rate of change has stabilized and in many cases it is significantly off the lows. **Specifically, this would indicate that the majority of companies should be able to meet low earnings estimates for the remainder of the year.**

We are attempting to gain insight into the stock market from the state of the economy. While a value for the indicator is reported, the actual value is not overly important. The rate of change is more important than where the index stands. We compare the index to its six-month rate of change. We also compare the absolute value of the index to its six-month average. This is not a mechanical tool. We are just trying to evaluate the behavior of the stock market in light of where the economy is likely to be heading.

At this time, three months after the stock market bottom, the indicator is confirming that an economic recovery was likely. In late-October, when the initial estimate of the Gross Domestic Product (GDP) figure was announced, we learned that GDP had grown by 3.5% in the third quarter. This confirmed that the growth rate of EMI was providing an accurate reading of the state of the economy at that time.

Based on the EMI, we could see that there was reduced level of risk in the stock market. We used this information to increase the level of risk we were willing to accept in our stock portfolios.

Next, we look specifically at the rate of change in the indicator:

RELATIVE PERFORMANCE INDICATOR

While still negative, the RPI of the Economic Market Indicator is significantly higher, indicating a substantial shift in the economic direction. Consequently, a resumption of growth in the economy is expected.

This brief analysis is drawn from the chart of the rate of change of the EMI (Figure 16-1). The chart is evaluated in relation to the stock market. The Relative Performance Indicator (RPI) is how we calculate the rate of change. It's a slightly more complex calculation but the same general idea. We are looking for an indicator that will react to trend changes quicker than the traditional calculation method. Our approach balances the downside risk of signals that are too early or quickly reversed with the potential upside rewards of timelier signals.

A signal that is too early is one that forecasts a change in the economic trend too far in advance. We are trying to determine what the likely direction of the economy and the stock market will be in three to six months. The danger of an early signal is that we might miss out on potential stock market gains.

Another problem we can have with stock market timing signals is that they can be too frequent and prone to quick reversal. This means that one month the signal may switch from a sell to a buy but reverse back to a sell the next month. We use smoothing to reduce the possibility of this. While we can't eliminate the possibility of this occurring, simply smoothing the data is a good step towards minimizing it.

In this analysis, we find that one of the most important evaluative tools is when a divergence exists between the chart showing the RPI of the economy and the price chart of the stock market. We use the S&P 500 to evaluate the trend of stocks in this analysis. A divergence occurs when the two data series move in different directions. For example, in the summer of 2008, the RPI of the EMI shown in Figure 16-1 was in a clear downtrend as the stock market was moving higher. We believe that stock prices will ultimately reflect the underlying economic fundamentals and expect the trend in the EMI to lead the trend in stocks. So when we see a divergence such as this one, where the economy seems to be moving lower as stocks move higher, we expect that stock prices will soon reverse their uptrend. Similarly, if the EMI is moving higher as stocks move down, we would look for a reversal to the upside in the stock market.

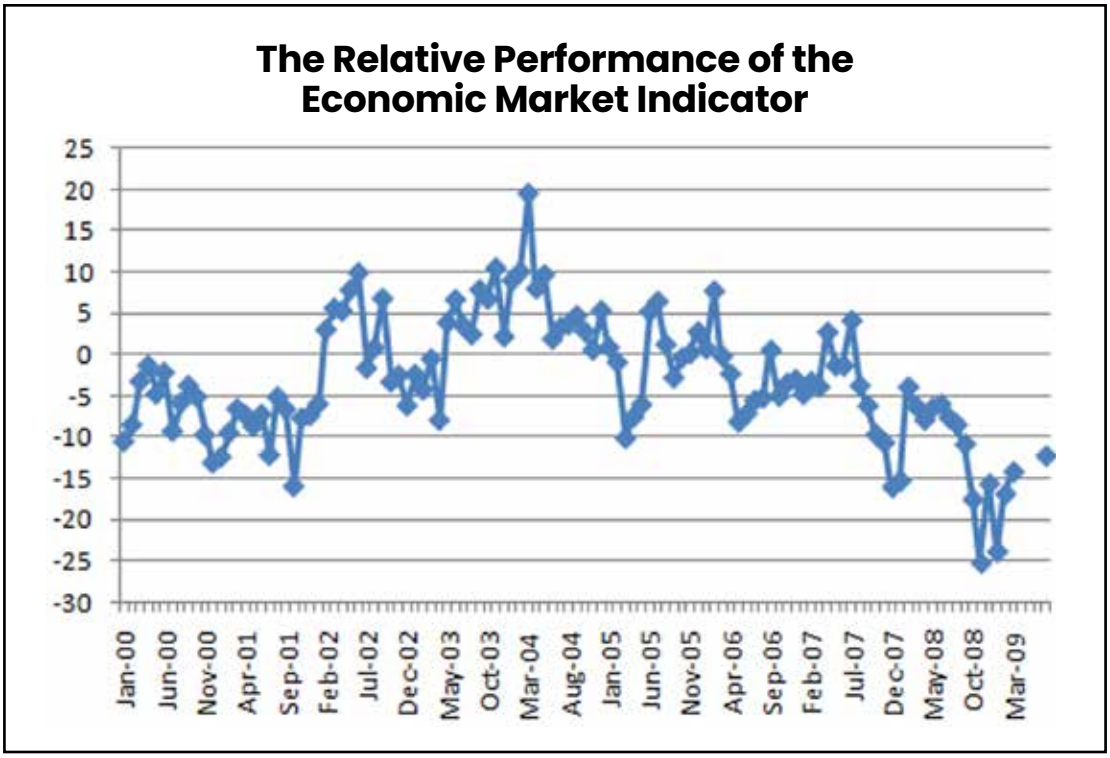

Figure 16-1: Reversals in the trend of the EMI tend to lead reversals in the stock market. (source: Dunn Warren Investment Advisors)

At the stock market bottom in March 2009, we can also see in that chart that there was an upward divergence in the EMI. The indicator was still near its worst levels, but it was offering hope that recovery

was possible. This was in contrast with media commentators at the time who were certain that a repeat of the Great Depression was inevitable.

The next thing we look at is the breadth of the indicators. Breadth simply means how many of our individual indicators are moving up and how many are moving down. The idea behind breadth is that the majority is most often right. A trend in the overall index can only be sustained if a majority of the separate data series is moving along with that trend. When breadth weakens, and fewer indicators are moving in that direction, the trend is very likely to reverse. Breadth offers an early warning of potential changes in the trend.

BREADTH

Breadth has improved. Ten of the indicators have seen improvements in growth rates. This means that the 6-month of rate of change is less negative for ten of the indicators. Consumer Debt, Exports and Imports are the only indicators where the growth over the last six months is worse. Employment Advertising, ISM, Government/Corporate Spreads, Hours Worked, Unemployment Claims, New Orders, ISM Service, Monster.com Advertising Index, and Mortgage Applications all have positive trends.

While the level of the EMI is not important, we do find it important to place the level into historical context. The next section of our report briefly comments on where the indicator lies in relation to recent levels, or in this case we note its position relative to historic extremes:

DEPTH

The EMI hit its low of 78.62 in February and has inched higher to 80.07. From its peak, the EMI has declined 31.4 points from the high of 109.95 reached in July 2005. While this by no means alleviates the possibility of a further drop, we have seen a base formation the last three months and the strength now seems to indicate a break out.

In the final sections of our monthly report, we highlight what we think is important about the current state of the indicator and develop an initial conclusion as to what the EMI is telling us. This report is not the final look at the indicator or its components. This monthly look is discussed at the firm's investment committee meeting and a brief update to this report is prepared each week. In short, the significant conclusions we draw from the EMI are subject to change at any time as new data becomes available. In this respect, we consider ourselves Keynesians based on John Maynard Keynes classic reply to a gentleman who wondered why his outlook has changed, "When the facts change, I change my mind. What do you do, sir?"

While the significance and conclusion sections are revised over time, they are the most important parts of the current report:

SIGNIFICANCE

What is most notable is that the rate of change has gone from the depths of -15.0% at the end of January to -10.2% today. This improvement is indicative of the overall improvement in many of the indicators.

CONCLUSION

The economy has clearly stabilized and should resume growth soon. In the short term (6 to 9 months), we do not expect to see a double dip recession in the economy. The housing market has yet to improve as indicated by the number of foreclosures and the continuous decline in prices in many parts of the country. Additionally, the government's persistent actions to increase the money supply through quantitative easing initiatives combined with the continued issuance of new debt cannot be overlooked. Eventually the government's easing of monetary and fiscal policy has the potential to lead to significant inflation, which could cripple the economy no matter how well it is doing at that point. As it stands for now, the economy can grow despite the weak housing market and the longer term possibility of impending inflation.

We supplement this report with a visual risk/reward matrix (Figure 16-2). We assign a value to each

indicator representing its relative risk and reward at that point in time. Those values are then plotted in a simple matrix. It shows us how aggressive we should be in our stock selection strategies. While it is a simple visual approach, it is based upon extensive research and backtesting. The idea has proven useful over the years. Individual investors should consider implementing a similar approach, and this tool could be useful with as few as four or five well-selected economic inputs.

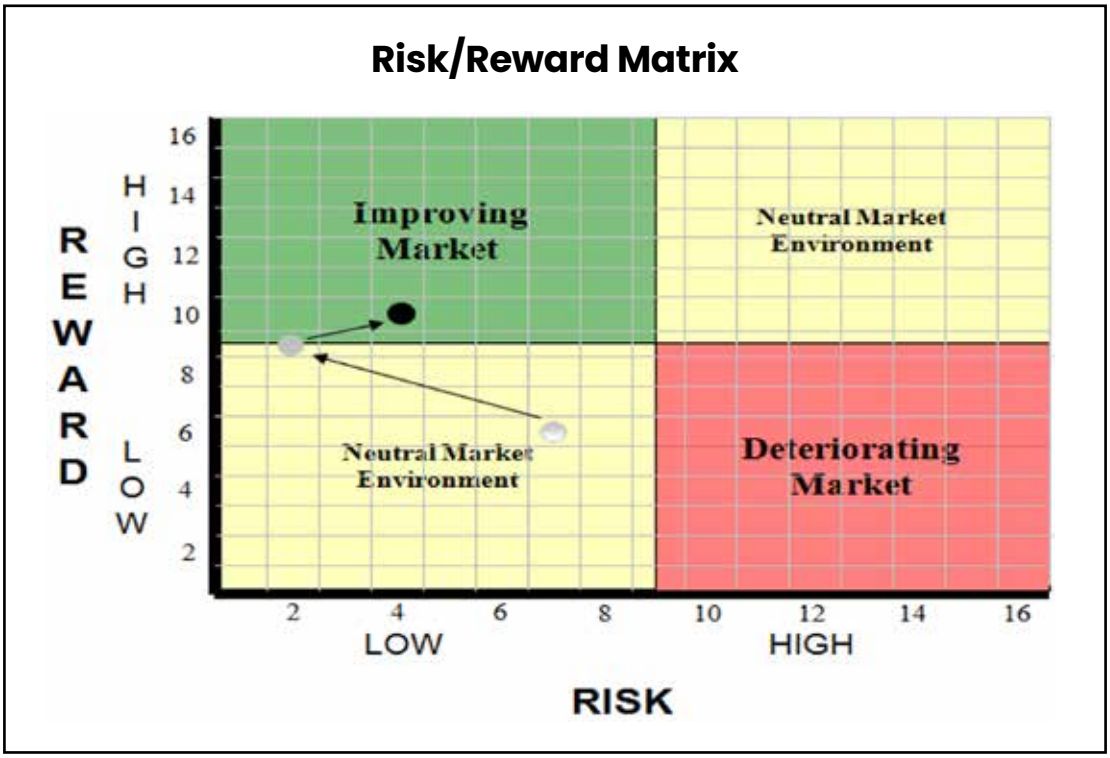

Figure 16-2: The Risk/Reward Matrix uses economic inputs to create a useful measure of stock market potential. By including several months of data on the chart, we can quickly spot the trend of the economy. (source: Dunn Warren Investment Advisors)

We consider economic analysis to be inseperable from the investment selection process. Day traders can ignore economic fundamentals, but investors who measure their holding periods in timeframes longer than minutes should find it helpful to understand the state of the economy. Being able to understand economic risk helps to confirm an analysis of where we are in the business cycle. That information should confirm the degree of risk for individual investments since different businesses do better during different phases of the businesses cycle.

Diagnosing the state of the economy to understand where we are in the business cycle is the first step in a well-defined investment selection process. It can reduce risk, which helps to avoid large losses, which leads to long term success.

APPENDIX A:
ECONOMIC DATA

This section presents a brief overview of the indicators analyzed. Individuals can use this section as a starting point to complete their own tests or add additional indicators to the model presented in this book.

INDICATOR: 10 Year Goverment Bond

What it is:
The current yield available to investors on U.S. Treasury Bonds with a ten year maturity.

Why it's important:
Interest rates include a risk premium and an inflation premium. It is widely believed that the United States is virtually free of default risk which means that bonds issued by the Treasury include only an inflation premium. The risk of inflation is continually reevaluated by investors and movements in this interest rate offer an instant view of the most current perceptions. As inflation fears rise, interest rates will increase. This is most likely to happen in a growing economy, where competition for labor and raw materials should push prices up. A slowing economy should lead to lower inflation, and bond investors will accept a lower yield in this type of an economy.

Data Source:
The Federal Reserve (http://research.stlouisfed.org/fred2/series/GS10)

INDICATOR: 30-Year Conventional Mortgage Rate

What it is:
The rate a homebuyer would pay on a new mortgage.

Why it's important:
Housing is a traditional engine of economic growth. There are a number of people involved in each housing transaction, originating the loan and completing all the required steps in the process. New homeowners also tend to personalize their home by renovating it and buying furniture. These activities create jobs and growth throughout the economy. As rates go down, more potential homebuyers qualify for mortgages and increased affordability creates more sales. Higher rates decrease sales and reduce jobs in related industries.

Data Source:
The Federal Reserve (http://research.stlouisfed.org/fred2/series/MORTG)

INDICATOR: Average Hourly Earnings

What it is:
The amount an employee is paid per hour. This data is found in the Employer Costs for Employee Compensation report.

Why it's important:
Average hourly earnings shows the trend in the cost of labor, an important indicator of inflation. It also confirms the unemployment indicators – when unemployment is low, wage growth should be higher. Divergences within this relationship offer an early warning that there is likely to be a significant change in employment or inflation.

Data Source:
Bureau of Labor Statistics (http://www.bls.gov/news.release/ecec.toc.htm)

INDICATOR: Baa corporate bond spread

What it is:
The difference in rates between corporate bonds of average quality (not the highest rated AAA nor junk bonds).

Why it's important:
The Baa/Treasury spread quantifies the amount of risk that investors see in the corporate world. This indicator is a measure of the risk premium that investors require to accept the chance of corporate default. As it widens, they think the economy is weakening and defaults are expected to rise

Data Source:
The Federal Reserve offers Baa Corporate bond yields at (http://research.stlouisfed.org/fred2/series/BAA). The value of the 10-year Treasury yield is usually subtracted from the Baa yield to obtain the spread.

INDICATOR: Baltic Dry Index

What it is:
The Index is compiled daily by the Baltic Exchange and tracks international shipping rates of various dry bulk cargoes. It offers "an assessment of the price of moving the major raw materials by sea. Taking in 26 shipping routes measured on a timecharter and voyage basis, the index covers Handymax, Panamax, and Capesize dry bulk carriers carrying a range of commodities including coal, iron ore and grain.[47]"

Why it's important:
When demand for goods increases because of a growing economy, the cost of shipping raw materials and imports should also increase. This Index offers a real time view of changes in those shipping costs and should correlate closely with economic activity.

Data Source:
http://www.balticexchange.com/

INDICATOR: Building Permits

What it is:
The number of housing units that builders are authorized to start construction on.

Why it's important:
Home construction is an expensive and time consuming undertaking. A large number of permits, or an increasing trend in the number of permits being issued, reflects the fact that people have confidence in their own economic situation, or the economy in general. Declines in this indicator indicate that credit conditions may be tightening since construction loans tend to be among the riskiest loans made by banks.

Data Source:
U.S. Census Bureau (http://www.census.gov/const/www/permitsindex.html)

INDICATOR: Auto and Truck Sales

What it is:

The monthly sales total of all domestically produced vehicles.

Why it's important:
Cars and truck sales are an important indicator of consumer demand, accounting for a large part of total retail sales. Demand for big ticket items like autos and trucks tends to be interest rate sensitive, which should mean that this indicator is a leading indicator of the business cycle.

Data Source:

U.S. Census Bureau as a component of the Manufacturing Trade Inventory and Sales Report (http://www.census.gov/mtis/www/mtis_current.html)

INDICATOR: Consumer Confidence

What it is:
The Consumer Confidence Survey® is a monthly survey conducted by the Conference Board and is based on a sample of 5,000 U.S. households. Respondents are asked about the current economic conditions and their expectations for the future. A similar survey is conducted by the University of Michigan and published as the Consumer Sentiment Index.

Why it's important:
Attitudes impact spending and these surveys offer insight into the psychology of the consumer. When people are optimistic, they will spend more and commit to large purchases such as homes and cars. Changes in the trend usually coincide with changes in the business cycle.

Data Source:
The Consumer Confidence Survey is available by subscription (http://www.conference-board.org) The University of Michigan Consumer Sentiment Index is available from the Federal Reserve at http://research.stlouisfed.org/fred2/series/UMCSENT

INDICATOR: Consumer Debt

What it is:
The amount of credit that consumers have taken on through auto loans, credit cards, and other loans (except mortgages).

Why it's important:
Borrowing can fuel consumption and when consumers spend they boost corporate profits.

Data Source:
The Federal Reserve (http://www.federalreserve.gov/Releases/G19/Current/default.htm)

INDICATOR: Consumer Price Index (CPI)

What it is:
The official measure of inflation.

Why it's important:
The CPI calculates the change in the price of a basket of goods and is used by business and the government as an official benchmark for determining the amount of increases due under government programs such as Social Security and private sector pay raises. The Fed uses price indexes, such as CPI, to help set monetary policy. If inflation is rising, the Fed may hike interest rates. Stocks usually fall in response to higher-than-expected inflation.

Data Source:
Bureau of Labor Statistics (http://stats.bls.gov/news.release/cpi.toc.htm)

INDICATOR: Copper Prices

What it is:
The market price of copper.

Why it's important:
Copper has many commercial applications. It is widely used in commercial activities ranging from

computer chips to building construction to automobiles. As such, it can be used as a real-time gauge of industrial demand for raw materials. An increase in the price may be among the first signs of inflation.

Data Source:
Many commercial data vendors offer the price of copper along with those of other futures contract.

INDICATOR: Disposable Personal Income

What it is:
The amount of money consumers have available to spend after paying income taxes.

Why it's important:
The rate of change in disposable income offers insight into the balance sheet of the consumer. As income increases, spending should follow and economic growth should be healthy. Decreasing incomes are signs of potential recessions.

Data Source:
The Federal Reserve (research.stlouisfed.org/fred2/series/DSPI)

INDICATOR: Domestic nonfinancial sectors, total debt

What it is:
The amount of debt that corporations owe. The amount of business debt excludes financial companies because financial companies use money as inventory and borrow for different reasons that other businesses.

Why it's important:
Expanding a business often requires a loan, and this indicator tracks the amount of debt being used by businesses. It should rise and fall along with the business cycle.

Data Source:
The Federal Reserve (http://www.federalreserve.gov/releases/z1/Current/accessible/d3.htm)

INDICATOR: Economist Commodity Price Index

What it is:
This is an index of commodity with a very long history. It was first published in 1864, and offers data going back to 1845.

Why it's important:
It consists of 25 different commodities but excludes oil and precious metals which are a large component of other commodity indexes. About half its weight comes from food prices and the other half consists of industrial components, which are the raw materials of consumer items. It is probably the best index to measure consumer inflation in real-time.

Data Source:
By subscription from www.economist.com.

INDICATOR: ECRI Future Inflation Gauge

What it is:
A proprietary tool of the Economic Cycle Research Institute that is designed to predict cyclical turning points in inflation.

Why it's important:
Inflation is a key driver of interest rates and spotting trend changes before they occur can help investors anticipate potential policy moves by the Federal Reserve.

Data Source:
By subscription from www.business cycle.com, but the recent values are reported by major businesses news media outlets.

INDICATOR: ECRI Weekly Leading Index

What it is:
A composite index key weekly economic series. The weekly frequency of the WLI makes it a very timely gauge of the economy's direction.

Why it's important:
It is designed to spot changes in the trend of the business cycle before they occur.

Data Source:
By subscription from www.business cycle.com, but the recent values are reported by major businesses news media outlets.

INDICATOR: Employment Advertising

What it is:
The Conference Board Help-Wanted Online Data Series™ measures the number of new, first-time online jobs and jobs reposted from the previous month on more than 1,200 major Internet job boards and smaller job boards that serve niche markets and smaller geographic areas.

It is the successor to The Conference Board's long-running Help-Wanted Advertising Index of print ads (which was published for over 55 years and discontinued in August 2008), the new online series is not a direct measure of job vacancies. The level of ads in both print and online may change for reasons not related to overall job demand.

Why it's important:
A strong job market is critical to a growing economy. This Index provides a valuable insight into the thinking of employers and changes in the trend of employment advertising often lead changes in the trend of unemployment.

Data Source:
http://www.conference-board.org/economics/helpwanted.cfm

INDICATOR: Exports

What it is:
A measure of the amount of goods U.S. manufacturers send overseas.

Why it's important:
This represents a measure of the amount of excess manufacturing capacity in the country and the relative competitiveness of U.S. goods. It should also increase as the value of the dollar declines.

Data Source:
U.S. Census Bureau (http://www.census.gov/foreign-trade/statistics/historical/index.html)

INDICATOR: Fed Funds Rate

What it is:
The interest rate at which depository institutions lend balances at the Federal Reserve to other depository institutions overnight.

Why it's important:

As one of the primary tools the Fed uses to set monetary policy, the Fed Funds Rate is a valuable indicator of the direction of Fed policy. It is also a benchmark used by commercial banks to set other rates for consumer loans.

Data Source:
The Federal Reserve (http://www.federalreserve.gov/fomc/fundsrate.htm)

INDICATOR: Hours Worked

What it is:
A component of the Employment Situation report, this indicator tracks the average number of hours worked in a week by different categories of employees.

Why it's important:
Growth in the number of hours worked provides important information about the current and most likely future pace of overall economic growth.

Data Source:
Bureau of Labor Statistics (http://www.bls.gov/news.release/empsit.t15.htm)

INDICATOR: Housing Starts

What it is:
An estimate of the number of housing units on which construction was started.

Why it's important:
According to the Federal Reserve, "Housing is perhaps the most interest-rate sensitive sector of the economy. It often experiences large swings in activity in response to changes in the level of long-term interest rates such as those on mortgages. While residential investment represents just four percent of the level of GDP, due to its volatility it frequently represents a much higher proportion of changes in GDP over relatively short periods of time. Policy makers monitor the housing sector very carefully for clues about the near-term performance of the economy and for the effects of changes in financial conditions.[48]"

Data Source:
http://research.stlouisfed.org/fred2/

INDICATOR: Imports

What it is:
A measure of the amount of goods the U.S. buys from overseas.

Why it's important:
It's a measure of ultimate consumer demand. Labor tends to be cheaper overseas and importing goods made at lower cost shows that the consumer is spending and that should contribute to healthy corporate profits.

Data Source:
U.S. Census Bureau (http://www.census.gov/foreign-trade/statistics/historical/index.html)

INDICATOR: Industrial Production

What it is:
An index that measures changes in the activity of the industrial sector of the economy.

Why it's important:
The industrial sector accounts for about 20% of GDP and is a key barometer of the health of the economy and the business cycle.

Data Source:
www.federalreserve.gov/releases/g17/Current/default.htm

INDICATOR: Inventories

What it is:
The dollar value of the goods that businesses are holding as inventory (which means that is available for sale in the case of retailers, or as an input to the production process in the case of manufacturers).

Why it's important:
Inventory levels provide insight into future manufacturing demand. If inventories are rising faster than sales, new orders to manufacturers are likely to decline. Inventory levels that are below normal or lagging sales bodes well for future manufacturing activity.

Data Source:
Census Bureau (http://www.census.gov/mtis/www/data/text/mtis-inventory.txt).

INDICATOR: ISM Purchasing Managers' Index

What it is:
The Institute of Supply Management publishes a variety of economic data. Among the most useful is the PMI which reflects the current view of the economy from supply chain professionals. It is a composite index of the data collected from the manufacturing sector.

Why it's important:
Most economists and many investors pay attention to this report because it offers a reliable and timely of the state of the economy. Alan Greenspan, Ph.D., former chairman of the Federal Reserve Board, has said of the ISM Manufacturing Report On Business®, "I find the surveys conducted by the purchasing and supply managers to be an excellent supplement to the data supplied by various departments and agencies of government."[49] A reading above 50 percent indicates that the manufacturing economy is generally expanding; below 50 percent indicates that it is generally contracting.[50]

Data Source:
The Institute of Supply Management monthly reports can be obtained from http://www.ism.ws/ismreport/.

INDICATOR: ISM Non-Manufacturing Index

What it is:
The composite index for the non-manufacturing sector includes valuable data on the 80% of the economy which consists of providing services and other activities.

Why it's important:
ISM reports offer valuable economic insights. Just like the PMI, a reading above 50 percent indicates the non-manufacturing sector economy is generally expanding; below 50 percent indicates the non-manufacturing sector is generally contracting.

Data Source:
The Institute of Supply Management monthly reports can be obtained from http://www.ism.ws/ismreport/

INDICATOR: Journal of Commerce - Economic Cycle Research Institute Industrial Price Index

What it is:
The JOC-ECRI Industrial Price Index is a composite index of the prices of 18 industrial commodities including crude oil, and is designed to be a leading indicator of inflation.

Why it's important:
This index is designed to be a leading indicator of inflation rates. The index is based on prices of a broad assortment of raw materials used in industrial production, and ignores food, focusing solely on industrial inputs. That makes it less erratic than indicators which include food prices like the CPI or the Economist Commodity Price Index.

Data Source:
The Journal of Commerce offers this index by subscriptions (www.joc.com).

INDICATOR: Leading Economic Indicators (LEI)

What it is:
The index is a weighted composite of ten other economic indicators that is designed to signal changes in the business cycle before they occur. It includes, in order of importance:

1. The interest rate spread between 10-year Treasury notes and the federal funds rate.
2. The inflation-adjusted, M2 measure of the money supply.
3. The average manufacturing workweek.
4. Manufacturers' new orders for consumer goods and materials.
5. The S&P 500 measure of stock prices.
6. The vendor performance component of the NAPM index.
7. The average level of weekly initial claims for unemployment insurance.
8. Building permits.
9. The University of Michigan index of consumer expectations.
10. Manufacturers' new orders for nondefense capital goods.

Why it's important:
The trend in the indicator is usually in line with the trend of the economy. Divergences indicate that additional caution is warranted by investors.

Data Source:
The data is available by subscription from The Conference Board (http://www.conference-board.org/economics/bci/pressRelease_output.cfm?cid=1)

INDICATOR: Money Supply (M2)

What it is:
A measure of the amount of money in circulation that includes cash and most bank deposits.

Why it's important:
Some economists believe that the supply of money is directly related to inflation. Most notably, Milton Friedman said that "inflation is always and everywhere a monetary phenomenon." Watching the money supply can allow investors to spot inflationary pressures in the economy.

Data Source:
The Federal Reserve (research.stlouisfed.org/fred2/series/M2)

INDICATOR: Monster Employment Index

What it is:
A broad monthly report of online job advertisements

Why it's important:
Employers are most likely to advertise positions online and this indicator reacts quickly to hiring trends.

Data Source:
Monster.com offers a national and regional reports at http://hiring.monster.com/hr/hr-best-practices/market-intelligence.aspx

INDICATOR: Mortgage Applications

What it is:
A weekly compilation of financing applications.

Why it's important:
Mortgage financings indicate the level of activity within the housing market, which is a key driver of the economy. Reviewing this report also offers insight into consumer sentiment as the type of loans being applied for may be used to assess consumers' risk appetite (fixed rate loans tend to indicate lower risk tolerance than adjustable products).

Data Source:
The data is available to subscribers at http://www.mbaa.org/ResearchandForecasts/ProductsandSurveys/WeeklyApplicationSurvey

INDICATOR: New Orders

What it is:
A component of the Advance Durable Goods Shipments, New Orders and Unfilled Orders report that highlights the value of new orders placed with manufacturers over the past month.

Why it's important:
This indicator provides information on the demand for manufactured goods. Rising orders show that demand is strengthening, and this is likely to lead to an increase in production and employment.

Data Source:
The Census Bureau provides the report at http://www.census.gov/manufacturing/m3/

INDICATOR: Personal Consumption Expenditures

What it is:
This is a part of the personal income report which shows how much and where consumers are spending. It offers information on three categories of spending: durables, nondurables, and services. Analysts can spot subtle shifts in consumer behavior and forecast their impact on the business cycle by using this indicator.

Why it's important:
During a recession, consumers stop spending, which then adversely impacts a number of other economic indicators. Consumer spending is a valuable coincident indicator which can be used to confirm a suspected change in the business cycle.

Data Source:

http://www.bea.gov/newsreleases/national/pi/pinewsrelease.htm

INDICATOR: Price of a Gallon of Gasoline

What it is:
The market price of a gallon of unleaded gasoline.

Why it's important:
The price of gasoline represents a small part of consumer expenses but has a deep psychological impact on consumer sentiment. Economist Barry Ritholtz has shown that there is an inverse relationship between Presidential approval rating and the price of gasoline.[51]

Data Source:
AAA reports on national and regional trends at http://www.google.com/search?q=gas+prices+aaa&rls=com.microsoft:en-us:IE-SearchBox&ie=UTF-8&oe=UTF-8&sourceid=ie7&rlz=1I7GWYE

INDICATOR: Price of Oil

What it is:
The market price of a barrel of oil.

Why it's important:
Many economists contend that recessions in the 1970's, 1980's, and 1990's were caused, in part, by spikes in the price of oil. Recently, the price of oil has been tied to the level of economic activity in emerging markets such as India and China.

Data Source:
Many commercial data vendors offer the price of oil along with those of other futures contract.

INDICATOR: Prime Rate

What it is:
The interest rate charged by banks to their most creditworthy customers. The Prime Rate is almost always the at all major banks. It is usually reset by all banks at the same time and is usually adjusted at the same time and in direct correlation to changes in the Fed Funds Rate.

Why it's important:
Many loans are priced in relation to the Prime Rate and it is a key interest rate for consumers and businesses. Trends in this indicator mirror trends in other interest rates.

Data Source:
research.stlouisfed.org/fred2/data/PRIME.txt

INDICATOR: Producer Price Index

What it is:
A measure of prices at the wholesale level.

Why it's important:
There are three categories reported under this indicator - crude, intermediate, and finished. The index for prices at the intermediate stage of production often provides an early indication of building inflationary pressures.

Data Source:
http://stats.bls.gov/news.release/ppi.toc.htm

INDICATOR: Productivity

What it is:

A measurement of the relative amount of output per unit of input. In this case, it quantifies the value of what is being produced in the economy for a given amount of labor.

Why it's important:
When the markets are worried about inflation, this report offers early insights into whether or not those concerns are justified. If productivity is declining, labor costs may be rising faster and this is considered to be the first report that will reveal those inflationary trends.

Data Source:
http://data.bls.gov/PDQ/servlet/SurveyOutputServlet?data_tool=latest_numbers&series_id=PRS85006092

INDICATOR: Real Disposable Personal Income

What it is:
Inflation adjusted disposable personal income.

Why it's important:
Similar to Disposable Personal Income (above).

Data Source:
http://www.bea.gov/newsreleases/national/pi/pinewsrelease.htm

INDICATOR: Real Personal Consumption Expenditures

What it is:
Inflation adjusted personal consumption expenditures.

Why it's important:
Similar to Personal Consumption Expenditures (above).

Data Source:
http://www.bea.gov/newsreleases/national/pi/pinewsrelease.htm

INDICATOR: Retail Sales

What it is:
The total receipts of sales at all retail stores. Retail sales do not include spending on services, which accounts for more than half of total consumer spending.

Why it's important:
Changes in retail sales offer timely indicator of broad consumer spending patterns. It is expected to lead peaks and troughs in the business by a short time.

Data Source:
U.S. Census Bureau (http://www.census.gov/retail/)

INDICATOR: S&P 500 operating earnings

What it is:
The aggregate level of earnings generated by the businesses of the companies that comprise the S&P 500 Index.

Why it's important:
Earnings reflect the fortunes of corporate America. They generally rise and fall in line with the business cycle and should lag turning points in the economy.

Data Source:

Professor Robert Shiller provides a large amount of data on his web site, including this indicator (http://www.econ.yale.edu/~shiller/data.htm)

INDICATOR: Unemployment Claims

What it is:
A compilation of new claims filed for unemployment insurance over the previous week.

Why it's important:
Weekly data is more timely than monthly data and this report offers a weekly glimpse into the labor market. Hiring trends will be apparent here first and allow analysts to anticipate the data that will be seen in the monthly reports.

Data Source:
This data is maintained by the Department of Labor and is available at http://www.ows.doleta.gov/unemploy/claims.asp

INDICATOR: Unemployment rate

What it is:
An estimate of the percentage of people who unemployed after considering the total number of payroll jobs at all businesses and government agencies and the number of people who want jobs.

Why it's important:
The rate of change of employment provides valuable information about the current and likely future pace of economic growth.

Data Source:

The Bureau of Labor Statistics provides this information at http://data.bls.gov/PDQ/servlet/SurveyOutputServlet?data_tool=latest_numbers&series_id=LNS14000000.

APPENDIX B:
SUMMARY OF REGRESSION ANALYSIS

These are the indicators that we studied in preparing this book. The results we obtained are provided for those who want to analyze the data for themselves.

In the first column, the indicator and timeframe analyzed are listed. Indicators identified in shaded boxes are the ones that we found to have significant relationships with the stock market.

The lead/lag column shows the amount of time we varied the relationship by. Coincident data is when we used the economic data series in the month it was reported for. Leading time spans use the value of the stock market three, six, or nine months after the economic data series is reported. Lagging time frames show the relationship between the stock market and the economic indicator where the economic indicator is delayed by the various timeframes.

The coefficient/slope is the mathematical definition of the relationship. A positive number shows that the regression line moves upward towards the right. A negative number defines an inverse relationship where the line falls downward to the right hand side of the regression plot.

Covariance reflects the degree to which the two data series move together. We included this test to ensure that we were using data which was independent of each other. A high value in this column would show that the market and the economic data series moved in lock step and forecasting signals would be unreliable.

P-values were described in detail in Chapter 10. The ones shown in shaded fields are those that are not statistically significant.

T-stat shows the t-statistic, another test for statistical significance. It was used to confirm the P-values.

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
10 Yr Govt Bond	**Coincident**	0.023900308	0.000599	0.000299425	0.527762	0.631758
(4/1953-5/2009)	**3 Mo Lead**	-0.194070453	0.038957	-0.002407161	2.88E-07	-5.18418
	6 Mo Lead	-0.193681043	0.037018	-0.002298957	6.11E-07	-5.03695
	9 Mo Lead	-0.054020606	0.002893	-0.000643126	0.167886	-1.38055
	3 Mo Lag	0.211632072	0.047879	0.002647175	1.19E-08	5.774062
	6 Mo Lag	0.157740906	0.027906	0.001961241	1.56E-05	4.352804
	9 Mo Lag	0.068055188	0.005383	0.00084541	0.059768	1.88576
30 Yr Conv Mortgage	**Coincident**	-0.191579734	0.022291	-0.001495407	0.001456	-3.20309
(4/1971-5/2009)	**3 Mo Lead**	-0.345007624	0.070142	-0.002619048	1.21E-08	-5.80675
	6 Mo Lead	-0.180379961	0.018547	-0.001332477	0.003958	-2.89664
	9 Mo Lead	-0.015494969	0.000137	-0.000115157	0.805681	-0.24615
	3 Mo Lag	0.144317237	0.013085	0.001133248	0.015305	2.434444
	6 Mo Lag	0.16075981	0.017582	0.001269063	0.005034	2.818905
	9 Mo Lag	0.09208598	0.006111	0.000731332	0.100335	1.646685
Aluminum	**Coincident**	0.296417163	0.404339	0.020295381	2.58E-16	9.393882
(1/1998-6/2009)	**3 Mo Lead**	0.252643975	0.3011	0.017515495	1.67E-11	7.396892
	6 Mo Lead	0.098509896	0.036518	0.005553647	0.032076	2.167904
	9 Mo Lead	-0.004193496	5.18E-05	-0.000185383	0.937044	-0.07915
	3 Mo Lag	0.211806416	0.22294	0.014725181	1.61E-08	6.036271
	6 Mo Lag	0.110010408	0.075495	0.007824063	0.001848	3.182104
	9 Mo Lag	0.054224803	0.022005	0.003914917	0.101536	1.650002
Auto Sales	**Coincident**	0.10619744	0.037035	0.004146406	0.000119	3.887751
(1/1976-5/2009)	**3 Mo Lead**	-6.65398E-05	1.45E-08	-2.60698E-06	0.998105	-0.00238
	6 Mo Lead	-0.027432363	0.002388	-0.001049781	0.336442	-0.96241
	9 Mo Lead	0.045832995	0.006485	0.001715017	0.114204	1.583178
	3 Mo Lag	0.086810876	0.025663	0.003389649	0.001462	3.204996
	6 Mo Lag	-0.001476306	8.22E-06	-5.79161E-05	0.955064	-0.05639

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
	9 Mo Lag	-0.011099738	0.000496	-0.000434162	0.66259	-0.43668
Ave Hourly Earnings	Coincident	0.689358734	0.00701	0.000117005	0.070971	1.809816
(1/1964-4/2003)	3 Mo Lead	0.68000732	0.006805	0.000115812	0.076196	1.77719
	6 Mo Lead	0.08887302	0.000115	1.50913E-05	0.818449	0.229672
	9 Mo Lead	-0.946082736	0.01301	-0.000161188	0.014703	-2.44896
	3 Mo Lag	0.737808542	0.007951	0.000124379	0.0552	1.922171
	6 Mo Lag	1.110605782	0.018139	0.000187499	0.003805	2.908798
	9 Mo Lag	0.854116417	0.011102	0.000144516	0.024287	2.2601
Baa Corp Bond Spread	Coincident	-0.787264656	0.212902	-0.004668018	5.39E-58	-17.068
(1/1919-5/2009)	3 Mo Lead	-0.803248518	0.220854	-0.00474476	3.25E-60	-17.448
	6 Mo Lead	-0.448987981	0.068304	-0.002630511	3.24E-18	-8.86097
	9 Mo Lead	-0.317927251	0.033305	-0.001813484	1.82E-09	-6.06589
	3 Mo Lag	-0.231731708	0.01881	-0.001377757	6.33E-06	-4.53758
	6 Mo Lag	-0.058094762	0.001208	-0.000345624	0.255261	-1.13827
	9 Mo Lag	-0.052740675	0.000998	-0.000313148	0.301781	-1.03312
Building Permits	Coincident	0.30071662	0.186405	0.00752459	4.72E-28	11.57718
(1/1960-5/2009)	3 Mo Lead	0.252301361	0.128911	0.006225587	3.29E-19	9.280602
	6 Mo Lead	0.133566664	0.034655	0.003174425	6.27E-06	4.559119
	9 Mo Lead	0.048437138	0.004482	0.001136935	0.107849	1.610442
	3 Mo Lag	0.174402218	0.065966	0.004381123	2.99E-10	6.411229
	6 Mo Lag	0.021553208	0.001076	0.000543918	0.430029	0.789695
	9 Mo Lag	-0.087506331	0.018107	-0.00221932	0.001183	-3.25912
Commodity Index	Coincident	0.389632176	0.058753	0.001932508	5.89E-05	4.082446
(7/1986-5/2009)	3 Mo Lead	0.03701694	0.000471	0.000162139	0.724723	0.352529
	6 Mo Lead	-0.421974567	0.040248	-0.001198426	0.00107	-3.30836
	9 Mo Lead	-0.410699695	0.031371	-0.000958037	0.004172	-2.89065
	3 Mo Lag	0.353837519	0.051352	0.001773266	0.000194	3.780325
	6 Mo Lag	0.214337499	0.021771	0.001085181	0.01664	2.410103
	9 Mo Lag	0.236341366	0.029551	0.001207728	0.005449	2.802926

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
Consumer Confidence	Coincident	0.433475459	0.169981	0.004810644	1.07E-16	8.704751
(1/1978-6/2009)	3 Mo Lead	0.289730061	0.074247	0.00315764	1.05E-07	5.425317
	6 Mo Lead	0.067664905	0.004024	0.000735066	0.226021	1.212726
	9 Mo Lead	0.103181495	0.009345	0.001125478	0.065798	1.845402
	3 Mo Lag	0.137725583	0.017946	0.001538745	0.009987	2.589734
	6 Mo Lag	-0.064080551	0.004295	-0.000714605	0.210976	-1.25309
	9 Mo Lag	-0.040447079	0.001838	-0.000449987	0.415368	-0.81542
Consumer Debt (NSA)	Coincident	-0.200186123	0.007483	-0.000421995	0.015013	-2.43742
(1/1943-4/2009)	3 Mo Lead	-0.235782767	0.010332	-0.000494374	0.004312	-2.86275
	6 Mo Lead	-0.186734101	0.006477	-0.00039214	0.024226	-2.25791
	9 Mo Lead	-0.233514141	0.010124	-0.000491533	0.004885	-2.82259
	3 Mo Lag	0.071474847	0.00095	0.000144313	0.387952	0.863818
	6 Mo Lag	0.280650713	0.015155	0.000558236	0.000551	3.468971
	9 Mo Lag	0.269231956	0.013863	0.000525391	0.000979	3.309206
Consumer Price Index	Coincident	0.056359956	0.000157	4.66647E-05	0.670989	0.424901
(1/1913-6/2009)	3 Mo Lead	-0.370572437	0.006789	-0.000307236	0.005194	-2.80012
	6 Mo Lead	-0.502487708	0.012397	-0.0004144	0.000159	-3.78951
	9 Mo Lead	-0.377526222	0.006966	-0.000310668	0.004749	-2.82913
	3 Mo Lag	0.368824004	0.006731	0.000306144	0.005393	2.787878
	6 Mo Lag	0.502391942	0.012779	0.000417825	0.000126	3.84823
	9 Mo Lag	0.649945303	0.021848	0.000541377	5.19E-07	5.04827
Consumer Price Index	Coincident	-1.114421379	0.02578	-0.000276417	3.06E-05	-4.19811
(4/1953-5/2009)	3 Mo Lead	-1.156454686	0.027201	-0.000282056	1.92E-05	-4.30566
	6 Mo Lead	-1.00198744	0.019254	-0.000231136	0.000343	-3.5996
	9 Mo Lead	-0.625896406	0.007476	-0.000143468	0.026446	-2.22461
	3 Mo Lag	-0.902966746	0.017322	-0.000224469	0.000668	-3.41864
	6 Mo Lag	-0.741589939	0.012317	-0.000184121	0.004251	-2.86886
	9 Mo Lag	-0.58207777	0.007838	-0.000143914	0.023032	-2.27825
Copper	Coincident	0.001247883	0.002565	0.027022446	0.290797	1.057661

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
(8/1972-6/2009)	3 Mo Lead	0.001187508	0.002323	0.025891617	0.316448	1.002947
	6 Mo Lead	0.001436814	0.003431	0.031542603	0.224897	1.215361
	9 Mo Lead	0.000940122	0.001476	0.020781034	0.427921	0.793513
	3 Mo Lag	0.000989818	0.001621	0.021575893	0.402791	0.83747
	6 Mo Lag	2.59901E-05	1.21E-06	0.000569652	0.981808	0.022815
	9 Mo Lag	-0.001238982	0.001017	-0.009265888	0.510593	-0.65847
Crude Oil	Coincident	0.438840741	0.07518	0.00218036	4.63E-06	4.676273
(6/1986-6/2009)	3 Mo Lead	0.185480931	0.01336	0.000922331	0.058795	1.897878
	6 Mo Lead	-0.261919597	0.021288	-0.001023886	0.017472	-2.39173
	9 Mo Lead	-0.546434036	0.058687	-0.001338795	7.44E-05	-4.02614
	3 Mo Lag	0.250541446	0.024676	0.001257659	0.010007	2.594193
	6 Mo Lag	0.139361477	0.008817	0.000706692	0.127325	1.529571
	9 Mo Lag	0.231738647	0.0285	0.001186077	0.006159	2.761752
Disposable Personal Income	Coincident	0.336122812	0.002659	9.45507E-05	0.207582	1.261609
(1/1959-5/2009)	3 Mo Lead	-0.443459095	0.004607	-0.000124716	0.097826	-1.6581
	6 Mo Lead	-0.814419917	0.015068	-0.000223121	0.002751	-3.0069
	9 Mo Lead	-0.577787159	0.007316	-0.000153097	0.037802	-2.0817
	3 Mo Lag	0.291278637	0.002048	8.21709E-05	0.26997	1.104162
	6 Mo Lag	0.09039784	0.000209	2.54831E-05	0.725284	0.351573
	9 Mo Lag	0.466742282	0.005823	0.000132058	0.063976	1.855845
Domestic Nonfinancial Sectors-Total Debt	Coincident	-0.227903422	0.000952	-4.53393E-05	0.486573	-0.69628
(2/1959-2/2002)	3 Mo Lead	-0.14037843	0.000361	-2.80686E-05	0.669216	-0.42747
	6 Mo Lead	-0.149077344	0.000406	-2.98724E-05	0.651395	-0.4521
	9 Mo Lead	-0.237328158	0.001024	-4.73972E-05	0.474458	-0.71579
	3 Mo Lag	-0.041113993	3.12E-05	-8.22574E-06	0.900136	-0.12555
	6 Mo Lag	0.366408915	0.002505	7.37391E-05	0.261596	1.123889
	9 Mo Lag	0.453503081	0.003857	9.13997E-05	0.164738	1.391351
ECRI Weekly Leading Index	Coincident	2.041487942	0.588376	0.00365702	1.26E-98	26.76063
(1/1967-5/2009)	3 Mo Lead	1.325675251	0.240583	0.002311082	1.26E-31	12.56051

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
	6 Mo Lead	0.252981799	0.007798	0.000394735	0.049119	1.97241
	9 Mo Lead	0.03137244	0.000111	4.53401E-05	0.815718	0.233181
	3 Mo Lag	1.284356532	0.241236	0.002262069	1.01E-31	12.58296
	6 Mo Lag	0.3431495	0.018351	0.000601272	0.002475	3.041999
	9 Mo Lag	0.076956342	0.000944	0.00013548	0.495674	0.68182
Employment Advertising	Coincident	0.206926688	0.059667	0.002983599	1.3E-10	6.529968
	3 Mo Lead	-0.050657454	0.003524	-0.000722789	0.124496	-1.5381
	6 Mo Lead	-0.18824472	0.048607	-0.002694087	8.49E-09	-5.83317
	9 Mo Lead	-0.216400675	0.064258	-0.003110191	3.28E-11	-6.74752
	3 Mo Lag	0.367498155	0.188168	0.005319715	3.68E-32	12.45238
	6 Mo Lag	0.35748554	0.178123	0.005197396	3.11E-30	12.01417
	9 Mo Lag	0.29583371	0.122325	0.0043192	1.44E-20	9.612738
Export of Goods	Coincident	0.862420011	0.251514	0.003774299	2.9E-14	8.197923
(1/1992-4/2009)	3 Mo Lead	0.655409112	0.109515	0.002193634	1.8E-06	4.922177
	6 Mo Lead	0.084563921	0.001289	0.000203192	0.617325	0.50045
	9 Mo Lead	-0.061298301	0.000665	-0.000146684	0.721852	-0.35651
	3 Mo Lag	0.699599433	0.199002	0.003094411	4.02E-11	6.995933
	6 Mo Lag	0.44338449	0.098993	0.001983301	7.08E-06	4.616786
	9 Mo Lag	0.3057699	0.048098	0.001386575	0.002181	3.106604
Export of Services	Coincident	1.108506154	0.221276	0.002606174	1.62E-12	7.538593
(1/1992-4/2009)	3 Mo Lead	0.360079311	0.020592	0.00075755	0.043172	2.035179
	6 Mo Lead	-0.093524023	0.001254	-0.000180169	0.622229	-0.49348
	9 Mo Lead	0.285101236	0.011604	0.000554783	0.135932	1.49743
	3 Mo Lag	0.957840614	0.189989	0.002276659	1.24E-10	6.797542
	6 Mo Lag	0.67437603	0.115515	0.001618397	1.1E-06	5.033545
	9 Mo Lag	0.497235001	0.067666	0.001211457	0.000259	3.723199
Fed Funds Rate	Coincident	0.065374269	0.036621	0.006707749	8.38E-07	4.974599
(7/1954-5/2009)	3 Mo Lead	-0.001850981	2.88E-05	-0.000185102	0.891452	-0.13652
	6 Mo Lead	-0.016528138	0.002209	-0.001590566	0.232562	-1.19491

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
	9 Mo Lead	-0.00056474	2.54E-06	-5.35181E-05	0.967773	-0.04042
	3 Mo Lag	0.105391345	0.099038	0.010774852	2.08E-16	8.43984
	6 Mo Lag	0.090616565	0.076685	0.00917375	1.43E-19	9.349172
	9 Mo Lag	0.047320599	0.021121	0.004768325	6.31E-21	9.719953
Gasoline Prices	Coincident	0.058237162	0.012779	0.002667359	0.04674	1.996682
(3/1983-6/2009	3 Mo Lead	0.022478985	0.001875	0.00102248	0.449655	0.756965
	6 Mo Lead	0.020216456	0.001376	0.000840501	0.51934	0.645118
	9 Mo Lead	-0.061621472	0.011925	-0.002395179	0.05844	-1.89966
	3 Mo Lag	0.10650364	0.043038	0.004923388	0.000252	3.703623
	6 Mo Lag	0.112171226	0.054561	0.005230803	3.91E-05	4.174744
	9 Mo Lag	0.08115289	0.032961	0.003816825	0.001561	3.192382
Hours Worked	Coincident	5.63318369	0.073986	0.000160383	1.3E-10	6.556251
(1/1964-6/2009)	3 Mo Lead	2.325963124	0.012449	6.56608E-05	0.009664	2.596952
	6 Mo Lead	-0.591428996	0.000787	-1.64159E-05	0.517647	-0.64741
	9 Mo Lead	-1.59757665	0.005681	-4.41018E-05	0.08269	-1.73858
	3 Mo Lag	8.113776842	0.157166	0.000230848	1.18E-21	9.98816
	6 Mo Lag	7.455071805	0.142055	0.000212994	1.81E-19	9.385431
	9 Mo Lag	4.368024068	0.050759	0.000124328	1.55E-07	5.318612
Housing Starts (2-4 Units)	Coincident	0.042135731	0.01819	0.005245062	0.001617	3.168814
(8/1963-5/2009)	3 Mo Lead	0.025642867	0.006669	0.003172859	0.057668	1.902273
	6 Mo Lead	0.013958601	0.001967	0.001725795	0.304497	1.027823
	9 Mo Lead	0.003512209	0.000124	0.000435593	0.796986	0.257379
	3 Mo Lag	0.054899584	0.031595	0.006823819	3.21E-05	4.193463
	6 Mo Lag	0.015334891	0.002633	0.001909498	0.234746	1.18956
	9 Mo Lag	-0.019857568	0.004621	-0.002476907	0.1163	-1.57305
Housing Starts Total	Coincident	0.295700445	0.17228	0.00696496	2.4E-26	11.14713
(1/1959-5/2009)	3 Mo Lead	0.250742248	0.12102	0.005794091	2.14E-18	9.043392
	6 Mo Lead	0.120085274	0.02661	0.002672248	6.59E-05	4.019485
	9 Mo Lead	0.026832256	0.001311	0.000591034	0.380039	0.878486

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
	3 Mo Lag	0.182001303	0.068586	0.004300012	8.37E-11	6.613623
	6 Mo Lag	0.029416567	0.001909	0.000697056	0.288085	1.063289
	9 Mo Lag	-0.082207471	0.015132	-0.001946031	0.002763	-3.00568
Import of Goods	Coincident	0.729149647	0.217819	0.003900199	2.54E-12	7.462932
(1/1992-4/2009)	3 Mo Lead	0.444354835	0.050886	0.00151697	0.001357	3.249931
	6 Mo Lead	0.149416604	0.003481	0.00031308	0.411429	0.823158
	9 Mo Lead	0.208301149	0.006605	0.000432248	0.26118	1.126944
	3 Mo Lag	0.747333899	0.263645	0.004049181	8.83E-15	8.398446
	6 Mo Lag	0.498985364	0.14477	0.002741207	3.78E-08	5.730588
	9 Mo Lag	0.42706538	0.1139	0.00237427	1.59E-06	4.954938
Import of Services	Coincident	1.473702372	0.25819	0.002267373	1.17E-14	8.343306
(1/1992-4/2009)	3 Mo Lead	0.747360747	0.051102	0.000897648	0.001325	3.25717
	6 Mo Lead	-0.128083245	0.001306	-0.000135901	0.61504	-0.5037
	9 Mo Lead	0.318741947	0.008019	0.000340174	0.215539	1.242598
	3 Mo Lag	1.251918409	0.223527	0.001942341	1.78E-12	7.530702
	6 Mo Lag	0.950677943	0.159468	0.001490056	6.71E-09	6.066805
	9 Mo Lag	0.715689385	0.090813	0.001118485	2.06E-05	4.367809
Industrial Production Index	Coincident	0.833021308	0.212466	0.004402576	7.27E-58	17.04582
(1/1919-5/2009)	3 Mo Lead	0.489318714	0.073148	-0.002579679	1.71E-19	9.206543
	6 Mo Lead	0.080230562	0.001957	0.00042169	0.147626	1.449014
	9 Mo Lead	-0.003354562	3.42E-06	-1.76311E-05	0.951844	-0.06041
	3 Mo Lag	0.517505341	0.083125	0.002726324	4.82E-22	9.867622
	6 Mo Lag	0.395358283	0.049554	0.002082833	1.63E-13	7.472613
	9 Mo Lag	0.320076821	0.032677	0.001688823	2.6E-09	6.006484
ISM Manufacturing	Coincident	0.27841081	0.200539	0.008207953	2.18E-37	13.532
(1/1948-6/2009)	3 Mo Lead	0.159468845	0.065492	0.004688272	2.3E-12	7.137915
	6 Mo Lead	0.052235531	0.006973	0.001527821	0.024448	2.254727
	9 Mo Lead	-0.004967309	6.27E-05	-0.000144235	0.831736	-0.21255
	3 Mo Lag	0.180793707	0.08658	0.005346991	5.01E-16	8.301199

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
	6 Mo Lag	-0.004802839	6.42E-05	-0.000141646	0.829386	-0.21557
	9 Mo Lag	-0.090804263	0.023583	-0.002657638	3.37E-05	-4.17302
ISM Non Manufacturing	Coincident	0.505148713	0.195486	0.00579786	5.66E-08	5.748585
(7/1997-6/2009)	3 Mo Lead	0.39259124	0.106847	0.004126548	0.000109	3.988822
	6 Mo Lead	-0.025208654	0.000437	-0.000257889	0.811957	-0.23839
	9 Mo Lead	-0.031973574	0.00062	-0.000285165	0.779334	-0.28078
	3 Mo Lag	-0.009233987	7.07E-05	0.003438881	0.922905	-0.09696
	6 Mo Lag	-0.196645051	0.039897	-0.002341927	0.021664	-2.32424
	9 Mo Lag	-0.16878203	0.035085	-0.002039673	0.033538	-2.14892
M2 Money Stock	Coincident	0.745198002	0.013885	0.000222703	0.003877	2.899347
(1/1959-5/2009)	3 Mo Lead	0.502876592	0.006227	0.000148639	0.054184	1.929185
	6 Mo Lead	-0.380102192	0.003491	-0.000110764	0.150702	-1.43892
	9 Mo Lead	-0.919938914	0.020418	-0.000268359	0.000499	-3.50086
	3 Mo Lag	0.346078929	0.00307	0.000103674	0.176702	1.352587
	6 Mo Lag	-0.078506774	0.000168	-2.36054E-05	0.752625	-0.31533
	9 Mo Lag	-0.282912455	0.002268	-8.48579E-05	0.248086	-1.15616
New Orders (Durable Goods)	Coincident	1.122260677	0.334757	0.003894425	1.92E-19	10.03205
(2/1992-5/2009)	3 Mo Lead	1.050586285	0.252873	0.003188431	3.77E-14	8.165579
	6 Mo Lead	0.932364732	0.139407	0.002009571	7.05E-08	5.605894
	9 Mo Lead	0.820492642	0.09505	0.001579089	1.29E-05	4.478981
	3 Mo Lag	0.841974036	0.217146	0.002960161	4.03E-12	7.392107
	6 Mo Lag	0.494837696	0.092302	0.001762368	1.5E-05	4.441551
	9 Mo Lag	0.344884645	0.047926	0.001237065	0.002223	3.100737
New Orders (Non Defense)	Coincident	0.965164348	0.298438	0.004037013	4.12E-17	9.223782
(2/1992-5/2009)	3 Mo Lead	0.815645893	0.18647	0.003028406	1.91E-10	6.719715
	6 Mo Lead	0.730431663	0.116029	0.002134967	1.03E-06	5.046212
	9 Mo Lead	0.701482885	0.101773	0.001977647	6.13E-06	4.652013
	3 Mo Lag	0.840516671	0.258923	0.003535797	1.67E-14	8.296346
	6 Mo Lag	0.53547487	0.129264	0.002280807	2.27E-07	5.366563

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
	9 Mo Lag	0.376514659	0.068763	0.001625811	0.00023	3.755459
Nickel	Coincident	0.016068	0.002827	0.002262783	0.372021	0.894119
(5/1985-6/2009)	3 Mo Lead	0.027559026	0.008248	0.003883688	0.128836	1.523222
	6 Mo Lead	0.023826718	0.006253	0.003325266	0.188645	1.317855
	9 Mo Lead	0.038100725	0.015775	0.005205265	0.03738	2.091809
	3 Mo Lag	-0.034209966	0.01278	-0.004818648	0.058403	-1.90046
	6 Mo Lag	-0.024702277	0.007638	-0.003506033	0.146124	-1.45747
	9 Mo Lag	0.018838773	0.005162	0.002700236	0.235012	1.190174
Personal Consumption Expenditures	Coincident	3.539220731	0.152538	0.000515235	2.9E-23	10.3661
(1/1959-5/2009)	3 Mo Lead	1.903827709	0.043656	0.000275278	2.65E-07	5.207233
	6 Mo Lead	0.458521827	0.002448	6.43957E-05	0.228916	1.204402
	9 Mo Lead	0.122393244	0.000167	1.65435E-05	0.753844	0.313722
	3 Mo Lag	2.973793313	0.112857	0.000433038	3.44E-17	8.692811
	6 Mo Lag	1.922522669	0.050238	0.000280631	3.45E-08	5.591164
	9 Mo Lag	1.687117259	0.039438	0.000247139	1.16E-06	4.913393
Prime Rate	Coincident	-0.076606367	0.010743	-0.001604052	0.005405	-2.79037
(1/1949-5/2009)	3 Mo Lead	-0.123544157	0.027468	-0.002551849	8.28E-06	-4.49066
	6 Mo Lead	-0.034551698	0.002103	-0.000699464	0.221332	-1.22407
	9 Mo Lead	0.001880628	6.21E-06	3.80019E-05	0.947146	0.066314
	3 Mo Lag	0.096872495	0.017612	0.002036815	0.00037	3.577735
	6 Mo Lag	0.15314549	0.046604	0.003233406	5.78E-09	5.895364
	9 Mo Lag	0.11045071	0.025235	0.002341732	2.12E-05	4.281186
Private Investment (Quarterly v Dow)	Coincident	0.024707494	0.000138	5.90256E-05	0.854438	0.183653
(1st Quarter 1947-1st Q 2009)	3 Mo Lead	-0.22727693	0.010849	-0.000507641	0.103149	-1.6359
	6 Mo Lead	-0.20903398	0.009035	-0.000460307	0.137935	-1.48843
	9 Mo Lead	-0.212119377	0.009274	-0.000467213	0.133595	-1.50513
	3 Mo Lag	0.481520283	0.052673	0.001152149	0.000284	3.683309
	6 Mo Lag	0.706030972	0.114138	0.001635705	5.92E-08	5.595453
	9 Mo Lag	0.236341366	0.029551	0.001207728	0.005449	2.802926

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
	9 Mo Lag	0.561730512	0.073064	0.001269581	1.86E-05	4.367521
Producer Price (All Commodities)	Coincident	0.372430043	0.023915	0.001078328	1.34E-07	5.305834
(1/1913-5/2009)	3 Mo Lead	0.050146747	0.00043	0.000143775	0.482988	0.701734
	6 Mo Lead	-0.257684079	0.011053	-0.000738102	0.000366	-3.57423
	9 Mo Lead	-0.298819145	0.014791	-0.000834194	3.78E-05	-4.13699
	3 Mo Lag	0.38333888	0.025808	0.001112547	4.43E-08	5.509897
	6 Mo Lag	0.396389897	0.028228	0.001153355	1.07E-08	5.76211
	9 Mo Lag	0.416092063	0.03127	0.001211946	1.78E-09	6.066142
Producer Price (Finished Goods)	Coincident	-0.545045395	0.012989	-0.000269834	0.001902	-3.11637
(4/1947-5/2009)	3 Mo Lead	-0.541845745	0.012417	-0.000260484	0.00245	-3.03994
	6 Mo Lead	-0.610976545	0.015006	-0.000279179	0.000882	-3.33939
	9 Mo Lead	-0.809766892	0.026158	-0.000368325	1.11E-05	-4.4251
	3 Mo Lag	-0.365954101	0.005958	-0.000180666	0.03616	-2.09897
	6 Mo Lag	-0.15536414	0.001115	-7.56475E-05	0.366268	-0.90405
	9 Mo Lag	-0.061185894	0.000179	-2.97057E-05	0.718295	-0.36088
Real Disposable Personal Income	Coincident	1.177288587	0.023507	0.000238652	0.000165	3.791006
(1/1959-5/2009)	3 Mo Lead	0.058132581	5.69E-05	1.17599E-05	0.854134	0.183926
	6 Mo Lead	-0.515304293	0.00445	-0.000104144	0.104622	-1.62534
	9 Mo Lead	-0.380867353	0.002366	-7.51118E-05	0.23812	-1.1809
	3 Mo Lag	1.010575978	0.01778	0.000205588	0.001102	3.279086
	6 Mo Lag	0.597281807	0.006604	0.000121813	0.047924	1.982165
	9 Mo Lag	1.057541513	0.021652	0.000216707	0.000336	3.607369
Retail Sales	Coincident	0.369421499	0.007933	0.000231299	0.033348	2.133046
(4/1953-4/2001)	3 Mo Lead	-0.680252746	0.026819	-0.000426199	8.82E-05	-3.94938
	6 Mo Lead	-0.882209896	0.045037	-0.00055398	3.56E-07	-5.15281
	9 Mo Lead	-0.565113247	0.018554	-0.000355814	0.001208	-3.25374
	3 Mo Lag	0.968589137	0.054303	0.000594861	1.92E-08	5.700888
	6 Mo Lag	0.771190052	0.034154	0.000468823	9.81E-06	4.461888
	9 Mo Lag	0.342392077	0.006704	0.000207985	0.052387	1.944073

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
Retail Sales (Non Food Services)	**Coincident**	2.637762536	0.352566	0.001736801	9.94E-21	10.46215
(1/1992-5/2009)	**3 Mo Lead**	2.563575479	0.285135	0.001466001	3.88E-16	8.886808
	6 Mo Lead	2.684804055	0.187311	0.000933439	2.13E-10	6.704041
	9 Mo Lead	2.448348085	0.103932	0.00057615	4.56E-06	4.719058
	3 Mo Lag	1.874439346	0.204999	0.00125185	1.68E-11	7.145363
	6 Mo Lag	1.31529803	0.123904	0.000885594	3.93E-07	5.251514
	9 Mo Lag	1.253987454	0.120492	0.000851022	7.1E-07	5.128735
S&P 500 Earnings	**Coincident**	0.212578241	0.049258	0.003392492	7.34E-20	9.24033
(1/1871-12/2008)	**3 Mo Lead**	0.143465538	0.021571	0.002204983	2.12E-09	6.02214
	6 Mo Lead	0.071268269	0.005283	0.001088599	0.003191	2.953079
	9 Mo Lead	0.005070136	2.65E-05	7.69944E-05	0.834831	0.208543
	3 Mo Lag	0.262588162	0.076424	0.00419794	2.82E-30	11.66709
	6 Mo Lag	0.289627247	0.093089	0.004638343	9.28E-37	12.98237
	9 Mo Lag	0.270360695	0.081247	0.004337624	4.77E-32	12.0391
Steel	**Coincident**	0.23183472	0.303452	0.019290826	7.72E-12	7.525606
(1/1998-6/2009)	**3 Mo Lead**	0.102971744	0.060888	0.008704106	0.004817	2.869518
	6 Mo Lead	-0.03862146	0.00765	-0.002966579	0.330107	-0.97774
	9 Mo Lead	-0.019822417	0.001772	-0.001296644	0.643826	-0.46352
	3 Mo Lag	0.150539196	0.12523	0.012412195	3.89E-05	4.26392
	6 Mo Lag	0.070463884	0.033197	0.005764231	0.041158	2.063439
	9 Mo Lag	0.068806085	0.04134	0.005747366	0.024099	2.284258
Total Business Inventory	**Coincident**	1.891846025	0.130555	0.000900976	1.27E-07	5.480117
(2/1992-5/2009)	**3 Mo Lead**	1.413788334	0.056718	0.00053143	0.000706	3.441712
	6 Mo Lead	1.180368371	0.036161	0.00041174	0.007594	2.697844
	9 Mo Lead	1.295579709	0.043508	0.000457757	0.003602	2.94754
	3 Mo Lag	1.993071213	0.167248	0.000963163	2.01E-09	6.290063
	6 Mo Lag	1.703077143	0.150606	0.000835523	1.91E-08	5.864992
	9 Mo Lag	1.823384622	0.185993	0.000908067	3.82E-10	6.606194
Total Consumer Debt	**Coincident**	-0.381416489	0.010371	-0.000324896	0.008439	-2.64186

Indicator	Lead/Lag	Coefficient/Slope	R^2	Covariance	P Value	T Stat
(3/1953-4/2009) (Consumer Credit Outstanding)	**3 Mo Lead**	-0.237887212	0.00395	-0.000199126	0.105377	-1.62154
	6 Mo Lead	0.01112197	8.61E-06	9.31201E-06	0.939932	0.075384
	9 Mo Lead	-0.145698309	0.001483	-0.000122245	0.323624	-0.98778
	3 Mo Lag	0.124454676	0.001128	0.000106009	0.387296	0.865102
	6 Mo Lag	0.761029712	0.044548	0.000648931	4.2E-08	5.547295
	9 Mo Lag	0.823511281	0.05343	0.000693398	1.92E-09	6.089755
Unemployment Filings	**Coincident**	-0.099110071	0.069388	-0.008856403	1.91E-09	-6.11798
(1/1967-6/2009)	**3 Mo Lead**	0.016067756	0.001821	0.001440727	0.340425	0.954238
	6 Mo Lead	0.019055648	0.002543	0.001705682	0.261363	1.124457
	9 Mo Lead	-0.04080435	0.011594	-0.003644623	0.016552	-2.40473
	3 Mo Lag	-0.141569419	0.141267	-0.012645978	2.95E-18	-9.06028
	6 Mo Lag	-0.060532293	0.027598	-0.00539527	0.000196	-3.75198
	9 Mo Lag	-0.008906606	0.000643	-0.000797663	0.573599	-0.56314
Unemployment Rate	**Coincident**	-0.190255476	0.07391	-0.004426762	7.2E-14	-7.63282
(1/1948-6/2009)	**3 Mo Lead**	-0.016944681	0.000576	-0.000388057	0.51764	-0.6473
	6 Mo Lead	0.089776689	0.015904	0.002027486	0.00066	3.42056
	9 Mo Lead	0.124770024	0.030464	0.002791897	2.34E-06	4.759689
	3 Mo Lag	-0.306998727	0.197138	-0.007169816	1.44E-36	-13.3608
	6 Mo Lag	-0.290691186	0.186748	-0.00680969	2.16E-34	-12.8939
	9 Mo Lag	-0.207255458	0.09783	-0.004830212	7.14E-18	-8.84217

APPENDIX C:
COMPOSITE MODEL WORKSHEET

A worksheet such as this can be used to calculate the value of the model once a month.

ISM Index

Raw Value	
Model Value	+1 if index > 50, otherwise it is equal to -1

Baa Spread

Baa rate
10-year treasury yield

Spread	(Baa rate — 10-year rate)
Spread 12 months ago	
Difference in spread	(Spread - spread 12 months ago) / Spread 12 months ago
Model Value	+1 if difference in spread < 0, otherwise it is equal to -1)

Durable Goods

Most recent reported value
Reported value 12 months ago

% change	(Most recent value - Value 12 month ago) / Value 12 months ago

Model Value	+1 if % change > 0, otherwise it is equal to -1)

Composite Model Value	Sum of three model value fields

If the value of the "Composite Model Value" field is greater than +1, the model is on a buy signal. When it reaches a value of -1 or below, it is on a sell.

FOOTNOTES

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[15] This data was taken from Table 1-4, page 15 of *The Research Driven Investor* by Timothy Hayes.

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