



## Components of Economic Analysis\*

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May, 2010

Making sense of what is going on in the economy and discerning where it is headed is exceedingly difficult, even for those who are professionally-trained economists. Unlike the physical sciences, which are defined by fundamental laws grounded in deterministic interactions of phenomena, economic phenomena result from billions of human decisions that dynamically interact with each other, but also are shaped by institutional structures, social and cultural behavioral norms, and environmental conditions and events (acts of God).

While economists have attempted to emulate the rigor of the physical sciences through the application of mathematics and sophisticated modeling, the reality is that the behavior of the economy over time is better explained by chaos theory. This is not to concede that it is impossible to develop a sense of possible, even likely, pathways for the economy, nor even to deny the possibility of intentionally influencing the direction of the economy. Both are possible within the context of chaos theory. Chaos theory merely posits that decisions lead to subsequent decisions that are neither fully knowable nor predictable and these subsequent decisions will influence and alter outcomes.

It is useful in dealing with a chaotic system to understand relationships between variables. For example, we know that price rises in an open market system when demand exceeds supply. But, it is far more difficult to understand with any degree of precision how the complexity of interactions and decisions that flow from an imbalance between demand and supply influence the direction of the economy over time.

A fundamental shortcoming of much of economic commentary and analysis is rooted in a failure to acknowledge complexity which fosters a tendency to oversimplify and to rely uncritically on simple truisms. This approach often results in partial analysis that overlooks important available information and risks reaching conclusions that are misleading, or even wrong, and

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when extended to policy recommendations and actions, often result in unexpected outcomes and unintended consequences. When many indulge in superficial analysis the cacophony of voices creates a bewildering multiplicity of divergent views.

How does one sort through all the information and opinion and develop a dependable sense of possible outcomes and consequences? In what follows I describe the components of the analytical framework I use to process information. Application of such a framework will not unambiguously lead to knowing what will happen but it will help define possible outcomes and will clarify risk factors that could shape or direct an outcome. And, it helps eliminate time wasted considering unlikely outcomes. What is important is that this methodology must be repeated over and over again as new information becomes available and as new decisions are made and events occur.

## I. FUNDAMENTAL ANALYSIS

### 1. Long-Term Trends and Structural Changes

Deeply embedded long-term trends that lead to significant restructuring of how the economy functions over time dominate all other economic variables. What I mean by this is that such trends anchor the performance of the economy for an extended period of time. The economy's performance can vary considerably over the short run, but like a magnet, the economy's performance over longer periods keeps getting pulled back to the outcomes that are fundamental to these deeply entrenched trends.

These trends guide key economic variables such as employment, inflation, interest rates, productivity and so forth. Generally, they wax and wane over a time period that typically covers several years and eventually are replaced by new trends that in turn become deeply embedded and anchor much of economic phenomena.

In today's world economy there are three major structural forces that are reshaping the functioning of the global economy. These are the forces of **globalization**, accelerated **technical progress** (productivity) and use of copious amounts of **debt leverage**.

Globalization and technical progress collectively have increased supply and while they are stimulants for world-wide economic growth, they simultaneously are powerful engines of deflation. This is an extremely powerful embedded trend that will continue to shape the global economy for an extended time. Simply put, the global capacity to produce exceeds demand. And when supply exceeds demand, prices fall — disinflation or deflation occurs. This has led governments to pursue demand stimulus through policies such as tax cuts and deficit spending. But, as we increasingly understand, such policies create debt that accumulates over time. And when debt increases at a faster rate than the natural underlying growth rate in the economy, financial imbalances build that foster asset price bubbles and undermine the ability of the financial system to absorb shocks.

**Technical progress** simply involves the ability to produce an increasing amount of goods and services relative to the amount of inputs. Such a phenomenon is necessary to produce an increase in the standard of living. However, what has changed in recent times, and I mark the critical transition point in the United States to 1997, are two very significant developments both of which have greatly accelerated growth in productivity. In the U.S., productivity grew 1.4% annually from 1973 to 1997 but since 1997 has accelerated to 2.9% annually. While there are many causes of this significant upward shift, the primary one is technological advances in information management, such as fiber optics and desk-top computing, that are reshaping literally every kind of business process. And, this is not limited simply to the production of goods; it has fundamentally changed how financial transactions are structured and how they are conducted.

The second development, which got underway at about the same time, involved entry of nearly half of the globe's population into market-based economic systems. These emerging nations are able to grow at astonishing rates, such as China's 10% real rate of growth, because they can apply existing technology to enormously underutilized resource bases. In short, they are catching up with developed nations. That has happened before as it did for Japan. But what makes this episode much more significant is the sheer volume of people now involved in the catch-up process.

There is a systematic pattern to emerging nations' growth. Emerging nations benefit from an abundance of cheap labor and emphasize manufacturing of low-cost goods for export to more developed countries. This mercantilist economic paradigm can and is in certain instances, most notably

currently in China, amplified through currency exchange rate management.

What is important to understand is that both of these productivity impulses are far from spent and will continue to shape economic events for years to come. Also, these forces not only have increased supply relative to demand dramatically they are also contributing to a rapid reshaping of all global economies. The speed of restructuring has been so great that adjustment of inevitable imbalances has lagged. These imbalances have been amplified by intentional policies by individual countries intended to convey advantage and address local political imperatives. But, unfortunately, imbalances lead to economic instabilities and it follows that that the greater the imbalances are the greater are the instabilities. Imbalances are unsustainable and must eventually correct. As we have experienced in recent years large imbalances have often fed on themselves — the bubble phenomenon — and then when they eventually and inevitably tip over the policy response must be massive to contain the damage created by the reversal. And, increasingly we are also discovering that the policy response is not always adequate and perversely the response may also contribute to new imbalances. In short, while productivity has lifted the standard of living of billions of people rapidly, and that is a good thing, it has contributed to a dangerous destabilization of global economies.

**Globalization** is not a new phenomenon. It has been going on for several centuries. However, the scope and impact in this latest round is much greater than anything the world has previously experienced. Globalization breaks down communication and transportation barriers and in so doing stimulates economic efficiency. It takes frictions out of the system. But, to the extent that the global economy increasingly becomes an open system it simultaneously becomes more difficult to govern in the extant nation-state structure.

The development of wireless communications technology and the global establishment of the internet have substantially undermined the effectiveness of governance and regulatory regimes of traditional geographically limited political entities. One has to look no further than observe how the implosion of the U.S. subprime mortgage market rippled through the entire global financial system at lightning speed and was transmitted just as quickly from the financial sector to the real sector, again on a global basis. It is the nature of humans individually to seek enrichment and personal success. Governments exist to ensure that the actions of individuals are regulated in ways

that serve the best interests of society collectively.

What has happened at an accelerating pace in the span of just a few years is that the natural human tendency to find ways to avoid restrictions and rules has now spread on a global basis. While such behavior curtails the impact of outdated restrictions and accelerates economic growth, it also has contributed to a decline in the ability of governments to assure that the common welfare of society is served. This has made it increasingly difficult to contain bubbles and to reverse the buildup in imbalances in a timely way, thus further accelerating growth in global economic system instabilities.

That brings me to the third major embedded trend and that is the increasingly reliance on **debt leverage**. Since the dawn of human civilization, we have understood that a dependable currency and an organized financial system facilitate commerce and contribute to higher rates of economic growth. Along the way we learned that the savings of some could be deployed effectively as loans to others thereby accelerating economic growth. But we also learned that reliance on debt risks default and bankruptcy if revenues are insufficient to service the debt. And, as debt leverage increases relative to income the ability of the borrower to service the debt across all economic situations declines.

In the U.S. debt leverage has risen steadily due to cultural considerations, social policy, more abundant information and financial instrument innovation. The historic stigma attached to debt and bankruptcy diminished substantially over the last 40 years. Fair lending and equal access to credit laws have expanded access to credit and safety net programs, such as unemployment insurance and social security, have mitigated the historic consequences of unemployment and retirement. The ability to collect and analyze vast quantities of information has fostered new enterprises and encouraged established ones to expand the risk spectrum of clientele that they serve. And, financial innovations, such as adjustable-rate loans, longer-term amortizing loans, collateralized mortgage obligations and an assortment of derivatives, facilitated the management and transference of risk.

Unlike globalization and technical progress, debt leverage stimulates demand rather than supply. In other words, liberal use of debt can accelerate economic growth. Up to a point, greater leverage is a positive trend when coupled with more efficient credit risk management capability and if the amplitude of business cycles can be moderated. For a long time we thought

both of these conditions were true and thus we were complacent in dismissing the theoretical risks of ever increasing use of debt leverage. However, recent events have brutally swept that illusion aside.

There really is a limit to how much debt leverage an economy can handle before it becomes dangerously unstable. And, we now know that aggressive use of debt leverage fuels asset bubbles and can for a very long time sustain a seemingly benign environment. But there is also a simple truism. People, businesses and nations must be able to service debt based on income. If debt service takes an increasing portion of income, by definition resiliency declines and risk of default rises. The asset price bubbles created a myth that debt can be serviced through asset appreciation. But, this myth turned out to be nothing more than a much more broadly-based version of the traditional Ponzi scheme with the exception that it was legitimized as national policy. Careful study of economic history indicates that appreciation in asset values are tightly linked to the real rate of growth in the economy over time. Whenever the two growth rates diverge significantly from the historic relationship an imbalance is created which inevitably will correct or revert to the mean.

The recent global financial system catastrophe has reminded us of the truth of the enormous risks embedded in debt leverage. But instead of beginning the painful process of shrinking debt leverage to a level that will support a healthy and stable economy, we have chosen to shift debt leverage from private entities to governments. This has been done in the name of stabilization policy. But governments are no different than individuals and businesses when it comes to a matter of capacity service debt. There is a limit linked to the real rate of growth in the economy and when government debt grows faster, debt service capacity, by definition, declines and the risk of default accelerates.

There are many other forces that are contributing to systematically restructuring the economy. Each by itself does not have the kind of pervasive impact that globalization, technical progress and debt leverage are having. But, collectively they are important. An example is demographic trends like the aging of the baby boomers.

## **2. Short-Term Cyclical Factors**

While globalization, technical progress and debt leveraging are anchoring economic performance over long periods of time, business cycles are still very much a fact of life. Cycles are event and policy driven. They result in economic performance varying for a while from underlying fundamental trends. You can think of cycles as oscillations in economic performance over relatively short periods of time around an equilibrium level that is defined by the underlying fundamental forces of change.

Short-term cycles are caused by factors that result in imbalances between supply and demand but can also be exacerbated by human behavior. For example, low interest rates and rising employment and income can lead to an increase in the demand for new homes. However, it takes two to three years to acquire and permit land and build a home. In the meantime an imbalance between the supply and demand for housing develops and prices rise to ration available supply. However, rising prices increase builder profits and induce builders to build more homes. The cycle works in reverse, too. When interest rates rise and employment and incomes fall, the demand for new homes contracts but because of the long building timeline supply is relatively fixed in the short run. The clearing mechanism now forces compression in prices and reduces builder profits inducing them to curtail production of new homes. Because of the long time lags in adjusting supply to demand a pronounced and long price cycle in housing occurs.

Human behavior exacerbates the housing cycle. Rising demand leads to rising prices that can produce quick profits for investors. Such price speculation naturally leads to additional demand for housing, if investor activity is not restricted, thus amplifying the cycle.

While short-term cycles are well understood, the role of longer-run secular trends in amplifying short-term cycles is less well understood. History is replete with bursts of technological innovation, such as the most recent one involving information processing and telecommunications. Such bursts dramatically change the structure of an economy over time, but this process usually takes years to unfold. Such changes have enormous impact, but they play out over extended time periods. For example, the recent boom in commodities was clearly driven to a very great extent by the rapid growth of China, India and other less developed countries that have embraced open market economies since the early 1990s. Demand exceeded supply and drove

up prices. This was a secular trend that likely will continue for some time to come. However, an explosive short-term speculative cycle in commodities occurred, too, which drove prices to unsustainable levels in early 2008.

### **3. Governance Structures**

**Laws and regulations** govern the scope and conduct of economic activity of participants in the economy. Laws and regulations define the economic model. An economic model premised predominantly on market-based governance will be governed by more permissive laws and less restrictive regulations. While this is simply stating the obvious, it needs to be understood that this paradigm shapes how we approach governance in the United States.

Modern **finance theory** has had an enormous impact in shaping the structure of financial markets and the kinds of instruments that exist today, especially derivatives and futures contracts.

In finance and economics, basic theoretical models rely on simple assumptions that are intended to enable the models to describe behavioral relationships. However, because the assumptions are simplifications of a more complex reality, it should not be presumed that the models describe accurately the full range of behaviors that are possible. But, in the case of modern finance theory, rather than the theory being used to understand fundamental relationships it has been transformed into defining the structure of financial markets. Because finance theory is oversimplified, financial markets and instruments, structured on the presumption of its “truth” and self-correcting processes, led to disruptions when markets encountered conditions beyond the reach of the theory. We now understand this better, but we seem to have no better alternative, which means that traditional finance theory is still the governor of financial instruments and financial markets.

**Financial accounting** has always been a very important governance tool. It provides consistent and systematic rules for recording and disclosing financial transactions. But for accounting to be a recorder of phenomena rather than a driver of phenomena its rules must accurately reflect what is going on in the business model and how that model is impacted by a changing environment.

Fair value accounting has come under vigorous attack recently for creat-

ing the appearance of problems that do not necessarily exist at all or if they do exist they are of lesser consequence than fair value rules dictate. The efficacy of fair value accounting is rooted in the efficacy of finance theory and we have already discussed why modern finance theory should not be relied upon uncritically to define and drive financial transactions. Modern finance theory breaks down during fat-tail events. Logic and observation also clearly demonstrate that values are difficult, if not impossible, to determine in dysfunctional markets in which there are many sellers but few willing buyers except at fire-sale prices.

Fair value accounting rules are premised on the existence of an efficiently functioning market with many willing buyers and sellers and complete information transparency. However, in thinly traded or nonexistent markets, values must be determined by discounting expected future cash flows. Such estimation is inherently subjective and usually relies on a plethora of assumptions about which reasonable people can have a wide divergence of opinion.

**Financial supervision** has long since been professionalized and is segregated to a large extent from the political process. However, inevitably whatever is the dominant economic model not only drives laws and regulations but also heavily influences how they are applied to the activities and conduct of a regulated institution's business. The effectiveness of financial supervision is further impacted by fragmentation of jurisdiction between the states and the federal government and at the federal level by the existence of multiple agencies.

#### 4. Policy Intervention and Paradigms

Monetary policy and fiscal policy (taxes and spending policies at the local, state and federal levels) are the principal policy tools used to stabilize economic activity. The impacts of monetary and fiscal policy on aggregate demand are well known.

Economic cycles tend to follow the laws of physics. If a cycle has a high upside amplitude, it is likely to be followed by a downside amplitude of similar magnitude and duration. This is why bubbles are so dangerous. Bubbles are cycles with very high amplitudes which invariably end swiftly with a hard crash. Policymakers attempt to apply the brakes or stimulus

to fine-tune and manage the cycle to avoid such extremes. However, in practice, because of the long transmission lags (for example, monetary policy takes about a year to affect the economy) policy interventions may be too little or too much and may be too early or too late. Such imperfections can exacerbate cycles. In addition, because interactions among the various components of the economy are not always well understood and, even if they are, the constantly evolving structure of the economy can render them otherwise, policymakers can and do make mistakes that exacerbate cycles.

From 1980 to 2007, a period referred to as the Great Moderation, the amplitude of cycles diminished. This was falsely assumed to be the result of successful application of monetary and fiscal stabilization policies. But, we now know that this was an illusion, at least in part. These policies worked for a time for two reasons. First, they cushioned the negative consequences of default, bankruptcy and recession by stabilizing income and maintaining aggregate demand. But there was a hidden cost to this and that was that weak elements of the system were not systematically purged and this was made possible by steadily increasing use of debt leverage. Second, as participants came to believe that risk had been reduced, it encouraged them to take greater risks. For a while the use of greater amounts of leverage covered weaknesses that were building and reinforced the belief that policy had been able to contain risk. Low measured and perceived risk begat more risk taking and eventually this perverse positive feedback loop was no longer sustainable and the dam burst.

Yet, even in spite of this experience the policy paradigm remains unchanged. The paradigm dictates that when the private sector falters and the economy plunges into recession, government moves aggressively to stabilize and then reignite private demand by cutting taxes, increasing government spending and reducing interest rates. The paradigm is not wrong, but it has been taken to an extreme that is contributing to increased economic volatility. It is politically unacceptable to accept an extended period of subpar economic growth with the objective of curing economic imbalances. We continue to believe in the efficacy that intervention that moderates and contains pain is good policy. We do not evaluate or question seriously the longer run consequences of the policy paradigm. And, I should hasten to add that this is a global paradigm, it is not limited to the U.S. The consequence of pursuing this policy paradigm is a shifting of leverage and risk from private to public balance sheets. A seminal study by Ken Rogoff and Carmen Reinhart document, using eight centuries of history, that sovereign

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debt crises almost inevitably follow credit collapses within one to two years.

## II. STATISTICAL AND ECONOMETRIC ANALYSIS

For a time in recent years econometric models of the economy displaced fundamental analysis as the principal analytical tool. Such models are attractive because of their apparent precision. They are also appealing in that they enable a user to test how changes in policy variables change outcomes. There is no question that models are a useful analytical tool. But that is all they are — a tool. They do not substitute for the use of judgment and critical thinking.

The biggest flaw with econometric models is that they are built on the presumption that the structure of an economy is stable and unchanging over time. What that means is that historical relationships and patterns of behavior will be replicated in the same way in the future. In a dynamic economy this simply is not true. A second flaw is the limited availability of historical data and uneven quality. Key data are often subject to numerous revisions after initial reporting.

However, these flaws do not negate the value of models in understanding how economic processes work, interact with each other and evolve over time. It is the understanding of how processes unfold wherein insights can be gained. The flaw is when the user relies on point value estimates of future outcomes.

There are a variety of models that are in use and not surprisingly, given the complexity of economic phenomena, there are considerable differences in forecast outcomes from one model to the next. In addition, statistical and econometric topical analyses are conducted by professional economists. Again two studies on the same topic frequently reach different conclusions. This does not make them worthless. It just means that the user has to treat them as information, not as infallible truths.

Good analytical practice involves studying and understanding statistical analyses and evaluating the soundness of methodological design. Good analytical practice also involves seeking out a variety of studies on the same

topic and trying to determine what accounts for the differences in conclusions. When this kind of assessment is combined with rigorous fundamental analysis it is often possible to reach a better informed view of outcomes than when one relies on only one approach.

### III. BEHAVIORAL ANALYSIS — Impact of Beliefs and Sentiment

Classical economic theory is grounded in the premise of rationale expectations, which is a fancy way of saying that all participants in an economy have access to complete information and act on that information in a rational way. This is a convenient assumption when constructing theories, and is one of the main assumptions of modern finance theory, but does not reflect our way of life particularly well.

To make order out of seeming chaos, we establish belief systems as to how things should work. This is just as true in economic analysis as it is in other areas. A major economic belief that continues to drive behaviors, but which is inconsistent with the major forces of globalization and technical progress, is that economic expansions always lead to higher inflation and interest rates. The belief was rooted in a world where fluctuations in demand drove outcomes. But, the world changed so that supply became the principal driver of outcomes. Excess supply drives inflation down and interest rates follow inflation.

A belief remains valid only so long as the underlying phenomena that led to it in the first place remain unchanged. However, it is a human tendency to hang onto beliefs long after the underlying phenomena have changed fundamentally.

Sentiment differs from beliefs. Think of it as the emotion of the herd. People chatter about things with each other and reinforce each other. Chartists have long understood that sentiment drives economic variables up or down for extended periods independent of underlying fundamentals. Contrarian measures are frequently quite good at forecasting market turning points. When most people are bullish that is about the time that the market is more likely to head down than to continue going up. Investors recognize this as the greed/fear cycle.

Beliefs and sentiment can combine forces. Information that supports beliefs is taken as proof of the validity of the belief, while information that is not supportive is discounted. But sentiment can take on a bullish or bearish cast for an extended time because of a high profile event, such as a terrible employment report, even when the event itself is not consistent with beliefs. The take away, however, is that beliefs bias oscillations in sentiment in the direction of the belief until the belief is discredited or replaced by a new one.

#### **IV. INTERACTION AMONG ECONOMIC VARIABLES AND PHENOMENA ARE COMPLEX**

Economic interactions are very complex. Economics is a social science, not a physical science. It is about understanding how the actions of individuals, groups and countries affect the economic well being of others and how others respond.

There are certain basic principles that are reliable. For example, if there are fewer jobs than people who want them, employees will have little bargaining power over wages. This in turn will depress aggregate income and therefore aggregate demand and lead to downward pressure on inflation. Sustained low inflation leads to low interest rates. But what happens if employment is weak yet an oil price shock drives up inflation? Will interest rates rise or fall? Beliefs and sentiment might drive interest rates up in the near term. But, if the oil price shock depresses consumer demand for other goods and services, prices on these goods and services will experience downward pressure. Also, people employed in these parts of the economy might lose their jobs. This would further depress aggregate demand. The upshot in the long run would be downward pressure on inflation and eventually on interest rates as well. This is a simple example of the complexity of interactions among economic variables. It is one we have experienced before and, thus, it is one about which we have a pretty good sense of both the short-term and long-term consequences for inflation and interest.

Economic forecasting is made difficult by four factors. First, while some linkages among economic variables are understood on a one-on-one basis, the linkages are far less clear when other variables are considered simultaneously. Second, there are often long lags between action and reaction among

variables. Third, new events occur while the adjustment process is underway that will alter the outcome. Fourth, relationships among economic variables that seemed well defined and predictable may change fundamentally when the underlying structure of how the economy functions changes.

For example, before globalization and technical progress took on their now dominant roles about 1997, tax cuts raised disposal income, stimulated aggregate demand and led to the creation of jobs which closed the employment gap. Inflation and interest rates rose as the employment gap closed. But in today's world, while tax cuts raise disposable income, they are not contributing to the creation of new jobs to the same extent as in the past because increases in productivity growth can accommodate increased demand without creating as many new jobs. And, without additional jobs and the boost to aggregate income that comes with these jobs future tax revenues will not grow as fast as in the past to ameliorate the short-term effects of tax cuts on the federal budget deficit. It is not particularly clear to me how this change in linkages due to structural changes in the economy will play out over the longer run. This is the kind of thing that contributes to forecasting difficulty.

## V. BILL'S APPROACH TO ECONOMIC ANALYSIS AND FORECASTING

My approach to economic analysis and forecasting is to combine the three methodologies — fundamental analysis of key trends, statistically-based analysis of key economic relationships and projections of key economic variables, and study and analysis of sentiments and beliefs based on on-going media commentary, polling data and technical analysis charts.

### 1. Fundamental Analysis

First, I examine a plethora of economic data releases. Second, I study the work of several analysts/economists, paying particular attention to the logic and internal consistency of their lines of reasoning. I focus in particular on differences in opinion and attempt to ascertain the reasons for those differences. Finally, from this assessment I form my own views, also utilizing

my theoretical training and experience.

## **2. Statistical Analysis**

Over the last five years I have been building statistical forecasting models for key economic variables. These models initially were quite crude, but with the passage of time and additional research, the quality of the models has improved. The models generally have had a pretty good track record over short-time periods, but have been less successful beyond a one-year time horizon. In addition to my own work, I study the statistical work of others. These are tools that can help me apply fundamental analysis better but they are never a substitute for critical thinking.

## **3. Behavioral Analysis**

As the complexity of our world has increased and as our access to volumes of information has increased with it, our ability to process and make sense of all of the information is extraordinarily challenging. It is a natural human tendency to try to boil complexity down into simple statements. In a sound-byte driven world dominated by the cable TV news media, which seem to tilt more toward entertainment and gossip and less toward in depth analysis, it is easy to see how simple ideas, whether they are right or off the mark, can sway large numbers of people. It is important to pay attention to behavior because that can impact short-term outcomes. And at times, sentiment, whether it is soundly grounded, can also influence policy decisions.

## **4. Combined Analysis**

Finally, I look for corroboration between fundamental and statistical analytics and when inconsistencies arise I re-examine both analytical methods carefully. It is more difficult to integrate behavioral analysis but it proves particularly useful to get a better sense of why expected patterns are not materializing as expected. It often turns out that beliefs and sentiment have contributed to a delay in realization of an outcome or helped shape an outcome in different ways than fundamental and statistical analysis suggested.

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