STRATEGIC ECONOMIC DECISIONS

Leaders in the Economics of Uncertainty

PROFILE

August 2009

Topic I: The Inflation/Deflation Debate: What Will Happen, and Why?

Topic II: Kaleidoscope — The Tipping Point of 2008–2009

The Problem: *Where is the wisdom we have lost in knowledge? Where is the knowledge we have lost in information?* – T.S. Eliot

The Solution: *SED's Research Programme — dedicated to imparting an inferential edge so that clients are less wrong than the consensus, and less wrong for the right reasons.*

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Topic I: The Inflation/Deflation Debate: What Will Happen, and Why?

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Introduction

Topic I: At this writing, prospects for inflation is the topic of greatest concern and confusion to our clients. Investors are divided into two disjoint camps, namely deflationists and inflationists. This is not surprising given two extraordinary developments now taking place: **(i)** a growth rate of federal debt now and in the foreseeable future that is greater than we have ever witnessed, as well as the monetization of this debt at an unprecedented rate; and **(ii)** a global "output gap" that is also the greatest in postwar history — the result of a deceleration of global growth during the past year from over 4.5% to -2.5% that has driven unemployment rates very high in almost every nation.

Those focusing primarily on the liquidity story are understandably worried about much higher future inflation. Regrettably, history is on their side. For, as is commonly asserted, high inflation offers the most politically acceptable way out of a sovereign debt trap, given the alternatives of much higher taxes or default.[1] Those concentrating primarily on the output gap story fear deflation. The fact that US consumer spending will probably rebound very slowly, and that the unemployment rate will decline very slowly, simply reinforces the fears of deflationists.

Given the importance of the inflation/deflation debate, and given client confusion and concerns about it, we have dedicated the lead essay in this report to this topic. Indeed, we welcome the opportunity to write a brief piece that attempts to lay bare the truth as we see it about inflation, arguably the most counterintuitive and intuitively challenging variable in all of economics.[2]

[1] There is, of course, a fourth way out. As we demonstrated in our April 2009 essay "The End Game Draws Nigh," strategies maximizing real economic growth offer the best exit by far. For reasons we simply do not understand, discussion of win/win pro-growth strategies seems verboten in today's sterile debate about exit strategies.

[2] The reason why inflation is such a difficult variable goes to the very heart of microeconomics, namely, an inability to fit "money" into the fundamental Arrow-Debreu model of general economic equilibrium. The sad reality is that despite over forty years of trying, money, and, by extension, monetary economics, have never been successfully integrated with core "supply-demand-for-wheat" economics. For example, neo-Keynesian monetarist models with "sticky prices" have, in our view, added very little to our understanding of the real-world behavior of inflation.

As a reward for reading this piece, you will learn how to resolve such paradoxes as why the period of greatest inflation in US history (1972–1980) occurred when there was no rapid increase in the growth of the money supply, contrary to what is always supposed. You will also learn why the great monetary expansion in Japan between 1997 and 2003 did not cause any inflation at all. Finally, you will discover why the twin OPEC oil shocks of the 1970s precipitated a huge increase in inflation, whereas the equally big oil shock of 2002–2008 caused virtually no inflation at all. Yes, it can be very difficult indeed to make sense of inflation, much less to forecast it.

The structure of this essay is straightforward. We first review the three basic sources of inflation, and in doing so, explain away various paradoxes that arise in making sense of past inflationary episodes. We then assess the probability of each. Our conclusion is that for the next five years, inflation will not be a significant problem. However, should the government fail to grab the bull by the horns and commit to driving down the debt-to-GDP ratio — and it has completely failed to do so to date — then inflation will indeed begin to pick up disturbingly thereafter.

Even if our forecast is correct, it is still difficult to forecast the trajectory of future T-bond yields. For as Keynes instructed us in his Beauty Contest parable, what will matter is what the majority of judges (investors) will believe about inflation, regardless of the rectitude of their underlying forecasting logic. We must all avoid the risk of ending up too clever by half that results from ignoring Keynes' admonishment!

Topic II: Whereas the inflation essay in Part I is short and to the point, the "Kaleidoscope" essay in Part II is more expansive. We believe that the years 2008–2009 will prove to have been a "tipping point" in modern history like the years 1848, 1919, and 1968. Six paradigms (by paradigm, I mean our way of thinking about a given issue) are melting down at the same time. These range from the realization of the true unholiness of the Islamic Jihad to the crisis of confidence in capitalism, to the meltdown of economic theory featured as a cover story of a recent edition of *The Economist*, to the collapse of the Asian Export-Your-Way-to-Heaven model as well as the US Consume-Your-Way-to-Heaven model, to the transformation of commodity pricing from a market mechanism governed by the Invisible Hand, and lastly to a nasty bargaining game governed by the iron fists of thugs.

In looking back over the years, we were surprised to discover that we had written about and predicted five of the six transformations that are now occurring. As a result, we decided to review all these developments that constitute a kaleidoscopic change in the way we think about the world. Each will have a fundamental impact on markets, on economies, and even on the prospect of war in the future.

Note on the Economy: We are not discussing GDP growth at any length in this ***PROFILE***. Yet, given clients' concerns about today's incipient recovery, we summarize our views up front. Please pay special attention to our discussion of widespread confusion surrounding the *true* size of the US fiscal deficit for 2009, and its implications for future GDP growth. There is some surprisingly good news here.

We share the consensus view that the recession has bottomed out, and that positive GDP growth of about 2% should resume during the last two quarters of the year. We also share the view that the imperiled financial position of the household will rob the recovery of a normal cyclical rebound in consumption. The expectation by businesses of weak consumption will in turn depress inventory restocking and certain other forms of business investment. All this augurs a weak recovery. Moreover, periodic dips into negative growth territory (and hence a kind of "W") are possible given the notorious instability of quarterly investment spending and net export numbers.

In this regard, a bias in most forecasts of GDP is to assume that, since consumption accounts for by far the largest share of GDP, "as goes consumption, so goes the economy." This is false when it comes to predicting output growth on a short-term quarterly basis. The reason is that the standard deviation of swings in net exports and investment spending is 6 to 8 times greater than that of swings in consumption. Worse, the correlations between these three determinants of growth are highly unstable. As a result, quarterly GDP numbers regularly surprise us as being "surprisingly high/low" *even when our forecast of consumption growth comes true.* "As goes consumption, so does *not* go the economy" is quite often the reality. [This counterintuitive observation was the subject of previous SED research.]

We also share the consensus view that house prices have finally bottomed out in many markets. But it is not housing prices that matter to GDP growth. Rather it is the *new starts* that matter, and today's unprecedented overhang of unsold houses should depress the recovery of housing investment — yet another reason for a sluggish recovery.

On the positive side, growth will be abetted by improved net exports, high productivity, and strongly rebounding Asian growth led by China.

If we are somewhat confident about growth in the near term, we are not at all sure about growth in the long run. It is here that we depart from the consensus a bit, to the extent that there is any consensus at all about the long run. The big problem for growth going forward stems from the algebra of the GDP identity, namely **GDP = C + I + G + X**, and from the future behavior of government spending **G** in this identity.

The Big Concern: What happens to GDP growth if this year's record-high fiscal deficit of 13% of GDP falls back to around 3%, as it must if we are to avoid a ruinous long-run debt trap? The answer is that the required fiscal contraction would shave 10% off of GDP growth, albeit over several years. But what components of the GDP identity would *increase* by an offsetting 10% of GDP, to thus keep GDP growing? It is hard to imagine the answer here. To put this matter in historical perspective, note that during almost all past recessions, fiscal stimulus has averaged about 3% of GDP. [The magnitude of stimulus is measured by the *increase* in the deficit (**G – T**), where **T** denotes tax revenues.] It has never been in a range of 8% to 10% as it is at present. So once again, will the contraction of today's enormous stimulus derail future growth?

Our Mistake: We thought it might, but as Ben Friedman of Harvard pointed out to the author, our analysis was mistaken. It is regularly asserted that the 2009 US fiscal deficit will be $1.9 trillion, or about 13% of GDP. This statement turns out to be both correct *and* incorrect. Here is why. This year's deficit, while huge, decomposes — in a new manner — into two different pieces: **(i)** an operating deficit of about $900 billion; and **(ii)** TARP-like asset purchases of about $1 trillion.[3]

> *It turns out that it is only the first part of this total deficit that actually stimulates GDP and that thus matters for GDP forecasting. The asset purchases do not matter. As a result, the $460 billion increase of the 2009 operating deficit of $900 billion from the 2008 operating deficit of $440 billion is, while very large, much less problematic than the $1.46 trillion increase in the overall deficit.*

The Good News: This is very good news in two ways. First, it means that a much smaller-than-expected fiscal contraction of the operating deficit in the range of $400–$500 billion will be required in the next few years if we are to regain fiscal sanity. Second, the $1 trillion asset purchase portion of the huge 2009 deficit will rapidly dwindle back toward zero as bailouts are no longer needed. <u>And this latter reduction in the deficit will have virtually no impact on GDP growth.</u>

The argument here is not intended to suggest that the nation is not running a $1.9 trillion deficit that must be funded by the Treasury. For it is, and those who cite this number are technically correct. But this number is a red herring from the standpoint of GDP growth analysis.

The Bad News: Offsetting this good news is the disturbing reality that Obama administration policies are likely to raise the *structural* operating deficit way significantly over time, according to the Congressional Budget Office. This is why they are predicting unacceptably large deficits for the entire decade to come.

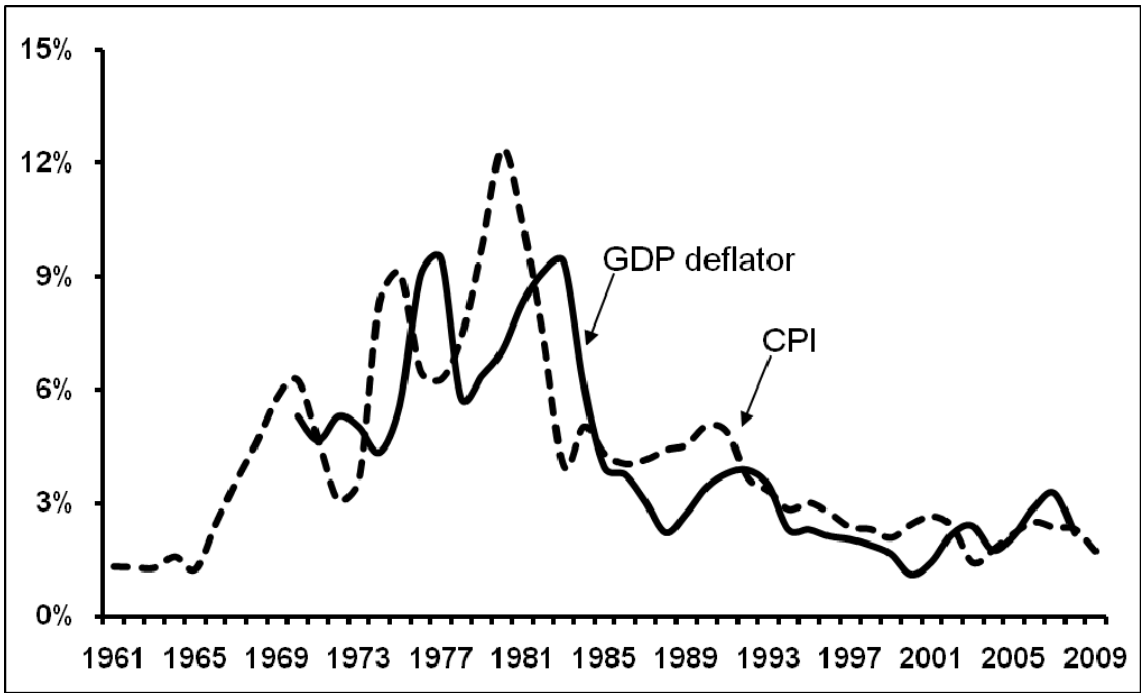
I. THE INFLATION/DEFLATION DEBATE

– What Will Happen, And Why? –

There are three different sources of inflation in the world we live in — namely a world of fiat money not anchored by a gold standard. The first is "output gap" inflation, sometimes known as "demand pull" inflation. The second is wage-price spiral inflation. The third is monetary inflation. Let us discuss what each of these terms really means, and, in doing so, give real-world examples of each. Please keep the data in Figure 1 in mind as we discuss inflation in the US during the past half-century.

[3] The operating deficit is calculated within the National Income and Product Accounts. The $900 billion deficit we have cited above is the most recent NIPA estimate.

FIGURE 1: US INFLATION (1960–2009)



Source: Bureau of Labor Statistics, SED

1. OUTPUT GAP INFLATION: The gap here can be positive or negative. A positive gap means that aggregate demand for goods and services exceeds potential supply. A negative gap (as in today's global economy) refers to situations where aggregate supply exceeds demand. Assuming competitive markets, the former implies inflation whereas the latter implies deflation.

During the past half-century, it has become somewhat more difficult to use future output gap forecasts to predict inflation. This is because the globalization of the world economy (Main Street, not just Wall Street) has increasingly permitted domestic manufacturers to meet excess demand by rapidly outsourcing to other nations. Thus, a domestic output gap that might have proven very inflationary in the past might imply much less inflation than before. Additionally, "dumping" strategies on the part of mercantilist-trading partners have reduced inflationary pressures in certain sectors of the domestic economy. These developments have rendered output gap analysis more problematic than it used to be.

An Example of "Guns and Butter" Inflation in the Late 1960s

Before 1960, inflation had been quite benign in the US since the Civil War, notwithstanding periodic spikes. But by the mid-1960s, inflation was beginning to heat up. By 1970, it temporarily peaked at a then-shocking 6%, only to subside back down to around 3% during the recessionary period of the early 1970s. This late 1960s inflation offered a good example of a kind of positive output gap inflation known as "guns and butter" inflation. The phrase refers to the fact that, when the US economy was already doing very well, the advent of large Vietnam War expenditures pushed aggregate demand up so as to exceed supply.

Vietnam War critics have a point when they argue that the late 1960s inflation would not have occurred had the administration raised taxes (thereby depressing domestic demand) to pay for the war. But the war was highly unpopular, so this did not happen. As a result, the combination of strong domestic demand and accelerating military spending stoked output gap ("demand pull") inflation.

It turned out that, for reasons no one anticipated, the resulting inflation of the late 1960s would play a major role in causing the Shah of Iran to precipitate the OPEC crisis of 1973. This crisis in turn led to the greatest explosion of inflation in our nation's history since the Civil War of the 1860s. What exactly are the linkages here? A principal reason for the Shah's demands for much higher oil prices was that accelerating US inflation had caused the already-low price of oil ($3 dollars per barrel) to fall even further in real terms. As a result, the Shah and other OPEC ministers demanded much higher oil prices as a matter of fairness. To obtain them, he decided to impose the fatal oil embargo of 1973. Note that OPEC did not simply raise the price of oil. They actually cut off the supply.

2. WAGE-PRICE SPIRAL INFLATION: As Figure 1 makes dolefully clear, the inflation of the late 1960s pales compared to what happened in the late 1970s. What explained *this* episode of inflation? We can all recite the answer: "A combination of the twin OPEC oil shocks of 1973 and 1979, along with incompetent monetary policy prior to the appointment of Paul Volcker late in the decade." [Volcker's predecessors are usually accused of having printed far too much money.] Volcker, for his part, is remembered as the giant who said "Enough!" and hiked short-term interest rates to nearly 20%. The resulting recession was very severe. Unemployment rose above 10% and inflation subsequently collapsed.

But is this account really true? No, it is not, although parts of the story are correct. Back in the early 1970s, labor unions were still very powerful. Shocked by the inflation of the Vietnam era, and then by the oil price shock of 1973, unions utilized their bargaining power to obtain COLAs (Cost of Living Adjustments). COLAs sometimes exceeded 10%. Copy-cat demands spread throughout the non-unionized workforce, although with less success. Now, since every business utilized labor (unlike most "commodities"), the impact of wage inflation on overall inflation was real. Note that it was the *expectation* of continued inflation that led to behavior that *caused* the very inflation that was expected. This cycle is called the wage-price spiral, and it dominated the behavior of inflation of the 1970s. The cycle was broken in 1981 when the Volcker recession drove unemployment way up and workers ceased to have bargaining power.

We can now resolve the second of the two paradoxes cited above in the introduction, namely the oil price/inflation paradox. Those who claim that the OPEC shocks were responsible for the nation's worst inflation are partly correct. Without these shocks, COLA inflation would not have occurred. Note that it was not the original oil price shock that precipitated inflation, but rather the downstream *implications* of this shock for expectations about future inflation, and hence, for wage inflation in a unionized world.

> *As for why a comparable oil price shock in the 2002–2008 period did not generate comparable inflation, consider what happened to the power of unions in the interim: Globalization and, in particular, outsourcing of jobs in manufacturing crippled union power. Without wage inflation, the impact of rapidly rising oil prices was very muted, and this caught most analysts completely off-guard.*

Finally, what can be said of the role of "irresponsibly easy" monetary policy during the 1970s? Plenty. The reality is that the compound growth of the monetary base during the 1970s was slightly *less* than in the disinflationary 1980s! The monetary authorities may have been irresponsible in certain ways, but they did not engage in deficit monetization and money printing, as we demonstrated quantitatively in previous research. **Note:** The account we have given of what transpired in the 1970s was reiterated by Paul Volcker himself in a speech he kindly delivered at an SED Client Conference in New York seven years ago.

3. MONETARY INFLATION: The third source of inflation is, of course, monetary inflation (e.g., money printing via deficit monetization). Given the extent of misinformation and outright confusion that surrounds this issue, we dissected it at length in our February and April 2009 reports. The essence of the "monetization" story is as follows.

First, let us begin by noting that fiscal deficits in the G-7 nations have not been particularly large throughout most of the past fifty years, typically ranging from 1% to 5% of GDP in most nations. Now, when fiscal deficits are not too large, it has not proven necessary to monetize them (e.g., to have the central bank step in and acquire Treasury debt in exchange for adding free reserves to the banking system). Instead, the Treasury finances the deficit itself simply by selling bonds to the public in exchange for cash with which to pay its bills. The central bank is not involved in this process at all, and the issue of money creation and inflation is moot. This reality partly explains the *lack of correlation* between the size of fiscal deficits and inflation during the past half-century. To repeat, deficits were not particularly large and were thus not significantly monetized.

Second, when a fiscal deficit *is* very large, then in order to prevent real interest rates from rising due to "crowding out" (e.g., too much aggregate borrowing by the public and private sector), the central bank will typically step in and buy bonds and notes from the public via open market operations. This policy is known as deficit monetization. As a result, bond market investors do not have to be rewarded with higher yields to buy from the Treasury that portion of debt which has been monetized.

Third, the way the Fed pays for the securities it buys on the open market is to credit the banks through which it acquires them with new reserves, as stated above. This is where confusion begins. Adding reserves to the banking system constitutes an increase in the monetary base of the country—the latter being the sum of bank reserves and dollar bills in circulation domestically. But adding reserves in and of itself does *not* at all amount to "printing new money." It is new money, as captured by rapid growth in the broad money measures **M1** and **M2,** that correlates to a certain degree with inflation, albeit with a long lag. Changes in the monetary base do not. Readers interested in how subtle and indeed problematic these distinctions are should read the attached footnote.[4] In sum, monetization of debt need not create inflation at all, contrary to what is usually assumed. But if this is so, where then does the potentially inflationary increase in new money come from, and what is its relation to deficit monetization?

Fourth, new money of the kind that stokes economic growth and inflation is only created when the banks decide to extend new credit to Tom, Susan, and Harry — an extension of credit made possible by the existence of those new free reserves on their balance sheets made possible by monetization. Traditionally, banks have been able to extend $10–$12 of new loans for each new dollar of free reserves on their balance sheets, other things being equal. Note that when banks extend credit, they put cash into the bank accounts of those seeking loans. Only when these loans get made and get spent does "new money" enter the system — the new money that can create monetary inflation downstream.

The Twin Caveats: Of course, in order for such loans to be extended in the first place, bank's customers must be able and willing to take on debt in the first place. Additionally, banks for their part, must be able and willing to extend the new credits. If other things are not equal (e.g., banks confront ongoing write-downs of their assets), then banks may not wish or even be able to extend new loans. In this case, no new money will enter the system and no inflation results despite "monetization" by the Fed.

The Japanese Paradox: It is these twin caveats that help explain away the Japanese monetary paradox: Despite an 85% increase in its monetary base between 1997 and 2004, inflation failed to take off. A combination of developments (e.g., ongoing write-offs by Zombie banks and a disinclination to borrow by ever older and more risk-averse customers) prevented new reserves from being transformed into new money and renewed economic growth.

[4] Whereas certain pure monetarists would agree with this statement, Keynesians and others have a problem with it. For example, Professor Benjamin Friedman at Harvard has undertaken important research over the years showing that the correlation of the **M**s with inflation is much lower than monetarists would purport it to be. He tells the author that the way to think about the whole issue is as follows: The creation of new money by the banking system serves to heat up economic activity. It is this increase in activity that generates inflation, *not* the creation of more money *per se*. Nonetheless, people of this non-monetarist persuasion cannot deny the role of outright money creation in stimulating hyperinflation *without growth* in cases such as Zimbabwe during the 2002–2008 period. The point we are making demonstrates how very complex the whole story of money and monetary inflation really is. This is just the point we stressed in footnote 2 at the outset of this discussion. The present author assumes a middle ground in this debate.

The Fundamental Proposition on Monetary Inflation: We can sum up this review of monetary inflation with the following proposition: In order for a very large fiscal deficit to give rise to markedly higher inflation, it is jointly necessary and sufficient that **(i)** a significant portion of the deficit be monetized, **(ii)** banks be able to extend large numbers of new loans, **(iii)** banks be willing to do so, **(iv)** customers be able to take on new debt, and **(v)** customers be willing to do so.

> *To understand why all this is a matter of grave concern today, consider that some economists are predicting that the reserves of banks will have grown from their long-run 2000–2007 average of about $50 billion to nearly $2 trillion by mid-2011. If $10 of loans were extended for each such dollar of new reserves, some $20 trillion of new money would be coursing through the arteries of the US economy. These new dollars would be chasing an essentially unchanged output of goods and services valued at about $14 trillion. As a result, the number of dollars chasing each widget would explode, and hyperinflation could well result.*

For our part, we do not expect nearly $2 trillion of new reserves to have been injected by the Fed by the end of this crisis. Indeed, reserves reached their historic peak of $902 billion this past May, and, at this writing, reserves are already back down to $790 billion. A case can be made either for reserves to fall off rapidly over the next two years or else to increase to $1.5 trillion depending on what happens to asset values and to economic growth. Nonetheless, it cannot be denied that the explosion of new bank reserves due to monetization during the past eighteen months is without precedent.

A Note on Fed "Exit Strategies": Fed Chairman Bernanke recently published a *Wall Street Journal* Op-Ed piece in which he outlined five possible exit strategies by which the Fed can soak up some of the liquidity created via monetization. It is said that Bernanke was obliged to clarify this matter in a very public manner given growing concerns by Chinese authorities and investors at large about the US debt tsunami. In one strategy that he cited, the Fed could pay interest on reserves. Banks would then sit on their reserves to the extent that doing so is more profitable on a risk-adjusted basis than extending new credits. A second strategy would be for the Fed to significantly increase the amount of reserves that banks are required to hold against their assets. This is exactly what it did in 1937 when it doubled the reserve requirement of the banking system.

While we were fascinated by Bernanke's array of strategies, we were quite dissatisfied with his essay. For he never discussed the price in terms of lost economic growth that would result from such forms of tightening. But given the arresting magnitude of the liquidity that has been added, won't this price be quite high? After all, did not the more modest exit strategy of 1937 help bring about the second leg of the Great Depression?

> *Nowhere has the chairman addressed the worry of many investors that another serious recession may ensue if the fiscal deficit must be brought way down as a share of GDP and around one trillion dollars of new liquidity must be blotted up. It is high time that President Obama's Best and Brightest advisors address this issue that cuts*

> *across both fiscal and monetary policy. They have scarcely broached it at all to date. All we get are bromides stating that, "assuming the Fed gets its timing right, everything will be OK."*

Is it really a simple matter of timing? We doubt it.

Note on Commodity Price-Shock Inflation: Why did we not include "commodity price-shocks" as a forth generic source of inflation? The reason is that the usual impact of such price-shocks on inflation is *indirect*, as discussed above in the case of the 1970s where it was the COLAs that drove inflation up, not the oil price, *per se.* When these indirect impacts are absent, a sharp increase in, say, oil prices only impacts the prices of goods and services in a subset of sectors in the whole economy. These *direct* impacts on the overall inflation rate tend to be surprisingly small, as was seen in the 2002–2008 period.

It must also be kept in mind that a sharp increase in real commodity prices will depress demand in those sectors that utilize significant quantities of the commodities involved. This is because manufacturers in these sectors will have to pass on their higher costs of the commodities they require for production. Reduced demand will, of course, partially offset the inflationary impact of the commodity price-shock *per se.* All this can best be understood by studying the structure of the input-output matrix (Leontief matrix) of the economy. This reveals how much of each input (e.g., copper) is consumed by each and every sector of the economy.

The Probability of Future Inflation — Our Forecast for 5 Years

The probability of inflation will be determined by the probability of all three *sources* of inflation discussed above. Our view is that the likelihood of either wage-price spiral inflation or reduced output gap inflation is negligible for the next five years. First, the global labor market is significantly non-unionized and will be extremely competitive for the better part of the next decade. Second, the global output gap is currently the largest on record. While this gap will shrink as economies recover around the world, it is unlikely to shrink to a level that generates demand pull inflation to an appreciable degree.

We give higher, but still low, odds of about 25% to significant monetary inflation for the following reasons. On the supply side of the credit market, we expect commercial real estate and credit card losses to be much higher than expected and to further imperil the balance sheets of a number of large and intermediate-sized banks. This will prevent many banks from being able to utilize their new reserves for credit creation. Additionally, we expect the Fed to implement a couple of the exit strategies Bernanke outlined, if only to a limited extent. These considerations suggest that many banks will not be able or willing to extend large amounts of new loans.

On the demand side, we believe that both households and businesses have been duly chastened by the credit market collapse. Businesses will seek to finance via equity as opposed to debt during the next few years. Households, for their part, will struggle both to pay down debt and to save more. Given what has happened to baby boomer retirement prospects, they will have no

choice but to do so for a long time. As a result, conditions **(ii), (iii), (iv), and (v)** of our Fundamental Proposition governing monetary inflation will probably not be satisfied. As a result, monetary inflation need not be feared in the shorter run nearly as much as it is by many investors. Finally, Former Fed Chairman Greenspan recently pointed out that, even if there is a large growth in the broad money measures, there tends to be a *three-year lag* between the growth in these **M**s and inflation itself.

To conclude, we believe inflation will rise back up from its current level of about -1% to around 2% or 3% during the next five years as today's slow recovery takes hold. The likelihood that a monetary-based inflation will break out in the five years beyond 2014 is quite high in our view. This is because we are dubious that the Obama administration will ever embrace the need for pro-growth strategies, and act accordingly. Slow growth will in turn cause the fiscal deficit to continue to grow at an unacceptable pace. And if it does, inflation will prove the politically least painful way out.

As to *when* the bond market as a whole becomes concerned about inflation and demands much higher inflation and risk premia (the Beauty Contest issue), we shall defer judgment to experts in the fixed income markets. But this is a critical variable for investment managers to monitor.

II. Kaleidoscope

– The Tipping Point of 2008–2009 –

Remember your first childhood experience with a kaleidoscope? It was magical: As you turned the stem, the pattern revealed by the crystals in the glass changed moderately, almost continuously, until a point of discontinuity was reached. Suddenly, the pattern being viewed changed radically.

History seems to be characterized by a similar phenomenon. For example, historians looking back to the three years of 1848, 1919, and 1968, deem each to have been a "tipping point." In hindsight, things changed fundamentally and permanently at those dates. The author is old enough to have experienced the year 1968 in a very personal manner. He left school in the United States during the summer of 1967 to live and work in New Guinea (and elsewhere). He returned late in the summer of 1968 to a country that he scarcely recognized. The nation's mood had gone from happy to nasty, from "*Surfin' USA*" to "*I Can't Get No Satisfaction*." Both Robert Kennedy and Martin Luther King, Jr. had been assassinated. Drugs, feminism, antiwar radicalism, and environmentalism had all come out of the closet. The bloody Democratic convention in Chicago topped it all with its riot squads and attack dogs. Moreover, similar happenings transpired throughout Europe at the very same time. And true enough, things would never again be quite the same. This was the inception of those culture wars that, alas, are still with us.

It is premature and perhaps pretentious to suggest that historians looking back will see the events of 2008–2009 as having constituted a tipping point as well. But we suggest that they will. This time, the revolution is primarily *conceptual* in nature. What is up for grabs is *how we think* about a host of surprisingly different matters. In this essay, we shall discuss six paradigms that are currently melting down. In discussing each of these, we draw upon our own efforts to anticipate most of these developments in SED's research programme during the past decade.

1. The Asian Export Model

Asian nations (first and foremost, China) are learning the truth of the saying, "Watch what you wish for. It may come true." The Asian model has largely been one whereby nations export their way to Heaven. Until recently the model worked well. Indeed, Asian nations have accumulated a total of well over $4 trillion of excess foreign exchange reserves in return for having produced far more than they consumed during the past two decades. But Asian governments are now being forced to reconsider their export strategies. They have discovered that, when foreign demand for their high value-added products slackens appreciably, the impact on GNP is *much* greater than expected.

Why has this been the case? One reason lies in the much larger multiplier effects associated with the production of high value-added export goods as compared to those consumption goods and services produced in the US. When demand for exports slackens, an export-oriented firm losing its own orders is forced to cancel upstream orders from its suppliers, who in turn must cancel orders from their suppliers, and so on. The overall impact on an exporting nation's level of output and employment can be severe. No comparable chainlike effect is experienced by non-exporting consumption-oriented economies like that of the US. For the interested reader, the best way to understand this difference is to contrast the structure of the "input/output matrices" (Leontief matrices) of the two kinds of economies.

This has been the principal lesson learned by Asian nations recently. Another lesson has been that, during a global credit market crunch, trade finance can be hit worse than most any other kind of finance. Banks worldwide that were forced to retrench slashed trade financing the most. This further imperiled the Asian model. Finally, the trade crisis has rekindled suspicions of Western protectionism amongst Asian export-oriented nations.

As a result of these three developments, numerous Asian nations claim to be rethinking the wisdom of their traditional export strategies. Chinese officials talk quite openly about the need for much greater domestic consumption to better diversify and, thus, to stabilize the economy. Exporters, they have learned, are at the mercy of far-away banks and customers to a much larger extent than they had realized. Naturally, it is *politically* quite difficult for nations to abandon a strategy that has worked so well for so long — special interest groups will fight for the status quo. As a result, we can expect the necessary "rebalancing" of such economies towards more consumption to take a decade or so to transpire.

Comment: In past research, we did not expect a shock to Asian exports anywhere near the magnitude of what has occurred. What caught us off guard was discussed in our Autumn 2008 ***PROFILE*** where we set forth a game theoretical explanation of the collapse of Asian and German exports, *and* of export financing worldwide. In particular, we had not foreseen how the "game" of inter-bank lending would be transformed by the Lehman Brothers collapse into a Prisoner's Dilemma game whose Nash equilibrium point (solution) would be for all major banks to stop lending to one another. The consequences — especially for trade finance — were staggering.

2. The US Consumption Model

If Asian nations are being forced to reconsider their business model, the US is likewise being compelled to reconsider its own consume-your-way-to-Heaven model, if even more so. Recent events within the US economy constitute a wonderful example of Stein's Law: "What cannot go on doesn't." As is well known, a corollary of the dramatic rise in US consumption during the past two decades was a notable fall in the US savings rate from a long-term average of 8.7% to 0. The combination of rapidly rising unemployment along with excessive household leverage and a marked deterioration of household net worth has been an explosion of the household savings rate from 0% to nearly 7% during the past year. An increase of this size over so short a period is without precedent. Americans suddenly realized that, in order to be able to pay their bills and retire, they had to save *much* more than they used to, and to do so permanently. Assuming that they persist in doing so, the entire US economy must reconfigure itself accordingly with increased investment spending and net exports compensating for lost consumption.

Comment: In essays dating back seven years, we have repeatedly stressed the seldom-acknowledged phenomenon of "wealth reversion," and the eventual need for American families to dramatically increase their savings rate because of it. With net worth either declining or else stagnating, families would have to revert to saving the old-fashioned way, namely out of *income*. Wealth reversion is now in full swing, with households having lost some $13 trillion in net worth during the past two years.

> *Yet before we cry about this loss, we should note that the current net worth-to-GDP ratio of the US is 3.4, exactly its long-run necessary average, according to the theory of economic growth and capital. [Recall that 3.4 is the equilibrium capital/output ratio for all economies.] In short, the level of US wealth is "correct" for the first time in a very long while. So celebrate, and stop expecting to claw back what was never yours in the first place!*

But since this ratio has been *above* average for nearly two decades, mean reversion arguments suggest that the ratio will have to head south for some time, with household wealth growing very slowly. This strongly suggests that the savings rate will stay high, and is likely to move even higher as more and more people realize the hopelessness of their retirement prospects without sharply increased savings.

3. "Beyond Capitalism"

Given today's global financial and economic crises, it is not surprising that every major business publication has run special features on the perils and pitfalls of Anglo-Saxon capitalism during the past year. Last spring, the *Financial Times* even published a glossy magazine dedicated to this topic. Bluntly, within the G-7 nations, belief in the unfettered role of markets has been upended, and with it the era of deregulation has come to a close. Globally, numerous developing nations are openly questioning the wisdom of adopting Western-style capitalism.

Importantly, this debate is not ideologically based as it always was during the Cold War era. Rather the debate is pragmatic. For capitalism is seen as having generated three highly disturbing sets of real world problems: **(i)** Recurring financial crises, the latest of which is a credit market crisis that will have cost over fifty millions jobs globally by the end of 2009; **(ii)** Excessive and unseemly inequalities in wealth and income; and **(iii)** Dangerous imbalances in trade and capital flows, with the US and other Western nations ever more in hock to the Asians, and a destabilizing collapse of the dollar ever more likely.

Comment: Our own view is that this consensus account is fundamentally wrong for reasons set forth at length in our September 2007 essay, "Today's True Back Swan: The Conceits of Bogus Capitalism." We demonstrated that true capitalism is in fact completely *incompatible* with the three sets of problems cited just above. Given widespread and proliferating confusion about the true nature of capitalism, it is worth reviewing how this is, in fact, the case.

(i) Consider first today's credit market crisis. Recall that true textbook capitalism requires a significant government role in regulating non-market "externalities," such as excessive pollution and excessive financial sector leverage. [In our February 2007 ***PROFILE,*** we demonstrated formally how excess leverage does constitute a non-market externality.] It was the abject failure of regulators to do their job and reduce balance sheet leverage as asset valuations went ever higher that was primarily responsible for the current crisis. It was not the "greed" of bankers.[5] More specifically, regulators permitted — indeed abetted — money center banks in their efforts to jack up their balance sheet leverage from an appropriate traditional level of 10–15, to an eye-popping 40–50 during the past decade.

> *As we have repeatedly emphasized, when investors are fundamentally wrong in their forecasts of future events (e.g., today's mortgage default rate), and when their mistakes are correlated, and when there is Pricing Model Uncertainty, then excessive leverage of this magnitude hypergeometrically transforms a "problem" into a catastrophe. Hence what Fed Chairman Bernanke predicted in July 2007 would be a $50–$100 billion dollar global financial sector loss morphed into what will have been a $5 trillion meltdown. Drawing upon the new concept of "endogenous risk" developed at Stanford in the past decade, we*

[5] Note that "greed" is a so-called "state variable" that cannot be legislated or controlled. Conversely, the amount of permissible leverage is a "decision variable" that can be controlled. The failure to make this distinction has fundamentally hobbled the debate about what went wrong during the past three years.

were able to both predict and explain this phenomenon from first principles. Excessive leverage brought down the world. Not mistakes. Not greed. Period.

Adam Smith would have been appalled at the bogus type of unregulated and overleveraged capitalism that has brought down the system, as anyone knows who actually reads his two great works *The Wealth of Nations* (1776) and *The Theory of Moral Sentiments* (1759).

(ii) Consider next the problem of excessive inequalities. The extent of inequality would be a fraction of what it now is, should true capitalism have prevailed. This follows from the fundamental theorem of Kenneth Arrow in 1953, which extended the capitalist theory of markets to environments in which uncertainty about the future is present. [Previous models had assumed certainty.] Arrow demonstrated that when there is uncertainty about the future, all agents must be perfectly hedged against all risks in order for the Invisible Hand to lead to an efficient allocation of resources. But the concept of "optimal hedging" implies a sharing of risk across agents such that those who are lucky whenever an uncertainty is resolved in their favor transfer a pre-specified share of their winnings to the unlucky losers.

The result will be a much flatter distribution of gains and losses, in sharp contrast to today's "winner take all" distribution. In the real world, practical reasons such as high transactions costs and moral hazards permit only a tiny fraction of the risks we all face to be optimally hedged. This is the famous "missing hedging markets" problem. One result is that those billions of dollars of redistributive transfers required by the theory of true capitalism never get made. In consequence, a vast degree of real-world inequality exists that is incompatible with true capitalism.

Happily, partial remedies exist. For example, a progressive income and inheritance tax scheme can be justified on the grounds that it partially remedies those maldistributions of income and wealth that result from the missing market problem. Note that this is a completely different justification for tax rate progressivity than the usual one based upon the principle of diminishing marginal utility.[6]

(iii) Consider finally the problem of today's vast trade imbalances. True capitalism implies a symmetry whereby *all* nations that trade possess open capital accounts, and accordingly, currencies that "float" to a considerable degree. In such an environment, no nation could possess the approximate $2 trillion of "excess" foreign exchange reserves that China currently holds. For as we have explained in the past, China's currency over the past few decades would have *appreciated* to a value many times higher than, say, its level in 1990. [During its own golden days of 1970–1990, the Japanese yen rose by 260% against the dollar.] In consequence, its trade surpluses would have disappeared, and the equilibrium value of its "excess" reserves would have tended toward zero. Instead, its currency value has *depreciated* by about 50% since 1990, notwithstanding its 18% revaluation during the past few years. And its holdings of excess reserves are without precedent.

[6] This argument was first set forth in Chapter 7 of the author's Princeton University Ph.D. Dissertation, "Social Choice, Distributive Justice, and the Theory of Games with Non-Linearly Transferable Utility," 1975.

All this resulted from a mercantilist combination of a closed capital account and currency pegging. In short, a global regime permitting a subset of nations *not* to play by the rules of the game of true capitalism has resulted in those vast imbalances for which most observers have blamed US over-consumption, and now "capitalism" itself.[7]

The three theoretically grounded arguments made above are absolutely fundamental, yet not one of them has surfaced in today's debate about the perils and pitfalls of capitalism. The reason is that these points are quite counterintuitive, and can only be understood by exposure to quite advanced economic theory — and what could be less fashionable than that! Nonetheless, the basic argument we have set forth is (in our view) an extremely important one.

> *For a retreat from capitalism due to a widespread belief that it is responsible for a disaster that it is, in fact, incompatible with, could prove disastrous. This is because all alternatives are worse. Much worse. More specifically, the late Nobelist Leonid Hurwicz proved a decentralized capitalist resource allocation system is the only system capable of satisfying the five philosophical ideals of equity, efficiency, stability, freedom, and privacy. And this is exactly what people want. In short, true capitalism is the least rotten apple in the barrel of alternative resource allocation systems, and no superior alternative does, or can, exist.*

Real-world evidence generated during the past two centuries fully supports Hurwicz's theoretical results in this regard. We would thus make a terrible mistake in throwing out "capitalism" because of ignorance as to what it really is.

4. The Unholiness of the Islamic Jihad

Like him or hate him, the Ayatollah Khomeini was perceived to be a holy man. His jihad against the United States (and, subsequently, other Satanic nations) precipitated in 1979 was rooted in fervid religious beliefs on the part of the Ayatollah and his fellow clerics. Slowly, a perception took hold that many of the other Islamic uprisings (including the Taliban in Afghanistan) were also rooted in spiritual fervor. As eminent Middle Eastern scholars have long pointed out, this perception became a PR plus for the entire Islamic movement.

Those days are now gone. The Ayatollah Ali Khamenei, the current head of Iran's Supreme Council, has now been exposed as yet another one-party thug — indeed a very corrupt thug — increasingly backed by the military and its associated militiamen-thugs known as the Baseej. Many Iranian clerics joined the rest of us in shock at Khamenei's response to the recent elections, both in word and in deed. The hope now is that the world will begin to take note of the reality that the politics not only of Iran, but of most of the Islamic world, are driven by the self-interests of thugocrats who are no more holy than you or I. As this realization spreads, the Islamic jihad will lose its legitimacy and become increasingly unstable. In turn, it should be

[7] Note that *under*-consuming Europe also runs a huge trade imbalance with China, well exceeding $200 billion.

countered much more strongly by the West than it has been to date, especially given the growing threat posed to Israel and Saudi Arabia by nuclear weapons in Iran and Pakistan.

Does this all qualify as a paradigm shift? Yes, it does. For we are being forced to recognize that the Islamic jihad is arguably the gravest threat of all, and we are being obliged to think differently about it.

5. The Commodity Price Catastrophe to Come

Finally, and long overdue, the years 2008 and 2009 witnessed a growing awareness that a development much more powerful than "speculation" has been responsible for the extreme volatility of *spot* market commodity prices in recent years — oil and copper prices in particular.[8] This development was a growing awareness of the impact of the supply-side on commodity prices. The logic here is quite tricky, so let us review it. In past decades, economists had been well aware that one reason for the volatility of many commodity prices lay in *price-inelastic demand.* But the supply curve, for its part, was always assumed to be long-run price-elastic: The higher the expected price, the greater the quantity that would be produced. It is easy to see, geometrically, that the more vertical (price-inelastic) the demand curve is for a given supply curve, the greater the change in price will be for a given shift in either the supply or demand curve. The situation is sketched in Figure 2, reproduced from a previous SED essay. The reader is asked to note the much greater price change in Case B than in Case A.

There is no mystery as to why certain commodities possess quite vertical demand curves. The primary reason lies in non-substitutability: In the case of gasoline, you "must" fill up your car with gas in order to commute to work, regardless of the price. This generates a very vertical demand curve whereby the quantity demanded will not change with the price.

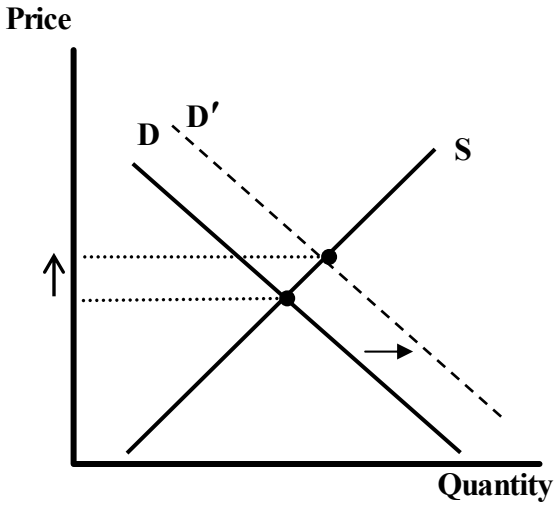
What is new is the advent of price-inelastic *supply* functions. Note from Figure 2.C that, when *both* the supply and demand function are nearly vertical, a leftward or rightward shift in either function causes a HUGE price change — precisely the kind of swings that we have witnessed in copper and oil prices during the past decade.

Now, what exactly does a nearly vertical supply function mean, and what explains the advent of such functions? As to the first question, it depicts a market in which the amount produced does not change significantly even if current and expected price do change.

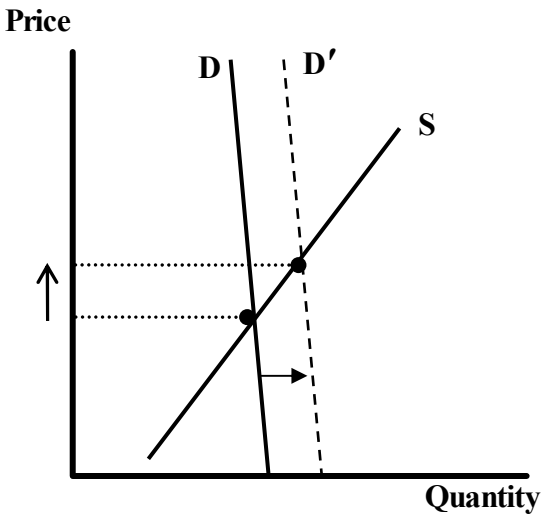
[8] We do not believe it is helpful to think of "commodities" as a class, since grains, copper, oil, and gold behave in quite different ways. In what follows, we focus on oil and copper because they exhibit the traits we are discussing.

FIGURE 2: COMMODITY PRICE BEHAVIOR

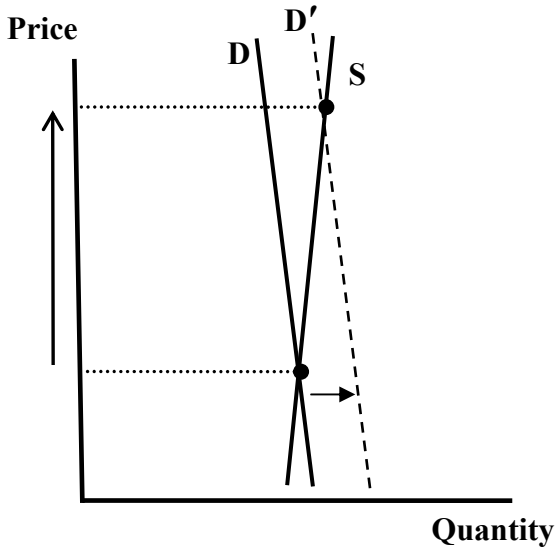
Case A: Normal Elasticities



Case B: Inelastic Demand



Case C: Inelastic Demand and Supply



Source: SED

But what could possibly cause this to happen? The answer lies in *a transformation of the incentive structure confronted by producers.* After the end of the Cold War, developing world nations that were previously client states of either the West or of Russia began to act with increasing abandon. The thugocrats of Russia, Nigeria, Iran, Venezuela, and other resource-rich nations, increasingly tore up existing contracts with the international mining and oil companies at will. And they did so with an impunity that was unthinkable during the Cold War era.

As a result, the incentives to undertake long-run investment in new oil fields and mines have dried up. Note carefully the logic here that underlies a vertical supply curve: Even if the CEO of a major oil company somehow *knew* that the market price of oil would be $350 dollars for the twenty years spanning 2015–2035, he would still not be tempted to invest tens of billions of dollars in new projects if he suspected that the governments of the nations involved would "renegotiate" existing contracts so as to tax away all the potential profits accruing from such high prices.

This did not use to happen. But since it now does transpire in more and more producing nations, the aggregate supply curve has become more and more vertical. This is one reason why production has remained stuck around 86 million barrels per day during recent years despite the huge increase in oil prices. The flip side of this story is that *because* production is so sticky, price had to do *all* the work, with the result that prices have fluctuated dramatically. The same has proven true in the case of copper.

Christophe de Margerie, Chairman of the French oil giant Total, has used this line of reasoning to predict that world oil supply will only grow from today's approximately 86 million barrels per day to under 100 million barrels during the next twenty-five years. Yet the IEA energy watchdog in Paris now forecasts that demand will rise to above 125 million barrels. As the logic of Figure 2.C makes clear, the resulting supply/demand imbalance could generate staggeringly high oil prices, or more likely, quantity rationing. The "peaking" of old oil only makes matters worse. World "old" output has been falling at about 9% per year, much greater than most anyone expected, with a 32% Mexican decline in output leading the way. Geometrically, this development shifts the entire oil supply curve backward, *augmenting* the upward price pressures due to the vertical slope of the function itself. This is the worst of all possible worlds.

Comment: We developed this "incentive structure" logic of commodity price behavior five years ago when we first predicted the huge increase in oil prices (ibid copper prices) that came to pass. Soaring world growth alone would shift the vertical aggregate demand curve outward, and the logic of Figure 2.C would come into play due to the new steepness of the supply curve.

We then applied this logic in reverse in 2008 when we sensed the possible collapse of world GDP growth that occurred during the last half of 2008. What exactly happened to cause such a precipitous drop in oil prices in merely six months? *First,* world GDP growth collapsed from 4.5% as late as June 2008 to an unprecedented -2.5% by the start of 2009. This caused a very rapid backward shift in the demand curve. *Second,* both the supply and demand curves remained quite vertical. The logic of Figure 2.C then kicks in, predicting both the very steep fall in prices *and* the lack of a significant drop in production that occurred.

During this period, those who blithely attributed the huge six-year *rise* in spot market oil prices to "speculation" could not invoke this same bogus logic when oil prices fell precipitously from $145 to $35 per barrel. And interestingly enough, they did not even try to do so.

Extension to the Assessment of Price Risk: It is easy to extend the foregoing analysis of what economists call "comparative statics" to the quite different topic of "risk assessment." In particular, where does volatility really come from? For the interested reader, go back to Figure 2, and now put probabilities on the different functions appearing there. [Thus, if there are two demand curves, you could assign **.35** to one and **.65** to the other. These numbers must add up to **1**.] The probability of any given curve is simply the probability of the state of the world that generates it (e.g., the probability of war versus peace.) Assuming that the "states" that determine the location of the supply curves are independent of those determining the location of the demand curves, then the probability of the equilibrium price occurring where any two functions intersect is simply the *arithmetic product* of the probabilities of the two curves themselves.[9]

Proceeding in this manner for each possible pair of curves, we can flesh out a probability distribution of the price of the commodity in the future. The Fundamental Theorem here reveals the riskiness of price (e.g., the standard deviation) to be an exponentially increasing function of the sum of the absolute values of the steepnesses of the supply and demand curves. This should be intuitively clear from the logic of Figure 2.

Pathological Incentive Structures—The More General Problem: The really big story centers around the transformation of the incentive structure that has caused a much steeper supply function in many commodity markets. We discussed this matter in much more general terms in our September 2007 essay, "Res Politica versus Res Economica: Why Economics Must Yield to Political Science as the Paradigm of Tomorrow." Our prediction was that many markets would be increasingly politicized in future decades, with the ever-so-visible *iron* fists of the Putins of the world replacing the Invisible Hand of Adam Smith. In game-theoretical terms, resource allocation would more and more become the outcome of a nasty multilateral bargaining game and less the outcome of a perfectly competitive "market game" as in the textbook. Some may recall from Robert Aumann's Theorem of 1977 that *bargaining power does not exist and can play no role at all in a true Adam Smith economy.* For every agent must be "tiny" and lack the incentive to collude with anyone else. By brilliantly linking market behavior to bargaining behavior, Aumann's result clarified the hitherto rather vague concept of "perfect competition."

> *Since we wrote that essay in September 2007, myriad events seem to have confirmed our predictions about pathological incentive structures. The implications of an increased politicization of markets are highly disturbing for both future economic growth and for world peace. This is especially true when the advanced nations prove to be as inept at bargaining as today's thugocracies are skilled. Why is it that the US*

[9] This probabilistic approach to price forecasting utilizing state-dependent supply and demand functions was introduced in "Arrow-Bayes Equlibria: A New Theory of Price Forecasting," by H.W. Brock, appearing in *Arrow and the Ascent of Modern Economic Theory*, Ed. George Feiwel, New York University Press, 1987.

and other advanced nations prove incapable of exacting any price from anyone for bad behavior, despite their great power?

Surprisingly, this is a topic that is rarely discussed either by political scientists or by economists. We believe it to be of the utmost importance.

6. The Meltdown of Economic Theory

The cover story of the July 18 issue of *The Economist* was entitled "The Meltdown of Modern Economic Theory." The two branches of economic theory that are melting down, in the opinion of the editors, are macroeconomic theory and financial theory. Readers will know that these are precisely the two fields within economics of which we have been extremely critical during the past decade.

Part A: Macroeconomics

In the case of macroeconomics, the magazine does a good job in outlining the fault lines that are creating rancorous divisions about macro theory — and that are doing so when we urgently need macroeconomic truth to help fight deep global recession. As a result of spats between high profile economists like Lawrence Summers, Brad de Long, Paul Krugman, and others, the public is increasingly questioning the competence of economists to be making the decisions that they are now charged with making. Why should the rest of us have confidence in them when they cannot agree on such basic issues as whether an endless sea of fiscal red ink matters, much less what to do about it? It should be remembered that, only two generations ago, macroeconomists were largely absent from the scene in Washington. Back then, lawyers ruled the roost. No longer. Ben Bernanke and Lawrence Summers are modern-day emperors of sorts. But do they wear any clothes?

In its critique, the editors discuss the balance of power between monetary and fiscal policy. They point out that fiscal policy has been significantly underemphasized in recent decades, whereas monetary policy (in the form of Fed funds rate adjustments) has been overemphasized. They also point out how macroeconomists at this time of crisis have failed to articulate any credible "exit strategy" from the vast increases in both money *and* red ink that they have justified as necessary to fight recession.

To be sure, Fed Chairman Bernanke published an excellent Wall Street Journal Op-Ed piece in July outlining five monetary strategies for withdrawing liquidity once better times arrive. But his piece rang hollow as he completely failed to discuss the negative impact on economic growth of utilizing such policies to "sterilize" the monetary excesses of the recession. Without knowing the true economic cost of such unprecedented tightening, how can we assess the odds that sterilization will in fact occur, and thus that hyper-inflation is not a risk? As for future deficit reduction, both President Obama and Treasury Secretary Geithner do nothing but blow smoke when

the subject comes up. Even the Finance Minister of China has demanded a better analysis of this issue, along with a plan of action to reduce the deficit.

As a result of this disarray within macroeconomics, many observers now join the editors of *The Economist* in wondering whether the macroeconomic cure for today's crisis will prove to be worse than the crisis itself.

Comment: In our April 2009 essay "The End Game Draws Nigh," we went much deeper in diagnosing what is wrong with macroeconomics than *The Economist* did, and we proposed a slew of remedies that will be needed to exit from today's macroeconomic quagmire. To begin with, we identified when standard fiscal and monetary policies *do* succeed in restoring growth, versus when they do not. In particular, we showed why fiscal deficits of under 7% of GDP have traditionally proven manageable throughout the G-20 nations. In particular, we showed why modest deficits do not need to be monetized, and have not been monetize in practice.

In this essay, we also discussed the issue of debt monetization in some depth. We demonstrated why much larger deficits *do* tend to require monetization that can (but need not) lead to excess liquidity and high future inflation. Fears that this will happen in turn lead to higher inflation and risk premia in the bond market. The problem is that these premia get imposed by forward-looking bond market vigilantes when *actual* inflation is still very low. The result is a sharp rise in *real* bond yields, and this can forestall economic recovery. In this regard, it is very alarming that the US is currently running a projected fiscal deficit of about 13% of GDP for the current fiscal year, 11% for the next year, and over 5% for 2019.

On the more positive side, we demonstrated how an initial debt shock such as we have had is not as problematic as people fear, provided that the government aggressively determines to drive the Debt/GDP ratio back down to normal after the crisis has passed. <u>It is this debt-ratio trajectory over time that is critical</u>. Hence, it is this trajectory that should be front and center when formulating macroeconomic policy. But it has not been.

What can be done to make it more prominent? And how can this ratio be driven way back down as it must be? In our view, macroeconomic theory itself must be <u>generalized</u> so as to directly confront this problem of debt growth. Oddly, the editors of The Economist *did not discuss this issue at all, despite the fact that macroeconomic <u>theory</u> was their chosen topic. Nor have other commentators that we know of discussed it. This failure bespeaks the insularity of current macroeconomic thinking.*

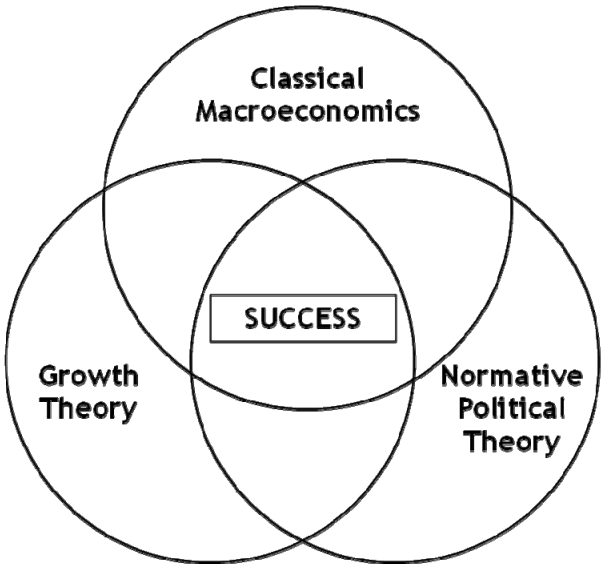
Our Answer: The generalization of macroeconomic theory proposed in our "End Game" essay (see Figure 3) involved grafting both growth theory and normative political theory onto standard macro theory with its emphasis on fiscal and monetary policy. In policy terms, what is currently needed to drive the Debt/GDP ratio back down is a mix of **(i)** fiscal restraint, **(ii)** policies targeted to drive up equilibrium growth, and **(iii)** constitutional reforms to governance itself. As for fiscal restraint and increased growth, we proposed 14 specific policies that can and should be utilized

to drive down the debt ratio. Four policies would drive down the *numerator* over time (the deficit as a share of GDP ratio), while the remaining 10 would drive up the *denominator* (the growth rate).

In particular, we showed how the two determinants of trend GDP growth (workforce growth and productivity growth) *can* be driven up. Contrary to what is often implicitly assumed, these two growth rates are *not* "exogenously given." Rather they should be viewed as variables that can be driven up or down via policy choices. Recall that bad policies destroyed China's growth during the Cultural Revolution, and good policies subsequently generated the highest growth rate on Earth. Growth theory is the branch of economics that makes sense of all this.

> *Why, therefore, has this branch of economics been segregated from "macroeconomics"? More disturbingly, why has the Obama administration not availed itself of any of these pro-growth strategies to date? Why have so many of its policy choices (e.g., higher taxes on labor) been anti-growth? Given the sea of fiscal red ink ahead, we find this situation to be scandalous. And no, "politics" is not the answer, as strategies aimed at more rapid growth are win-win strategies from which everyone gains.*

FIGURE 3: A GENERALIZATION OF "MACROECONOMICS"



The area of intersection of the 3 circles represents the success in solving the nation's long-run macroeconomic crisis

Source: SED

But just as growth theory must be welded on to classical macroeconomics, so must normative political theory — the theory of good governance analyzed with the new game-theoretic tools of incentive-structure theory. Normative theory makes clear that today's crisis of ever-growing public-sector debt is fundamentally political, and that until today's political system is changed, we face a menacing future. More specifically, the incentive structure governing the lives of politicians for five decades has made it *rational* to run for office by promising voters more future benefits and services than can ever be paid for. General Motors did the same thing in its kick-the-can-down-the-ally labor settlements, and it duly went broke. So, for related reasons, did California.

Could the federal government be next? Yes. But there is hope. Political theory is very instructive as to what to do about incentive structures. It teaches us that good leadership is all about changing the perceived payoff matrix of the game governing the policy choices of politicians. Today's matrix must be changed so that it no longer represents a Prisoner's Dilemma game whose solution is for politicians seeking reelection to further mortgage the future. With a new and better matrix, politicians would find it individually rational to do what is in *our* best interest, and that does not include going broke.

Constitutional reform is another possibility, although this only tends to occur when the status quo has completely broken down. High-profile task forces and blue-ribbon committees designed to embarrass politicians can also prove invaluable. So can bond-rating agencies, abetted by widely publicized "findings" of high-profile institutions like the IMF.

> *And finally, there are those bond market vigilantes. We suspect that the latter will prove the most effective catalysts for political reform of all during the next two decades. For what will increasingly matter to everyone will be the "terms" upon which We the People end up willing to lend some $60 trillion needed to fund both today's crisis and the retirement of the baby boomers to follow.*

But as always, what probably matters most of all is how we think about the problem at hand. And we are not thinking about it well today. Nor, in retrospect, are the editors of *The Economist*. Everyone is drawing upon an increasingly narrow and irrelevant body of macroeconomic thought in diagnosing today's problems and solutions. The idea that the Best-and-the-Brightest can ignore both growth theory and political theory while pretending to mend a long-run economic crisis says everything. In this regard, what we are really arguing for in Figure 2 is a replacement of macroeconomics as we know it with a modernized version of what was once called Political Economy. Pace Aristotle!

Part B: Financial Theory

Finance is the second branch of economic theory that is "in meltdown," according to *The Economist* cover story. The usual suspects are described in detail, namely the lack of transparency of markets especially in structured products, the restrictiveness of "Rational Expectations," the Efficient Market Hypothesis, and the purported antidote of Behavioral Finance (BF). Readers of these essays are sufficiently familiar with the debates within finance that we need say little more herein. Suffice it to say, today's growing loss of confidence in macroeconomics pales when compared to the black eye financial theory has received. The axioms underlying this theory as well as the models it has produced are in considerable disrepute. Even the august CFA is moving away from received theory, and in quite a public way as was made clear in a front page announcement in the *Financial Times* on June 15.

Comment: Starting back in 1994, we began our own critical assessment of financial theory, as longstanding readers of these essays may recall. When the author read the first paper by Mordecai Kurz of Stanford on his new theory of "Rational Beliefs" (RB), he was immediately struck by the integrity of the underlying logic. In RB theory, it would finally become possible to combine the rigor and clarity of classical financial economics with important insights from the emerging discipline of Behavioral Finance. Our problem with BF is that it had not and probably never would give rise to what is needed from the standpoint scientific progress: A falsifiable general equilibrium model that would account for all of the price risk *and* the spectrum of risk premia that financial theory is supposed to predict and explain. Developments during the following fifteen years have fully confirmed our initial view: BF failed in this task, and RB succeeded.[10] Given the importance of this observation to our readers, let us review the fundamental difference in perspective of these two approaches to microeconomics.

The starting point of BF is the assumption that classical theory went wrong by assuming that agents are rational. They are not, since their forecasts reflect myriad biases and are wrong. RB theory on the other hand retains the traditional assumption that agents are rational, but in a weakened form. Specifically, while they are assumed to maximize their risk-adjusted expected returns *given* their beliefs, these beliefs themselves are not assumed to be classical Rational Expectations. Because "things change" over time, agents cannot simply crunch historical data to arrive at the "true" probability distributions for all future events, as is assumed in most classical theories. For such truth does not exist. Instead, agents find it difficult to predict the future, and adopt different beliefs.

[10] The failure of BF in this regard is well known. As for the empirical success of RB theory, please see "Rational Diverse Beliefs and Economic Volatility," by M. Kurz, in *Handbook of Financial Markets: Dynamics and Evolution,* eds. T. Hens and K. R. Schenk-Hoppe, North Holland, Amsterdam 2009. This essay is the best we know of in making sense of the entire issue of "market volatility," namely what it really is, and what its true sources are. The bibliography is very extensive. Incidentally, authors chosen to contribute essays in this celebrated *Handbook* series are chosen because they are regarded as the very best in their field. We emphasize this for readers who initially doubted our enthusiasm for the new Stanford paradigm. Doubt no more.

Since there can be only one true belief *ex post,* most agents will end up having held beliefs that are wrong. It turns out that it is the correlation of these mistakes that largely explains real-world volatility.

> *Consider the catastrophe of the past two years. It originated in a vast correlated mistake about mortgage default rates. When this mistake was toxically combined with unprecedented levels of leverage, and with Pricing Model Uncertainty, disaster was at hand. Moreover, as we have stressed in our research during the past two years, the behavior of agents responding to the disaster was not irrational at all. On the contrary, their behavior was completely rational <u>given</u> their initial beliefs, their leverage, and their realization of their mistakes. Furthermore, it was this rational behavior on the part of all agents that generated massive volatility in many markets. In this regard, RB theory explains away murky concepts like "toxic assets," "fear and greed," and "irrational panic." These concepts are no longer needed.*

Kurz denoted the extra price volatility generated by mistaken beliefs as "endogenous risk," and showed it to account for at least 80% of market volatility in normal times, and well over 95% of volatility in times of panic. Where classical economics had gone wrong when predicting a very low real-world level of risk was to mask all the price risk that would bubble to the surface once agents were allowed to be wrong in their probabilistic forecasts. In short, we have moved from theories that are mistakes free to a new theory in which mistakes are central.

Why are investors' beliefs necessarily wrong? There are two sources of error. First, the economic environment is non-stationary. That is, structural changes occur that prevent historical data from revealing the true probabilities of future events. Agents cannot be right in such circumstances. Crunching historical data cannot lead them to truth. Second, agents do indeed suffer from biases in their forecasting, just as BF insists. Yet in many cases, no *psychological* analysis of biases is needed to explain agents' mistakes. Aristotle was not psychologically challenged in believing that the sun went around the Earth. He simply did not know that the Earth was spinning on its own axis. How could he? RB would judge Aristotle simply to have been wrong, not "biased." Other people might well be wrong because of their biases. Yet, what matters to market behavior (i.e., to economics proper) is not *why* people are wrong, but *that* they are wrong. It is really that simple.

Kurz was the first person to understand all this and to piece it together into a fully coherent model. The new model of general equilibrium that is required is, unfortunately, very demanding mathematically. [This is often the case in the history of science. For Einstein to pick up where Newton had left off and to fully explain gravity required the introduction of tensor calculus and differential geometry.] This, plus the fact that Kurz's writings are not user-friendly, largely explains why his research is not well known. Yet matters are beginning to change. As a former head of UBS just remarked to the author on the telephone, "It is interesting that more and more people are now talking about endogenous risk."

One final point should be made. Just as Kurz relaxed classical assumptions about agents' beliefs and permitted mistakes to enter the picture, he could also have weakened the assumption that, *given* their (wrong) beliefs, most agents are weakly rational. But as an empirical matter, he did not need to do so in order to fully explain all the price risk that classical theory had failed to predict and explain, and that BF also failed to predict and explain. According to the principle of Occam's Razor in the philosophy of science, we should thus assume that agents are, in fact, rational. Future economists may disagree. But if they do, they will probably find it impossible to construct a valid, falsifiable model with which to test their results. For some concept of goal-seeking behavior (weak rationality) is mathematically required to generate a meaningful model.

Normative versus Descriptive Theory: Not surprisingly, *The Economist* article did not discuss any of this. It also confused matters by failing to distinguish between the two completely different fields within finance that are in meltdown. The theories it did discuss (as well as RB) are all examples of "positive" or "descriptive" financial theory — theory descending from the CAPM model of the mid-1960s. The focus of such theories is on how markets work, and in particular, on how risk gets priced. The other field that the editors did not discuss is normative financial theory (i.e., what should we do with our money?) Normative theory descended from Markowitz's paper (1952) on the portfolio problem. But the credibility of normative theory has been impugned as much as that of descriptive theory. Concepts like "the policy portfolio" and "buy and hold" are melting down as we write. *As a result, there is total confusion about optimal asset allocation, both in theory and in practice.*

We have often stressed this distinction between descriptive theories of the "is" versus normative theories of the "ought." And, unlike Kurz who did not address normative theory at all, we did. Specifically, we demonstrated how the advent of RB theory finally made it possible to generalize classical normative theory and in doing so to arrive at a complete reconstruction of modern portfolio theory. Please refer to our two essays on "A Reconstruction of Portfolio Theory," September 2004 (chapter II), and February 2005 (chapter IV). Please also refer to a recent published article that goes way beyond our original work, and directly answers the question: "Is it possible to beat the market when everyone has the same information, and to do so in a manner that is consistent with proper microeconomic theory?" The answer is yes.[11] We will write about this paper in greater detail in a forthcoming ***PROFILE***.

Conclusion: In this essay, we have tried to argue that at least six paradigms are in partial meltdown during the years 2008–2009. These range from the Islamic jihad to the Asian economic model, to the US economic model, to the belief in capitalism itself, to resource allocation within the commodity sector, to macroeconomics, and finally, to finance. We do not know whether historians will agree with our suggestion that a "tipping point" of sorts has been reached. But we believe that some will. The current point in time is one where we will probably look back and realize that things fundamentally changed. To start with, whatever happened to my retirement?

[11] "The Ability to Outperform the Market: Logical Foundations Based Upon the Theory of Rational Beliefs," by H.W. Brock. *Revista Internazionale di Scienze Sociali,* 2007, number 3, pp. 365-402. For a copy, please email WoodyBrock@SEDinc.com.