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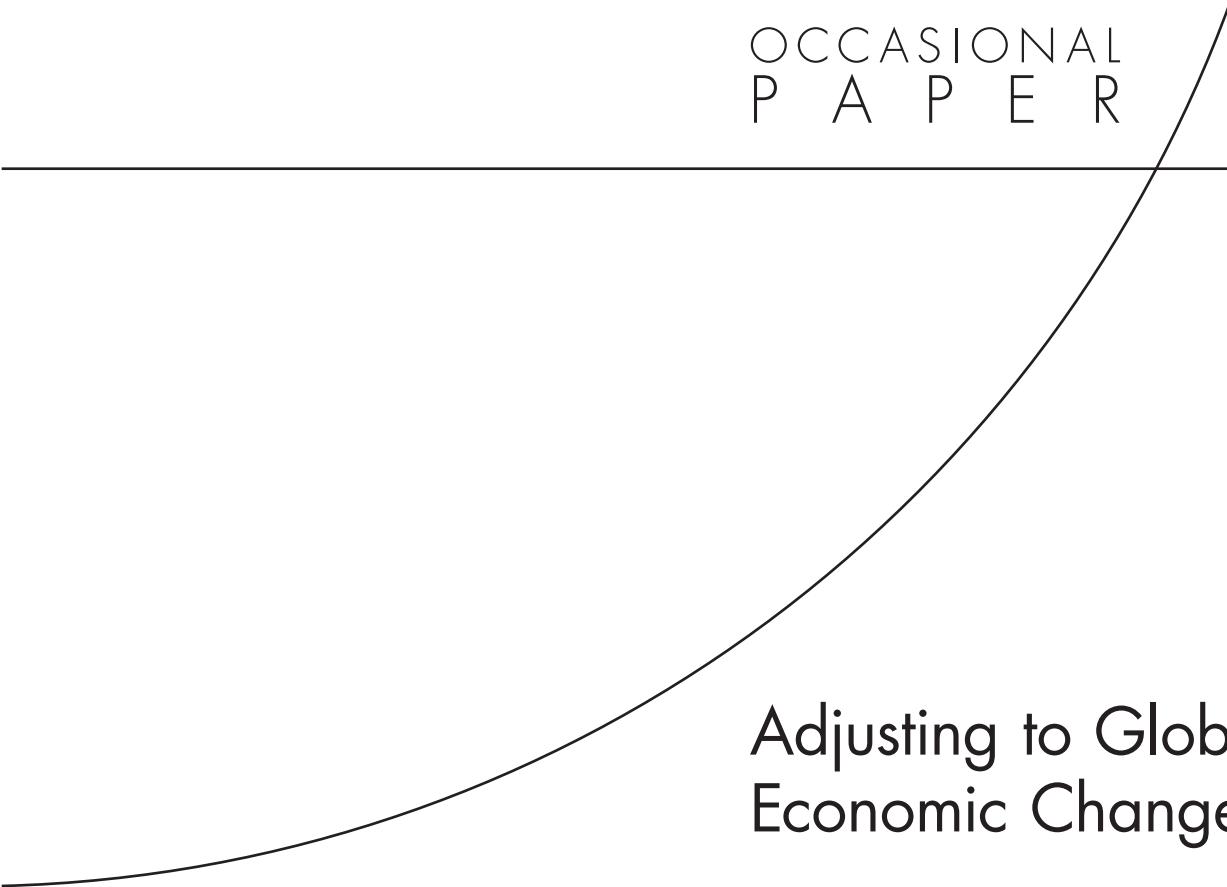
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Adjusting to Global Economic Change

The Dangerous Road Ahead

Robert A. Levine



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Preface

This occasional paper is intended to suggest to economists and policymakers in the United States and elsewhere that the macroeconomic perils faced by the global economy are deeper and likely to last longer than those presented by the current financial crisis.

A warning is not a forecast. Economic forecasts beyond a very few years are subject to so many unexpected variables that they frequently miss even the direction of change—as many investors and policymakers have discovered. But warnings may help hedge against worst cases. In most macroeconomic crises, the worst case—depression or inflation—is fairly clear, and modern policymakers have the tools at hand to cope. This paper warns that the worst case now may be both—stagflation—and makes some brief suggestions about the new tools needed.

The method combines macroeconomic history since the Great Depression with a brief exposition of the theories developed from this history and explores how that experience may apply to the future.

The author, a retired senior economist and current adjunct economist at the RAND Corporation, was deputy director of the U.S. Congressional Budget Office from 1975 through 1979, where he observed the stagflation of that period and helped analyze the policies devised by the administration and the Congress to cope with it. Returning to RAND in the 1980s and 1990s, he coauthored a report on macroeconomic policy and wrote several journal and magazine articles on the subject.

Publication of this occasional paper was sponsored by the RAND Pardee Center. The Pardee Center, established through a generous gift from RAND alumnus Frederick S. Pardee, aims to enhance the overall future quality and condition of human life by aggressively disseminating and applying new methods for long-term policy analysis in a wide variety of policy areas where they are needed most.

Acknowledgments

The author owes many thanks for criticisms and suggestions to his RAND colleagues (current and erstwhile) Nicholas Burger, Norman Jones, Krishna Kumar, Robert Lempert, Anthony Pascal, Peter Stan, Martin van Heuven, and Charles Wolf Jr.; and to friends and colleagues from other times and venues, John Bennett and Walter Williams. They have modified the views and analyses, but the errors and biases remain my own. Finally, particular thanks are due to Roberta Shanman for helping me find and mine the data.

Adjusting to Global Economic Change: The Dangerous Road Ahead

China presents a much greater challenge to the global economy: how to bring prosperity to 1.3 billion people without resulting in excessive dislocations in other countries. Add India's rapid growth and economists say it would be a real strain on the global trading system to enrich two-fifths of the world's population by strategies heavily dependent on exporting to the richest tenth of the world, the United States and Western Europe.

—*New York Times*, 2003¹

Many of the world's fastest-growing economies thought that they had insulated themselves from problems in the developed world. But economists said that simultaneous turmoil in Europe and the United States was too much to bear.

—*New York Times*, 2008²

This paper is not primarily about the worldwide financial crisis that began in 2008. Taken by itself, the crisis, although much deeper and wider than other recent ones, is the latest in a series of overexuberance-based financial bubbles that have expanded and burst since at least the 18th century.

Even if the crisis were to approach the one that began with the stock market crash of 1929, central banks and governments have learned how to cope with such crises, at least in part, and how to meliorate their stagnating effects on the real economy of production, employment, and income. If the lessons learned by national governments in the 1930s and subsequently can be applied globally—still a major question—then the worst of the economic effects of the Great Depression may be avoided.

Some crises are imposed on longer-run economic shifts that make them extremely difficult to handle. The current financial crisis may resemble that of 1929, but the underlying economic situation is more like that which brought about the “stagflation” of the 1970s, when what had become the standard macroeconomic tools—monetary and fiscal—for coping with stagnation caused rapidly accelerating inflation.

The fundamental causes of the problems of the 1970s and those at the beginning of the 21st century are similar: Both periods are marked by shifts of income and economic power from what has been the wealthy world to new regions and countries. In the 1970s, the oil-producing

¹ Keith Bradsher, “International Business: The United States and China Test the Boundaries of World Trade,” *New York Times*, November 28, 2003.

² Alexei Barrionuevo, “Emerging Markets Find They Aren’t Insulated from the Tumult,” *New York Times*, October 7, 2008.

states claimed and won income and power by restricting supply to petroleum users. Now, although oil price increases have been a major cause of immediate difficulties, the increases have stemmed primarily from increased demand for petroleum and other resources by hitherto relatively poor and dependent countries, with China and India leading the rest.

Such shifts in the shares of income and power (“share-shifts,” for short) may or may not be “just” in a moral sense; either way, however, they can cause major economic and political dislocations for substantial periods of time. In the 1970s, the wealthy oil-consuming countries could adapt to smaller shares by using their macroeconomic tools to slow growth and decrease income and employment, or they could attempt to maintain incomes by stimulating their economies, which in the face of the OPEC-caused supply reductions, accelerated inflation.

Either choice was politically unpalatable: Electorates felt the pain and governments were overturned throughout the West. Although the share-shift at the beginning of the 21st century has different causes, the economic and political results may resemble those of the 1970s. Or they could even have some of the truly dreadful effects of the Great Depression. Ironically, the rapidly growing gainers from the shifts are beginning to suffer almost as much as the losers, with still-poor populations suffering most of all.

Many crises stem from financial overinvestment in economic activities that—were they to continue to grow just a bit longer—would make fortunes for investors. Sometimes the investment starts out soundly based: The information technology (IT) boom of the 1990s increased productivity and accelerated real economic growth in ways that are still reverberating, but as starry-eyed investors continued into ill-considered dot-coms, it collapsed, leaving behind a lot of lasting improvement as well as disappointed dreams. Even the housing/credit bubble now bursting started with real gains in home ownership achieved by pooling the risks of mortgage lenders, although the complex ingenuity of the poolers concealed the flimsiness of many of the mortgages.

The following analysis moves back and forth between macroeconomic history and a brief exposition of economic theory that stems from and explains that history. The discussion begins with the Great Depression and the lessons learned for public policy, then places those events in the complementary frameworks of the two seminal economists of the 20th century: John Maynard Keynes and Joseph Alois Schumpeter.³ It uses these frameworks to examine five subsequent periods—World War II and the following prosperous quarter-century; the stagflation and recovery of the 1970s and 1980s; the IT boom that lasted through the 1990s; the current crisis; and the future. The final section makes some policy suggestions for escaping the worst effects. The conclusions are not optimistic.

³ The discussions of economic theory are highly simplified. The appendix to this paper discusses some of the simplifications and the author’s biases. Economists will note that the biases favor the Keynesian over the classical framework for macroeconomics; Schumpeter lies outside of both. One bias manifest throughout the paper is the use of the word *inflation* to mean a general rise in price levels. Some classical economists, but not all, interpret Milton Friedman’s statement that “Inflation is a monetary phenomenon” as a definition.

History: 1929–1939

From the 18th through the early 20th centuries, public policy mostly ignored the bubbles and their collapses; free markets and new technologies eventually worked things out, but frequently with much misery over periods of many years.

That began to change in the Great Depression. The overexuberance of the 1920s led to many unsound financial investments that could not pay off; the 1929 stock market crash resulted from the realization that investment had gone much too far. The result was not only the collapse of the financial markets but also the rapid reduction of spending on capital goods and services that had been financed by those markets. That soon spread to reduced demand for all goods and services, thus turning the financial crash into depression in the real economy.

The Federal Reserve and other central banks then proceeded in precisely the wrong direction, tightening credit to preserve the gold standard and making any revival of investment impossible. The Hoover administration followed in kind, trying to balance the federal budget by cutting spending. Congress made matters worse by passing the Smoot-Hawley tariff, thus accelerating the worldwide spread of the depression.

Fortunately, Franklin Delano Roosevelt, newly inaugurated as president in 1933, when the depression had sunk to frightening depths, ignored his campaign promise to balance the budget, instead increasing the deficit to unprecedented peacetime levels with the new huge-for-the-time public works, relief, and other spending programs of the New Deal. That helped turn the economy around, but the United States did not leave the depression behind until the really immense deficits of World War II.

Theory

The largely seat-of-the-pants planning and programs of Roosevelt's New Deal began before Keynes built an underlying theoretical structure that supported and validated them. His 1936 book, *The General Theory of Employment, Interest, and Money*,⁴ argued that prosperity and depression were governed by fluctuations in demand for goods and services. Increased demand induced increased production to meet the demand; that, in turn, increased jobs and income. Economic downturns resulted from a shortage of effective demand, leading to cutbacks of production and employment. As the newly unemployed and other victims of the cutbacks reduced their spending, the system spiraled downward. Classical economics had postulated that the response to decreased demand should and would be a reduction of prices rather than of production and employment, but Keynes stated and explained the obvious: It was not happening that way.

Policy could try to reverse the downturn in two ways. First, central banks such as the Federal Reserve could reduce interest rates and make money easily available for banks to loan out, hoping to revive business capital investment and, ultimately, other spending. Sometimes that works; sometimes—notably, by the time it was tried in the Great Depression—investment opportunities were no longer attractive at any price. Keynes and others termed that a

⁴ John Maynard Keynes, *The General Theory of Employment, Interest, and Money*, Macmillan/Cambridge University, 1936; reprinted many times since.

“liquidity trap”: Lots of money was available but nobody was willing to spend it on real goods and services.

The second option—Keynes’s great contribution to economic policy—was for the government to put more into the economy by spending more than it took out in tax revenues. People newly employed in government programs, like Roosevelt’s Works Progress Administration (the famed WPA), or those in need, who were simply given money through welfare programs, would buy more goods and services from the private sector (the Keynesian “multiplier”). Further, as Keynes’s disciples emphasized more than he himself did, the new consumption should induce new investment in plant and machinery to provide the consumption goods (the “accelerator”). The spiral would be reversed.

All this would increase deficits, thus going against all the tenets of classical economics and Puritan prudence and morality: It was argued (and still is) that governments, like families, cannot spend what they do not have. But that argument ignored the fact that sovereign governments, unlike families, can print money. Keynesian spending worked, although as noted, it took the huge expenditures and consequent deficits of World War II for it to work the economy out of the Great Depression.

Keynes threw less light on the underlying reasons for the initial downturn in spending that started the whole thing: What caused the decrease in demand? His disciples and many other economists, before and after *The General Theory*, debated many explanations endogenous to the system—overshooting investment leading to losses for unwise later investors, underconsumption resulting in products unsold, etc.—and how the theory and the numbers led to such phenomena. They reached no consensus.

Schumpeter, a non-Keynesian (strongly anti-Keynesian, in fact) Austrian-American economist, provided a different, socioeconomic, framework to explain the causes of economic fluctuations. It could, and can, be used in conjunction with the Keynesian frame, although Schumpeter surely did not do so.

Schumpeter, whose professional career spanned the first half of the 20th century, looked back at history starting with the industrial revolution and perceived a series of long waves of economic activity, as risk-taking entrepreneurs introduced radical productive innovations. These were mostly new technologies—*inventions* put into productive and economic actuality—but they could include new means of organization and management, such as the substitution of interchangeable parts for crafting of individual pieces. The new technologies and procedures replaced old ones in a process he called “creative destruction.”⁵

The industrial revolution, produced by the steam engine toward the end of the 18th century, was the first of these technology waves. It was followed by railroads, the telegraph and telephone, then by electricity, automobiles, aircraft, assembly lines, and radio. World War II (Schumpeter died shortly after the end of the war) provided an interruption but also jump-started the next wave, which was based on electronic, nuclear, and other technologies stemming largely from the war. The most recent wave is the information technology revolution of the 1980s and 1990s.

In spite of creative destruction, the first, rising phases of each wave increase productivity and also induce new investment in the new technologies that, in a Keynesian framework, would increase demand and thus employment and prosperity. Keynes had argued that investment was

⁵ Schumpeter produced many books over a 40-year time span; the one that sums up his theory best is *Business Cycles: A Theoretical, Historical and Statistical Analysis of the Capitalist Process*, Harvard University Press, 1939.

the autonomous first mover in changing demand, while consumption, the other major private component, was determined primarily within the circular system of production → producers' incomes → spending → demand for products → producing to meet that demand. Schumpeter provided an explanation outside the circle for the autonomous investment.

Eventually, however, the new innovations run their course; investment overshoots; profits, production, and demand decrease; and the process reverses itself into hard times until the next technological wave. Schumpeter also postulated two shorter cycles: one, lasting 5–10 years, is what is commonly thought of as the business cycle, including bubble cycles like the current one; another, less important, cycle based on overshooting business inventories.

Schumpeter suggested a regular periodicity for each of the three, a concept criticized even by some economists who embrace the overall frame of reference. What is important here, however, is not the periodicity but the fact that short-cycle recessions that occur during a rise of the long wave are likely to be less severe than those that occur during the long ebb. Keynesian policies to mute the effects of cyclical downturns will work more effectively for the milder ones on the rising side of a long wave.

We can put together the three sets of theories—classical, Keynesian, and Schumpeterian—to explain the Great Depression: The stock market crash—a bubble based in the overextension of post-World War I speculation—accords with classical concepts. The subsequent downturn was made worse by implementation of monetary and fiscal policies later identified by Keynes as being perverse. All of this was much worse because it came on the ebb-side of a long Schumpeterian wave stemming from the automobile-airplane-radio revolution.

One more piece of theory, not applicable to the Great Depression as such, is needed to complete the basis for examining the next period of history. Although Keynes had thought and written a great deal about inflation after World War I, he did not treat it extensively in the depression-generated *General Theory*. He reasoned that inflation—the bidding up of prices across the board by demands greater than supplies that could not be readily increased—was unlikely when labor and other resources were extensively underemployed and could readily increase supply in response to increased demand. Rather, inflation would become a danger only as productive capacity ran short.

This seemed to imply a sudden threshold at which inflation replaces real growth as labor, in particular, becomes fully employed. In the 1930s, inflation seemed a distant danger, but World War II and the high demand of the postwar period made it a major focus of macroeconomic policy and theory. The clear policy prescription was to put Keynesianism into reverse, cutting demand by raising interest rates and running government surpluses rather than deficits, but doing so was politically difficult and was not implemented effectively in the United States or the other Western nations that were regaining their prosperity after the war.

That inflationary experience led to the augmentation of growth and inflation theory in a journal article by a follower of Keynes, William Phillips, who used historical statistics on the British economy to derive the “Phillips curve.” The curve showed the gradual substitution of an accelerating increase in prices for further reduction of unemployment as labor became more and more fully employed in growth phases.⁶ The Phillips curve worked well for the quarter-century following the end of World War II.

⁶ William Phillips, “The Relation Between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861–1957,” *Economica*, Vol. 25, No. 100, 1958.

History: 1939–1971

The impact of deliberate deficit policy is difficult to measure because, to the extent that a planned deficit works to improve the economy, economic growth brings with it higher tax revenues, thus reducing the actual deficit (although not as much as claimed in the 1980s by “supply-side” economists—see below).

Figure 1, showing deficits and unemployment during the Great Depression and World War II, seems ambiguous about Keynesian policies in the 1930s: The federal budget was in virtual balance in 1930 and 1931. Then in the last two fiscal years of the Hoover administration, 1932 and 1933 (July 1931–June 1933), the deficit rose sharply to about 4.5 percent of gross national product (GNP), due largely to the drop in revenues caused by the downward economic push of the administration’s ill-timed attempts to balance the budget. In the first full year of the Roosevelt administration, the deficit rose to more than 5 percent; but thereafter it averaged around 3 percent. New Deal deficit finance seemed to work, somewhat: Unemployment took an irregular downward course, falling from a high of more than 25 percent in 1933 to less than 15 percent in 1940.

World War II produced a dramatic demonstration of the effectiveness against unemployment of Keynesian policies taken to an extreme. When the war began in Europe in September 1939, the United States became the “arsenal of democracy,” rearming itself and then joining the war in December 1941. Spending constraints came off. Tax rates and revenues increased too, but deficits increased dramatically, to a high of 28 percent of GNP in 1943. And unemployment dropped to a rock-bottom 1.2 percent in 1944.

But all this came at a cost. As shown in Figure 2, inflation (which had been relatively trivial during the Depression) shot up under rearmament and the wartime stresses beginning in 1940, reaching an annual rate of more than 10 percent in 1942, before moderating as wartime price and wage controls became effective.

Figure 1
Unemployment Rate and Surplus or Deficit in the United States, as Percentage of Gross Domestic Product, 1930–1945

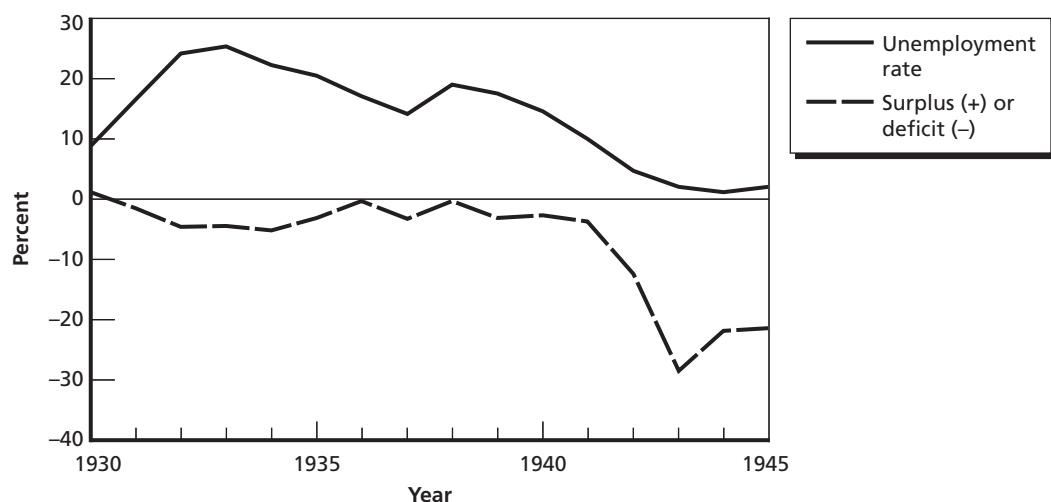
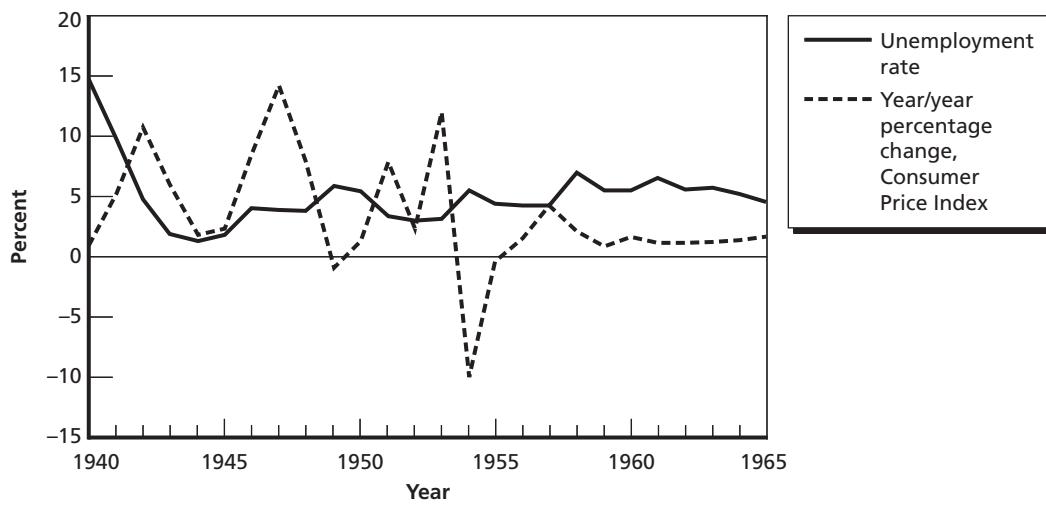


Figure 2
Unemployment and Inflation in the United States, 1940–1965



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After the war ended, however, Congress removed the controls and inflation accelerated, exceeding 14 percent in 1947. Meanwhile, after a brief postwar adjustment period, unemployment remained low, averaging 4.4 percent from 1946 to 1951. The policy background for all this was the rapid increase in private demand as wartime barriers were dropped. The federal budget was kept in surplus by growth-based tax revenues, and Federal Reserve policy kept interest rates deliberately low to encourage private growth. This period of interplay between growth and inflation motivated the research that produced the Phillips curve.

By the end of the 1950s, inflation, which had accelerated again at the beginning of the decade because of the Korean War, moderated and the U.S. economy suffered a mild recession. Though trivial compared to the Great Depression, it was enough to aid in the election of Democratic President John Kennedy to succeed Republican Dwight Eisenhower and to establish Keynesianism as official doctrine. The proudly Keynesian economists of the Kennedy and Lyndon Johnson administrations used fiscal policy to manage the economy, combining tax cuts with increased spending on the social programs of Kennedy's Fair Deal and Johnson's Great Society. The resulting moderate deficits led to quite satisfactory economic growth, with unemployment dropping below 4 percent by 1965 while inflation remained below 2 percent.

Then, beginning in 1965, came full-scale American participation in the Vietnam War. Wartime spending initially accelerated economic growth, even to the point where increased tax revenues brought about budget surpluses in 1968 and 1969. But these disappeared with the beginning of the Richard Nixon administration in 1969. By 1971, inflation had become so rapid that the Republican president attempted, not very successfully, to impose limited price controls—controls that were outside the ordinary workings of peacetime fiscal and monetary policy.

History: 1972–1986

In the autumn of 1972, the Arab states that had been humiliated by Israel in the 1967 war struck back, mounting a strong attack from all sides on the Jewish holy day of Yom Kippur. The attack achieved initial success, but the Israelis fought back. They seemed on the verge of another overwhelming victory after surrounding the Egyptian army in the Sinai peninsula, until the United States and the Soviet Union forced an end to hostilities. A crucial factor in the Israeli victory had been an emergency airlift of arms by the United States. That led to fear of counter-intervention by the Soviet Union; fear on both sides of escalation of the cold war is what led the two to end the war in the Sinai.

The Arab states blamed the United States—and the West in general—for their defeat, and they took their revenge. Saudi Arabia, Iraq, and the oil states on the Persian Gulf used the hitherto not well-known Organization of Petroleum Exporting Countries (OPEC) to boycott exports to the United States and other nations they believed culpable. Although all oil supplies were not cut off, they were cut back, and since the petroleum market was worldwide, prices shot up.

Oil was an essential factor of production in developed economies—in energy, transportation, agriculture, and direct production of plastics and other goods—and the higher prices pervaded every sector, accelerating inflation rapidly in the United States and throughout the West. Central banks and governments could try to control the inflation by using the classical monetary mode of increasing interest rates and by cutting government spending and raising taxes à la Keynes. This inflation, however, was not caused by excess demand for goods and services as in World War II and the postwar period, but rather by deliberately restricted supply. Monetary and fiscal policies to reduce demand would bring about stagnation of economic growth and increased unemployment as well as slower inflation; conversely, stimulating demand to restore employment would reaccelerate inflation.

The result was a period of what became known as “stagflation,” a frustrating neither/nor combination of fluctuating policies that provided little in the way of remedies. In the United States, the successive administrations of Presidents Gerald Ford and Jimmy Carter swung from restriction to stimulus, with economic advisors who knew better having to make successive optimistic forecasts they knew were wrong.

As the Carter administration approached its end, developed economies had begun to adapt to the oil price increases, partly because few boycotts can hold indefinitely, partly because the flexible economies of the West adapted by reducing their dependence on petroleum. But in 1979, the Iranian revolution and the hostility to the United States, which had been the chief supporter of the Shah, led to the hostage crisis and the renewal of the oil boycott, giving stagflation a new impulse.

Government impotence against stagflation was politically unsupportable. In the 1970s and the first years of the 1980s, Ford lost the presidency of the United States to Carter and Carter lost to Ronald Reagan; in the United Kingdom, James Callaghan was replaced as prime minister by Margaret Thatcher; Helmut Schmidt gave up the German chancellorship to Helmut Kohl; and in Canada, Pierre Trudeau lost to Lester Pearson. After Ford’s loss early in the stagflation period, all these shifts were from left to right, but conservative Valery Giscard d’Estaing’s loss of the French presidency to Socialist Francois Mitterrand made it unlikely that a worldwide move to conservatism was the primary cause.

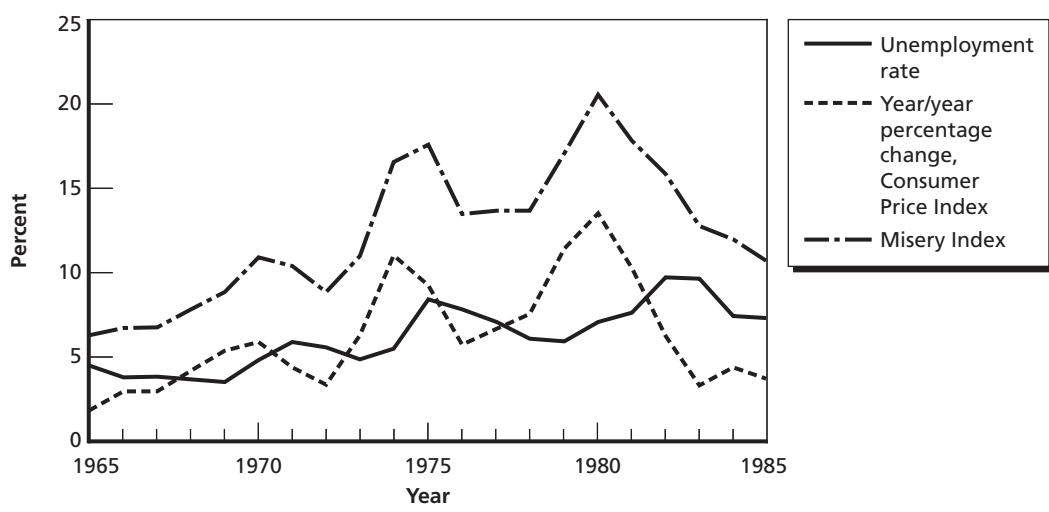
Stagflation in the United States culminated with a bizarre set of moves in the early 1980s, when the early tax cuts of the Reagan administration resulted in rapidly increasing deficits, threatening further inflationary acceleration. The Federal Reserve countered with unprecedented high interest rates, which brought about a short but sharp recession. Through the rest of the decade, in the United States and the other developed economies, matters calmed down as OPEC power began to fade, in part because of further adaptation by the developed countries. The 1980s were not very prosperous years, but they were far less uncomfortable than the preceding decade.

Figure 3 picks up the picture with the 1965 large-scale U.S. entry into the Vietnam War. It shows the 1965–1985 relationship between unemployment and inflation, and brings in the concept of the “misery index” (the inflation rate plus the unemployment rate). This measure was conceived by Johnson administration economic advisor Arthur Okun, who called it the “discomfort index”; it was used by George McGovern in his campaign against Richard Nixon, then by Carter in his campaign against Ford, and was renamed the “misery index” by Ronald Reagan, who then used it most successfully against Carter. The end of the simple Phillips inflation-unemployment trade-off of the postwar period is clear: In the 1970s, unemployment and inflation augmented each other, adding up to misery unequalled since the worst years of the Depression, when it was due to unemployment alone.

Theory

The transitions and traumas of the 1970s and 1980s required major shifts in macroeconomic theory. One attempt, “supply-side” economics, was an effort, as political as it was economic, to skip the Depression, World War II, and Keynes, and return to the good old political economy of the 1920s.

Figure 3
Unemployment, Inflation, and the Misery Index, United States, 1965–1985



Another, rational expectations theory, was far better grounded but incomplete, particularly as an explanation of stagflation compared to persistent inflation. The theory stated that rational economic actors should and do base their decisions not on current conditions but on the conditions expected when their actions take effect; but the effort to anticipate the future accelerates its coming.

Applied to the 1970s in particular, businesses expecting inflation set prices higher ahead of the curve to protect themselves against further inflation, but this very act accelerated inflation. Thus, rational expectations negated expansionary Keynesian policies because the belief that such policies would lead to inflation in the short or long run induced inflationary action by economic actors, thereby dissipating the expansionary effects into more inflation rather than stimulating real growth and increased employment.

Rational expectations theory was criticized on a number of grounds, centered in part on the imperfections of rationality in a variable world. Rational expectations did apply well to the 1970s, when the inflationary results of expansionary policies seemed nearly certain, but as uncertainty returned, the policy implications of rational expectations faded. That happened in part because, while the theory did throw light on the workings of stagflation, it provided no generalized explanation for its causes. Most economists attribute 1970s stagflation in substantial measure to the oil crises, but few have tried to theorize beyond that.⁷

Comparisons of the 2000s to the 1970s usually point out that oil and oil prices play a significantly smaller role in current industrial economies than they did in the 1970s, in large measure because such economies can adapt over time to these radical changes. Market economies substitute cheaper resources for more expensive ones—e.g., coal for oil—thus weakening the nexus between petroleum and overall economic activity. And because the link is weaker, it has been suggested that stagflation like that of the 1970s is now less likely. Unlike in the 1970s, however, the reason for the recent oil price acceleration lay not in the constriction of supply, either deliberate or natural, but in rapidly increasing demand. And those demand increases extended far beyond petroleum as such.

The next section provides a brief Schumpeterian explanation for the technology boom of the 1990s, which finally broke out of the malaise of the 1970s and the moderate growth of the 1980s. It is followed by a section on the increasing problems from 2000 to 2008. The final two sections discuss the disturbing prospects for the future and possible policies for coping with them.

History: 1986–2000

The IT revolution provides a textbook example of a Schumpeterian innovative long wave. Computers began to come into their own after World War II. Moving from the clumsy electro-mechanical devices and the room-filling vacuum tube-based electronic marvels of the 1950s, existing firms, notably IBM, turned them into mainframes the size of Volkswagens but more expensive than most Mercedes. These devices, reading out data and communicating largely by means of punch cards, became the mainstay of business in the United States and elsewhere.

The IT revolution as such started with computers, made more efficient with transistors and then microchips, but it went far beyond hardware. The revolution was based on

⁷ For further discussion, see the appendix.

the pervasive spread of instantaneous computation, information retrieval, and—above all—communication, at costs so low and with equipment so convenient and operating modes so simple that every business and most individuals in the developed world (and many in the less-developed world) learned to depend on them.

In the 1970s, Apple and IBM started to spread the use of the personal computer. Although hardware provided the seedbed for the IT revolution, however, the key was the substitution of software for hardware; Microsoft's meteoric rise began in the early 1980s. Steve Jobs and Bill Gates were prototypical entrepreneurs: They invented nothing but moved new technology into mainstream economic activities, making fortunes in the process. Meanwhile, intercomputer communication had begun with the Defense Department's ARPAnet in the 1960s; the personal computer made possible its transformation into the Internet in the 1980s. And in 1996, Google began another phase of the revolution by systematizing worldwide information retrieval.

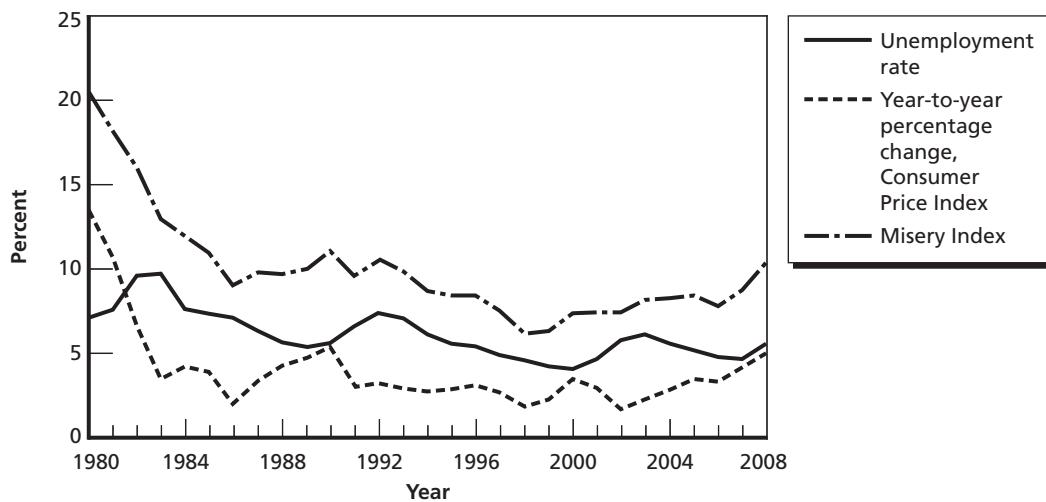
All this was truly Schumpeterian: It accelerated the growth of productivity and investment—both direct investment in computers and software and investment throughout the economy in new modes of doing business made possible by the new information technology. And the increased demand initiated by the investment and spread through the economy by the Keynesian multiplier led to the rapid growth of GDP in the 1990s.

The IT revolution finally ended the modest economic growth of the 1980s that had succeeded the malaise of the 1970s. The economic policies of the 1990s may have helped growth—at least they did not stand in the way—but the impulse lay outside of public policy.

History and Theory: 2000–2008

Figure 4 traces the paths of unemployment, inflation, and misery from the beginning of the recovery from stagflation in 1980, through the IT revolution, to the present.

Figure 4
Unemployment, Inflation, and the "Misery Index," 1980–2008



The IT wave probably crested in the early 2000s—even with hindsight it is difficult to be certain about the precise reversal of such a movement. Unfortunately, the timing coincided with a new phase in the global economy, one that seems to be akin to that of the 1970s and may bring about results at least as unhappy.

The basis of what follows is this: The current credit crisis is similar in itself to many serious crises in the past and, like them, has pushed the real economy into a slow-growth/unemployment recession. But it is unlike most of its predecessors of the postwar era that were ameliorated and quickly reversed by monetary and Keynesian fiscal policies.

Rather, the credit crisis has come not only on the downside of the IT wave but also at a time of a fundamental structural readjustment of the world economy—a rapid shift of shares of global income and production to new countries and regions that is similar, although not identical, to the shift of the 1970s.

In the earlier period, OPEC's monopoly-enforced claim to an increased portion of the world's slowly growing production and income, produced real losses for the rest of the world, the United States in particular. It was close to a zero-sum game. Now, the developing world, led by China and India, is claiming a larger share, but the new claims are based on the rapid growth of their own production, thus increasing total world product as well.

The sum is no longer zero, but the problems remain similar. In an ideal world, that would mean that, unlike in the 1970s, everyone will gain, and nobody will suffer. In the world as it is, however, it just does not work that way, for several reasons:

- **Transitions.** Changes of this nature are not instantaneous. The movement of customer support operations from the United States to India, or shoe production from Italy to China, leaves businesses and workers in the Western countries stranded until the local economies can adjust by creating new types of industries, operations, and jobs. And the time period can last many years for specific industries and workers, indeed for entire economies. Some economists may find such periods economically tolerable, but the victims do not.
- **Distribution.** Although the world as a whole may gain, everyone may not. The economic theory of comparative advantage points out that if every nation produces the goods and services that it does more efficiently than others made *within the same country*, and exchanges those products for those made more efficiently elsewhere, every country will be better off than if it produces less efficiently for itself. That is true even for nations that produce all products less efficiently *than they can be made elsewhere*. But countries that are less efficient in everything will not be very well-off, and countries that are moving toward lower efficiency relative to other countries may decline across the board. Perhaps most important, countries in which relative efficiency is shifting from one kind of production to a very different kind will penalize the producers of the old while rewarding the producers of the new. That the comparative advantage of the United States is shifting from the assembly line to high-technology jobs does not benefit autoworkers. And the transition may be a very long one.⁸
- **Expectations.** Even if a nation, or a group within that nation, does not become worse off in absolute terms, a sudden readjustment in expectations may have strong political and social effects. Since the end of World War II at least, Americans have expected

⁸ See the appendix.

each generation to be better off than the last, particularly as shown by increasing home ownership and college attendance. Interruption of these expectations is having strong negative effects.

For all of these reasons, although the underlying causes of the current share-shift may be different and seemingly perhaps more benign than those of the 1970s—with previously poor countries gaining—the political and social effects in the developed countries, and perhaps the economic effects, may be similar in the two periods.

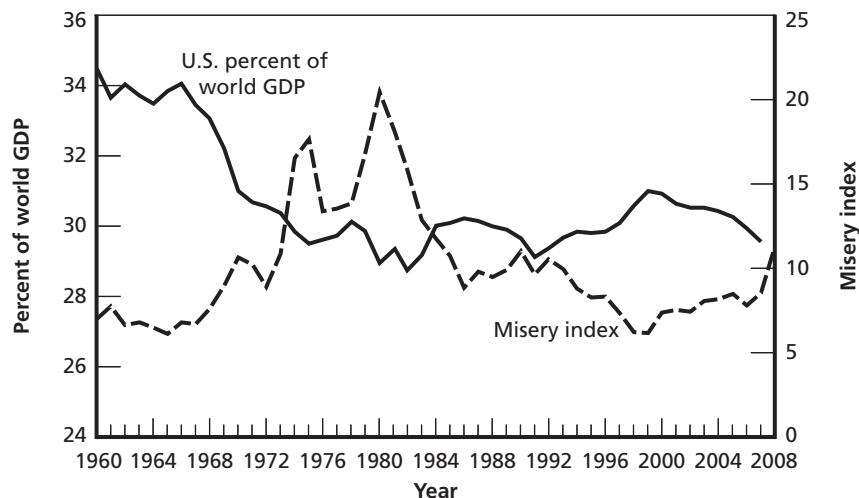
Figure 5 shows the share of world GDP going to the United States, from 1960 to 2007, together with the misery index for 1960–2008. The U.S. share of GDP fell sharply in the 1970s when OPEC was able to exact an increasing portion for its members; share ratios leveled off in the 1980s and 1990s as the IT revolution accelerated. Since 1990, the U.S. share has fallen each year, most recently at an increasing pace.

The earlier share-shift of the 1970s gave the United States—and other developed countries—a choice: They could accept their reduced shares, allowing their economies to shrink through reduced production and employment, or they could fight the shrinkage using expansionary monetary and fiscal tools. But when attempted expansion went beyond productive capabilities, because the key petroleum resource was in short supply at increasing prices, the expansionary policies accelerated inflation—ergo, stagflation.

Something similar is happening again. The world credit crisis beginning at the end of 2008 has focused the attention of the Federal Reserve and the world's other central banks, including even the European Central Bank and those of governments in developed and developing countries, on preventing a sharp global downturn, with inflation set aside as an immediate consideration. But, as discussed below in the section on prospects, when growth turns significantly upward, share-shift is likely to raise the issue of inflation once more.

The price of oil has again been a contributor to the share-shift; when the price rose rapidly until the end of 2008, producers increased their share. But this time, oil prices were an intermediate cause of the share shift rather than the initiator. The price increase of the 1970s had a

Figure 5
Percentage of World GDP and Misery Index, United States, 1960–2008



supply basis: OPEC restricted the supply and, since demand did not decrease, the price went up. In 2008, however, petroleum was not in short supply; the OPEC nations certainly enjoyed a price rise, but they did not cause it. In late 2008, the price began to drop precipitously, as did most other economic magnitudes, because of decreased demand stemming from the economic downturn. OPEC tried to cut supply in order to support the price. As discussed below, when world economies begin to revive, what happens to oil prices will be an indicator of what happens next.

The initial increase in the price of oil, and many other things, was caused by increased demand. Demand increased because new buyers—mainly newly developing nations, notably but not only China and India—entered the market. The rapid industrial growth in these countries—based on the adoption of new technologies using labor forces that are still paid low wages—has increased their use of energy, and oil is a major source. The same is true for many other basic commodities including other energy sources like gas, as well as metals.

Major increases occurred in the prices of agricultural commodities because many of these are used in industrial production; because environmentalists and corn farmers have been trying to substitute ethanol for petroleum; and, importantly, because increasing consumer incomes in many parts of the world increase not only the quantity of food demanded but also its quality, e.g., more meat and less cereal grain. Part of the increased demand for oil has the same consumption-based cause—many more automobiles in China, India, and elsewhere competing for a larger share of the world's gasoline.

Increasing demand has also exacerbated another major global problem. The newly developing countries insist on a relatively uncontrolled right to pollute the air with atmosphere-warming gases. Not only do their greater production and increased automotive and other travel increase their emissions, they also claim that their growth requires, at least initially, relatively primitive processes that the older developed countries say they are willing to control. Climate-control agreements are thus hung up by disputes between the already wealthy who say they are willing to reduce their emissions but insist that the *nouveaux riches* control their rapidly increasing share and the new industrial states that contend that the older ones have gained their comforts and now want to prevent the newcomers from getting their own.

That the new economies have a right to end their poverty, increase their shares, and catch up to the wealthier world would be accepted and endorsed by many in the wealthy world as a matter of simple justice (particularly by those whose own personal wealth or well-being is not severely threatened). But it becomes a different matter if share-shifts lead not only to a decrease in relative wealth but also to a recession-induced decrease in absolute incomes, or even to a significant slowdown in expected rates of growth. Justice takes a back seat; the issues now are economics and politics, and resistance becomes strong.

Policy is produced by politics, at least in democratic countries, and politics is governed by perceptions. And, particularly in hard times, perceptions are governed as much by personal situations as by consideration of the common good or national interest.

In the United States, times have been hard for some time for many of the blue-collar workers who have been losing manufacturing jobs, more recently for outsourced back-office white-collar employees. Whether accurate or not, the perception has been that much of the blame should be put on globalization. The immediate political result has been increased and frequently successful pressure for protectionism. In fact, protectionism, whether good or bad national policy (opposition to protection is part of the economists' credo) provides little actual protection for those portions of the population needing and advocating it. In the 21st century,

given a world of instant communication, a flow of capital that is almost as rapid, and increasing mobility of labor (legal or illegal), protectionist policies can be partly and temporarily effective at best—for the United States or for other share-losing nations.

For the United States, another set of policies, not usually classed as protectionist, has in fact provided effective protection, but with an ever-rising bill that will have to be paid eventually. Increasing deficits, both in the federal budget and the international balance of payments, have provided Americans and American government and society with overseas funding to maintain levels of command over resources while losing share. But the payment deficit cannot increase forever. It used to be said of the national debt, “It’s OK; we owe it to ourselves,” but in large part we no longer do.

Balance-of-payment deficits have until recently allowed the United States to maintain absolute levels of real income even as its share of the world total has decreased; share-gainers have been glad to lend the United States the necessary support. But even ignoring the frequently pointed out possibility that they may cease to do so and might even call the loans—it is argued with some cogency that lenders are already in too deep and doing so would hurt them almost as much as the borrower—the share-shift is accelerating too rapidly for foreign financing of the American standard of living to suffice.

The economies of the United States and the other high-income countries have been threatened because the sudden takeoff of growth in China, India, and other developing economies is enabling them to rapidly increase their production and income. This also raises world production and income, but not enough or fast enough to cushion the rest of the world against shocks or to compensate the specific losers in the rest of the world. Indeed, losers are not confined to the rich world; the poorest, slowly developing regions and nations are hit even harder relatively, because the inflation part of stagflation increases the price of oil and other commodities while the stagnation part reduces the rich countries’ demand for their products. Ironically, the effects are beginning to threaten even the rapidly growing countries that initiated the process.

In any case, the changes began with the newly developing countries. In the past, their combination of low technology and low wages gave them a comparative advantage for producing and selling simple goods in world markets—initially, agricultural and other commodities, then textiles, then clothing. Now, rapid flows of information have enabled emerging economies to learn modern technologies, and rapid flows of capital, together with good education systems, have enabled them to adapt and adopt these technologies. Given their relatively low wages, these countries have thus been able to outcompete the previous producers. The example most frequently encountered by Americans lies in the supply of information itself: the outsourcing of product support.

As Figure 5 showed, the share of the high-income countries is again falling. True, global economics is not a zero-sum game: At least until recently, world product and income has been increasing. That is because of the rapid growth in the developing countries. But by the end of 2008, GDP in many developed countries had begun to fall; real incomes for large sections of the population were shrinking, established firms were going under, stable local economies are being destabilized. And lacking a new technological revolution, that process may last a long time.

The rapid share-shift phenomenon is new for the industrial age. (It can be argued, however, that the industrial revolution itself was similar.) In the 19th and 20th centuries, new, mostly European, countries joined the industrial elite at a stately pace compared to the current one; that process engendered very little destabilization.

Share-shift is not a Schumpeterian process—he focused on the upside that was brought about by technological growth—but it can easily be put into a Schumpeterian framework. Share-shift (or any other negative phenomenon) can begin a long-run declining wave, i.e., a trough, with mirror-image effects on well-being and on shorter cycles. A rising Schumpeterian wave will eventually fall as the initial technologies run their course and new entrepreneurship and investment overshoot. There is less evidence as to whether downward movement also contains the seeds of its own reversal. The 1970s stagflation began to end when OPEC overshot and lost control of oil prices, but it was finally ended only by the IT revolution.

Prospects

The new share-shift long trough was triggered by the credit crisis. That crisis may be slowed down or even reversed by wise policy on the part of the Federal Reserve and other central banks; at this writing it is not clear what the Fed will do, but nothing will be easy in the short run. Even if the credit crisis can be ended, its effects on the real economy have already begun—and will persist.

In the United States, consumption is down; investment is likely to follow, no matter how easy credit becomes, until businesses find new opportunities in spite of the slack consumption. All this will increase unemployment and is already helping to produce a downward spiral. President Obama will have difficulty coping. The need for Keynesian stimulus is recognized across most of the political spectrum, but whether it will be large enough or fast enough is by no means sure. The planned deficits of the 1930s did not suffice, and it took the huge wartime deficits to restore the economy.

Further, unlike the 1930s, globalization has made Keynesian policies in one country difficult; too much of the stimulus may be dissipated in imports. And the poorest parts of the world will continue to suffer the most. Their shares are not shifting upward, their imports are being made more costly by worldwide commodity inflation, their exports will be hampered by difficulties elsewhere, and the aid extended to them by richer nations will not be encouraged by the economic problems in those countries. Perhaps their strongest lifeline is the increasing investment by China, but the strength and durability of that investment remains to be seen.

The United Nations' mid-2008 economic update, published in May before the severity of the crisis became manifest, sums it up:

In the wake of numerous challenges, the world economy is teetering on the brink of a severe global economic downturn. The deepening credit crisis in major developed market economies, triggered by the continuing housing slump, the declining value of the United States dollar vis-à-vis other major currencies, persisting global imbalances, and soaring oil and non-oil commodity prices all pose considerable risks to economic growth in both developed and developing economies.⁹

⁹ United Nations, *World Economic Situation and Prospects 2008: Update as of Mid-2008*, p. 1.

At the same time:

... global inflation is expected to accelerate in 2008 to 3.7 percent despite a slowdown in growth.¹⁰

The short run will thus be difficult, not a promising start for the longer period on which this paper focuses. What lies ahead, once the credit crisis as such comes to an end? The possibilities fall into three broad categories, with the boundaries between them indistinct as always:

1. The share-shift analysis in this paper may simply be wrong. Once the credit crisis is over, coordinated monetary and fiscal policies may restore growth in a tolerable period of time. National shares will continue to shift, but the overall growth will buffer the problems. Additional wise policies by the developed and developing nations will spread the new prosperity to the poor countries as well. All of this may be assisted by a new Schumpeterian wave of technological growth in areas difficult to foresee at this time. That may not happen, however.
2. The downward spiral may continue. As in the Great Depression, the magnitude of the necessary stimulus may not be recognized or may not be politically possible. ("What? A deficit of two trillion dollars? We just won't do that!") Or the global proportions of the problem may overwhelm national efforts even in the world's largest economy, and the needed international coordination will not be possible. The result in the United States may resemble the Great Depression, at least in length if not in depth. And an almost sure part of the American reaction will be real and explicit protectionism, thus spreading the depression worldwide, as did the Smoot-Hawley tariff. The Great Depression brought the New Deal to the United States. It brought the rest of the world Nazism and universal war. This time, though, many nations have nuclear weapons.
3. Turnaround policies may be effective, but the share-shift/stagflation analysis may be correct. The developing nations may quickly claim their share of the rewards, seen by the still slowly improving developed world as too much and too fast. Thus, as growth is restored, oil and other commodity prices in particular will begin to rise, and inflation will be seen as a real and immediate danger. Once again, governments and central banks will have to make the impossible choice between too-high unemployment and too-rapid inflation. The situation will continue until a new wave accelerates growth in the developed countries as the IT revolution did in the 1980s and 1990s. The 1970s were difficult, but at least they were a lot better than the 1930s and 1940s.

The indicators of direction should not be long in coming. If, in a year or two, the period generally predicted for a turnaround of at least the credit crisis, real economies begin to improve too, with accelerating growth and falling unemployment, then the optimistic scenario seems at least possible. If turnaround begins and oil prices, which had continued to fall due to a lack of demand, again accelerate rapidly, then the developed countries and the world are in for another bout of stagflation. And if the first year or two of stagflation leads to further downward years

¹⁰ United Nations, 2008, p. 7.

of the real economy, then history will record Great Depression II as the successor to Great Depression I, as it did World War II after World War I.

Policy Responses

Both classical and Keynesian economic theories suggest that turnaround is possible. Classicists and neoclassicists stress the use of monetary policy. Keynesians do not abjure monetary policy but cite the liquidity trap and the need for massive stimulus and call for fiscal compensation through budgetary deficits. In the United States, the rapidity of the decline and the fears for the future have created a consensus on the need for fiscal compensation. The size, type, and duration of deficit stimulus remain open, but the beginning of a Democratic administration, together with increased Democratic control of the Congress, suggests that the stimulus will be larger and broader than might otherwise have been the case.

Stimulus in one country will no longer suffice, however: Too much of the new growth stimulated and the new jobs created will be elsewhere, and that in turn will create new political pressures for protectionism. That is why discussions have begun at the highest level, of coordinated stimulus managed by new institutions parallel to the new international monetary system created at Bretton Woods in 1944. The November 15, 2008, Washington meeting of heads of state initiated no new actions, let alone mechanisms,¹¹ but it did provide agreement on the need for stimulation.

In this case, the words may be more important than the deeds, at least the international deeds. International coordinating machinery, from the UN to the EU, has seldom lived up to its promise. But recent statements favoring stimulus have been accompanied by uncoordinated but parallel actions by the major players. The European Central Bank and the euro states have grudgingly suspended their adherence to the mandate to combat inflation above all other sins: The bank has lowered interest rates explicitly to stem the downturn, and the EU itself has laid out plans for deficit-financed fiscal stimulus to be set up by the member states, most of which seem ready to move, although Germany, still haunted by the hyper-inflation of the early 1920s, is dragging its feet. Outside the euro area as such, the United Kingdom, led by Prime Minister Gordon Brown with his long record as a successful pragmatic chancellor of the exchequer, has done the same. And most strikingly, China has mounted a stimulus program that is huge relative to the size of its economy. For the short run at least, this move may mean that Chinese growth will depend more on its own consumption and less on exports.

That leaves the United States, where the constitutional separation of powers, together with the transition of administration, has slowed things down. As noted, however, President Obama and the Democratic Congress are likely to move quickly.

Parallel stimuli by the major economies will provide a test of the three alternative futures suggested above. The share-shift analysis presented here may just be too pessimistic, and sufficient stimulus may soon turn the global economy back to steady growth with moderate inflation. Or, if turnaround takes a long time as in the 1930s (the second alternative future), then global economic and political structures will probably have changed enough that an entirely different analytical framework will be needed.

¹¹ Headline in the *International Herald Tribune*, November 17, 2008: "G-20 Mostly Avoids the Thornier Questions."

But if turnaround can be achieved in the “short run” of a few years and the analysis here is appropriate, then a renewed spiral of inflation will begin well before prosperity has been restored. Early indicators will be rapid increases in the prices of petroleum and other commodities, as developed and developing countries again begin to increase their demands for limited supplies.

What might then be done if stagflation recurs before prosperity and optimism return? For the United States and other wealthy nations, steps will be needed to produce greater internal political acceptance of the effects of share shifts. In the current situation, unlike the 1970s, the share shifts stem from overall growth, mainly in the developing countries. Conceptually at least, what is being shared out is prosperity, not distress as in the earlier period.

As discussed throughout this paper, a major part of the problem in the United States, politically at least, stems from shifts in internal sharing that lead to prosperity for some but real declines for major portions of the population. Protectionism is a popular solution but is likely to be ineffective and internationally dangerous. Analysis of other possible measures is outside the scope of this analysis.¹² Europe, on the other hand, has greater income equality and perceived balance (although protection of special sectors, such as farming and fishing, is still politically powerful) but this is at the cost of greater economic rigidity, which makes it difficult to compete with the developing economies. Perhaps both sides of the Atlantic should move toward one another.

“Maybe we could,” however, is the limit of optimism in this paper. The world ahead looks difficult.

¹² The author is preparing another paper on this aspect of the problem.

Economic Theory

In this paper I use economic theory to help explain events of the last 80 years and project into the future, but I do not attempt to provide any sort of full history of economic doctrine over that period of time. To the contrary, I use as little theory as is necessary to explain the events, and simplify even that. The paper mentions by name only four economic theorists: John Maynard Keynes and Joseph Alois Schumpeter, because they are basic to the discussion; William Phillips, because his name has been given to the Phillips curve, a crucial although controversial linking relationship; and Milton Friedman, who rethought and made powerful the basic concepts of classical economic theory. It omits other high-profile and relevant economists, from Gottfried Haberler in the 1930s and Evsey Domar in the 1950s, to Robert Lucas in the 1970s, as well as John Kenneth Galbraith across the entire period.

The simplifications and omissions may be of concern to some, particularly my fellow economists. This appendix is intended to fill in or bridge some gaps. It is in itself highly simplified, but it may help.

Two basic controversies have divided and continue to divide economics and economists. One is between “classicalists” (and neoclassicalists) and Keynesians (and neo-Keynesians); the other is between deductive, now largely mathematical, theorists and those who depend on inductive reasoning that starts with broad observation of economic phenomena. This paper takes sides as little and as gently as possible, but complete impartiality is not possible, and this appendix makes explicit my bias toward the Keynesian and inductive sides.

Classicalists and Keynesians

Classicalists believe that economic phenomena can and should be derived from, and explained in terms of, equilibria arrived at when economic actors (all of us) try to maximize their own advantages and utilities; Keynesians contend that certain equilibria do not and cannot exist.

One major Keynesian exception to equilibrium theory is the “liquidity trap.” In classical economics, the interest rate—the price of borrowed money—should rise and fall to equate supply and demand; Keynesians contend that because nominal rates, at least, cannot go below zero, the supply of money will sometimes exceed the demand with no possible short-term equilibration.

Another exception is the existence of “involuntary unemployment.” Classicalists believe that because employees can agree to lower their wages to the margin at which employers will employ them to produce enough value to cover those wages, workers’ refusal to do so makes their unemployment “voluntary.” Keynesians argue that such wage reduction across the entire

economy is institutionally impossible and that additionally, in the economy as a whole, such wage reductions would decrease the demands for product and production workers, thus inducing a downward spiral. They are also concerned with the length and conditions of the transition to a new equilibrium. Perhaps Keynes's most famous statement was, "In the long run, we are all dead."

Some of the additional controversy between classicists and Keynesians is over definition and metaphor. An example important to this paper concerns the use of the word *inflation* to mean an increase in general price levels. Many classical economists prefer Milton Friedman's statement that "Inflation is a monetary phenomenon." The disagreement hinges on the semantic one made famous by President Bill Clinton: "It depends on what the meaning of *is* is." My interpretation of Friedman's sentence is that he was asserting his position in a long-running debate among economists: that inflation is always caused by an oversupply of money. I disagree, but try to remain neutral in this paper. If, however, *is* concerns the definition of inflation, the general-price-increase meaning is the standard one not only in nontechnical discourse, but also in economics textbooks.

Another point of theoretical disagreement important to this paper concerns rational expectations theory, developed by Friedman, Lucas, and other neoclassicists. Initially proposed in the 1960s, rational expectations theory is based on conceptual logic shared by almost all economists—that expectations for the future rather than immediate conditions govern current economic decisions.

Rational expectations theory contends that if economic actors expect inflation, they act ahead of the curve to protect themselves against further inflation. For example, those who set prices for goods to be sold in the future will base those prices not on current market value but on what they will be able to get when that value has increased in the period when the goods will be sold. In general, paying attention to such expectations, rather than blindly observing current conditions, would be the rational way to maximize profits. But those rational actions would in turn accelerate the expected inflation. The theorists argue that rational expectations negate the expansionary Keynesian policies intended to stimulate growth, because the belief by economic actors that such policies would lead to inflation would induce inflationary action by those actors, thus dissipating the expansionary effects into more inflation rather than stimulating real growth and increased employment.

Rational expectations theory has been criticized on a number of grounds, centered in part on the imperfections of rationality in a variable world. The contention is that rational expectations did apply well to the 1970s, when the inflationary results of expansionary policies seemed nearly certain, but as uncertainty returned, the policy implications of rational expectations faded.

One contention made by rational expectations theorists, however, is demonstrably correct. They point out that the Phillips curve—a statistically derived Keynesian relationship showing that as employment increases, wages increase too, leading to acceleration of inflation as employment becomes tight—was shown by the stagflation of the 1970s to be no longer valid (or no longer stable) because inflation accelerated even as employment fell.

This paper therefore substitutes for the Phillips curve a more recent invention: the "discomfort index," named by Johnson administration economic advisor Arthur Okun and renamed the "misery index" in Ronald Reagan's presidential campaign. (For reasons explained in this paper, the index was very high in Jimmy Carter's administration.) The discomfort or

misery index is the sum of inflation and unemployment and thus measures the joint effect on both economic conditions and alternative policies.

Deduction and Induction

The other controversy, even more basic than classicism versus Keynesianism, but less frequently discussed in recent years, is between deductive and inductive economists. Although the former now almost completely dominate academic economics departments, induction (sometimes dismissed by deductive economists as mere “institutional economics”) plays an important—perhaps the most important—role in the actual making of economic policy. Policy is made by politics, and politicians depend heavily on what they and their constituents can see.

Deductive economics begins with the basic assumptions of economic theory—marginalism, self-interest motivation, optimization, etc.—and builds and models economic structures on this basis. Indeed, some deductive economists contend that macroeconomic reasoning is valid only so far as it is based on these microeconomic assumptions and structures. The increasing use of mathematical reasoning by economists in the 20th century (the turn-of-the-20th-century progenitor of modern economic theory, Alfred Marshall, used little or none), and the immense vistas opened to mathematical thinking by computers have provided a powerful boost to mathematical theorizing and modeling.

All classicists and most Keynesians (including Keynes) have been deductive economists. Inductive economists, however, contend that the simplifications definitionally inherent in deductive economics, particularly the more intensive use of mathematics, increasingly oversimplify the complexities of the real world. They prefer instead to examine economic history and current events and obtain their insights in that way.

I am an economist trained in deduction; I apply my training to policy analysis. My own view is eclectic, valuing both induction and deduction. Induction is necessary to convert deductive theory into something useful to policymakers in the real world. Deduction gives economics a power to project to new and different situations far more powerful than the more purely inductive policy disciplines like political science and sociology.¹

The most important example of such synthesis in this paper concerns Adam Smith’s theory of comparative advantage. Comparative advantage, accepted in its pure form by almost all economists, points out that countries are best off producing those goods and services they make most efficiently compared with other products made in the same country, and trading the less-efficient products for the ones that other countries produce more efficiently. If country A, for example, can produce both wheat and coal but has fertile plains and few coal mines, whereas country B is in the opposite situation, A is better off producing only wheat and trading some of the wheat for B’s coal.

But the theory covers neither the absolute income of countries nor the effects of change in their relative positions. If A produces both coal and wheat less efficiently than B (i.e., more capital, labor, and other inputs per ton or bushel) it is still better off producing whichever it does best and trading, but A will be poorer overall than B. If comparative advantage shifts, i.e., if A begins to produce coal more efficiently than wheat, then the direction of trade should

¹ See Robert A. Levine, “Economists’ Contributions to Public Policy Planning,” in *Proceedings of the International Conference on Public Policy Planning*, Taipei: Research Development and Evaluation Commission, October 1989.

shift. But until wheat farmers can convert to becoming coal miners—which may be take a long time—A is going to have economic, political, and social difficulties.

In the real-world histories and projections of this paper, China and India and others are beginning to produce goods and services with a different mix of efficiency than had been the case. China, for example, used to export low-cost agricultural goods and textiles and import heavy manufactured goods from the developed world. That is changing: Now China produces and is beginning to export automobiles, and the comparative advantage of the United States and some of the rest of the developed world is increasingly in high-tech goods and services. But it is difficult for unemployed autoworkers—or their children who expected to make a good living on the assembly line—to convert to becoming software engineers. In this difficulty, and the time it will take for the overall economy to make the adjustment, lie many of the economic problems of the United States.

The deductive theory is brilliant and it works, but it does not work for everything. Observation of, and data from, the real world are necessary to convert the theory to policy.

This paper reads inductively so that it can be followed by noneconomists. It is intended to synthesize classical economics and the deductive theories of Keynes and others, and to apply them to observations of the real economies of the United States and the rest of the world, in order to explain the history of the past 70 years and project future possibilities.