

THINKING ABOUT THE CRISIS

Alternative Explanations of the Operation of a Capitalist Economy

Paul Davidson

*Why has financial deregulation led to credit crisis?
This macroeconomist returns to John Maynard
Keynes for an explanation of the failure of financial
markets—and indeed the failure of accepted economic
theory today—to warn the nation, no less to prevent
its occurring.*

POLITICIANS AND TALKING HEADS ON TELEVISION are continually warning the public that the current economic crisis that began in 2007 as a small subprime mortgage-default problem in the United States has created the greatest economic catastrophe since the Great Depression. What is far less frequently noted, however, is that what is significant about this current economic crisis is that its origin, like the origin of the Great Depression, lies in the operations of free (deregulated) financial markets. As I pointed out in two recent articles (Davidson 2008a, 2008b), the deregulation of the financial system

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Challenge, vol. 52, no. 6, November/December 2009, pp. 5–28.
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ISSN 0577-5132 / 2009 \$9.50 + 0.00.
DOI: 10.2753/0577-5132520601

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that began in the 1970s in the United States is the basic cause of our current financial market distress.

Yet for more than three decades, mainstream academic economists, policymakers in government, and central bankers and their economic advisers insisted that (1) both government regulations of markets and large government-spending policies are the cause of our economic problems, and (2) ending big government and freeing markets from government regulatory controls is the solution to our economic problems.

In an amazing “*mea culpa*” testimony before Congress on October 23, 2008, Alan Greenspan admitted that he had overestimated the ability of free financial markets to self-correct and he had entirely missed the possibility that deregulation could unleash such a destructive force on the economy. Greenspan stated:

This crisis, however, has turned out to be much broader than anything I could have imagined. . . . Those of us who had looked to the self-interest of lending institutions to protect shareholders’ equity (myself especially) are in a state of shocked disbelief. . . . In recent decades, a vast risk management and pricing system has evolved, combining the best insights of mathematicians and finance experts supported by major advances in computer and communications technology. A Nobel Prize [in economics] was awarded for the discovery of the [free market] pricing model that underpins much of the advance in [financial] derivatives markets. This modern risk management paradigm held sway for decades. The whole intellectual edifice, however, [has] collapsed. (Greenspan 2008a)

Under questioning by members of the congressional committee, Greenspan admitted: “I found a flaw in the model that I perceive is the critical functioning structure that defines how the world works. That’s precisely the reason I was shocked. . . . I still do not fully understand why it happened, and obviously to the extent that I figure how it happened and why, I shall change my views” (Greenspan 2008b).

The purpose of this paper is to explain to Greenspan, and others who believed that the solutions to our economic problems are free efficient markets, why they are wrong.

Theories Explaining the Operation of a Capitalist Economy

There are two fundamental economic theories that attempt to explain the operation of a capitalist economy. These are:

1. The classical economic theory, which has many variants, including the theory of efficient markets, classical or neoclassical theory, general equilibrium theory, dynamic general equilibrium theory, and mainstream economic theory, *including old and New Keynesian theory*. The mantra of this analytical system is that free competitive markets can cure any economic problem that may arise, while government interference always causes economic problems. In other words, government economic policy is the problem, the free market is the solution.
2. The Keynes liquidity theory of an entrepreneurial economy. The conclusion of this analysis is that government, with cooperation of private industry and households, can cure economic flaws inherent in the operation of a capitalist economy, especially when unfettered greed or fear is permitted to dominate economic decisions.

Time is a device for preventing everything from happening at once. Economic decisions made today will have outcomes that can only be evaluated days, months, or even years in the future. The basic—but not only—difference between these two alternative theories is how they treat knowledge about future outcomes that will be the result of today's decisions. In essence, the classical efficient-market theory presumes that by one method or another, decision makers today can, and do, possess knowledge about the future. Thus the only economic decisions that today's markets have to solve is the allocation of today's resources to produce the most valuable of "known" outcomes today and all future dates. Since classical efficient-market theory presumes all decisionmakers "know" their future intertemporal budget constraints and act accordingly, there can never be problems of loan defaults, insolvency, and bankruptcy. Accordingly, if people are rational, mainstream theory provides no guidelines for how to deal

with these problems when they create a financial crisis domestically and/or globally. Such a crisis is impossible!

The Keynes liquidity theory, on the other hand, presumes that decision makers “know” that they do not, and cannot, know the future outcome of certain crucial economic decisions made today. Thus the Keynes theory explains how the capitalist economic system creates institutions that permit decision makers to deal with an uncertain future while making allocative decisions whose outcomes they cannot “know” with actuarial certainty and even to make decisions not to decide, and then sleep at night.

Reading Tea Leaves: The Classical Solution for Knowing the Future

Advocates of classical economics believe that free markets are efficient. In a classical efficient market, it is presumed that there are large numbers of rational decision makers who, before making a purchase or sales decision, collect and analyze *reliable information* on both the probability of events that have already occurred and the *probability of events that will occur in the future*. In an efficient market, it is assumed that this important information about the past and the future is available to all decisionmakers.

In the eighteenth and nineteenth century, most economists assumed that current market participants possessed complete information about the future; therefore in a free market, participants always made correct decisions that represented their own best interests. To some, an assumption that the future is already known may seem preposterous. Nevertheless this idea underlies the Greenspan belief (cited above) that the self-interest of lending institutions in a free market led management to undertake transactions that protect shareholders' equity.

The classical-theory presumption that the future is known is *the foundation* of all of today's efficient-market theories. For example, the Arrow-Debreu general equilibrium model is the basic analytical framework from which most mathematical computer economic models used by economists are based. The Arrow-Debreu presumption is

that markets exist today to permit participants to buy and sell all the products and services that will be delivered today and at every date in the future.

Thus, at the initial instant, it is presumed that all market participants enter into transactions for the purchase and sale of all products and services not only for delivery today but for delivery at all future dates *till the end of time*. In its extreme conceptualization, this general-equilibrium approach implies that buyers today not only know what goods and services they are going to demand in the market today, tomorrow, and every future date for the rest of their lives, they also “know” today what their grandchildren, great-grandchildren, and so on will want to buy and sell decades and centuries from today. If efficient markets had existed when Adam and Eve were banished from the Garden of Eden, then Adam and Eve, being ancestors to all of us alive today, would have already entered a future order to purchase dinner for all participants at this conference. Only the high level of mathematics and abstraction of this classical theory can bury its impossible axiomatic foundation.

Many of today’s mainstream classical economists recognize that the Arrow-Debreu presumption of the existence of a complete set of markets for every conceivable good and service for every future date is impossible. Nevertheless they still believe in the efficiency of free markets. To salvage their efficient-market conclusions, they assume that market participants possess “rational expectations” regarding all future possible outcomes of any decision made today. Lucas’s theory of rational expectations asserts that although individuals presumably make decisions based on their subjective probability distributions, if expectations are to be rational, these subjective distributions must be equal to the objective probability distributions that will govern outcomes at any particular future date. In other words, somehow today’s rational market participants possess statistically reliable information regarding the probability distribution of the universe of events that will occur on any specific future date.

To obtain a reliable probability distribution about a future universe of events, the decision maker should draw a random sample from that

future universe. Then the decision maker can analyze this sample to calculate statistically reliable information about the mean, standard deviation, and so on of this future population. Thus, the analyst can reduce uncertainty about prospective outcomes to a future of actuarial certainties expressed as objective probabilistic risks—though still subject to Type I and Type II errors.

Since drawing a sample from the future is not possible, efficient market theorists must presume that probabilities calculated from already existing market data are equivalent to drawing a sample from markets that will exist in the future. This presumption is known as the ergodic axiom, which in essence asserts that *the future is merely the statistical shadow of the past* (Davidson 1982–83). Only if this ergodic axiom is accepted as a universal truth will calculating probability distributions (risks) on the basis of historical market data be statistically equivalent to drawing and analyzing samples from the future. Only under the ergodic axiom are the past, the present, and the future all rolled up into one!

Those who claim that economics is a “hard science” like physics or astronomy argue that the ergodic axiom must be the foundation of the economists’ model if economics is to be a “hard” science. An axiom is defined as a universal truth that needs not be proved. The classical ergodic axiom permits economists to claim that probabilities calculated from past and current market data provide reliable actuarial knowledge about the future. In other words, the future is merely probabilistically risky but not uncertain. In 1969, for example, Nobel prize-winning economist Paul Samuelson (1969), who is often thought to be the originator of post–World War II Keynesianism, wrote that if economists hope to remove economics from the realm of history and move it into the “realm of science,” we must impose what he called the “ergodic hypothesis.”

The assumption that the economy is governed by an ergodic stochastic process means that the future path of the economy is already predetermined and cannot be changed by human action today. Astronomers insist that the future path of the planets around the sun and the moon around the earth has been predetermined since the

moment of the Big Bang beginning of the universe. Nothing humans can do can change the predetermined path of these heavenly bodies. This Big Bang astronomy theory means that the “hard science” of astronomy relies on the ergodic axiom. Consequently by using past measurements of the speed and direction of heavenly bodies by observations, astronomical scientists can accurately predict the time (usually within seconds) of when the next solar eclipse will be observable on the earth.

Assuming that this hard-science astronomy is applicable to the heavenly bodies of our universe, it should be obvious that Congress cannot pass legislation that will actually prevent future solar eclipses from occurring even if the legislation is designed to obtain more sunshine to improve agriculture crop production. In a similar vein, if, as Samuelson claims, economics is a hard science based on the ergodic axiom, then Congress can neither pass a law preventing the next eclipse nor pass a law preventing unemployment and recession that are already predetermined in the future path of the economy. The result is a belief in a laissez-faire non-government-intervention policy as the only correct policy.

Logically consistent efficient-market analysis suggests that active government economic policies that interfere with free markets create an “external shock” to the system. By an “external shock” the efficient-theory economists mean that government policy is equivalent to throwing something into the predetermined path of the economy, pushing it temporarily off its path into one involving more unemployment, resource waste, and so on. Unless we continued to throw more pebbles at the pendulum, the effect of the one-time pebble external shock would wear off and the pendulum would soon return to its natural swinging path as the ergodic law of gravity reestablished control over the pendulum.

If markets are efficient and not constrained by onerous permanent government regulation and interference, then the action of participants in these efficient markets in response to any external shock caused by government policies will move the economy back to its predetermined efficient path, just as the law of gravity would restore the pendulum

swing after the external shock of being hit by a pebble. In other words, whenever government policies shock the economic system, action by rational market participants in a free market, in some unspecified time (i.e., the long run), will restore the system to its predetermined efficient path (by purging “the rottenness out of the system,” as Treasury Secretary Andrew Mellon continually told President Herbert Hoover, according to Hoover’s autobiography) (Hoover 1952, 30).

Thus, for example, it is often argued that the government creates unemployment in the private sector when it passes legislation that all workers are entitled to at least a minimum wage that cannot be lowered even if unemployed workers are willing to work for less rather than starve. Similarly if government passes legislation that protects and encourages unionization, the effect will be to push wages up so high that profit opportunities will be ultimately eliminated and unemployment of workers ensured. Thus, it follows from classical theory, that the market and not the government should decide what should be the minimum wage rate that workers receive. *Consistency, therefore, would require arguing that government should never constrain the pay of top management but rather should leave it to the market to determine the value of CEOs. Is it not surprising that these CEOs then hire these classical economists as consultants?*

The highly complex computer models used by investment bankers on Wall Street in recent years to evaluate and manage the risks of dealings with financial assets is based on statistical probability analysis of historical data to predict the future. Given the necessity in 2008 that the government bail out all these Wall Street investment bankers when their risk-management tools failed, it should be obvious that their risk-management computer models presumed the ergodic axiom while the real world environment was nonergodic. That is why all these risk management models failed to predict the 2008 future.

Oxford mathematician Jerome Ravetz, in an article titled “Faith and Reason in the Mathematics of the Credit Crunch,” has written:

The term faith is believed by these competent present observers to be relevant to the mathematics at the heart of the multi dimensional pyramid game that has led to our present [credit crunch] catastrophe.

Combined with the corruption of quality and the abuse of uncertainty in mathematical models, blind faith in [classical] economics and mathematics forms . . . the toxic mix that has enabled greed and irresponsibility to wreak their destructive way. . . . Mathematics first provided an enabling technology with computers, then with a plausible theorem it offered legitimation for runaway speculation. . . . It framed the quantitative specification of its fantasized products. Mathematics thereby became uniquely toxic, what Warren Buffet has called “weapons of mass destruction.” (2008, 3-5)

Classical Theorists vs. Keynes on the Reality of Assumptions

If Keynes were alive today, I think he might have called this theory of efficient markets a case of “weapons of math destruction.” Yet economist Robert Lucas has boasted that the axioms underlying classical economics are “artificial, abstract, patently unreal” (1981, 287). But like Samuelson, Lucas insists that such unreal assumptions are the only scientific method of doing economics. He writes, “Progress in economic thinking means getting better and better abstract, analogue models, not better verbal observations about the real world” (1981, 276). The rationale underlying this argument is that these unrealistic assumptions make the problem more tractable and, with the aid of a computer, the analyst can then predict the future. Never mind that the prediction might be disastrously wrong.

Computer-based mathematical versions of classical efficient market theory involving thousands of variables and an equation for each variable have been put forth as a hard-science description of our economic system that, at any point of time, simultaneously determines the price and output of every item that is traded in the economic system. For many, even identifying the fundamental axioms buried under all the mathematical debris is an impossible task. Moreover, the fact that computers can manipulate all that mathematics gives the results an aura of scientific truth. How can a computer printout be wrong?

Peter Taylor and David Shipley of MAP Underwriting Agencies, Lloyd’s of London, suggest why all these computer printouts are wrong. They write:

There are lies, damned lies, and statistics. . . . Probability and Statistics just don't feel right for many problems. . . . They give the impression of allowing fairly for the eventualities . . . and then something unexpected happens. . . . Those of a more pragmatic nature would want some measure of credibility such as the extent of applicability to a theory or a problem. In complex systems, the predictability that is so successful in the controlled worlds of the lab and engineering has not worked and yet theories claiming predictability have misled policy makers and continue to do so. . . . We may even have to own up to not having an appropriate model at all, surely a modern-day heresy. (2009)

Taylor and Shipley argue that we should learn from the current economic and financial crisis:

As investors, never trust a manager who says he has a superior mathematical model. . . . As managers, leave room in your business model for the unexpected. . . . As regulators, focus on management's ability to understand real risk exposure, rather than the comfort blanket of a model . . . [and] As modelers, encourage critical awareness that the model may not represent all the relevant mechanisms for the process under consideration. (2009)

In the introduction to his book *Against the Gods*, a treatise that deals with the questions of relevance of risk management techniques on Wall Street, Peter L. Bernstein wrote:

The story that I have to tell is marked all the way through by a persistent tension between those who assert that the best decisions are based on quantification and numbers, determined by the [statistical] patterns of the past, and those who based their decisions on more subjective degrees of belief about the uncertain future. This is a controversy that has never been resolved. . . . to what degree should we rely on the patterns of the past to tell us what the future will be like? (1996, 6)

One hopes that the empirical evidence of the collapse of those "masters of the economic universe" that have dominated Wall Street machinations for the last three decades has at least created doubt regarding the applicability of classical ergodic theory to our economic world. Even Alan Greenspan seems to be having second thoughts, although he still has not completely changed his tune.

Keynes's Liquidity Theory for Dealing with the Uncertain Future

John Maynard Keynes's ideas support Bernstein's latter group. Keynes specifically argued that the uncertainty of the economic future cannot be resolved by looking at statistical patterns of the past. Keynes believed that today's economic decisions regarding spending and saving depend on individuals' subjective degree of belief regarding possible future events.

Keynes stated that classical economists

resemble Euclidean Geometers in a non Euclidean world who, discovering that in experience straight lines apparently parallel often meet, rebuke the lines for not keeping straight as the only remedy for the unfortunate collisions which are occurring. Yet in truth there is no remedy except to throw over the axiom of parallels and to work out a non-Euclidean geometry. Something similar is required today in economics. (1936, 16)

To create a non-Euclidean economics to explain why these unemployment "collisions" occur in the world of experience, Keynes had to deny ("throw over") the relevance of *three* fundamental classical axioms for understanding the real world. The classical ergodic axiom which assumes that the future is known and can be calculated as the statistical shadow of the past was one of the most important classical assertions—but not the only one—that Keynes rejected. Instead Keynes argued that when crucial economic decisions had to be made, decision makers could not, and did not, merely assume that the future can be reduced to quantifiable risks calculated from already existing market data.

Although in his discussion of uncertainty Keynes did not know or use the dichotomy between an ergodic and nonergodic stochastic system, in his criticism of Jan Tinbergen's methodology he notes that economic time series cannot be stationary because "the economic environment is not homogeneous over a period of time" (Keynes 1939/1973, 308). Nonstationarity is a sufficient but not necessary condition for a non-ergodic stochastic process. Accordingly, Keynes was implicitly arguing that economic processes over time occur in a nonergodic economic environment.

Taming Uncertainty in Keynes's Liquidity Theory

For decisions that involved potential large spending outflows or possible large income inflows spanning a significant length of time, people “know” that they do not know what the future will be. Nevertheless, society has attempted to create institutions that will provide people with some control over their uncertain economic destinies.

In capitalist economies, the use of money and legally binding money contracts to organize production and sales of goods and services permits individuals to have some *control over their cash inflows and outflows and therefore some control of their monetary economic future*. Purchase contracts provide household decision makers with some monetary cost control over major aspects of their cost of living today and for months and perhaps years to come. Sales contracts provide business firms with the legal promise of current and future cash inflows sufficient to meet the business firms' costs of production and to generate a profit.

People and business firms willingly enter into *legal* contracts because all parties think it is in their best interest to fulfill the terms of the contractual agreement. If, because of some unforeseen event, either party to a contract finds itself unable or unwilling to meet its contractual commitments, then the judicial branch of the government will *enforce the contract* and require the defaulting party to either meet its contractual obligations or pay a sum of money sufficient to reimburse the other party for all monetary damages and losses incurred. Thus, as Keynes biographer Lord Robert Skidelsky has noted, for Keynes “injustice is a matter of uncertainty, justice a matter of contractual predictability.”

In their book, Arrow and Hahn write:

The terms in which contracts are made matter. In particular, if money is the goods in terms of which contracts are made, then the prices of goods in terms of money are of special significance. This is not the case if we consider an economy without a past or future. . . . *if a serious monetary theory* comes to be written, the fact that contracts are made in terms of money will be of considerable importance. (1971, 256–57, emphasis added)

Only Keynes's liquidity theory explaining the operation of a capitalist economy provides this serious monetary theory as a way of coping with an uncertain future.

Money is that thing that government decides will settle all legal contractual obligations. This definition of money is much wider than the definition of legal tender, which is "This note is legal tender for all debts, private and public."

An individual is said to be liquid if he or she can meet all contractual obligations as they come due. For business firms and households, the maintenance of one's liquid status is of prime importance if bankruptcy is to be avoided. In our world, bankruptcy is the economic equivalent of a walk to the gallows. Maintaining one's liquidity permits a person or business firm to avoid the gallows of bankruptcy.

Since the future is uncertain, we never know when we might be suddenly faced with a payment obligation at a future date that we did not, and could not, anticipate and which we could not meet out of the cash inflows expected at that future date. Or else we might suddenly find that an expected cash inflow disappears for an unexpected reason. Accordingly we have a precautionary liquidity motive for maintaining a positive bank balance plus further enhancing our liquidity position to cushion the blow of any unanticipated events that may occur in the uncertain future.

If individuals suddenly believe the future is more uncertain than it was yesterday, then it will be only human to try to reduce cash-outflow payments for goods and services today in order to increase our liquidity position to handle any adverse future events, since our fear of the future has increased. The most obvious way of reducing cash outflow is to spend less income on produced goods and services—that is, to save more out of current income.

This need for checkbook balancing and desire for an additional liquidity cushion is an irrelevant concept for the people who inhabit the artificial world of classical economic theory where the future is probabilistically risky but reliably predictable. The efficient market concept ensures that no one in this mythical world would ever enter into a contractual payment obligation they could not meet, since

every person would know his or her future net income and spending pattern today and at every date in the future. If some participants do enter into wrong contracts, they are permitted to recontract without any income penalty—a solution that is not permitted in our world of experience.

Efficient markets would never permit people to spend an amount that so exceeds their income that the debt cannot be serviced. Markets would not be efficient if people today entered into contractual transactions that they cannot fulfill when the future occurs. Wouldn't credit card holders who are having trouble meeting even their monthly minimum credit card payment obligations and those mortgage borrowers who were foreclosed out of their homes be happy to know that, if only they had lived in the classical world of efficient markets, they would never have become entrapped in such burdensome contractual arrangements?

In a Keynes analysis, on the other hand, the civil law of contracts and the importance of maintaining liquidity play crucial roles in understanding the operations of a capitalist economy—both from a domestic national standpoint and in the context of a globalized economy where each nation might employ a different currency and even different civil laws of contracts. I cannot pursue, in this paper, the international aspect of money and contracts, but I do discuss it in Davidson 2007 and, more recently, Davidson 2009. In essence, Keynes argued that in a modern capitalist world, there should be an international financial and payments system that insulates each nation from the economic maladies that another nation might develop because of poor policies produced by the other nation's politicians. It is the equivalent of quarantining nations where swine flu develops so they do not infect other people around the world.

In Keynes's theory, *the sanctity of money contracts is the essence of the entrepreneurial system we call capitalism*. Since money is that thing that can always discharge a contractual obligation under the civil law of contracts, money is the most liquid of all assets. Other liquid assets have some lower degree of liquidity than money because they cannot be "tended," that is, handed to the party, to discharge a contractual

obligation. However, as long as these other assets can be readily resold for money (liquidated) in a well-organized and orderly financial market, they will possess a degree of liquidity. A rapid sale of the liquid asset for money will permit people to use the money received from the sale of financial assets to meet their contractual obligations.

By an *orderly financial market* we mean that the price on the next sale of a financial asset transaction to be executed will not differ by very much from the price of the previous transaction. As Peter L. Bernstein has noted (1998, 15–18), the existence of orderly financial markets for liquid assets encourages the holders (investors) of these securities to believe they can execute a fast exit strategy at any moment when they suddenly decide they are dissatisfied with the way things are happening. Without liquidity for these stocks, the risks of being a minority stockholder (owner) in a business enterprise would be intolerable.

Nevertheless, the liquidity of orderly equity markets and the market's promotion of fast exit strategies make the separation of ownership and control (management) of business enterprises an important economic problem that economists and politicians have puzzled over since the 1930s. In fact, Greenspan's surprise that the *managers* of large investment banks were not protecting the interests of the *owners* of these corporations indicates he does not understand the difference that liquid markets make in driving a wedge between ownership and control. In classical theory there can never be a separation in the decision making between owners and managers.

In my paper "Securitization, Liquidity, and Market Failure" (Davidson 2008b), I explain why, as long as the future is uncertain and not just probabilistically risky, the price for liquid assets at any future date in a free market could vary dramatically and almost instantaneously. In the worst-case scenario, liquid financial assets could become unsalable (illiquid) at any price as the market collapses (fails) in a disorderly manner, creating toxic assets. This is what happened in the mortgage-backed securities (MBS) markets—and especially for subprime mortgage derivatives developed in the United States.

To assure holders of liquid securities that the market price for their

holdings will *always change in an orderly manner*, there must be a person or firm in the market called a “market maker.” The existence of this market maker assures the public that if, at any time, most holders of the financial asset suddenly wanted to execute a fast exit strategy and sell, while few or no people wanted to buy this liquid asset, the market maker would be obliged to enter the market and purchase a sufficient volume of the asset to ensure that its new market price would change continuously in an “orderly” manner from the price of the last transaction. In essence, the market maker assures the holders of a liquid asset that they can always execute a fast exit strategy at a price not much different from the last price. In the New York Stock Exchange, these market makers are called “specialists.”

Orderliness is a necessary condition to convince holders of the traded asset that they can readily liquidate their position at a market price close to the last publicly announced price. In other words, *orderliness is necessary to maintain liquidity in these markets*. Orderliness provides preventive medicine against toxic assets.

Modern financial efficient-market theory suggests that these quaint institutional arrangements for market makers to create orderliness are antiquated in this computer age. With the computer and the Internet, it is assumed that huge numbers of buyers and sellers can meet rapidly and efficiently in virtual space. Consequently, to assure the public the market is well organized and orderly, there is no need for humans to act as specialists who keep the books and also make the market when necessary. The computer can keep the book on buy and sell orders, matching them in an orderly manner, more rapidly and more cheaply than the humans who did these things in the past.

In the many financial markets that failed in the winter of 2007–8 (e.g., the markets for mortgage-backed assets, auction rate securities), the underlying financial instruments that were to provide the future cash flow for investors typically were long-term debt instruments. A necessary condition for these markets to be efficient is that the probabilistic risk that the debtors will fail to meet all future cash-flow contractual debt obligations can be “known” with actuarial certainty. With this actuarial knowledge, it can be profitable for insurance

companies such as AIG to provide holders of these financial assets with insurance guaranteeing solvency and the payment of interest and principal liabilities by the debtors.

In the classical efficient market theory, any observed market price variation around the actuarial value (price) determined by fundamentals is presumed to be statistical “white noise.” Any statistician will tell you that if the size of the sample increases, then the variance (i.e., the quantitative measure of the white noise) decreases. Since computers can bring together many more buyers and sellers globally than the antiquated pre-computer market arrangements, the size of the sample of trading participants in the computer age will rise dramatically. If, therefore, you believe in efficient market theory, then permitting computers to organize the market will significantly decrease the variance and therefore increase the probability of a more well-organized and orderly market than existed in the pre-computer era.

In a world of efficient financial markets, holders of market-traded assets can readily liquidate their positions at a price close to the previously announced market price whenever any holder wishes to reduce his/her position in that asset. If the efficient market theory is applicable to our world, then how can we explain so many securitized financial markets’ failing in the sense that investors are finding themselves locked into investments they cannot cash out of?

Keynes’s liquidity theory can provide the explanation. Keynes presumes that the economic future is uncertain. If future outcomes cannot be reliably predicted on the basis of existing past and present data, then there is no actuarial basis for insurance companies to provide holders of these assets protection against unfavorable outcomes. Accordingly, it should not be surprising that insurance companies such as AIG, which have written policies to protect asset holders against possible unfavorable outcomes resulting from assets traded in these failing securitized markets, find they have experienced billions of dollars more in losses than the companies had estimated (Morgenson 2008). In a nonergodic world, it is impossible to actuarially estimate insurance payouts in the future.

Although the existence of a market maker provides, all other things

being equal, a higher degree of liquidity for the traded assets, this assurance could dry up in severe sell conditions unless the monetary authority is willing to take direct action to provide resources to the market maker, or even indirectly to the market. If the market maker runs down his/her own resources and is not backed by the monetary authority indirectly, the asset becomes temporarily illiquid. Nevertheless, the asset holder “knows” that the market maker is providing his/her best effort to bolster the buyers’ side and thereby restore liquidity to the market.

In markets without a market maker, on the other hand, there can be no assurance that the apparent liquidity of an asset cannot disappear almost instantaneously. Moreover, in the absence of a market maker, there is nothing to inspire confidence that someone is working to try to restore liquidity to the market.

Those who suggest that one needs only a computer-based organization of a market are assuming the computer will always search and find enough participants to buy the security whenever a large number of holders want to sell. After all, the “white noise” of buyers and sellers at prices other than the equilibrium price in efficient markets is assumed to be normally distributed. Hence, by assumption, there can never be a shortage of participants on one side or the other of financial markets.

With the failure of thousands of security markets in the first weeks of 2008, it should be obvious that the computers failed to find sufficient buyers. Moreover, the computer is not programmed to automatically enter into failing markets and begin purchasing when almost everyone wants to sell at, or near, the last market price. The investment bankers who organized and sponsor the many mortgage-backed security markets will not act as market makers. These bankers may engage in “price talk” before the market opens to suggest to their clients what the probable range of today’s market-clearing price is likely to be.¹ These “price talk” financial institutions, however, do not put their money where their mouth is. They are not required to try to make the market if the market-clearing price is significantly below their “price talk” estimate.

Nevertheless many reports indicate that representatives of these investment bankers have told clients that these assets were “cash equivalents” (Kim and Anand 2008). Many holders of these securities believed their holdings were very liquid since big financial institutions such as Goldman Sachs, Lehman Brothers, and Merrill Lynch were the dealers who organized the markets and normally provided “price talk.” On February 15, 2008, the *New York Times* reported:

Some well-heeled investors got a big jolt from Goldman Sachs this week; Goldman, the most celebrated bank on Wall Street, refused to let them withdraw money from investments that they considered as safe as cash. . . . Goldman, Lehman Brothers, Merrill Lynch, etc. have been telling investors the market for these securities is frozen—and so is their cash. (Anderson and Bajaj 2008, D4)

Obviously, participants in the market believed they were holding very liquid assets. Nevertheless, the absence of a credible market maker has shown that these assets can easily become illiquid! Had these investors learned the harsh realities of Keynes’s liquidity theory, they might never have participated in markets whose liquidity could be merely a fleeting mirage.

Policy Implications

The policy response to the financial market failings we are experiencing can be broken into two parts. First, what can be done to prevent future occurrences of this widespread failure of public financial markets? Second, what, if anything, can be done today to limit any depressing effects of the current credit crunch developing in these securitized financial markets?

The question of prevention is the easier of the two to answer.

According to the Web site of the Securities and Exchange Commission (www.sec.gov): “The mission of the U.S. Securities and Exchange Commission is to protect investors, maintain fair, orderly, and efficient markets, and facilitate capital formation.” The SEC Web site then notes that the Securities Act of 1933 had two basic objectives: “require that investors receive financial and other significant information con-

cerning securities being offered for public sales, and prohibit deceit, misrepresentations, and other frauds in the sale of securities.”

The SEC regulations apply to *public financial markets* where the buyer and the seller of an asset do not ordinarily identify themselves to each other. In a public financial market, each buyer purchases from the impersonal marketplace, and each seller sells to the impersonal market. It is the responsibility of the SEC to assure investors that these public markets are orderly.

In contrast, a *private financial market* would be one in which both the buyer and the seller of the any financial asset are identified to and know each other. For example, bank loans were typically a private market transaction that would not come under the purview of the SEC. In the past, there were no resale markets for bank loan securities created in private financial markets. The loan debt contract resulting from a transaction in a private market traditionally has been an illiquid asset that the lender “knew” he/she would have to keep on the asset side of his/her balance sheet until the loan was paid off or the borrower went into default. Under such conditions, the lender knew enough to carefully check the borrower for the three Cs—Collateral, Credit History, and Character—before granting a loan.

On its home page, the SEC also declares: “As more and more first-time investors turn to the markets to help secure their futures, pay for homes, and send children to college, our investor protection mission is more compelling than ever.” Given the current experience of contagious failed and failing public financial markets, it would appear that the SEC has been lax in pursuing its stated mission of investor protection. Accordingly the U.S. Congress should require the SEC to enforce diligently the following rules:

1. *Public notice of potential illiquidity for public markets that do not have a credible market maker.* In the last quarter of a century, large financial underwriters have created public markets that, via securitization, appeared to convert long-term debt instruments (some of them very illiquid, e.g., mortgages) into the virtual equivalent of high-yield, very liquid money market funds and other short-term deposit accounts. As the newspaper reports we have cited indicate, given the

celebrated status of the investment-bank underwriters of these securities and the statements of their representatives to clients, individual investors were led to believe that they could liquidate their position at an orderly change in price from the publicly announced clearing price of the last public auction.

This perceived high degree of liquidity for these assets has now proven to be illusory. Purchasers might have recognized their potential low degree of liquidity if the buyers were informed of all the small print regarding market organization. In markets such as the auction rate security markets, for example, although the organizer-underwriter could buy for its own account, it was not obligated to maintain an orderly market. Since the mandate of the SEC is to ensure orderly public financial markets and “require that investors receive financial and other significant information concerning securities being offered for public sales, and prohibit deceit, misrepresentations . . . in the sale of securities,” it would seem obvious that *(1) all public financial markets that are organized without the existence of a credible market maker either should be shut down because of the potential for disorderliness, or (2) at a minimum, information regarding the potential illiquidity of such assets should be widely advertised and made part of essential information that must be given to each purchaser of the asset being traded.*

The draconian action suggested in (1) is likely to meet with severe political resistance. The financial community will argue that in a global economy with the ease of electronic transfer of funds, a prohibition of this sort would merely encourage investors looking for higher yields to deal with foreign financial markets and underwriters, to the detriment of domestic financial institutions and domestic industries trying to obtain capital funding.

Elsewhere (Davidson 2007), I have proposed an innovative international payments system² that could prevent U.S. residents from trading in foreign financial markets that the United States deemed detrimental to American firms that obeyed SEC rules while foreign firms did not. If, however, we assume that the current global payments system remains in effect, and there is a fear of loss of jobs and profits

for American firms in the FIRE (Finance, Insurance, and Real Estate) industries, then the SEC could permit the existence of public financial markets without a credible market maker as long the organizers of such markets clearly advertise the possible loss of liquidity to holders of assets traded in these markets.

A civilized society does not believe in “caveat emptor” for markets that sell products that can have terribly adverse health effects on the purchaser. Despite the widespread public information that smoking is a tremendous health hazard, government regulations still require cigarette companies to print in bold letters on each package of cigarettes the warning that “Smoking can be injurious to your health.” Likewise, any purchases on an organized public financial market that does not have a credible market maker can have serious financial health effects on the purchasers. Accordingly, the SEC should require the following warning to potential purchasers of assets traded in a market without a credible market maker: “This market is not organized by an SEC-certified credible market maker. Consequently it may not be possible to sustain the liquidity of the assets being traded. Holders must recognize that they may find that their position in these markets can be frozen and they may be unable to liquidate their holdings for cash.”

Furthermore, the SEC should set up strictly enforced rules regarding the minimal financial resources relative to the size of the relevant market that an entity must possess in order to be certified as a credible market maker. The SEC should be required to recertify all market makers periodically, but at least once a year.

2. *Prohibition against securitization that attempts to create a public market for assets that originated in private markets.* The SEC should prohibit any attempt to create a securitized market for any financial instrument or a derivative backed by financial instruments that originates in a private financial market (e.g., mortgages, commercial bank loans).

3. *Congress should legislate a twenty-first-century version of the Glass Steagall Act.* The purpose of such an act should force financial institutions to be either an ordinary bank lender creating loans for

individual customers in a private financial market or an underwriter broker that can only deal with instruments created and resold in a public financial market.

What can be done to mitigate the depressing consequences of the current financial mess?

In two earlier papers (Davidson, 2008a, 2008b), I proposed the creation of twenty-first-century equivalents of the Roosevelt-era Home Owners Loan Association (HOLC) and the Bush I administration's Resolution Trust Company (RTC) to alleviate the U.S. housing bubble crisis and to prevent potential massive insolvency problems by removing toxic assets from financial institution balance sheets while penalizing managers and stockholders of these financial institutions.

Notes

1. Before the day's auction begins, the investment banker will typically provide "price talk" to his clients indicating a range of likely clearing rates for that auction. This range is based on a number of factors, including the issuer's credit rating, the last clearance rate for this and similar issues, general macroeconomic conditions, and so on.

2. My proposed international payments system is a variant of the Keynes Plan that Keynes presented at the Bretton Woods conference in 1944 and which was rejected by the United States.

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