

AVOIDING THE NEXT CRISIS: CAN CENTRAL BANKS LEARN?

Robert L. Hetzel

Any effort to avoid future recessions must rest on an organized way to learn from the past. However, the absence of such efforts within central banks renders such learning problematic and makes likely the recurrence of episodes of recession and financial market turmoil. Critical to learning is the use by policymakers of models to evaluate the past performance of monetary policy. These models should not be the complicated, multiequation models favored by the forecasting departments of central banks. Rather, they should be simple models that require policymakers to take a stand on the basic issues in monetary economics: the nature of the price level (monetary or real) and how well the price system works to maintain output at potential (full employment). They should serve as a safeguard to the understandable tendency of central bankers to attribute economic disturbances exclusively to real shocks rather than monetary shocks.

This article explains how learning requires that policymakers use models to disentangle causation from correlation. In that way, models can bring coherence to the diverse experiences of the past and can facilitate prediction of how well alternative policy rules would work. The quantity-theory hypothesis that recessions originate in central bank interference with the price system is summarized and used to

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Robert L. Hetzel is a Senior Economist at the Federal Reserve Bank of Richmond. The views expressed in this article are those of the author and should not be attributed to the Federal Reserve Bank of Richmond or Federal Reserve System.

explain the Great Recession. The article concludes with comments on learning and models.

Creating Causation Out of Correlation

An inversion of Says' law would be that demand creates its own supply. There is a demand for journalists to explain the Great Recession and subsequent slow recovery. The resulting supply of stories uses correlation to explain causation. In the boom phase of a business cycle when individuals are optimistic about the future, they bid up asset prices and take on debt. In the bust phase, they sell assets at fire sale prices and attempt to pay down debt. Correlation becomes causation through a morality tale about greed and speculative excess.

The initial occurrence of speculative excess requires a purging of the economic body. Easy money and inflation lead to tight money and deflation. To become easily comprehensible, this story anthropomorphizes impersonal market forces through the vilification of the unrestrained greed of Wall Street bankers. Finally, the story resonates by mining a deep populist vein in American culture. As a result of unrestrained speculation, paper wealth increases out of proportion to the productive capacity of the real economy. The inevitable bursting of the asset bubble disrupts financial intermediation and productive economic activity. In the form of the real-bills doctrine, this perennially popular populist narrative powered the creation of the Federal Reserve System.¹

In contrast to the journalistic imperative to tell a compelling story, the fundamental methodological desideratum in macroeconomics is to disentangle causation from correlation. This effort requires a model, which separates the behavior of exogenous

¹The original Federal Reserve Act mandated that only short-term, self-liquidating debt instruments used to finance inventories of goods in the process of production were eligible for discounting with the Reserve banks. By limiting discount window lending to "real bills," the founders of the Fed intended to prevent the speculative use of credit and the formation of asset bubbles. The Fed has always characterized itself as *an* institution that influences conditions in credit markets rather than as *the* institution that controls money creation. The former rather than latter characterization deflects the populist criticism that by engendering asset prices unsustainably high compared to real productive capacity paper money creation generates bubbles, the bursting of which produces deflation and recession.

variables and shocks from the behavior of endogenous variables. Exogenous forces arise from outside the working of the price system and endogenous variables respond to them in a way dependent upon the price system. As a way of introducing the importance of bringing the discipline of economics to bear on the issue of the shocks that cause cyclical fluctuations in the economy, the following provides an example of the kind of descriptive characterization of business cycles referred to above and contrasts it with an economic characterization.

Washington Irving commented on the 1818–19 deflation and recession:

Every now and then the world is visited by one of these delusive seasons, when the “credit system” . . . expands to full luxuriance: everybody trusts everybody; a bad debt is a thing unheard of; the broad way to certain and sudden wealth lies plain and open. . . . Banks . . . become so many mints to coin words into cash; and as the supply of words is inexhaustible, it may readily be supposed that a vast amount of promissory capital is soon in circulation. . . . Nothing is heard but gigantic operations in trade; great purchases and sales of real property, and immense sums made at every transfer. All, to be sure, as yet exists in promise; but the believer in promises calculates the aggregate as solid capital. . . .

Now is the time for speculative and dreaming of designing men. They relate their dreams and projects to the ignorant and credulous, [and] dazzle them with golden visions. . . . The example of one stimulates another; speculation rises on speculation; bubble rises on bubble. . . . No “operation” is thought worthy of attention, that does not double or treble the investment. . . . Could this delusion always last, the life of a merchant would indeed be a golden dream; but it is as short as it is brilliant [in Fisher 2008: 4].

William Graham Sumner, in 1874, commented similarly on the same event:

In consequence, . . . the inclination of a large part of the people, created by past prosperity, to live by speculation and not by labor, was greatly increased. A spirit in all respects akin to gambling prevailed. A fictitious value was given to all kinds of property. Specie was driven from circulation as if by common

consent, and all efforts to restore society to its natural condition were treated with undisguised contempt [in Wood 2006: 4].

Thomas Jefferson, who had heavy debts at the time of his death, frequently expressed the American populist view that banks encouraged speculation and subsequent financial bust through their ability to create paper money (bank notes).² He especially distrusted the Bank of the United States:

Everything predicted by the enemies of banks, in the beginning, is now coming to pass. We are to be ruined by the deluge of bank paper. It is cruel that such revolutions in private fortunes should be at the mercy of avaricious adventurers, who, instead of employing their capital, if any they have, in manufactures, commerce, and other useful pursuits, make it an instrument to burden all the interchanges of property with their swindling profits, profits which are the price of no useful industry of theirs [Letter to Thomas Cooper 1814].

A spirit . . . of gambling in our public paper has seized on too many of our citizens, and we fear it will check our commerce, arts, manufactures, and agriculture, unless stopped [Letter to William Carmichael 1791].

The Bank of the United States is one of the most deadly hostilities existing [Letter to Albert Gallatin 1803].³

In contrast, Richard Timberlake (1993: chap. 2), who was an original member of Milton Friedman's Money and Banking Workshop in the early 1950s, used a quantity-theoretic framework to analyze the 1818–19 deflation and recession. The charter of the First Bank of the United States lapsed inopportunately in 1811 given the advent of war with Britain in 1812. Given its limited ability to tax, the federal government financed wartime deficits by issuing small-denomination Treasury notes, which the government made legal tender and functioned as a medium of exchange. The resulting expansion in bank reserves promoted an expansion of bank note issue. This expansion of the money stock created inflation.

²Jefferson died in debt to a great extent because he had to sell his main income-producing property, Poplar Forest, in 1819 to pay debts. Because of the deflation and recession, property prices were extremely depressed at that time.

³Quotations are from "Thomas Jefferson's Top 10 Quotes on Money and Banking" (<http://dailybail.com/home/can-we-party-like-its-1776-and-just-start-over-thomas-jeff.html?printerFriendly=true>).

As the commodity value of a paper dollar fell relative to the commodity value of a gold dollar, given the fixed par value of gold in terms of a dollar set by the gold standard, individuals took paper dollars to banks and asked for gold dollars. Faced with the loss of gold reserves, banks suspended convertibility and inflation proceeded without the constraint imposed by the gold standard. In 1816, Treasury Secretary Crawford decided to return the country to the gold standard. In order to again bring the purchasing power of depreciated paper dollars back into line with that of a gold dollar, the United States began to retire its note issue by running fiscal surpluses. The resulting contraction in the monetary base and in money led to deflation and recession.

In the bursting bubble explanation of recession, shifts in investor sentiment *overwhelm* the working of the price system. In the monetary explanation, monetary disturbances *disrupt* the working of the price system. In the bubble explanation, investor mood swings are an irrational manifestation of human fallibility: unpredictable swings between greed and fear. In the monetary story, stable monetary arrangements (a rule) can shape constructively the expectations of the public because they are formed rationally.

A corollary of the bubble explanation is that pessimism overwhelms the ability of a central bank to maintain the nominal expenditure of the public even if it were to have a policy of expanding the money stock. A liquidity trap frustrates monetary policy. In contrast, the monetary explanation holds that because of stability in the velocity of money a central bank can create money in order to maintain nominal expenditure. With the bubble explanation, the sharp declines in nominal expenditure that accompany the declines in output in recession are an inevitable concomitant of a hard-wired Phillips Curve relationship running from real (output and unemployment) to nominal variables (inflation). With the monetary explanation, the associated declines in nominal and real output are a sign of misguided monetary policy that forces a decline in nominal expenditure and, as a result, real output.

Recessions: Failure of the Price System or Interference with It?

The 1818–19 deflation and recession illustrate the quantity theoretic hallmarks of recession. As an empirical matter, monetary shocks initiate boom-bust cycles. The swings over the cycle from investor

optimism to pessimism do not arise capriciously from irrational shifts in speculative mania or animal spirits but from the disruption to economic activity caused by monetary disturbances. The disruption to the price system from monetary shocks originates in the way that such shocks confront firms with problems of coordination that only an omniscient central planner could solve. Firms are forced to make strategic decisions whose solution is not amenable to the decentralized decisionmaking of the price system. That is, firms can no longer predict changes in the demand for their product based on a small number of relative prices, but must also predict the behavior of all the firms setting prices in the economy.

Confronted with monetary shocks that force an unpredictable evolution of the price level, firms lack a way of coordinating changes in the dollar prices they set in order to discover the evolving price level that undoes the shock. That is, they lack a way of searching for the average of their dollar prices (the price level) required in order to make nominal money correspond to the purchasing power demanded by money holders while at the same time preserving the relative prices that clear markets. Moreover, a discrete increase in the pessimism of the public about the future requires a rearrangement of consumption with a new set of relative prices. Although the welfare theorems of economics provide assurance that this new allocation of resources and configuration of relative prices exist, economics has nothing to say about the amount of time required for the trial-and-error process of discovering them.

As an empirical matter, significant disruption to economic activity necessitates a monetary shock. Nothing endemic to the working of the price system produces it. A low real interest rate does not indicate a failure of the price system but is a symptom of a negative monetary shock. When once again the public becomes optimistic about the future, the real rate of interest will rise.

The contrasting explanations of the 1818–19 deflation and recession illustrate the need for identifying restrictions to disentangle the nature of the shocks that cause cyclical fluctuations. In order to identify monetary shocks, quantity theorists make two assumptions. The first highlights the intrinsic worthlessness of fiat money and the second emphasizes the efficacy of the price system in the absence of government interference in its operation. It follows that in order to achieve nominal and real stability, a central bank must operate with a rule that provides for the stability of nominal variables (a stable

nominal anchor) and that respects the working of the price system (allows market forces to determine real variables like the real interest rate and the unemployment rate).

In order to give fiat money value given its intrinsic worthlessness, the central bank must limit its quantity. Given that central banks ordinarily operate with an interest-rate instrument, they must limit the quantity of money indirectly by imposing discipline on the public's demand for nominal money. In order to impose that discipline, they must operate with a rule that conditions the expectations of the public. Such a rule possesses two facets. First, because individuals take a piece of paper (money) today in exchange for goods that satisfy real wants, they must believe that money will possess value in exchange tomorrow. Practically, the central bank must keep the inflationary expectations of the public in line with its inflation target (Hetzel 2008).

Second, in order to avoid the price fixing that creates an excess demand for bonds produced by unsustainably high interest rates and the resulting open-market sales required to maintain the rate peg that lead to monetary contraction and deflation, the central bank must have a procedure that allows the market to determine the real interest rate. Symmetrically, it must avoid an excess supply of bonds created by unsustainably low interest rates and the open-market purchases that lead to monetary expansion and inflation. Like any central planner, the central bank lacks the dispersed knowledge of market participants. It does not know the value of the sustainable (natural) rate of interest.

The real interest rate acts to counter fluctuations in the degree of optimism (pessimism) of individuals about their future job and income prospects. By lowering the price of current resources in terms of forgone future resources, a low real interest rate stimulates the demand for current resources and thus stabilizes fluctuations in aggregate demand when individuals are pessimistic about the future. Conversely, a high real interest rate restrains the demand for current resources when individuals are optimistic about the future. When central banks fail to follow procedures that allow market forces to determine the real interest rate, through the creation and destruction of money, they circumvent this operation of the price system and as a consequence engender the boom and bust of the business cycle.

Central bank interference with the market determination of interest rates engenders monetary emissions or destruction. The

counterpart of the resulting surpluses in the bond market is money creation and of the shortages in the bond market money destruction. In individual markets, the consequences of government price fixing are obvious. One sees immediately the resulting shortages and surpluses. As explained by Milton Friedman (1960), however, “long and variable lags” from money destruction and creation obscure the macroeconomic counterpart of central bank price fixing.

The Great Recession of 2008–09

Economists did not predict the severe world recession that unfolded in 2008 nor did they predict the lack of a strong recovery. For this reason, many economists are working on extending the profession’s workhorse New Keynesian model. Much of this work has taken the form of the introduction of financial frictions in credit markets. Work combining finance and macroeconomics is important regardless of the validity of the intuition that the shock that caused the Great Recession originated in financial markets. A characteristic of recession is the persistence of high real interest rates long after expected consumption would have declined (Hetzel 2012a: Table 7.1, Figures 8.4 and 8.5). That fact points to a financial friction (Hetzel 2012a: 123).

However, while financial frictions could play a role in propagating shocks, they are unlikely candidates for the shock that precipitated the Great Recession. Both in the United States and in other advanced economies, mild recession turned into major recession in 2008Q2 and 2008Q3 before the turmoil in financial markets set off by the Lehman crisis, which started September 15, 2008. Despite the losses banks incurred when they took the mortgage-backed securities held in off-balance-sheet entities on to their balance sheets, credit markets were working well before the Lehman bankruptcy (Hetzel 2012a: chap. 12).

In contrast, the central bank behavior Milton Friedman (1960) identified with recessions manifested itself in spring and summer 2008. In his long-and-variable-lags argument, Friedman pointed to the destabilization of economic activity attendant upon the direct response of central banks to realized inflation. As a result of the very long lags between contractionary monetary policy and disinflation, the central bank keeps short-term interest rates largely unchanged while the economy weakens. This price fixing results in a monetary deceleration.

All major central banks behaved the same way in 2008–09. The argument for a monetary shock would be less persuasive if their monetary policies had been divergent. Starting in summer 2004 and coming to a head in 2007 and the first half of 2008, an inflation shock propelled by rising energy, commodity, and food prices pushed up headline inflation. Even though core inflation remained significantly lower at somewhat above 2 percent, central banks were concerned about losing credibility and having high headline inflation pass through to core inflation.

At the same time, the inflation shock caused real disposable income to stop growing. Consumers became more pessimistic about their future income prospects. That increased pessimism required a decline in the real interest rate in order to maintain aggregate demand equal to potential output. However, because of the persistence of high inflation, despite the weakening of economic activity, central banks maintained high real interest rates. The resulting contractionary monetary policy turned a moderate recession due to the inflation shock into a major recession.

Out of a belief that the problem was not contractionary monetary policy but rather a disruption to financial intermediation, the FOMC lowered the funds rate only slowly to a value near zero at the December 15, 2008, meeting. A flow of funds out of institutional money funds into the large, too-big-fail banks as well as an increased demand for liquidity caused the monetary aggregate M2 to surge in fall 2008. After accommodating this surge, starting in January 2009, the FOMC allowed M2 to grow at a historically low rate for economic recoveries. Focused on programs to restart financial intermediation in markets like the asset-backed commercial paper market and convinced that a near-zero interest rate implied expansionary monetary policy, the FOMC allowed the growth rate of nominal GDP to decline drastically through a failure to promote the growth rate in the monetary base required to maintain strong M2 growth.⁴

⁴See Hetzel (2012a: 236 and 347) for a discussion of the low M2 growth after December 2008. For two reasons, this low M2 growth understates the restraining effect of monetary policy on nominal GDP growth. When interest rates decline, the interest-sensitivity of M2 demand causes M2 velocity to decline. That is, weakening economic activity and the associated reduction in interest rates, by causing an outflow of funds from money market instruments into bank deposits, spur M2 growth. Moreover, starting in fall 2008, government policies of insuring all non-interest-bearing demand deposits and of too-big-to-fail drew funds out of money market instruments and in to bank demand deposits for flight to safety reasons.

Learning Requires the Language of Economics

Based on FOMC documents available through 2006, the staff of the Board of Governors uses models solely to forecast the future. The desire to forecast the evolution of the economy creates a bias for complex models with very large numbers of equations. Unfortunately, the ability of economists to forecast the future evolution of the economy is negligible.⁵ A resulting characteristic of such models is their continual reestimation to make them fit the data. Moreover, the FOMC does not provide the staff with a policy rule summarizing its behavior to use in the simulations. In contrast to the effort placed on forecasting the future, there is no effort to use models to evaluate the efficacy or mistakes of past monetary policy. There is no organized, continuing effort to learn from the past.

It appears as though central bankers believe that their legitimacy comes from the public perception that they understand the behavior of economic activity and how their actions interact with economic activity. That perception appears to derive from the belief on the part of the public that an ability to talk about the economy in a descriptive way implies an understanding of the structure of the economy. An encyclopedic knowledge of facts about the economy is evidence of a reliable grasp of a model of the economy. Central bankers understand what macroeconomic variables they control and how they exercise that control.

A more reliable way of achieving and maintaining legitimacy would be to engage in an ongoing, large-scale effort to learn from the past. Theoreticians and historians would work together to use the models of economics to understand the history of central banking (Hetzel 2012b). Determination of which policies have worked and which have not worked would constitute an apolitical, scientific program.

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⁵Hetzel (2012b) shows that the forecasts made by the Board staff prior to FOMC meetings contained in the Greenbook predict the behavior of real GDP in the succeeding quarter only marginally better than naïve forecasts.

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