

# MONETARY DISEQUILIBRIUM THEORY AND BUSINESS CYCLES: AN AUSTRIAN CRITIQUE

KENNETH A. ZHRINGER

*ABSTRACT:* Monetary disequilibrium theory has some common ground with Austrian economics, but there is substantial disagreement regarding the analysis of business cycles. While monetary disequilibrium theory does include some consideration of the market process so important in Austrian theory, at its core lies a view of equilibrium as essentially a static state. This incorrect definition has led to an inadequate explanation of the business cycle in the monetary disequilibrium tradition. The Austrian theory of the business cycle examines business cycles from within the context of the entire economic process and thus, far from being overly specific, is the only theory that provides a complete explanation of that phenomenon.

---

Kenneth Zahringer (kaz998@mail.missouri.edu) is a Graduate Fellow at the Department of Agricultural and Applied Economics, University of Missouri.

An earlier version of this paper was presented at the Austrian Student Scholars Conference and the Austrian Scholars Conference. The author would like to thank Joseph Salerno, Peter Klein, Robert Murphy, Timothy Terrell, Per Bylund, Alex Magnier, and an anonymous referee for very helpful conversations and suggestions. All remaining shortcomings are the author's own. This material is based upon work supported by the National Institute of Food and Agriculture, U.S. Department of Agriculture, under Agreement No. 2008-38420-18747. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author and do not necessarily reflect the views of the U.S. Department of Agriculture.

*KEYWORDS:* business cycles, equilibrium, deflation

*JEL CLASSIFICATION:* E32, E40

## INTRODUCTION

The concept of monetary equilibrium has a long history in economics, going back at least to Wicksell (1962 [1898]). Wicksell's idea has been incorporated into divergent schools of thought in the century plus since its inception. Chief among these are the monetarist school, in particular an offshoot of that tradition represented by the works of Leland Yeager, Steven Horwitz, and others that emphasizes monetary disequilibrium, and the Austrian school. Both schools' concepts of monetary equilibrium have evolved since Wicksell's time, and both begin with similar basic definitions founded on individual demand for cash balances. However, the two schools hold divergent views on the nature of equilibrium in general, leading to different applications of that basic concept. This difference in viewpoint has profound consequences for the theories developed by these two schools of thought, especially in the area of business cycle theory. We shall see that a distorted definition of monetary equilibrium has led to an inadequate explanation of the business cycle as well as erroneous policy recommendations by the monetary disequilibrium perspective. This inadequacy is particularly apparent in the analysis of and proposed responses to a secondary deflation.

## MONETARY DISEQUILIBRIUM THEORY

While the investigation of the nature of money and the effects of monetary debasement is as old as political economy, framing that question in terms of monetary equilibrium is relatively recent. One of first to do so was the Swedish economist Knut Wicksell (1962 [1898]). Wicksell was primarily concerned with the behavior of the general level of prices, especially as influenced by changes in interest rates. He did this in an explicitly Walrasian equilibrium context, so his discussion was permeated with equilibrium considerations. At the outset, he asserts that "the ideal condition... would undoubtedly be one in which, without interfering with

the inevitable variations in the relative prices of commodities, the general average level of money prices... would be perfectly invariable and stable." (Wicksell, 1962 [1898], p. 4) Although he admits to difficulties in defining that average price level, he has no doubt that it is possible to do so.

As described by Myrdal (1939), Wicksell based his definition of monetary equilibrium on the existence of three conditions. The first of these is the equivalence of the "natural" rate of interest and the money rate of interest. Wicksell developed his concept of the natural rate while a student of Böhm-Bawerk, and like his teacher uses a definition based on the physical productivity of capital. Wicksell's second condition of monetary equilibrium is equilibrium in the capital market. That is, equivalence between the supply of and demand for savings, or in other words, as Myrdal points out (p. 86), between saving and investment. Properly understood, of course, this condition is a corollary of the first, since adjustment of the money interest rate leads the capital market to clear. With the natural interest rate based on capital productivity, though, Wicksell must specify this condition separately. Finally, Wicksell's third condition of monetary equilibrium concerns equilibrium in the commodity market, defined here as a stable price level, as noted above. So we see that Wicksell's basic conception of equilibrium, his meta-definition if you will, is that equilibrium exists at the macroeconomic level, either in specifically defined macroeconomic conditions or constancy of a particular macroeconomic variable. The individual does not explicitly appear in this system.

Wicksell's meta-definition is part and parcel of the Walrasian general equilibrium framework that became commonplace in much of mainstream economics in the twentieth century. In particular, this viewpoint was shared by Clark Warburton, arguably the founder of the monetarist school (Bordo and Schwartz, 1987). Writing in the 1940s, Warburton was primarily interested in explaining business cycles and depressions. He developed his ideas largely on the basis of his empirical investigations into the connection between variations in the money supply and economic conditions—measured by prices, employment, and output—from 1915 to around 1940. The primary economic effect of changes in the money supply in Warburton's system was changes in the overall price level. Other changes in economic variables were a result of price changes (Warburton, 1945).

Based on the effects of changes in the price level, Warburton argued for a monetary policy that, like Wicksell's ideal, would keep the price level constant. Rising prices would be harmful to retirees and others on fixed incomes, while falling prices, even if a result of increased productivity, would depress business activity by reducing nominal profit margins (Warburton, 1946, pp. 442–444). He came to advocate a Friedman-like rule for money supply growth, based on population and economic growth, with some variation allowed to achieve the ultimate goal of price stability (Warburton, 1952, pp. 498–500). In all this, Warburton's definition of monetary equilibrium, like Wicksell's, is based on the stability of the macroeconomic variables of the price level and output.

In the present day Leland Yeager has built upon and extended Warburton's work (Garrison, 2001, p. 233). Like Warburton, Yeager adheres to the monetarist school of thought, which he defines as the view that "money matters most" (Yeager, 1997b, p. 19). Yeager's definition of monetary equilibrium recognizes that individuals are the basis of economic activity, but deals with them only in the aggregate. In Yeager's system, individuals have a demand for money to hold as cash balances, based on their income and desire to provide for future contingencies, while the supply is set by the monetary authority. He begins his analysis by correctly stating that markets tend to clear, and if markets in general fail to clear, as in a depression, it must be because of some disturbance that affects the entire economy and cannot be corrected quickly. He reasons that since money, as the medium of exchange, enters into all market transactions, the most likely candidate for such a disturbance must be a discrepancy between the demand for and supply of money, or monetary disequilibrium, at the current level of prices. (Yeager, 1986, p. 370)

Also integral to Yeager's analysis is a conception of sticky wages and prices that seems similar to Keynes's but that he attributes to early monetarists that predate Keynes. (Yeager, 1986, pp. 372–374) This stickiness is a particularly important factor in the situation where money demand exceeds supply, and thus prices would have to adjust downward generating the classic "who goes first" problem. The disequilibrium condition should bring about an increase in the value of money and thus lower prices, but individuals are not immediately aware of the change. Knowledge of

the monetary disequilibrium is transmitted through the market at least in part by lower nominal prices and wages, which don't happen immediately. As individuals restrict their purchases to try to maintain their cash balances at the newly desired level, economic activity lags. This signals the need for prices and wages to decrease, but no individual has an incentive to accept a lower income without a guarantee of lower costs. Each actor thus refuses to accept a lower price or wage until all other actors do so. As long as prices and wages do not adjust, the economy will not reach the new equilibrium quickly and the depression will linger. Deflation, then, is to be avoided at all costs since it will inevitably result in unemployment and depression. (Yeager, 1956; 1986, pp. 374–378)

The opposite case of the supply of money exceeding demand does not concern Yeager much, since wages and prices are not nearly so sticky upwards as downwards. Consumers may be reluctant to pay higher prices and employers reluctant to pay higher wages, but the increased money supply generates higher levels of spending as people try to get rid of their excess cash balances. Thus an increase in the money supply does not cause a “who goes first” problem and in fact stimulates a higher level of business activity overall.

Two characteristics of Yeager's analysis stand out. First, in his view equilibrium is defined at a high level of aggregation. Monetary equilibrium exists when the total demand to hold cash matches the total supply of money. Second, he believes that, at least in the situation when prices need to fall, the market process simply does not work, or does not work well enough to prevent widespread economic malaise. These ideas figure strongly in the policy recommendations of adherents to the monetary equilibrium view.

## MONETARY EQUILIBRIUM IN THE AUSTRIAN SCHOOL

As mentioned before, Wicksell was a student of Böhm-Bawerk, so his ideas were well known among the members of the nascent Austrian school. This was very different intellectual soil, however, and here Wicksell's ideas bore fruit that resembled only in the most general terms that which had sprung from the minds of other economists.

Mises did much with Wicksell's basic concepts. In his early work (Mises, 1980 [1912]), he used Wicksell's idea of the natural rate.

However, he did not accept the capital productivity definition in any form. Rather, he defined the natural rate as “the rate determined at the time by the whole economic situation” (p. 398). Though Mises does not define the natural rate here in any further detail, it is obviously a more complex concept for him than for Wickseil. He goes on to emphasize that the productivity of capital, however defined, is not a determinant of the interest rate, but instead is a decision point for entrepreneurs as to which projects to undertake, based on the market interest rate. Later on, Mises (1998 [1949]) integrated Wickseil’s basic concept with the principle of subjective value in a time preference definition of the natural rate, which Mises called “originary interest” (p. 523). Placing his theory of interest on this firm foundation was instrumental in allowing Mises to move on to a sound concept of monetary equilibrium.

Mises’s individualist conception of equilibrium stands in stark contrast to Wickseil’s reliance on broad measures of macroeconomic aggregates. For Mises, the only equilibrium concept that applies to the real world is the plain state of rest (Mises, 1998 [1949], pp. 245ff). The plain state of rest is a strictly individual condition that is attained after each successful market transaction, when a particular want is fulfilled. It occurs repeatedly during the course of market operations as actors fulfill specific wants, then disappears as market conditions change and new wants are pursued. Individual states of equilibrium, or rest, can only be meaningfully aggregated up to the level of market clearing. That is, markets clear when all participants achieve a plain state of rest. Of course, this aggregate state disappears as quickly as do the individual states. Equilibrium in any broader sense is a useful concept only as an aid to understanding the goal of the market process: if the goal of action is the satisfaction of human wants, then action would cease only when all wants are fulfilled. This final state of rest is an unattainable condition since every change in economic conditions changes the nature of this state. It is a target constantly in flux, always aimed at but never hit.

For Mises, then, monetary equilibrium, like equilibrium in general, happens at the individual level. Each actor wants to keep a cash balance on hand for future transactions, both planned and contingent. This desired cash balance constitutes the individual’s money demand and is based on that individual’s subjective

valuation of holding money as compared to their valuation of obtaining more goods or services with that money. The amount of money the individual actually has on hand constitutes his supply of money. Through their spending behavior, individuals will attempt to equate their desired and actual cash holdings. As individuals engage in market transactions, the desire for individual monetary equilibrium, that is, the desire to hold a specific cash balance, is translated into the total demand for money and overall monetary equilibrium. In this respect, then, actors treat money exactly the same as other goods. Actors demand goods based on the marginal utility of each particular good, as subjectively determined. They hold differing quantities of each good such that the marginal utility of each good, relative to its price, is more or less the same as any other. Money simply takes its place on each individual's unitary value scale.

It is important to remember here that the nominal amount of the cash balance is irrelevant to the individual (Mises, 1998 [1949], p. 418). Money is not valued for its own sake, but rather for the services it provides in being traded for other goods or in being available to trade for other goods. Thus the individual's goal is to hold a particular real cash balance, a particular amount of purchasing power held in reserve. This realization is instrumental to the Austrian analysis of the effects of changes in the money supply.

Rothbard (2009) made a more detailed analysis of the demand for money, analogous to his total demand analysis of the market for goods. Here money demand is divided into *exchange demand*, the demand for money by sellers of all other goods, and *reservation demand*, the demand to hold money by those who already have it (p. 662). Since the total stock of money must, at any given time, be owned by individuals, these two categories of demand sum to the *total demand to hold money*. Rothbard, then, comes to the same endpoint as Mises, that the demand for money is the demand of individuals to hold cash balances. This demand will interact with the given supply of the money commodity in the total economic market for goods and services, and the market will tend toward an equilibrium level of the purchasing power, or exchange value, of money (PPM). Rothbard emphasizes that the PPM is a concept that can be defined and understood, but not measured. It is not the inverse of any average price level, since that term cannot even

be meaningfully defined, Wicksell's (and many others') efforts notwithstanding. Instead, since money exists in a state of barter with all other goods, the PPM is the vector of the prices of all other goods and services in the economy. The elements of this vector are not comparable, since there are no common units, and while in principle countable, they are for all practical purposes infinite.

## AN INDIVIDUALIST VIEW OF EQUILIBRIUM

We see, then, a dichotomy in the approach to monetary equilibrium. On the one hand are monetary disequilibrium analysts who view equilibrium as a state of the economy as a whole, and emphasize the conditions necessary for certain measured macroeconomic quantities to remain constant. On the other side are the Austrians, who emphasize the actions of individual market participants and view money as just one part of an integrated whole. Monetary equilibrium here is just one aspect of the general state to which the economy tends to move as individual actors seek to satisfy their wants. This view of equilibrium is sufficiently different from the mainstream to warrant a more in-depth explanation. Probably the most extensive treatment is by Hülsmann (2000).

In this view, since equilibrium is defined at the individual level, equilibrium analysis must therefore take place at the individual level. Hülsmann defines equilibrium analysis as "the method of comparing actual behavior with its counterfactual alternatives in terms of success and failure." (Hülsmann, 2000, p. 7) If the individual discovers that an action was successful, in terms of satisfying his highest preference or putting a resource to its highest value use, then that action produced an equilibrium. If the individual errs, failing to take such an action and choosing a different alternative, then that action produces a disequilibrium. The actor will presumably wish to correct that error, to the extent that he can under current market conditions. There are two very important conclusions we can draw from this definition. First, equilibrium exists insofar as the individual is successful in identifying the most valuable alternative when acting. Second, the realization of whether any particular action was successful or not, and thus was equilibrating or not, only comes after, sometimes long after, the action is taken. At the time of action we can only say that the

individual will use available market data to the best of his ability in making a decision and acting. Or, in common terms, "it seemed like a good idea at the time."

Individual actions will of course have macroeconomic manifestations. But the macroeconomy is, as Mises liked to say, a complex phenomenon. Particular actions or sets of actions produce macro conditions only after interacting with all the other actions taken in the economy, which constitute the current data of the market. Particular actions can have different results under different market conditions. Thus we cannot predict with certainty and in detail the macro outcome of, say, a change in desired cash holdings without complete knowledge of market conditions, which is clearly impossible. Thus any attempt to define monetary equilibrium in terms of macro phenomena, like the price level, is doomed to failure. Indeed, this concept is fundamental to Rothbard's (2000, pp. 169–181) explanation of why there in fact was an excess supply of money that caused price inflation in the 1920s, even though nominal prices were quite stable.

## MODERN MONETARY DISEQUILIBRIUM THEORY

Horwitz (2006) has attempted a synthesis of the monetary disequilibrium and Austrian approaches to the macroeconomy. In his view these two approaches are complements rather than alternatives, and can be fruitfully combined with one another to produce a more comprehensive theory of macroeconomic phenomena, rather than one theory being subsumed within the other. His basic point is that Yeager's approach is incomplete, and can be augmented by Austrian capital theory, while Austrian macroeconomics is asymmetric, disproportionally emphasizing the problems caused by inflation at the expense of the analogous problems connected to deflation, which Yeager's approach explicitly examines.

Horwitz begins his argument with a discussion of the basic properties of money, as identified by Yeager. These properties are very familiar to Austrian economists. First, money is the generally accepted medium of exchange, and second, the demand for money is the demand to hold real cash balances. The third property Horwitz (and Yeager) define is that we routinely acquire money; the crux of this definition is that "we will always accept money in

exchange even if this means temporarily having more of it than we might wish to hold." (p. 168) We do this because we know we can always trade the excess money for other goods or assets. Horwitz claims Austrians pay less attention to this property, though this seems to be very similar to Menger's (1892) point that money is the most saleable, most liquid commodity. The consequence of this property is that monetary disequilibrium is corrected by changes in expenditures, since that is the means of changing cash balances over which actors have near total control. Most individuals cannot change their income at will, and selling assets depends on finding a willing buyer. Horwitz's description of this process is, of course, essentially similar to that of Mises, described earlier.

Horwitz goes on to develop a highly symmetric theory of adjustment to monetary disequilibrium that owes as much to Yeager as Mises. Excess demand for money, as well as excess supply, causes changes in expenditures that eventually bring about changes in prices and wages. Changes in both directions are not uniform, since either an increase or a decrease in expenditures involves a change in the overall structure of demand. Since these adjustments always take time, and because of the stickiness of prices and wages, the adjustment process always involves economic distortion. Thus Horwitz has repeated Yeager's two major errors: First, although he acknowledges individual action in his analysis, he treats actors as a homogeneous group pursuing macroeconomic equilibrium rather than a diverse group pursuing individual equilibrium states. Second, he assumes wage and price rigidities are an essential and unavoidable feature of the economy; in other words, monetary disequilibrium theory assumes the market does not work.

But is this a valid assumption? Economic theory can tell us how market processes would play out in the presence of rigidities, or in their absence. But whether wages and prices are in fact rigid enough to preclude a rapid adjustment to monetary disequilibrium in a particular episode, or in general, is an empirical question. Thus, the monetary equilibrium position might be better framed as a conditional statement: If prices are sufficiently sticky downward and if there is no offsetting monetary policy, then a deflationary monetary disequilibrium will lead to a depression and the depression will linger until prices adjust. Atkeson and Kehoe (2004) address this

question in a panel study using data from 17 countries going back 100 years or more, in some cases back to the early 19<sup>th</sup> century.<sup>1</sup> A substantial portion of this time frame precedes the era of modern activist monetary policy, so we should be able to gain some insight into the basic relationship between deflation and depression. Of 73 episodes of price deflation they identified, 65 had no associated depression. This implies that in some 89 percent of cases, prices were not significantly rigid and were able to adjust downward quickly enough to avoid a depression. Atkeson and Kehoe stress that theirs is a preliminary, fairly rough study. It does, however, bring up a serious question as to whether price rigidities are as endemic and ubiquitous as monetary equilibrium theory proposes. As we shall see, there are better explanations for rigidities.

## **MONETARY EQUILIBRIUM AND THE POST-BOOM CORRECTION**

The two theoretical errors described above lead to an oversimplified analysis that boils down to (1) a departure from equilibrium is the problem and (2) a return to equilibrium, by whatever means, is the solution. This neglect of the wider market process, outside of the adjustment to changes in money supply, leads monetary disequilibrium theorists to propose that a depression, as the nearly unavoidable result of deflation (excess of demand over supply), could be corrected equally well by either a fall in prices or an increase in the nominal money supply. The former would increase the PPM to equate real cash holdings with the now smaller supply, while the latter would increase nominal cash holdings to match desired holdings at the current PPM. Since the money supply can be increased quickly and easily while price changes take time and cause economic dislocations, increasing the money supply is the preferred course of action (Yeager, 1956, Sec. V).

Yet we know that depressions are not cured by infusions of new money, both from Rothbard's (2000) excellent analysis of the early part of the Great Depression and from the experience of the last few

---

<sup>1</sup> For a more complete exposition of the Atkeson and Kehoe study and its implications, see Salerno, J. T. (2004), at <http://mises.org/daily/1583/Deflation-and-Depression-Wheres-the-Link>.

years. Unless Yeager dogmatically holds that the increases simply were not large enough, we must admit that there is something else going on.

That something else, of course, is the rest of the market process that takes place outside of the specific equilibrium relationship that Yeager, and to a lesser degree Horwitz, concentrates on. An understanding of the market process leads to a fuller understanding of the nature of the post-boom deflation, both of prices and of the money supply. There are a number of reasons why either prices or the money supply, or both, would decrease during a correction, and the two may not travel in lock step.

We are assisted in this understanding by the terminology developed by Salerno (2003). Salerno notes that the original economic definition of deflation referred to a decrease in the money supply, while the modern definition is couched in terms of falling prices or, equivalently, an increase in PPM. Due to this unfortunate conflation of cause and effect, we must always be careful to specify the referent when speaking of deflation. Salerno's typology uses the modern definition, describing the basic causes of price deflation. He recognizes that either the demand or the supply side of the money relation can affect money prices. There are two ways an increase in money demand can bring about falling prices. General economic growth causes an increase in money demand, both for transactions and in cash balances. This is the basis for Horwitz's (2000, pp. 98–102) acceptance of the productivity norm. Also, the cash balance component of money demand may increase on its own, perhaps due to increased uncertainty. Salerno terms this the cash building type. This is the type of deflation emphasized, and apparently most feared, by monetary disequilibrium theorists. Changes in supply primarily occur through changes in bank credit. This may take the form of a change in individual preferences for cash over bank deposits, or monetary policy may engineer a real decrease in the money supply. Salerno also identifies the confiscatory mode of money supply change, when the government forcibly restricts individuals' access to bank deposits. This case is not treated in this paper.

Most fundamentally, we must realize that factor prices, including wages, must decrease during the correction, regardless of whether the money supply decreases or merely ceases to grow (Mises, 1998,

p. 566). This is because the factor prices entrepreneurs are willing to pay are based not on current conditions, but on the expected future prices of their products. Since credit inflation distorts those prices upwards and falsifies calculation, current factor prices are likewise bid up. When the inflation stops those expected future prices never come to be; factor prices are thus too high for the new market conditions and must decrease. Demand for cash balances will certainly increase among entrepreneurs as they wait for those prices to drop, but this is a rational response to distorted factor prices, not an exogenous shock that produces unnecessary price deflation as described by monetary disequilibrium theorists. This would fall under the monetary policy case in Salerno's typology.

Bankruptcies during the correction can bring about a decrease in the amount of fiduciary media and thereby a decrease in the money supply. Banks must write off some or all of the debts of the failed firms, and some banks may go bankrupt themselves. As this happens, the fiduciary media created by the original extension of that credit disappears. To the extent that this is not counteracted by credit expansion to other firms or by other banks, the money supply is decreased. This decrease would necessarily bring about an increase in the PPM and lower prices. At a minimum, further credit expansion is inhibited and future price inflation is curtailed (Mises, 1998, pp. 564–568). This is another example of the monetary policy case.

It is very possible that the money-holding preferences of the general public would change during the correction, but we must be very careful in how we characterize this eventuality. Individuals in general may increase their demands for cash balances for the same reasons as entrepreneurs, as described above. Again, this would be a rational response to the prospect of falling prices, not an exogenous shock. If individuals express this demand through larger deposit balances it is fairly obvious what is going on. If individuals express a greater demand for currency, though, the situation is more complex. This may be an increase in money demand, or it may be simply a change in the form of cash holding preferred by individuals (Hayek, 1935, p. 112; Cochran et al., 1999, p. 61, n. 20). Thus, as Salerno points out, an increased demand for currency may operate from the demand or the supply side of the money relation. Banks are not able to distinguish between the two

motivations. In either case, the shift toward currency will change the currency/deposit ratio and decrease the amount of fiduciary media in the economy. Horwitz (2000, p. 216) observes that under a free banking system with competitive note issue this shift would not affect reserves. However, if the preference shift toward currency is a response to the deterioration of the wider economic situation and the prospect of bank failures, then customers would be more likely to demand base money rather than banknotes. This would have the same effect on the money supply as an increased demand for currency in our present system.

So we see that at least some level of price deflation is an unavoidable part of the post-boom correction. It is also obvious that the correction will take a finite amount of time to run its course and will not proceed absolutely smoothly. Hayek (1939, p. 176) observed that price and wage rigidities could impede the correction process and produce a “secondary deflation” that could “continue long after it had served its initial function”. These rigidities could be the result of existing institutional arrangements (Horwitz, 2000, pp. 168–170), the overall complexity and interdependence of the economy (Yeager, 1986, pp. 374–378), or intentional policy responses to the downturn, as we saw in the Great Depression (Rothbard, 2000, pp. 209ff.). Hayek defined the initial, necessary deflation as prices falling to where they would have been had the prior inflation not occurred; anything more would be “secondary” and presumably unwarranted (White, 2008, p. 757). Time is also part of this definition, as the above quote shows. The secondary deflation is one that lasts longer than we would expect. Alternatively, if we start from Mises’s observation above we might say that only the correction in factor prices is necessary, and any fall in prices that results from deflation of the money supply is secondary. These definitions initially seem reasonable, but they are again based solely on values of macroeconomic variables. In order to gain a better understanding of this phenomenon, we must examine the actions of individuals as they try to re-establish their desired individual equilibrium states in the aftermath of the bust.

The stylized facts in the Austrian account of the correction are well known. As credit expansion slows or stops, market data begins to return to more realistic levels. This reveals entrepreneurial error committed in the past—projects that once appeared profitable are

not. Firms undertaking these projects cut back and retrench or in some cases go bankrupt. Banks that financed those projects must write off some or all of the debt. Workers on the failed enterprises are unemployed. As prices correct, entrepreneurs embark on new ventures better aligned with real consumer wants. Workers find new jobs, production increases, and the economy recovers.

At the individual and firm level, there are a couple of things going on here. Bordo and Landon-Lane (2010) describe 1930–32 as a period when banks experienced liquidity shocks as individuals' preference for cash over deposits led to bank runs. This fits well with the Austrian view. Unemployment effectively decreases individual demand for cash balances as individuals live off savings, spending down their balances. In and of itself, this would decrease reserves and banks' ability to extend credit. The situation is compounded by the debt deflation process, as banks have to deal with bad debts from failed projects and firms. Banks, then, were losing assets in two directions. The resulting liquidity crunch could lead to failure, and the prospect of failure exacerbated individuals' desires to hold cash. Both these processes, writing off debt and the change in the cash/deposit ratio, tend to decrease the money supply and put downward pressure on prices. As the depression continues, the loss of asset value and the drain of deposits could lead to real insolvency; Bordo and Landon-Lane portray the 1933 bank crisis as an insolvency event.

In addition, we would not expect individuals to maintain their old spending patterns in the face of unemployment of uncertain duration. While they would be spending down their cash balances, then, they would likely be doing so at a slower rate of consumption than before. We must remember that this is a separate phenomenon from the increased demand for cash balances described earlier. What we have is two distinct groups of individuals responding to different circumstances. The unemployed must make their savings last as long as possible. Those still employed are faced with the prospect of declining nominal, and uncertain real, incomes and declining prices. In both cases the response is the same: a lower level of spending overall, in both consumption and investment, which further feeds the contraction (O'Driscoll and Rizzo, 1985, pp. 202–210). The combination of the constrained income of one group and the

deflationary expectations of the other work in a sort of feedback loop to continue to depress both prices and economic activity.

## POTENTIAL RESPONSES TO DEFLATION

So we see that debt deflation and constrained income are both unavoidable components of the correction. Both are operating simultaneously and to a certain degree interact in bringing about price deflation. Is there a way, then, to distinguish between the original, necessary part of the process and the secondary, unnecessary part that goes too far and that we would like to avoid? Doing so by Hayek's definition would require that we calculate where prices ought to be and then implement policy to bring about that price level. This is no mean feat. Not only would we have to calculate a myriad of prices, as there is no real "price level"; the choice of a goal is problematic. As noted above, Hayek suggests the level where prices would have been in the absence of the prior inflation, but this target is problematic. That counterfactual lies along a historical path not taken. As we enter the correction, supplies of and demands for goods and money are different than what they were before the prior inflation. As Salerno (2006, p. 50) demonstrated, "The supply of and demand for money are thus codeterminants equally with the respective supplies of and demands for commodities of an integrated structure of money prices." So it may not be at all reasonable to expect to arrive at the same destination when we start at a different origin. Current conditions may indicate a different structure of prices altogether. In the end, only the market process can arrive at a rational price structure. Our only point of certainty is that during the correction, factor prices must drop to the point that business ventures are again profitable and deflationary expectations fade (Mises, 1998, pp. 566–567).

Still, even if we do not know exactly where prices ought to be, might there be some policy measure that would help prices correct more quickly? The income-constrained economic slowdown is the situation monetary disequilibrium theorists most want to avoid, since it contains the possibility of a continuing downward spiral. Horwitz (2000, pp. 210–212) stresses the benefits of currency elasticity in allowing a monetary, rather than price level, response

to changes in money demand. But we should remember Hayek's (1935, pp. 124–125) caution. In order to effectively change the money supply in response to a change in demand, we must not only inject or retract the correct amount, as Horwitz describes, we must make sure that the change in supply reaches only those actors whose demand has changed, and in the proper direction. As we saw above, a change in reserves, the indicator Horwitz uses, can be caused by actors with a changed demand for cash balances or by those with no change in demand but only a change in preferences. The income constrained slowdown is fueled both by actors with increased demand for cash balances and others with a decreased demand. In the face of this heterogeneity in individuals, making sure the monetary policy affects the correct group is critical. Considering that banks' primary avenue for implementing monetary policy is the loan market and that many of the target individuals would not be participants, this would also be a practical impossibility. There appears to be no way to engage in an inflationary monetary policy, in this or any other situation, in a manner that would avoid the injection effects that caused the original distortions during the boom. This is not an issue for monetary disequilibrium theorists, though. While they acknowledge the existence of injection effects, they discount their effects and go on to their macro equilibrium treatment of the cycle (e.g. Yeager, 1997a; Horwitz, 2003).

Even if it were possible to target the monetary intervention properly, the calculation problem described above makes things even more complicated. The change in the money supply must be of the proper magnitude and in the proper direction, calculated on the fly, as it were, while the crises is unfolding. For example, Warburton (1952, p. 508) notes that "The latter half of 1950... was an occasion when some deviation in the money supply from the computed normal line of growth may have been needed. Yet the evidence is conflicting as to whether an accelerated or retarded rate of increase in the quantity of money was needed." If the correct course of action is unclear some two years after the fact, how could we expect policy makers at the time to make the correct decision? However clear the theoretical relationships might be, this is again a practical impossibility. Hayek's warning still rings true. It is instructive that although Hayek changed his mind in later years and decided we ought to take action against the secondary

deflation (White, 2008, pp. 763–764), he apparently did not come up with a way to do that would get around the practical roadblocks he identified early in his career (Hayek, 1935, pp. 124–125).

Yet, given all this we still have at least one clear example of a deflationary period that was much greater, in both magnitude and duration, than it seems it should have been. The period 1929–33 is widely regarded as one of the worst deflations, both of prices and the money supply, in US history. White (2008, p. 757, n. 10) performed a rough calculation, based on a not unreasonable assumption, indicating that during this time prices declined some 34 percent more than was warranted by the changes in output and the money supply. While we may not ascribe the precision to White's estimate that might be implied by his use of a decimal point, his argument is nonetheless very persuasive in general terms. Here is an instance of price deflation that went well beyond what conventional macroeconomic analysis would indicate was necessary. And if it was not strictly necessary, this motivates us to understand it more fully and at least attempt to discern how such an episode might be prevented or counteracted, even if we must bow to practical considerations. To do this, we must not focus solely on macroeconomic variables but also the actions of individuals as they strive to adapt to changing conditions and re-establish their desired individual equilibrium states.

In order to investigate this sort of question, it is helpful to have a second example with which to make a comparison. Fortunately, we have just such an example. Barely ten years earlier, in 1920, the US economy also experienced a depression. As the table shows, in terms of decreases in output, employment, and the money supply the first twelve months of the 1920 downturn were far worse than the first twelve months of the Great Depression. Yet two short years later the recovery was well underway and the economy was arguably in better shape than it was before the crisis began (Woods, 2009, p. 23). If we can discern some relevant similarities or differences between these two episodes, we may gain some understanding as to the nature of the secondary deflation and why it lasted as long as it did in the 1930s.

While a comprehensive comparison of the depressions of 1920 and 1929 is well beyond the scope of this paper, we can make some basic comparisons and draw some provisional conclusions.

Hayek saw the secondary deflation as grounded in rigidities in the economy, as noted earlier. How might these rigidities have changed over ten years? It would be difficult to make the case that individuals’ ideas of the appropriate wage or price in a particular context had become significantly more rigid over that time or that long-term contracts had become more common and more rigid, as Horwitz (2000, pp. 168–170) discussed. It would likewise be difficult to make the case that the economy had become significantly more complex and interconnected, as Yeager stressed. We do, however, have clear evidence that the government policy response was dramatically different in the two situations. In 1920 the monetary policy response was essentially nonexistent, while the federal government’s fiscal policy involved decreasing the economic burden of government by decreasing both tax rates and spending (Woods, 2009, p. 23). In 1929, by contrast, the Federal Reserve attempted heroic measures to re-inflate the money supply, while the federal government initiated dramatic increases in spending and made every effort to prevent wages and prices from correcting (Rothbard, 2000, pp. 209ff.).

Comparison of Recessions of 1920 and 1929

First 12 Months of Recession	1920	1929
Unemployment	12%	8.7%
GDP, Year on Year Change	-17%	-9%
Change in Adjusted Monetary Base	-15.4%	-6.5%

Sources: Unemployment and GDP, 1920: Woods (2009), 1929: Heyne, et al. (2002). Monetary Base: <http://research.stlouisfed.org/fred2/>, AMBNS, own calculations.

The effects of these measures on individuals were dramatic. Austrian theory characterizes the bust and correction as a time when market data are shedding distortions and returning to realistic values. Since the only avenue for monetary inflation is through financial markets, in attempting to re-inflate the Fed reintroduced the same injection effects and attendant distortions that necessitated the correction in the first place. The federal government attempted to prevent price corrections but in reality could only postpone them. This meant that individuals who were

refraining from economic activity, whether they were waiting for lower prices or because of unemployment, had to wait longer and in at least some cases continue to consume savings or capital in order to survive. As wealth resources dwindled and expenditures decreased in concert, the level to which prices had to fall in order to reinvigorate the economy decreased as well. By 1933 many individuals no longer had the wherewithal to pay prices they would have paid in 1931, whether for factor inputs or consumption goods. The “lack” of policy response in 1920 put up no such barriers to individual adaptation to the change in market data. A secondary deflation is necessary only in the sense that it is the unavoidable consequence of government attempts to prevent the post-boom correction. The experience of 1920 shows that a protracted deflation is not attributable to normal market forces.

One more relevant comparison has been alluded to and should be stated explicitly. For all the differences, the depressions of 1920 and 1929 had one important characteristic in common. They were both preceded by several years of monetary inflation. When the inflation slowed the correction followed.

Woods’ analysis is not without its critics. In particular, Kuehn (2011) examines Woods’ paper and two other treatments of this episode (Murphy, 2009; Powell, 2009) and attempts to show that the Fed’s response to the crisis was in fact more activist than portrayed here and in line with Keynesian prescriptions rather than contrary to them, as all three Austrian authors contend. In fact Kuehn’s data and arguments bolster rather than disprove the Austrian analysis, and parts of his analysis of the episode are deficient.

Kuehn spends much time examining all three authors’ alleged misrepresentations of Keynesian theory. While a complete response is well beyond the scope of this paper, one point he makes is relevant here. Kuehn notes that the policy prescriptions most criticized by Woods, extremely low interest rates and fiscal stimulus, apply only to recessions with “low marginal interest rates and deficient demand” and that “these conditions did not materialize during the 1920–1921 depression” (p. 274). Thus a reduction in already high interest rates and a decrease in nominal wages would be sufficient to revive the economy, and Austrians and Keynesians have a point of agreement. Yet he does not address the question of why that “deficient demand” might occur in the first place. As the preceding

analysis here shows, deficient demand is not a causative factor in a recession that would call for a particular policy response. Instead, it is a direct result of already chosen government stimulus policies that actually prolong the recession. So long as the government does not impede the recovery, demand needs no stimulus.

Kuehn also attempts to portray Fed policy as activist during this episode, on two counts. First, he notes that the recession was intentionally engineered by Governor Strong's decision to raise the discount rate in the first half of 1920 (p. 276). This is true but not particularly relevant. Kuehn agrees with the Austrian position that the rate increase ended the inflation of the money supply, as Strong intended, and the correction followed. This has no implications, however, regarding the character of the Fed's subsequent actions, which must be analyzed on their own. Second, regarding those subsequent actions, Kuehn characterizes the Fed's reductions in the discount rate in 1921 as a stimulus that helped revive the economy (p. 286), yet his own analysis shows that to be an error. Kuehn quotes Governor Strong as saying that the 1921 discount rate reductions were "a reaction to internal credit conditions" (p. 284) that is, to the domestic credit market. So the Fed was following the market, not leading it. The fall in interest rates was a result of a recovering economy, not a stimulus that spurred the recovery. Decreasing the discount rate *per se* does not define an activist, stimulating monetary policy. This only occurs when the monetary authority pushes interest rates below what the market rate would be. Strong clearly was not doing this in 1921. So the Fed's actions in the wake of the correction in fact were neutral, relative to the market, as Woods claims.

We must admit that all three articles mentioned above are brief overview of the 1920–22 deflation and correction. An in-depth Austrian analysis of this episode is a task awaiting an ambitious researcher. Yet some provisional conclusions are clear. While we have no way to differentiate the secondary deflation on the basis of magnitude or duration, we can define it conceptually as the extension of the depression precipitated by government policy attempts to prevent or ameliorate the correction. As such it cannot be counteracted with positive policy measures, but it can be prevented in two general ways. First would be to refrain from ever implementing an expansionary monetary policy in the first place,

and thus avoid the attendant distortions. Second would be to refrain from attempts to prevent the correction once it is underway. In this situation, duration is a much more important consideration than severity. The shorter the correction, the less individuals need to draw down their wealth to endure the hard times. This implies that the shorter the correction, the less prices and wages will have to decrease in order to allow entrepreneurs to restart profitable projects and the process of economic growth.

Monetary disequilibrium theorists now have a substantial explanatory problem. While they may have some criticism of monetary policy during the Great Depression, it is only that it did not go far enough. Government policy was undeniably in the recommended direction from their point of view. In this case the depression lasted a good ten years. In 1920, however, the government did the opposite of what monetarists would recommend. Then the depression bottomed out in 18 months and was essentially over in two years. This illustrates the critical flaw in monetary disequilibrium theory: it is, as its name implies, a strictly monetary explanation of a set of complex economic phenomena. It is not sufficiently connected to real economic factors, like the pool of real savings, nor does it sufficiently take into account market processes that surround and influence business cycles. This, along with its static equilibrium goal of a constant price level or, alternatively, a constant money flow, makes it an incomplete and insufficient theory of business cycles. It can only appear to be a workable theory if the discussion is limited to those areas where it does apply.

## **SYNTHESIS OR SUBSUMPTION?**

As noted above, Horwitz has high hopes for a synthesis of Austrian and monetary disequilibrium theories, as opposed to either one being subsumed within the other. The Yeagerite approach can be fruitfully augmented by Austrian capital theory, in his view, and Austrian theory could be improved by becoming more symmetrical, recognizing Yeager's emphasis on the negative effects of monetary deflation. Unfortunately, this view neglects the fundamental difference between the two theoretical approaches. As described throughout this article, Yeager and Horwitz maintain an essentially Walrasian conception of equilibrium even though they

attempt to also include an Austrian definition based on individual cash balances. These two different definitions of equilibrium are not compatible.

The Austrian concept of malinvestment can only be fully understood in the context of this individual definition of equilibrium. At all times during the boom, entrepreneurs are choosing what appear to be their most valuable alternatives, based on current market data. However, if those data are distorted due to monetary policy many of those actions will be errors. An observer can see the intervention and say with certainty that market data are distorted, relative to what they would be absent the intervention, but that is all. The current data is the only information that exists. We cannot know what the market data would have been in the absence of the intervention; that requires further information that does not exist (Mises, 1998, p. 708). Since that cannot be calculated, neither observers nor entrepreneurs can say which actions will prove to be successful and which failures; we can only know that more will fail than otherwise would have. Thus the malinvestments made during the unsustainable boom represent, in a sense, unrevealed, or perhaps latent, disequilibrium. It is only when market dynamics play out to their inevitable end and the distortions are finally washed away that the success or failure of past individual actions becomes apparent. Until then, actors continue to make choices that seem to be good at the time, based on the only information that they have. The revelation of the extent of the failures—the malinvestments—defines the bust phase and leads to the reorganization and recovery. It is a mistake to believe, as Yeager seems to, that the problems start only when the errors are revealed, rather than when they are committed.

## CONCLUSION

While adopting Austrian capital theory could be an improvement to any body of economic theory, this author believes the potential benefits to Austrian theory of incorporating the Yeagerite approach are more apparent than real. In fact, the significant features of monetary disequilibrium theory, excepting the inclusion of the “stable price level” definition of equilibrium, have been present in Austrian monetary theory for a long time.

We have already seen that the basic concept of monetary equilibrium (and disequilibrium), defined in terms of an individual's demand for cash balances, was described by Mises in 1912 in his *Theory of Money and Credit*. There the concept is quite symmetric, as Mises described the adjustments that occur both in the event of excess demand as well as excess supply. Rothbard, as well, recognized the real world significance of deflation, explicitly citing it as a major cause of the panic of 1819 (Rothbard, 2007, pp. 18–19), but also placing it in the context of the prior monetary expansion of the Second Bank of the United States and many state banks.

Modern Austrian economists no doubt do emphasize the pernicious effects of inflation more than the harm caused by rapid deflation, as Horwitz claims. This is most likely due to the twin facts that inflation is the more immediate problem in our current system and that, in Austrian theory, deflation is the result of prior inflation. Some amount of price decreases are an essential part of the correction, even without a change in the money supply. To the extent that the boom was financed with fiduciary media, when the boom ends and debts are paid, liquidated, or written off with less new credit extended, the money supply must shrink. The resulting price decreases are a necessary part of the correction, however difficult it may be. The best way to prevent the harmful effects of deflation, then, is to limit monetary expansion in the first place. The Austrian emphasis on inflation is not misplaced—it is there, at least in part, because we do recognize the harmful effects of deflation.

Thus we see that a synthesis of Austrian and monetary disequilibrium theories is a pointless quest. Monetary disequilibrium theory is certainly simpler than Austrian theory, but too much so. Being founded on a flawed definition of equilibrium, it leaves out important parts of the economic system and thus provides an incomplete view of business cycles. By viewing sticky wages and prices as a normal part of the economy, it neglects the effects of interventions that produce rigidities. Austrian business cycle theory, far from being unnecessarily complex, is the only theory that properly places business cycles in the full context of a functioning economy, firmly grounded in individual action. As Horwitz trenchantly observed, Occam's razor cuts both ways.

## REFERENCES

- Atkeson, Andrew, and Patrick J. Kehoe. 2004. "Deflation and Depression: Is There an Empirical Link?" *The American Economic Review* 94, no. 2: 99–103.
- Bordo, Michael, and John Landon-Lane. 2010. "The Banking Panics in the United States in the 1930s: Some Lessons for Today." *Oxford Review of Economic Policy* 26, no. 3: 486–509.
- Bordo, Michael D. and Anna J. Schwartz. 1987. "Clark Warburton: Pioneer Monetarist." In Anna J. Schwartz, ed., *Money in Historical Perspective*. Chicago: University of Chicago Press, pp. 234–254.
- Cochran, John P., Steven T. Call and Fred R. Glahe. 1999. "Credit Creation or Financial Intermediation?: Fractional-Reserve Banking in a Growing Economy." *Quarterly Journal of Austrian Economics* 2, no. 3: 53–64.
- Garrison, Roger W. 2001. *Time and Money: The Macroeconomics of Capital Structure*. New York: Routledge.
- Hayek, Friedrich A. 1935. *Prices and Production*. London: George Routledge and Sons, Ltd.
- . 1939. *Profits, Interest, and Investment and Other Essays on the Theory of Industrial Fluctuations*. London: Routledge and Kegan Paul, Ltd.
- Heyne, Paul, Peter J. Boettke, and David L. Prychitko. 2002. *The Economic Way of Thinking*. Toronto: Pearson/Prentice Hall.
- Horwitz, Steven. 2000. *Microfoundations and Macroeconomics: An Austrian Perspective*. New York: Routledge.
- . 2003. "The Costs of Inflation Revisited." *The Review of Austrian Economics* 16, no. 1: 77–95.
- . 2006. "Monetary Disequilibrium Theory and Austrian Macroeconomics." In Roger Koppl, ed., *Money and Markets: Essays in Honor of Leland B. Yeager*. New York: Routledge, pp. 166–185.
- Hülsmann, Jörg Guido. 2000. "A Realist Approach to Equilibrium Analysis." *The Quarterly Journal of Austrian Economics* 3, no. 4: 3–51.
- Kuehn, Daniel. 2011. "A Critique of Powell, Woods, and Murphy on the 1920–1921 Depression." *Review of Austrian Economics* 24, no. 3: 273–291.

- Menger, Karl. 1892. "On the Origin of Money." *The Economic Journal* 2, no. 6: 239–255.
- Mises, Ludwig von. 1912. *The Theory of Money and Credit*. Indianapolis: Liberty Classics. 1980.
- . 1949. *Human Action: Scholar's Edition*. Auburn, Ala.: Ludwig von Mises Institute. 1998.
- Murphy, Robert P. 2009. "The Depression You've Never Heard Of: 1920–1921." *The Freeman* 59, no. 10: 24–26.
- Myrdal, Gunnar. 1939. *Monetary Equilibrium*. London: W. Hodge.
- O'Driscoll, Gerald P., and Mario J. Rizzo. 1985. *The Economics of Time and Ignorance*. New York: Basil Blackwell.
- Powell, Jim. 2009. "Not-So-Great Depression: How Warren G. Harding Got Us Out of It." *National Review Online*. Available at <http://www.nationalreview.com/articles/226645/not-so-great-depression/jim-powell>.
- Rothbard, Murray N. 2000. *America's Great Depression*. Auburn, Ala.: Ludwig von Mises Institute.
- . 2007. *The Panic of 1819: Reactions and Policies*. Auburn, Ala.: Ludwig von Mises Institute.
- . 2009. *Man, Economy, and State with Power and Market*. Auburn, Ala.: Ludwig von Mises Institute.
- Salerno, Joseph T. 2003. "An Austrian Taxonomy of Deflation—With Applications to the US." *Quarterly Journal of Austrian Economics* 6, no. 4: 81–109.
- . 2004. "Deflation and Depression: Where's the Link?" *Mises Daily*, Aug. 6. Available at <http://mises.org/daily/1583>.
- . 2006. "A Simple Model of the Theory of Money Prices." *Quarterly Journal of Austrian Economics* 9, no. 4: 39–55.
- Warburton, Clark. 1945. "The Volume of Money and the Price Level between the World Wars." *Journal of Political Economy* 53, no. 2: 150–163.
- . 1946. "Quantity and Frequency of Use of Money in the United States, 1919–45." *Journal of Political Economy* 54, no. 5: 436–450.

- . 1952. "How Much Variation in the Quantity of Money Is Needed?" *Southern Economic Journal* 18, no. 4: 495–509.
- White, Lawrence H. 2008. "Did Hayek and Robbins Deepen the Great Depression?" *Journal of Money, Credit and Banking* 40, no. 4: 751–768.
- Wicksell, Knut. 1898. *Interest and Prices: A Study of the Causes Regulating the Value of Money*. New York: A.M. Kelley. 1962.
- Woods, Thomas E. 2009. "Warren Harding and the Forgotten Depression of 1920." *Intercollegiate Review* 44, no. 2: 22–29.
- Yeager, Leland. 1956. "A Cash-Balance Interpretation of Depression." *Southern Economic Journal* 22, no. 4: 438–447.
- . 1986. "The Significance of Monetary Disequilibrium." *Cato Journal* 6, no. 2: 369–399.
- . 1997a. "Injection Effects and Monetary Intermediation." In George Selgin, ed., *The Fluttering Veil: Essays on Monetary Disequilibrium*. Indianapolis: Liberty Fund, pp. 253–279.
- . 1997b. "Monetarism." In George Selgin, ed., *The Fluttering Veil: Essays on Monetary Disequilibrium*. Indianapolis: Liberty Fund, pp. 19–32.