

## *The Clash of Economic Ideas*

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### **Chapter 3**

#### **The Roaring Twenties and Austrian Business Cycle Theory**

The Yale University economist Irving Fisher invented a system for easily displaying index cards, later known as the Rolodex, and sold his Index Visible Company in 1925 for a tidy sum. He turned his small fortune into a reported \$10 million fortune (the equivalent of \$123 million today) by speculating in stocks during the economic boom years known as the Roaring Twenties. After the recession of 1921, the American economy grew handsomely, and stock prices rose even more rapidly. Fisher's positions soared. In October 1929 he declared confidently that the stock market had not become overpriced, but had reached a "permanently high plateau". Two weeks later the market crashed. Fisher was wiped out, having borrowed heavily to buy stocks on margin. To pay his debts he was forced to sell his New Haven home, turning to his sister-in-law for a place to live. The stock market crash followed a downturn in manufacturing output that had begun a few months earlier. Economies in other industrial countries similarly slumped. Like Irving Fisher, economists around the world sought to puzzle out what had happened. Could the downturn have been avoided, or was there something about the boom years that destined them to come to an end?

## **The Roaring Twenties**

Real gross domestic product in the United States grew more than 45% in the eight years between 1921 and 1929, rising to \$865.2 billion (in year-2000 dollars) from only \$595.1 billion of in the recession year 1921. The compound growth rate was a mighty 4.79% per year, much higher than the 3.32% rate over the entire twentieth century.<sup>1</sup> The boom was not evenly distributed across industries but was especially pronounced in the output of producers' goods. The 1929 volumes of pig iron and steel production nearly tripled the volumes of 1921. Construction activity and machine tools output both more than tripled. From September 1921 to its peak in September 1929, the total index of industrial production rose by 96.7%, more than double the rise of consumers' goods output. Between 1925 and 1929, the output of producers' goods rose 22% while the output of consumers' goods rose only 7%.<sup>2</sup> Price levels meanwhile moved little: the wholesale price index in 1929 was within 1.5% percent of its 1922 level.

A cyclical downturn began to develop in 1927. The young Federal Reserve System, having begun operations in 1914, experimented with its powers. It pursued an expansionary policy to stabilize wholesale prices, keep interest rates low, and thereby extend the boom. Over the five years from June 1922 to June 1927, the M2 measure of the money stock (total deposits plus currency outside the banks) had expanded by 34%, or about 6% per annum. Now, over the eighteen months between June 1927 and December 1928 it grew by 10%, or about 6.5% per annum.<sup>3</sup> A few years later, Cornell University economist Harold L. Reed observed that "the greatly increased open market purchases of the Reserve banks in the first half of 1927, and the ensuing reductions in discount schedules from July of that year on," had brought about an "extremely large" growth in bank loans and "record volume" of corporate security issues, thereby financing "a remarkable expansion of our capital equipment".<sup>4</sup>

The stock market also responded to the outpouring of credit, rising 50% during 1928 and another 27% from January to October 1929. The Fed became alarmed at the extraordinary run-up in stock prices and tightened monetary policy, raising the discount rate from 3.5% in early 1928 to 5% by early 1929.

The boom finally came to an end. The Fed's production index peaked in June 1929 and declined thereafter.<sup>5</sup> The National Bureau of Economic Research dates the end of the expansion as August 1929. The Bureau of Labor Statistics' Index of Industrial Production began to decline after September. The stock market crashed in October. Unlike the short sharp shock of the eighteen-month recession of 1920-21, and of crises in earlier decades, the steep decline in real activity continued for four years, later to be known as the opening phase of a Great Depression. By 1933, real GDP had fallen to \$635.5 billion (again in year-2000 dollars), a decline of 26.5% from its 1929 peak.<sup>6</sup> Industrial production had fallen 47%. Gross Private Domestic Investment plummeted from \$16.5 billion in 1929 to only \$1.3b in 1932.<sup>7</sup> To Harold L. Reed, surveying the economy from the perspective of late 1932, the "remarkable expansion" of plant and equipment from 1927-28 still crowded the market, discouraging new investment: "Productive power was so geared up that, ever since the 1929 recession in the security markets, it has been difficult to find a satisfactory outlet for bank credit in plant improvement projects."<sup>8</sup>

### **Pre-Keynesian macroeconomics**

What explanations did contemporary economists have to offer for this boom and bust? Paul Krugman has suggested that they had nothing to say before John Maynard Keynes came to the rescue:

But classical economics offered neither explanations nor solutions for the Great Depression. By the middle of the 1930s, the challenges to orthodoxy could no longer be contained.<sup>9</sup>

Krugman here uses “classical economics” in the idiosyncratic way that Keynes used it in his *General Theory*, to mean the main current of economic theory before Keynes’ 1936 work, rather than in the standard way to mean the main current of economics (for example Adam Smith, David Ricardo, and John Stuart Mill, to be met in later chapters) before the 1871 marginalist-subjectivist revolution. Keynes at least acknowledged using non-standard labels: “I have become accustomed, perhaps perpetrating a solecism, to include in ‘the classical school’ the *followers* of Ricardo, those, that is to say, who adopted and perfected the theory of the Ricardian economics, including (for example) J. S. Mill, Marshall, Edgeworth, and Prof. Pigou.”<sup>10</sup> Using standard labels, Mill was the only Ricardian or classical economist on Keynes’ list. The later three were all non-Ricardian and *neo*-classical because they accepted the *marginalist subjective value* theory of price, with its twin focus on individual optimization and market equilibrium, over Ricardo’s *labor cost* theory of price and focus on distributive shares. Keynes idiosyncratically used “the classical school” and “Ricardian economics” to designate economics under the hypothesis that *unhampered markets will clear* to allow full employment of resources.

Contrary to Krugman, many leading pre-1936 economists offered explanations for the boom and bust. Each explanation implied “solutions” in the sense of lessons for policy. Ludwig von Mises, building on the analysis of Knut Wicksell and the nineteenth century’s British Currency School, had sketched a monetary business cycle theory as early as 1912 in *The Theory of Money and Credit*, refining and extending it in the book’s 1924 second edition and in a 1928

monograph.<sup>11</sup> F. A. Hayek began to develop a more elaborate version of Mises' theory a few years before the 1929 crash, emphasizing the behavior of the economy's structure of production over the course of the cycle. With the onset of the Depression, Mises, Hayek, and other "Austrian School" economists (most notably Fritz Machlup, Gottfried Haberler, and Lionel Robbins) applied their theory to the task of explaining the crisis.<sup>12</sup> The Austrian theory was widely debated, as we will see below. With the publication of his *Prices and Production* in 1931, Hayek's account of what had gone wrong (in a nutshell: loose monetary policy had distorted interest rates and production patterns) became the chief rival to Keynes' account (in a nutshell: loss of nerve by investors meant that investment spending failed to make up for too little consumption spending).<sup>13</sup>

Other pre-Keynesian monetary and business cycle theorists offered their own explanations, some of them overlapping the Mises-Hayek account in various degrees. Some of the leading names in the United Kingdom were Dennis H. Robertson, Ralph Hawtrey, and Arthur Cecil Pigou; in the United States there were Irving Fisher, Wesley Clair Mitchell, Jacob Viner, and John Maurice Clark.<sup>14</sup> Keynes and his followers would find these explanations lacking in various respects, but it can't accurately be said that before Keynes' *General Theory* the leading economists offered nothing. Outside the Austrian camp, leading economists offered anti-Depression policy recommendations that anticipated those later associated with Keynes, in particular easier monetary policy and an increase in government spending financed by borrowing.<sup>15</sup>

## **The Mises-Hayek theory of the boom-bust cycle**

In his *Theory of Money and Credit*, and his 1928 monograph, Mises modernized the credit-cycle theory of boom and bust first developed by British economists in the mid-nineteenth century's debate over the Bank of England's role in overall business fluctuations. He added monetary dynamics drawn from the Swedish economist Knut Wicksell and a capital-and-interest theory based on the earlier Austrian economist Eugen von Böhm-Bawerk (all three elements are discussed in more detail below). The result was a "monetary malinvestment theory" of the business cycle.

In Mises' theory, the boom period begins when the banking system arbitrarily expands the supply of loanable funds beyond the supply of voluntary savings, reducing the interest rate below its equilibrium value (Wicksell's "natural rate of interest"). Here "the banking system" that expands is either a central bank that is not tightly constrained by the gold standard, or a system of commercial banks acting in concert like (or following the lead of) such a central bank. Mises wrote that "the banks ... intervene on the market in this case as 'suppliers' of additional credit, created by themselves, and they thus produce a lowering of the rate of interest, which falls below the level at which it would have been without their intervention."<sup>16</sup>

The low interest rate induces, and the expansion of credit finances, the undertaking of new investment projects:

The lowering of the rate of interest stimulates economic activity. Projects which would not have been thought "profitable" if the rate of interest had not been influenced by the manipulations of the banks, and which, therefore, would not have been undertaken, are nevertheless found "profitable" and can be initiated.<sup>17</sup>

The newly perceived profitability, however, vanishes when the interest rate returns to equilibrium. Workers and machines have been drawn into unsustainable activities that will have to be abandoned:

If ... the banks decided to halt the expansion of credit in time to prevent the collapse of the currency and if a brake is thus put on the boom, it will quickly be seen that the false impression of “profitability” created by the credit expansion has led to unjustified investments.<sup>18</sup>

Alternatively, if the banking system does not stop the expansion, the currency will collapse. The public will eventually react to rising inflation by abandoning the currency, resulting in a “crack-up” like the German hyperinflation of the 1920s. Mises seemed to regard an ongoing inflation, at a steady percentage rate, as an unsustainable knife-edge path.

Mises’ policy lesson: to avoid the recession, avoid the credit boom in the first place. According to one story, perhaps apocryphal, an audience member asked Mises after a lecture: Do you really advise that once a depression begins the central bankers should do nothing? To which Mises replied: Madam, my advice is that they should start doing nothing much sooner than that! If a credit expansion has already been started, Mises’ advice was to stop it as soon as possible. The longer the boom, the bigger the bust:

The longer the period of credit expansion and the longer the banks delay in changing their policy, the worse will be the consequences of the malinvestments

and of the inordinate speculation characterizing the boom; and as a result the longer will be the period of depression and the more uncertain the date of recovery and return to normal economic activity.<sup>19</sup>

Mises blamed unwarranted credit expansion on political pressures for cheap money that the central bank failed to resist. As an institutional reform to avoid the problem he favored *free banking*, a monetary system without a central bank, although he acknowledged that the adoption of central banking throughout Europe in previous decades had made the choice of free banking versus central banking one of those “questions that have long been regarded as closed”. Exemplified by Scotland, Sweden, Canada, Switzerland, and other countries in the periods before their central banks were created, free banking meant a system in which decentralized and competitive commercial banks issue the currency, tied down by a contractual obligation to redeem their notes for gold or silver coin. Its defenders argued that competition would prevent all the banks from colluding to expand in concert, and interbank redemption of excess notes or deposits would restrain any smaller set of banks from over-expanding. International redemption would restrain the system as a whole. In his later treatise *Human Action* Mises wrote:

Free banking is the only method for the prevention of the dangers inherent in credit expansion. It would, it is true, not hinder a slow credit expansion, kept within very narrow limits, on the part of cautious banks which provide the public with all the information required about their financial status. But under free banking it would have been impossible for credit expansion with all its inevitable consequences to have developed into a regular—one is tempted to say normal—



feature of the economic system. Only free banking would have rendered the market economy secure against crises and depressions.<sup>20</sup>

Hayek, in a series of works from the mid-1920s through *The Pure Theory of Capital* (1941), added to Mises' theory a more detailed account of how an easy-money lowering of the interest rate prompts malinvestment during the boom, and how that distorts the economy's structure of production away from a sustainable equilibrium.<sup>21</sup> Hayek commented in 1932 that "what I tried to do in *Prices and Production*, and in certain earlier publications, was to show that monetary factors may bring about a kind of disequilibrium in the economic system."<sup>22</sup>

The problem caused by the distortion of the interest rate is a mismatching of the plans of savers and investors. As Hayek sometimes put it, the distorted interest rate fails to equalize the supply with the demand for real capital. The artificially lowered interest rate no longer meshes the time-profile of output for which businesses are making their investment plans – to produce so much for the present and so much for various future periods – with the public's planned time-profile of savings and consumption across the same periods. Instead investment is skewed too much toward the "higher stages" of production, meaning projects such as mineral extraction, heavy industry, and building construction that will yield consumable output only in relatively distant future periods, and too little toward near-future consumable output. As he summarized the problem:

[A]n expansion of credit via the Bank Rate mechanism [i.e. via the central bank announcing a lower interest rate on loans and "printing" new money to supply the greater quantity of funds demanded] will *not* 'apportion the additional money

between consumers and producers so as not to disturb the initial proportions,' but will certainly favour the "higher" stages at the expense of the "lower".<sup>23</sup>

The "misdirection of production" leads to "a consequent crisis." The mismatch between the entrepreneurs' planned investment profile and the consumers' planned savings and consumption profile is revealed in the bust. The bust occurs when investment projects that cannot be profitably completed – because the public does not voluntarily save enough to finance their completion at low interest rates – are finally recognized to be non-viable and are terminated. The crisis occurs because "it becomes obvious that it is not possible to wait as long as had at first seemed practicable for the product of the investment."<sup>24</sup>

Consistent with the Mises-Hayek account of the boom period, interest rates were relatively low in the United States during 1924-28 while Federal Reserve policy was bringing about an expansion in bank lending and an increase in new bond issues.<sup>25</sup> Interest yields on corporate bonds steadily declined from early 1923 to early 1928.<sup>26</sup>

Contemporary economists who subscribed to the Austrian view, and who at the time viewed the U. S. boom as the offspring of over-expansive monetary policy, should have seen the boom as unsustainable and should have been forecasting that a bust was coming. And they did. Hayek predicted a coming crash in April 1929. The most explicit warning came from the Swedish economist Johan Akerman, who wrote on October 1, 1929:

American economic life is now about to enter upon the final phase of a boom period that began already in the middle of 1921 ... American monetary policy ... can hardly be said during these years to have favored the tranquil course of

industrial expansion. Under direct or indirect monetary influences savings capital had been attracted to speculative investments, which are now beginning to prove unprofitable.<sup>27</sup>

The Hayekian theory was first and foremost a theory of the “upper turning point”: it aimed to explain why the cheap-credit boom must give way to bust.<sup>28</sup> Thus it offered an explanation of the 1929 downturn. And it suggested that the severity of the downturn would be proportional to the unusual length of the boom.

Hayek had less to say about the character of the post-bust recession, because in his theory the recession was a period that followed the market’s normal tendency toward equilibrium. The mistakes made during the boom are the difficult thing to explain. The recession is a corrective period in which the needed re-adjustments take place. The firms that made non-viable investments must wind them down or go bankrupt, laying off workers and idling machines, leading to above-normal unemployment and unused capacity until those workers and machines are re-absorbed into more appropriate employments elsewhere. The more rapidly the economy adjusts prices and resource allocations, the shorter the recession will be.

Keynes would object to the self-equilibrating character of the Mises-Hayek cycle scenario, the idea that the economy returns on its own to a normal level of activity. For him the hypothesis that the market economy will right itself was the common flaw in all “orthodox” theorizing. Thus he wrote in the preface to the 1936 German edition of *The General Theory*, once again using “classical” to designate theory built on the idea that markets tend toward a full-employment equilibrium, that prior to his own theory,

The most important unorthodox discussion on theoretical lines was that of Wicksell. ... But his followers were chiefly Swedes and Austrians, the latter of whom combined his ideas with specifically Austrian theory so as to bring them in effect, back again towards the classical tradition.<sup>29</sup>

### **Hayek versus Keynes' *Treatise***

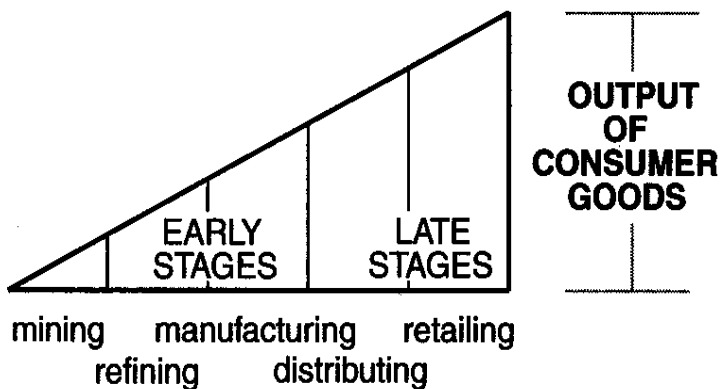
Harvard economist Alvin Hansen, reviewing Hayek's *Prices and Production* (1931), summarized the contrast between its message and the message of Keynes's *A Treatise on Money* (1930):

Hayek directs all his attack against monetary [expansion] (forced saving) which, in his view, is the source of most, if not all, of our difficulty. The implication is that monetary [contraction] could be prevented were monetary [expansion] definitely conquered. This in sharp contrast to Keynes, in whose mind measures to prevent monetary [contraction] are always upper-most.<sup>30</sup>

Monetary expansion is the source of difficulty, in Hayek's view, because it distorts the interest rate. "Forced saving" here means the diversion of economic activity toward more investment and less present consumption than the public prefers, because the monetary expansion goes disproportionately into new business loans. Monetary contraction became a serious problem beginning in 1930, as we will discuss below.

## The Hayekian triangle

Hayek's theory connects today's investment to the production of tomorrow's consumption goods. Consumable outputs emerge after a series of "stages" of production that turn raw material into finished output. When an economy is in *intertemporal equilibrium*, the planned and actual real quantity of emerging consumption goods each period equals the real quantity demanded at correctly anticipated prices and interest rates. Hayek pictured the economy's intertemporal "structure of production" using a triangular diagram borrowed from the nineteenth-century British economist William Stanley Jevons (1835-1882). Hayek suggested that it be called the "Jevonian investment figure". The underlying concept of time-consuming or "roundabout" capitalistic production had been developed by the nineteenth-century Austrian economists Carl Menger and Eugen von Böhm-Bawerk.



**Figure 1: The Stages of Production.** Source: Roger Garrison (2001)

Hayek drew the triangle with earlier stages (Menger's "higher orders") above the later stages. Here the triangle is rotated 90 degrees to show the value of goods-in-process growing

over prospective time (that is, as we look ahead). On the horizontal axis, going from left to right, we measure prospective time from the applications of inputs to the emergence of the resulting consumable output. In the vertical direction we measure the dollar value of the goods-in-progress at that stage. Value grows as additional inputs bring the goods closer to readiness for consumption. At an early stage of production we might locate (for example) cotton seeds and the labor and machine services used to plant them. At a later stage would be bolts of cotton denim and the labor and machine services used to cut pieces out of them. At the last stage before consumption would be ready-to-wear blue jeans in a cubbyhole at the Gap and the services of the gum-chewing salesperson waiting to sell them.

The temporal *length* of an economy's equilibrium triangle – the duration of the periods between the applications of inputs and consumption of resulting final outputs – depends on the public's "time-preference." How many units of future consumption will be just enough to get people to willingly sacrifice one unit of present consumption? As a benchmark case of *sustainable lengthening* of the triangle, against which he would contrast the *unsustainable lengthening* that characterizes the business cycle boom, Hayek invited his readers to consider a shift toward lower time-preferences, generating a greater volume of voluntary saving by the public at any given rate of return to saving. In supply-and-demand terms, increased saving shifts the supply curve for loanable funds to the right and thereby lowers the interest rate.

A lower interest rate means that anticipated future revenues from investment are discounted less heavily relative to present outlays. Put another way, it signals that borrowing to finance lengthy investment projects is less costly relative to the projects' anticipated future revenues. The economy moves toward a mix of greater investment in early stages of production relative to present consumption – a longer triangle – because investors embark on longer (more

“roundabout”) investment projects. Those projects had been technically available all along, but looked unprofitable (present discounted values were too low) at the previous higher interest rate. A simple example of a more roundabout investment project is Böhm–Bawerk’s example of leaving trees to grow longer before felling them for lumber. Suppose that a tree’s proportional growth rate is greatest when it is young, and slows as it matures. When the interest rate is 10% per year, it pays (maximizes present value) to harvest trees once they reach the age where next year’s growth will be no longer exceed 10%. At a 5% interest rate, it pays to leave standing any tree growing at 9.9%, and not harvest it until later when its growth rate has slowed to 5%.

### **Why bust follows boom**

The problem of the unsustainable boom arises when monetary expansion temporarily shifts the supply curve for loanable funds to the right, lowering the interest rate *as though* there were actually an increased willingness to save. Investors embark on more roundabout investment as in the previous case. In this case, however, the lower interest rate encourages *more* consumption because unchanged impatience confronts a lower cost of consuming (consumer credit is cheaper; the reward to saving is diminished). With both consumption and roundabout investment rising, a boom ensues. The economy temporarily gives 110 percent: it provides a combination of consumption and investment greater than can be sustained. Hidden within the boom are the seeds of its own destruction, a tug-of-war for resources between longer processes of production (investment for consumption in the relatively distant future) and shorter processes (consumption today and in the near future). In Fritz Machlup’s words:

In its original formulation the Mises-Hayek theory started out from a state of full employment and on this basis it was possible to argue that an investment inflation will draw productive factors away from the stages of production near to the consumers' goods end, and that this situation is not tenable in the long run and is bound to lead to a reaction.<sup>31</sup>

The scarcity of genuine savings to support the more roundabout investment, as Hayek later put it, eventually creates “the necessity of having to abandon investments because it has been attempted to make the capital equipment more ‘capitalistic’ than is compatible with the size of that part of the people's income which they want to take out in the form of consumers’ goods”.<sup>32</sup> The crisis arrives when investors realize that the inappropriately capital-consuming projects they have begun cannot all be completed with the available savings.

In a review of Hayek’s *Prices and Production*, Alvin Hansen summarized its business cycle theory as follows:

In Hayek’s view the essence of a boom is an elongation of the capitalistic process of production brought about by forced saving imposed upon the community by the action of banks. A lengthening of the production process thus occasioned cannot possibly, in his view, be permanently maintained, but must necessarily be followed by a shrinkage in the structure of production. Such a shrinkage, it is argued, is the very essence of depression.



A stock market run-up and an overly ambitious set of investment projects, in the Austrian view, were symptoms of a period of artificially cheap credit. The inevitable return of interest rates to equilibrium, the end to the period of cheap credit, implied the bursting of the asset-price “bubble” and the bankruptcy of investment projects whose profitability depended on the continuation of cheap credit. Lionel Robbins, in a 1932 letter to the *Economist*, wrote that “although the causes of the present depression are various and complex, there is considerable reason to believe that the main initiatory cause was the inflationary boom in America and elsewhere which preceded it.”

In Hayek’s scenario, to summarize, artificially cheap credit creates a false boom, luring investment into unsustainable projects. The unsustainable boom gives way to a crisis, followed by liquidation and restructuring during the recession. The boom-bust cycle is most severe in producers’ goods industries and construction, because those are the industries most sensitive to movements in the interest rate. The business bankruptcies that accompany the downturn reveal a cluster of mistaken investment decisions. The clustering of errors is explained by entrepreneurs’ common response to a signal that is normally trustworthy, a movement in the interest rate, but which in this case is falsified by monetary expansion. The false interest rate leads the economy to “bite off” more than it can “chew”.

This scenario has sometimes been characterized as a “hangover” theory of recession: a recession follows the seemingly prosperous times fueled by excessive monetary expansion, just as a hangover follows a seemingly off-the-hook party fueled by excessive drinking. The metaphor became so popular in explanations for the bust of the American housing finance industry in 2008 that even the then-President George W. Bush reportedly remarked: “Wall Street got drunk ... and now it's got a hangover.” In explaining the boom-bust cycle of the 1920s

and '30s the Austrians emphasized the role of the central bank in spiking the financial punchbowl by expanding the supply of credit and lowering interest rates.

Hayek's account of the collapse of 1929-33 stands in contrast to the later scenarios of John Maynard Keynes and Milton Friedman. In the Hayekian view, the seeds of the bust were sown by the Federal Reserve during the Roaring Twenties. In Keynes's view, by contrast, Fed policy before 1929 policy was fine. In *A Treatise on Money* (1930) Keynes wrote: "The successful management of the dollar by the Federal Reserve Board from 1923 to 1928 was a triumph . . . for the view that currency management is feasible."<sup>33</sup> The depression began only because investment demand collapsed due to pessimistic "animal spirits," a loss of nerve by investors. For Milton Friedman as well, pre-1929 policy was fine. The economic collapse came only because the Fed allowed the money stock to collapse after 1929.

### **Hayek's policy prescription**

Why did the Federal Reserve pursue the monetary expansion that distorted the structure of production in the 1920s? In Hayek's view, seconded by C. A. Phillips, T. F. McManus, and R. W. Nelson in *Banking and the Business Cycle* (1937), the Fed was conducting an experiment in price-level stabilization.<sup>34</sup> In a preface to the 1933 English translation of *Monetary Theory and the Trade Cycle*, citing a series of six articles he had published between 1925 and 1932, Hayek noted that "the critique of the programme of the 'stabilizers,' which is in many ways the central theme of this book, has now occupied me for many years."<sup>35</sup>

The Mises-Hayek business cycle theory led Hayek to the conclusion that intertemporal coordination is best maintained by constancy of nominal spending or "the total money stream," or – in terms the variables of the equation of exchange ( $MV=PQ$ ) discussed further in chapter 11

below – constancy of the money stock times its velocity of circulation,  $MV$ . In *Prices and Production* Hayek recommended that the money stock  $M$  should vary to offset changes in the velocity of money  $V$ , but should be constant in the absence of changes in  $V$ . The price level should be allowed to fall as real income  $Q$  grew.<sup>36</sup> As Hansen summarized the prescription:

The supply of money should, therefore, be kept constant, except for such increases or decreases as may be necessary to offset ... changes in the velocity of circulation ... Hayek wants, therefore, not a *constant* money supply, but a neutral money supply – one which will insure that there will be no *monetary* causes of price changes.

Hayek noted that a hypothetical monetary system in which the money stock consisted exclusively of gold coins (without bank-issued money) would poorly approximate his norm because the stock of monetary gold would not adjust *promptly* to offset changes in velocity. Gold accumulated slowly from additional mining following a rise in the relative price of gold. Nor would a system with bank-issued money approximate it well, he thought, unless a central bank existed to promptly offset any changes in the volume of bank-issued money not warranted by velocity changes. Thus Hayek was more ambivalent than Mises regarding the merits of the gold standard and free banking.<sup>37</sup>

Hayek criticized the Federal Reserve's policy of stabilizing the price level during 1922-29 because – in order to offset the price-reducing effects of productivity improvements that were increasing real output – it required the Fed to inject money. The Fed's injections distorted the

interest rate away from its equilibrium value, leading to savings-investment discoordination. As Phillips, McManus and Nelson summarized the indictment:

The special character of the depression is traced to the hyper-elasticity of the Federal Reserve System, and to the operation of that system as exemplified in the “managed currency” experiment of the Federal Reserve Board, working in opposition to what D. H. Robertson labels “the over-mastering tendency of prices to fall” after a war financed by inflationary measures. By virtue of that experiment, the Board succeeded in holding up the price level for a surprising length of time, but in so doing unwittingly aided in producing the boom and its consequent depression. The depression, in other words, was the price paid for the experimentation with currency management by the Federal Reserve Board during the period when the dislocations caused by war had not as yet been corrected and when the post-War deflation of prices had not been completed.

... [T]he futility of price level stabilization as a goal of credit policy is evidenced by the fact that the end-result of what was probably the greatest price-stabilization experiment in history proved to be, simply, the greatest and worst depression.<sup>38</sup>

### **In a growing economy, prices should fall**

As noted, Hayek had been criticizing price-level stabilization policy for several years before the 1929 crash. In *Monetary Theory and the Trade Cycle* he spelled out the problem in theoretical terms:

The rate of interest which equilibrates the supply of real savings and the demand for capital cannot be a rate of interest which also prevents changes in the price level. In this case, stability of the price level presupposes change in the supply of money. . . . The rate of interest at which, in an expanding economy, the amount of new money entering circulation is just sufficient to keep the price-level stable, is always lower than the rate which would keep the amount of available loan-capital equal to the amount simultaneously saved by the public: and thus, despite the stability of the price-level, it makes possible a development leading away from the equilibrium position.

Such a development described the 1920s. In Hayek's view, the Federal Reserve System had inadvertently fostered the unsustainable boom of the 1920s through its policy of stabilizing the price level by injecting money, thereby padding the supply of credit or loanable funds, thereby distorting the interest rate. Hayek summarized what had happened in his 1932 essay "The Fate of the Gold Standard":

Instead of prices being allowed to fall slowly, to the full extent that would have been possible without inflicting damage on production, such volumes of additional credit were pumped into circulation that the level of prices was roughly stabilized. . . . Whether such inflation [i.e., monetary expansion] merely serves to keep prices stable, or whether it leads to an increase in prices, makes little difference. Experience has now confirmed what theory was already aware of; that

such inflation [i.e., monetary expansion] can also lead to production being misdirected to such an extent that, in the end, a breakdown in the form of a crisis becomes inevitable.<sup>39</sup>

Hayek's notion of the importance of allowing investment to be guided by "the rate of interest which equilibrates the supply of real savings and the demand for capital" was built, following Mises, on the capital and interest theory of the earlier Austrian economist Eugen von Böhm-Bawerk, as further developed by the Swedish economist Knut Wicksell.

### **Eugen von Böhm-Bawerk's theory of interest**

Eugen von Böhm-Bawerk (1851-1914) was a 20-year-old student at University of Vienna when Carl Menger's *Principles of Economics* appeared in 1871. The economist Joseph Schumpeter (himself Vienna-trained), in his encyclopedic *History of Economic Analysis*, described Böhm-Bawerk as "so completely the enthusiastic disciple of Menger that it is hardly necessary to look for other influences".<sup>40</sup> Böhm-Bawerk taught at the University of Innsbruck from 1881 to 1889, where he wrote his landmark contributions to capital and interest theory, *History and Critique of Interest Theories* (1884) and *Positive Theory of Capital* (1889). He served as Austria's Finance Minister in 1895, 1897, 1898, and 1900-04. He famously criticized the labor theory of value in *Karl Marx and the Close of His System* (1898). In 1904 he returned to the University of Vienna and held a chair in economics there until his death in 1914.

Böhm-Bawerk sought to explain the fact that "Present goods are, as a rule, worth more than future goods of like kind and number." Present goods are those available for consumption now; future goods are those that will become available only at a later date. The price that people

pay today for future goods is *discounted* in compound proportion to the number of years they will have to wait to consume them. Equivalently, people pay a *premium* for present goods.

Böhm-Bawerk famously offered three grounds for the premium (or “agio” in his old-fashioned terminology) on present goods. We can divide his grounds into two demand-side factors and one supply-side factor. On the demand side, people subjectively discount future-dated goods because (1) they “underestimate” the utility of future goods due to short-sightedness, “defects of will,” or worry that they won’t live long enough to consume them; and (2) they expect higher incomes in the future, so consumption goods will be less scarce for them at future dates than they are at present. We can avoid framing the first reason in a judgmental way, and simply say that people typically have a *preference* for present goods, or have “positive time-preference,” even when anticipated income is equal across periods. On the supply side, Böhm-Bawerk argued that (3) having more time to produce typically allows us to use more “roundabout” production methods that are more fruitful. A fisherman who can spend the weeks necessary to make a net will eventually be more productive than one who keeps fishing merely with a quickly made pointed stick. The fisherman will thus value a stock of food available today, to tide him over until the net is ready, more highly than the same stock of food available only a year later. Resources available sooner are more valuable because they can be put to work in ways (like making a net) that will yield more output at any given future date. This third ground, at least in the way that Böhm-Bawerk formulated it, somewhat begs the question because it already assumes a positive discount rate. With a zero discount rate, the fact that an input that becomes available only later yields equal physical output (via equally roundabout production) only later would be a matter of indifference.

The equilibrium interest rate, in Böhm-Bawerk's theory, is determined by the interaction of savers' time-preferences with the investors' anticipated returns to longer periods of production. With additional resources provided by savers, investors have a larger "wages fund" and can extend the average period of production by paying a given labor force for more months. The equilibrium interest rate (call it  $\hat{i}$ ) coordinates saving and investment plans: it is just high enough to persuade savers to lend the marginal dollar (in return for  $1 + \hat{i}$  future dollars), and just low enough for investors to repay the marginal dollar borrowed with the return ( $\$(1 + \hat{i})$ ) from the enabled extension of the period of production.<sup>41</sup>

### **Mises, Wicksell, and the British "Currency School"**

Knut Wicksell revised and restated Böhm-Bawerk's capital and interest theory with greater clarity.<sup>42</sup> He importantly distinguished the *natural rate* of interest, the equilibrium rate as determined by market forces in the revised Böhm-Bawerkian theory, from the *market rate* of interest which is subject to arbitrary variation by the banking system. If the banking system (again, a central bank or all the commercial banks acting in concert) pushes the market rate below the natural rate, the quantity of bank loans demanded by investors swells and exceeds the available pool of savings. The bankers "themselves create the money required" to expand loans. The monetary expansion creates price inflation. The inflation means that the *real* market loan rate of interest has fallen even further (where the real rate is the nominal interest rate minus the inflation rate), stimulating a further increase in the quantity of loans demanded. A *cumulative process* thus leads the monetary system away from equilibrium toward ever-greater monetary expansion and price inflation. In a "pure system of credit" without any concern for gold reserves, the expansion process cumulates without limit: the quantity of money explodes.



Precisely to avoid a Wicksellian cumulative expansion, the “Taylor Rule” for monetary policy today calls for the central bank to *raise* the real interest rate when inflation rises, by raising its nominal interest rate target by more than the increase in the inflation rate.

In a system based on gold redeemability, the cumulative process is ultimately limited by reserve ratios reaching the lowest limit the banking system will allow. As Ludwig von Mises later suggested when he referred to the “attempt of Wicksell (1898) to rehabilitate the Currency School,”<sup>43</sup> the collision of Wicksell’s cumulative process with the limit imposed by finite gold reserves yielded a restatement of the business cycle theory that had been sketched earlier in the nineteenth century by British economists critical of the Bank of England for over-expansion, members of the Free Banking School and some members of the Currency School. (Other members of the Currency School blamed the country banks, rather than the Bank of England, for over-expansions. More on these schools below.)

Like the Free Banking School, Mises argued that only a central bank has the power to significantly over-issue. Decentralized banks of issue lack the power, constrained by rapid reserve losses to rival banks. Hayek, following the Currency School writer Thomas Joplin rather than Mises on this point, thought a scenario of in-concert over-expansion by decentralized competing banks was a serious possibility: when demand for loans increases, banks will gladly expand their liabilities to loan more money at the existing loan interest rate. The Joplin-Hayek scenario is not well founded, however. It requires that banks fail to raise their loan rates in the face of increased demand for loans, which doesn’t make sense given that the banks face rising costs of expanding because a larger volume of redeemable liabilities is a bigger threat to their reserves.<sup>44</sup>

The critics of the Bank of England charged that the Bank had at times over-expanded its lending, foolishly creating the money to lend by issuing more of its own liabilities even when it had no additional reserves, in the process lowering the interest rate and fueling a business boom, until dwindling gold reserves eventually forced it to reverse course. The reversal meant a credit crunch and the collapse of the cheap-credit boom. As Mises noted, “The English ‘Currency School’ has already tried to explain the boom by the extension of credit resulting from the issue of bank notes without metallic backing.”<sup>45</sup>

Mises extended the older theories in two ways. First, where most of the earlier British writers had focused on over-expansion of credit funded by the issue of banknotes, Mises noted that “the expansion of credit can result not only from the excessive issue of bank notes but also from the opening of excessive current accounts,” that is, checkable deposits. Second, where the earlier analysis was “restricted to the case where credit is expanded in only one country and thus limited by gold outflows, “it did not consider credit expansion on an international scale by all the capitalist countries simultaneously.”<sup>46</sup> Mises sought to show theoretically that even a worldwide expansion (assumed to be in-concert for the sake of argument) could not go on indefinitely but must end in a crisis. To pursue this second aim Mises built on Wicksell’s natural-rate and cumulative process ideas: concerted central bank credit expansion could set off the cumulative process by lowering the market interest below the natural rate, but would need to accelerate to outrun market forces restoring the natural rate.<sup>47</sup> Uninterrupted acceleration would lead to a hyperinflation; any interruption would bring the crisis. In the more salient cases of unconcerted expansion, Mises emphasized the narrower restraints that interbank losses of scarce gold reserves place on the expansion of note and deposit liabilities in a free banking system where competing banks do not collude on loan and deposit interest rates, and that international reserve losses (the

price-specie-flow mechanism) places on a central banking system covering a small country on an international commodity standard.

### **The Currency School and the Free Banking School**

The Currency and Free Banking Schools were groups of British monetary economists who debated in the period 1820-1850 over the causes of and remedies for business cycles. A third group, the Banking School, joined the debate around 1844. The legislative landmark of the period was Prime Minister Robert Peel's Bank Charter Act of 1844, which imposed on the Bank of England the sort of policy rule that the Currency School was advocating.

The Currency School was led by Samuel Jones Loyd (later to become Lord Overstone), Robert Torrens, and John R. McCulloch. They held that both the Bank of England (at that time a nascent central bank with a monopoly of note-issue in London) and the English country banks (commercial banks outside London, typically small) had the power to over-issue banknotes, that is, temporarily expand their liabilities and loans more than was consistent with equilibrium. Cyclical booms were due to over-issues either by the Bank of England or (in most cases) by the country banks. The over-expansion of the money supply would drive prices up and thereby drive gold out of the country, a process known as the "price-specie-flow mechanism" (where "specie" means coined gold or silver). The bust occurred when the Bank of England was forced to tighten to stop its loss of gold reserves. As a remedy the Currency School proposed a strict monopoly of note-issue, taking the right of issue away from country banks, and the imposition of a rule on the one remaining issuer (either the Bank of England or a new government-owned bank). The rule, known as the Currency Principle, called for the stock of banknotes to shrink one-for-one with gold outflows (and expand with gold inflows). The price-specie-flow mechanism would then

promptly correct the “mixed” (specie and banknotes) money stock, making it behave in the self-regulating manner of a pure gold coin system.

The Free Banking School, led by banker James William Gilbart and Member of Parliament Henry Stuart Parnell, had a similar monetary over-expansion theory of the business cycle, except that they put all the blame for over-issues on the Bank of England. A competitive country bank, facing reserve losses to surrounding banks through the clearing system should it expand more than they do, is too tightly constrained to expand significantly on its own without additional reserves. The Bank of England’s excess notes, by contrast, don’t promptly come back for redemption but end up lodged in the reserves of the country banks and thereby fuel a system-wide over-expansion. Because they held that only a monopoly bank can significantly over-issue, while competitive banks can’t, the Free Banking School proposed to replace the Bank of England’s monopoly with a system of competitive note-issue (“free banking”) in London. Mises was closer to the Free Banking School on the source of the monetary over-expansion, whereas Hayek accepted the Currency School position that over-expansion could come either from the central bank or from the commercial banks.

The Banking School, led by Thomas Tooke and John Fullarton, did not have a monetary theory of the business cycle because they held that no bank can significantly over-issue, not even the Bank of England, so long as its notes were redeemable for gold. One of their (faulty) rationales for believing that the banking system would not over-issue, the “real bills doctrine,” persisted in economic thought and indeed became the doctrine of Federal Reserve officials who thought that the Fed could not be over-expanding in the 1920s. It’s second (also faulty) rationale was the “law of the reflux”, famously expounded by Fullarton, which was a process supposed to remove any excess notes, even of the Bank of England, promptly from circulation.<sup>48</sup> We will

discuss the real bills in more detail doctrine below. With monetary disturbances ruled out, the Banking School believed that business cycles were non-monetary in origin, due either to real shocks like harvest failures or to unexplained waves of speculation. They thought that the institutional status quo was suitable, and they had no remedy to propose for business cycles other than greater prudence by bankers.

### **Böhm-Bawerk's view of capitalistic production**

Hayek's concept of time-consuming stages of production, as pictured in the triangle diagram, also came from Böhm-Bawerk and Menger. Menger distinguished between ready-to-consume goods that are directly valued for the enjoyments that they offer here and now, and "higher-order" or producers' or capital goods<sup>49</sup> that are indirectly valued for their anticipated contributions to the production of *future* consumption goods. Böhm-Bawerk wrote that "capital is, by its nature, composed of a mass of intermediate products, and the common goal of all these products is to ripen into consumption goods or means of enjoyment." He represented the degrees of ripeness of intermediate products by a set of concentric rings. In the central circle, representing the earliest stage of production, we might find (to repeat the example used above) cotton seed; in a middle ring bolts of denim; in the outermost ring blue jeans in a cubbyhole at the Gap awaiting sale.

Böhm-Bawerk's rings show the temporal dimension to capital. The Jevons-Hayek triangle adds an explicit value dimension.

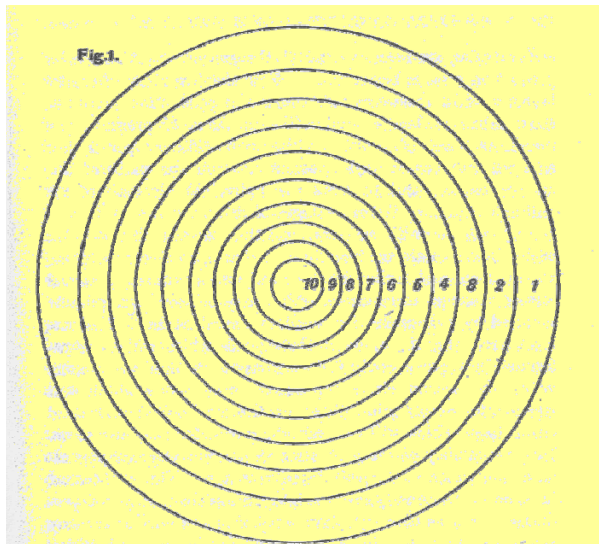


Figure 2: Böhm-Bawerk's stages of production

### Criticisms of Hayek's theory

Hayek's theory of the business cycle was soon criticized by Keynes, Piero Sraffa of Cambridge, Nicholas Kaldor of Hayek's home institution the London School of Economics (Kaldor later moved to Cambridge), and others. Hayek, Machlup, and other Austrians came to the theory's defense. Kaldor described at length, from his own perspective as a leading critic, how the initially positive reception of Hayek's work had given way to increasing criticism:

Professor Hayek first fascinated the academic world of economists by a new theory of industrial fluctuations which in theoretical conception, and perhaps even more in its practical implications, was diametrically opposed to the current trend of monetary thought. The term "fascination", though perhaps slightly unacademic, aptly describes the effect of the *first impact* of Professor Hayek's ideas on economists trained in the Anglo-Saxon tradition (and the present writer has no wish to conceal that he was among the fascinees) to whom it suggested aspects of

the nature of capitalistic production they were never taught to think of. It suggested those “deep-seated underlying maladjustments” in the structure of capitalist production, which may have been ultimately caused by, but which could not be adequately described in terms of, those purely monetary processes with which most of the then current speculation was concerned. [Kaldor could here be describing the theories of R. G. Hawtrey, D. H. Robertson, and Irving Fisher.] In comparison with Professor Hayek's “triangles”, “distorted price-margins”, and unduly-elongated production periods, the prevailing concern with price-levels, and with the banks doing this or that, must have appeared facile and superficial.

This was the first impact. On second thoughts the theory was by no means so intellectually satisfying as it appeared at first. There were admitted gaps here and there in the first published account which was merely intended as rudimentary [here Kaldor cited *Prices and Production*], and when one attempted to fill these gaps, they became larger, instead of smaller, and new and unsuspected gaps appeared – until one was driven to the conclusion that the basic hypothesis of the theory, that scarcity of capital causes crises, must be wrong. These “second thoughts” produced a remarkable crop of critics of *Prices and Production* in the pages of English and American journals the number of which could rarely have been equalled in the economic controversies of the past.<sup>50</sup>

As Kaldor elsewhere noted, the criticisms were chiefly of two sorts: (1) arguments to the effect that lengthening and shortening of the structure of production could not account for the variation in aggregate output and employment over the cycle; and (2) arguments rejecting the

meaningfulness of the Jevons-Böhm-Bawerk-Wicksell capital theory and its idea of a production period of definable length, and by implication its use in an account of the business cycle.<sup>51</sup>

Keynes opened the criticism of Hayek's *Prices and Production* in an unusual place, namely in the middle of his reply to the first part of Hayek's review article on Keynes' *Treatise on Money*. Keynes declared:

The book, as it stands, seems to me to be one of the most frightful muddles I have ever read, with scarcely a sound proposition in it beginning with page 45 ... It is an extraordinary example of how, starting with a mistake, a remorseless logician can end up in Bedlam.<sup>52</sup>

Keynes' colleague at Cambridge, Arthur C. Pigou, appalled by Keynes' unmannerly behavior, described the exchange in the following terms in 1935:

The author's answer was, not to rebut the criticisms, but to attack with violence another book, which the critic had himself written ...! Body-line bowling! The method of the duello!<sup>53</sup>

In his rejoinder, Hayek objected that Keynes was throwing up a smokescreen, dodging Hayek's criticisms of the *Treatise*:

Instead of devoting his answer mainly to clearing up the ambiguities which I have indicated carefully and in detail, and the existence of which he cannot deny, he replies chiefly by a sweeping accusation of confusion, not in my critical article,



but in another work [...] ... I cannot believe that Mr. Keynes wishes to give the impression that he is trying to distract the attention of the reader from the objections which have been raised against his analysis by abusing his opponent.<sup>54</sup>

A few months later in the *Economic Journal*, an academic quarterly that Keynes edited, Keynes' junior colleague Piero Sraffa scathingly reviewed *Prices and Production*. In Hayek's capital theory, Sraffa wrote, "a maze of contradictions makes the reader so completely dizzy, that when he reaches the discussion of money he may out of despair be prepared to believe anything." Regarding the book's discussion of money, "it is clear that a methodical criticism could not leave a brick standing in the logical structure built up by Dr. Hayek." Sraffa argued that Hayek's search for a monetary policy that would not affect relative prices (a "neutral money") was in vain. Sraffa took Hayek to be seeking a monetary policy that would replicate the properties of a barter economy, which was impossible because in a money economy contracts were fixed in money terms, not in commodity terms.<sup>55</sup> But here Sraffa mistook Hayek's goal, which was not to replicate *all* the properties of a barter economy, but to find a monetary policy that would not drive a wedge between savings and investment. Hayek restated his theory in a reply to Sraffa that has already been quoted above.<sup>56</sup>

To answer his Keynesian critics, and to adapt his theory to the conditions of the Great Depression, Hayek in 1939 published a new essay, "Profits, Interest, and Investment," in a book of the same title.<sup>57</sup> There he tried to exposit a different mechanism – the "Ricardo Effect" – that would generate an Austrian-type business cycle without relying his earlier assumptions of a full-employment starting point, an initial impulse from a monetary disturbance, and misdirection of

investment by movement of the interest rate. Economists who noticed the essay were mostly baffled by it, at a loss to see how it was consistent with the story of *Prices and Production*.

To address criticisms of the capital theory that *Prices and Production* had sketched only in bare outline, Hayek worked for seven years to produce *The Pure Theory of Capital* (1941). Where previous economists had mostly theorized about capital only as far as necessary to explain interest rates, Hayek wanted to build a capital theory that would be “useful for the analysis of the monetary phenomena of the real world.” That is, he tried to spell out in more detail a theory of capitalistic production that be useful for improving our understanding of the business cycle. The book provided an elaborate analysis of time-consuming production. With the Second World War diverting his attention to other concerns, however, Hayek cut the project short and never completed a planned second volume that would have applied the elaborated capital theory to the business cycle. Reviewer Arthur Smithies wryly commented that Hayek had unintentionally provided an example of the very thing his cycle theory warned about, a project built on foundations so overly elaborate that it could not be profitably completed. Later developers of the Austrian business cycle theory, like Roger Garrison, have found the less elaborate model of *Prices and Production* more useful.<sup>58</sup>

### **Did Hayek and Robbins deepen the Great Depression?**

Milton Friedman told an interviewer in 1999:

I think the Austrian business-cycle theory has done the world a great deal of harm. If you go back to the 1930s, which is a key point, here you had the Austrians sitting in London, Hayek and Lionel Robbins, and saying you just have

to let the bottom drop out of the world. You've just got to let it cure itself. You can't do anything about it. You will only make it worse. ... I think by encouraging that kind of do-nothing policy both in Britain and in the United States, they did harm.<sup>59</sup>

Keynesian economists have made similar charges. Robert Skidelsky, Keynes' biographer, told the *Commanding Heights* interviewer that "Hayek was very, very aloof to the political and practical consequences of doing nothing in the early '30s, and he never really came clean on that."<sup>60</sup> The "do-nothing policy" or "aloofness" charge is somewhat unfair, however, and Hayek did in fact "come clean" in the sense of publicly regretting the policy advice he did give in the early 1930s.<sup>61</sup>

Hayek's norm for monetary policy was *not* to "let the bottom drop out of the world" or to be passively indifferent to sharp deflation driven by a monetary contraction, but was rather, as noted above, to stabilize nominal expenditure  $MV$ . What Hayek and Robbins can be faulted for was their failure to be consistent in applying this policy norm when it mattered most. Hayek and Robbins understandably criticized proposals to re-inflate the price level all the way back to its previous unsustainable level (a level inconsistent with the fixed gold value of the dollar), and denounced as counterproductive various schemes to use cheap credit to bring the economy out of a slump that in their view cheap credit had created. But Hayek unfortunately also expressed ambivalence about the shrinking  $PQ$  and sharp deflation in 1929-32 because he thought that the deflation might serve a useful purpose by "breaking" price and wage rigidities. In a 1975 talk, Hayek regretted his mistake:

I am the last to deny – or rather, I am today the last to deny – that, in these circumstances, monetary counteractions, deliberate attempts to maintain the money stream, are appropriate.

I probably ought to add a word of explanation: I have to admit that I took a different attitude forty years ago, at the beginning of the Great Depression. At that time I believed that a process of deflation of some short duration might break the rigidity of wages which I thought was incompatible with a functioning economy. Perhaps I should have even then understood that this possibility no longer existed. ...

The moment there is any sign that the total income stream may actually shrink, I should certainly not only try everything in my power to prevent it from dwindling, but I should announce beforehand that I would do so in the event the problem arose.<sup>62</sup>

Lionel Robbins similarly, in retrospect, regretted his advice against using monetary expansion to arrest the deflation of 1929-32.

The claim that Hayek's and Robbins' regrettable (and subsequently regretted) advice "did harm" in the United States supposes that policy-makers in the Hoover administration or at the Federal Reserve were following their advice. There is no evidence of that. Hoover's policies of 1929-32 were formulated before the publication of *Prices and Production* (1931) and Robbins' *The Great Depression* (1934). Besides, Hoover's response to the onset of the Depression was far

from “do-nothing”.<sup>63</sup> Hoover brought business leaders to the White House to urge them not to cut wages. He created the Reconstruction Finance Corporation to bail out banks and industrial firms with cheap federal loans. He signed the Smoot-Hawley Act raising tariffs. He pushed for a large increase in federal construction spending. The list of Hoover’s interventions could be extended.

The Fed’s acquiescence in deflation after 1929, and possibly even its expansionary policy before, stemmed not from Austrian business cycle theory but from Fed officials’ adherence to a view known as the Real Bills Doctrine.

### **The Real Bills Doctrine *versus* the Austrian cycle theory**

“Real bills” are short-term transferable IOUs issued by business firms to finance goods in the process of production. For example, a baker on September 1<sup>st</sup> may buy flour, paying the miller with a document that says “I the baker will pay the miller, or assignee, \$1000 on December 1<sup>st</sup>.” The bill is “real” in that it finances the baker’s purchase of a tangible asset, the flour. The baker can repay the bill from revenues earned by selling baked goods made with the flour. The miller can keep the bill to maturity, or – if he wants cash sooner – can sell the bill to a banker. The banker will pay the miller somewhat less than \$1000 (the “present discounted value”) today for a bill due on December 1<sup>st</sup>. The bank earns interest by holding the bill until December 1<sup>st</sup> and then collecting \$1000 from the baker. (Alternatively put, the bill appreciates as it approaches maturity.)

There are at least two ideas called “the Real Bills Doctrine”. The first one – sometimes called “the commercial loan theory” – offers a (reasonable) *rule of thumb for prudent portfolio management by a commercial bank of issue*. It says that if the bank issues redeemable banknotes

or demand deposits by purchasing bills of exchange, and the bills are repaid upon maturity, the bank will find its cash reserves automatically replenished. With a developed bill market, real bills are a liquid asset (more liquid than other bank assets like loans), so the bank can conveniently resell its bills if it needs cash before the bills mature.<sup>64</sup>

The second version of the RBD, the one relevant to Fed monetary policy in the 1920s and 1930s, was developed in discussions of Bank of England policy in the nineteenth century by members of the Banking School and other defenders of the Bank. It offers a (fallacious) *guideline for monetary policy*. It says that if the banking system, meaning the central bank where it rules the roost, will discount all of (but only) the good quality real bills offered for discount, it will accommodate the “needs of trade” for financing but will not over-issue. That is, it will not over-expand the money supply so as to raise the price level or (under a gold standard) drive gold from the country and endanger convertibility. David Laidler has summarized the connection of this version to the commercial loan theory, and its shortcomings:

In short, it was of the very essence of the real-bills doctrine that ... bank lending ... should be confined to loans made on the security of short-term bills of exchange issued by reputable merchants or manufacturers to finance the production and distribution of real goods. The belief that bank lending thus confined would guarantee the preservation of price-level stability and/or specie convertibility was an integral, and fallacious, element of the doctrine.<sup>65</sup>

There are at least two major problems with the RBD as a guideline for money creation. First, focusing on the *quality* or *type* of assets that the central bank (or a commercial bank)

acquires in no way guarantees that the *quantity* of its monetary liabilities is not excessive. For a banking system on a gold standard, the operation of gold redemption (as enforced by the interbank clearing system) equilibrates the supply and demand for bank liabilities, independently of the type of assets banks acquire. For a central banking system that is only weakly constrained by gold convertibility (like the Federal Reserve in the 1920s and '30s), and *a fortiori* for a central bank issuing fiat money (like the Fed after 1971), restricting its discounting operations to one *category* of debt instruments does not constrain the *quantity* of its issues.

The second major problem is that stabilizing the price level and “accommodating the needs of trade” – meeting every increase in the demand for loanable funds with an increase in the supply of loanable funds via credit expansion, rather than letting the interest rate rise – will result in excessive credit expansion. This was Hayek’s critique of Federal Reserve policy in the 1920s, as further discussed below. The RBD lacked the notion of a Wicksellian natural rate that the central bank’s discount rate should match in order to avoid disruptive monetary policy.

If the Fed had been tightly constrained by the gold standard, meaning that they had to raise the discount rate promptly to safeguard their gold reserves when an over-expansion began to result in an outflow of gold, then the Real Bills Doctrine would have had little scope to guide monetary policy. But the Fed, which began operations in 1914 and was soon pressed into service to help finance US entry into the War, found that the gold standard was not a tight constraint. The Real Bills Doctrine had wide scope to guide the Fed’s monetary policy.

Some Real Bills advocates, seemingly like the Austrians, thought that the Federal Reserve had pursued an excessively expansionary policy of 1927-28 that had sown the seeds for the downturn of 1929. But the appearance of similar views was misleading. The two schools’ criteria for excess were different: where the Austrians judged Fed policy over-expansive for

pushing or holding the market rate of interest below the natural rate, the RBD advocates, as Laidler characterizes them, judged it over-expansive for being “on a scale greater than the needs of trade required” and on that account having “fuelled ‘speculative investment’ in the stock market and an unsustainable investment boom.” Fed officials following the RBD judged credit creation excessive only by an (inadequate) non-quantitative asset-category test: any lending by purchasing real bills could not be excessive, but any lending by purchasing other assets (e.g. government bonds) was.

The Austrian and real-bills views were quite distinct not only in their analyses but also in their prescriptions. It was the RBD rather than the Austrian theory that was the source of the Fed’s thinking. (There is no evidence that *Prices and Production* influenced Fed officials after 1931, and certainly not before.) Where Hayek’s stable-*MV* policy norm called (even if Hayek himself failed to call) for expansionary monetary policy to offset the shrinkage of nominal income in the 1929-32 period, the Real Bills Doctrine implied that monetary contraction was appropriate to match the shrunken volume of real bills offered for discount in a period of shrunken economic activity.

Economic historian Barry Eichengreen has identified Adolph Miller of the Federal Reserve Board and the governors of the Philadelphia and Dallas Federal Reserve Banks as “outspoken advocates of letting nature run its course” after 1929. Miller had been a member of the Board since its beginning in 1914, and before that an academic economist. Evidence of the Board’s adherence to the real bills doctrine during Miller’s tenure can be found in the Board’s Tenth Annual Report of 1923, which declares: “It is the belief of the Board that there is little danger that the credit created and distributed by the Federal Reserve Banks will be in excessive volume if restricted to productive uses.”<sup>66</sup>



Hayek in *Monetary Theory and the Trade Cycle* sharply criticized the RBD's elastic-credit-supply norm for disabling the economy's "interest rate brake," meaning the equilibrating tendency of the interest rate to rise in the face of greater credit demand and thereby to limit investment to available savings. Where Mises' scenario of the typical business cycle had pictured the central bank as *actively initiating* the boom by using monetary expansion to drive interest rates *down*, Hayek viewed the Fed as having *amplified* an investment upswing by using monetary expansion to *prevent the market interest rate from rising* as it should have to match the rising natural rate when the rising demand for loanable funds exceeded voluntary saving. Elastic credit had thus enabled the launching of unsustainable new investments, creating the unsustainable boom. Policy based on the real bills doctrine was, for Hayek, not just a minor error. It was a principal source of the Great Depression the world was experiencing.<sup>67</sup>

## Notes

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<sup>1</sup> Lawrence H. Officer and Samuel H. Williamson, "Annualized Growth Rate and Graphs of Various Historical Economic Series" MeasuringWorth.Com, January 2008. The annualized 1921-29 growth rate of *per capita* real GDP was 3.29%, compared to a century-long rate of 1.97%.

<sup>2</sup> Index of Industrial Production from Federal Reserve Board Statistical Release G.17, Industrial Production and Capacity Utilization (not seasonally adjusted), [http://www.federalreserve.gov/Releases/g17/table1\\_2.htm](http://www.federalreserve.gov/Releases/g17/table1_2.htm). All other figures from C. A. Phillips, T. F. McManus, and R. W. Nelson, *Banking and the Business Cycle: A Study of the Great Depression in the United States* (New York: Macmillan, 1937), pp. 123-27, 194.

<sup>3</sup> Board of Governors of the Federal Reserve System, *Banking and Monetary Statistics 1914-1941*, p. 34. Online at <http://fraser.stlouisfed.org/publications/bms/>.

<sup>4</sup> Harold L. Reed, "Reserve Bank Policy and Economic Planning," *American Economic Review* 23 (Mar., 1933 Supplement), p. 112.

<sup>5</sup> Allan H. Meltzer, "Money and Monetary Policy: An Essay in Honor of Darryl Francis," *Federal Reserve Bank of St. Louis Review* (July/August 2001), p. 28.

<sup>6</sup> In the worst slump since the Great Depression, 1973-75, real GDP fell only 3.4 % peak to trough.

<sup>7</sup> Gross Private Domestic Investment (GPDIA), U.S. Department of Commerce, Bureau of Economic Analysis. <http://research.stlouisfed.org/fred2/data/GPDIA.txt>

<sup>8</sup> Reed, *op. cit.*, p. 112.

<sup>9</sup> Paul Krugman, "Who Was Milton Friedman?," *op. cit.*

<sup>10</sup> John Maynard Keynes, *The General Theory of Employment Interest and Money* [ed. Elizabeth Johnson and Donald Moggridge], Vol. VII in *The Collected Writings of John Maynard Keynes* (London: Macmillan, 1973), p. 3 n. 1.

<sup>11</sup> Ludwig von Mises, *The Theory of Money and Credit* [1912; 2<sup>nd</sup> German ed. 1924; with additional essay added to 1953 American ed.], trans. H. E. Batson (Indianapolis: Liberty Fund, 1981); Mises, "Monetary Stabilization and Cyclical Policy" [1928], trans. Bettina Bien Greaves, reprinted in Mises, *On the Manipulation of Money and Credit*, ed. Percy L. Greaves, Jr. (Dobbs Ferry, NY: Free Market Books, 1978).

<sup>12</sup> Fritz Machlup, *The Stock Market, Credit and Capital Formation* [1931], trans. Vera C. Smith (London: William Hodge, 1940); Gottfreid Haberler, "Money and the Business Cycle," in Quincy Wright, ed., *Gold and Monetary Stabilization* (Chicago: University of Chicago Press, 1932); Lionel Robbins, *The Great Depression* (London: Macmillan, 1934). Appearing slightly later (1937), but offering further empirical evidence for the applicability of the Austrian theory to the boom and bust, was Phillips, McManus, and Nelson, *op. cit.*

<sup>13</sup> John Maynard Keynes, "The Great Slump of 1930" and "Economy: (i) Saving and Spending," in *Essays in Persuasion*, *op. cit.*, pp. 135-56.

<sup>14</sup> On Fisher's theory see Scott Sumner, "Price-level Stability, Price Flexibility, and Fisher's Business Cycle Model," *Cato Journal* 9 (Winter 1990), pp. 719-27.

<sup>15</sup> For a thorough account of the anti-depression policy recommendations of mainstream economists between 1929 and 1936 see J. Ronnie Davis, *The New Economics and the Old Economists* (Ames: Iowa State University Press, 1971).

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<sup>16</sup> Ludwig von Mises, “The Austrian Theory of the Trade Cycle” [1936], in *The Austrian Theory of the Trade Cycle and Other Essays*, compiled by Richard M. Ebeling (Auburn, AL: Mises Institute, 1996), p. 2.

<sup>17</sup> Ibid.

<sup>18</sup> Ibid., p. 3.

<sup>19</sup> Ibid., pp. 5-6.

<sup>20</sup> Ludwig von Mises, *Human Action*, 3<sup>rd</sup> ed. (Chicago: Henry Regnery, 1966), p. 443.

<sup>21</sup> On the core similarities and some peripheral differences between Mises’ and Hayek’s accounts of the cycle, see Roger W. Garrison, “Overconsumption and Forced Saving in the Mises-Hayek Theory of the Business Cycle,” *History of Political Economy* 36 (Summer 2004), pp. 323-349.

<sup>22</sup> F. A. von Hayek, “Money and Capital: A Reply,” *Economic Journal* 42 (June 1932), p. 238.

<sup>23</sup> Ibid., p. 245.

<sup>24</sup> Ibid., pp. 241, 247.

<sup>25</sup> The expansion in lending (banking system assets) was made possible by an expansion in banking system liabilities, the magnitude of which basically equaled the increase in the M2 money stock minus any increase in the gold stock. About two-thirds of the M2 increase during 1921-29 was traceable to an increase in bank reserves. The increase in bank reserves in turn was due mostly to the Federal Reserve’s expansion of its own liabilities (a smaller contributor was gold inflows into the United States). The other one-third was due to an increase in the ratio of bank deposits to reserves, which was mostly due to the Federal Reserve’s reductions in required reserve ratios.

<sup>26</sup> Thomas E. Hall and J. David Ferguson, *The Great Depression: An International Disaster of Perverse Economic Policies* (Ann Arbor: University of Michigan Press, 1998), p. 7, fig. 1.3.

<sup>27</sup> Quoted by Phillips, McManus, and Nelson, op. cit., p. 147.

<sup>28</sup> See Roger W. Garrison, “Overconsumption and Forced Saving,” op. cit.

<sup>29</sup> John Maynard Keynes, *The General Theory of Employment Interest and Money* [ed. Elizabeth Johnson and Donald Moggridge], Vol. VII in *The Collected Writings of John Maynard Keynes* (London: Macmillan, 1973), p. xxxiii. We discuss below Wicksell’s theory of a “cumulative process” away from equilibrium.

<sup>30</sup> Hansen, in the terminology of the times, used the terms “inflation” and “deflation” where I have substituted “expansion” and “contraction”. For better or worse, current usage reserves the former pair of terms for movements in the price level.

<sup>31</sup> Machlup, op. cit., pp. 194-95.

<sup>32</sup> F. A. Hayek, “A Comment” [on Nicholas Kaldor, “Professor Hayek and the Concertina-Effect”], *Economica* New Series 9 (Nov. 1942), p. 384.

<sup>33</sup> Phillips, McManus, and Nelson, op. cit., p. 179, quoting Keynes, *A Treatise on Money*, Vol. II, pp. 258-259.

<sup>34</sup> An alternative explanation suggests that the Fed was trying to keep interest rates low, thereby not attracting gold from abroad, to aid the Bank of England’s attempt to get back on the gold standard at the pre-War parity. This is not necessarily inconsistent with price-level stabilization, since keeping US prices from falling would also avoid attracting gold inflows.

<sup>35</sup> Hayek, *Monetary Theory and the Trade Cycle* (London: Jonathan Cape, 1933), pp. 16-17.

<sup>36</sup> For secondary accounts Hayek’s monetary policy views and their evolution see George Selgin, “Hayek versus Keynes on How the Price Level Ought to Behave,” *History of Political Economy*

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31 (1999), pp. 699-722; and Lawrence H. White, "Hayek's Monetary Theory and Policy: A Critical Reconstruction," *Journal of Money, Credit and Banking* 31 (1999), pp. 109-20.

<sup>37</sup> Lawrence H. White, "Why Didn't Hayek Favor Laissez Faire in Banking?," *History of Political Economy* 31 (Winter 1999), pp. 753-769.

<sup>38</sup> Phillips, McManus, and Nelson, op. cit., pp. 5-6, 176. The U. S. Wholesale Price Index, even after dropping a remarkable 37% between 1920 and 1922, remained 30% above its average for 1914-16. WPI data from Allan H. Meltzer, *A History of the Federal Reserve, Vol. 1, 1913-1951* (Chicago: University of Chicago Press, 2003), p. 111, Table 3.6.

<sup>39</sup> F. A. Hayek, "The Fate of the Gold Standard," in Hayek, *Money, Capital, and Fluctuations: Early Essays*, ed. Roy McCloughry (Chicago: University of Chicago Press, 1984), p. 129.

<sup>40</sup> Joseph A. Schumpeter, *History of Economic Analysis*, New York: Oxford University Press, 1954, p. 846. For biographical and theoretical details see Roger Garrison, "Eugen von Böhm-Bawerk: Capital Interest, and Time," in Randall Holcombe, ed., *Fifteen Great Austrian Economists* (Auburn: Ludwig von Mises Institute, 1999, pp. 113-122, n. 1.

<sup>41</sup> Mises accepted this theory in 1912, but had backed away from it by 1924, and by the time of writing *Human Action* (1949) defended a pure time-preference theory of interest that explained interest-rate determination without reference to the superiority physical productivity of more time-consuming processes or to a wages-fund.

<sup>42</sup> For an overview of Wicksell's thought see Carl G. Uhr, *Economic Doctrines of Knut Wicksell* (Berkeley: University of California Press, 1960).

<sup>43</sup> Mises, "The Austrian Theory of the Trade Cycle," op. cit.

<sup>44</sup> For details see White, "Why Didn't Hayek Favor Laissez Faire in Banking?," op. cit.

<sup>45</sup> Mises, "The Austrian Theory of the Trade Cycle," op. cit., p. 1.

<sup>46</sup> *Ibid.*, pp. 1-2.

<sup>47</sup> For an interesting discussion of where Mises adopted and where he departed from Wicksell's analysis, see Riccardo Bellofiore, "Between Wicksell and Hayek: Mises' Theory of Money and Credit Revisited," *American Journal of Economics and Sociology* 57 (Oct. 1998), pp. 531-578.

<sup>48</sup> On the banking and business cycle theories underlying the Currency-Free Banking-Banking Schools debate see Lawrence H. White, *Free Banking in Britain*, 2<sup>nd</sup> ed. (London: Institute of Economic Affairs, 1995), ch. 4.

<sup>49</sup> Also known as "intermediate goods" or "means of production" or "inputs". These are the same goods that, according to Mises (see chapter 2), a socialist economy would be unable to allocate appropriately.

<sup>50</sup> Nicholas Kaldor, "Professor Hayek and the Concertina-Effect," *Economica* (New Series) 9 (Nov., 1942), p. 359.

<sup>51</sup> Nicholas Kaldor, "Capital Intensity and the Trade Cycle," *Economica* (New Series) 6 (Feb., 1939), p. 40.

<sup>52</sup> J. M. Keynes, "The Pure Theory of Money. A Reply to Dr. Hayek," *Economica* 34 (Nov. 1931), pp. 394. Bedlam was a London insane asylum.

<sup>53</sup> Quoted in Bruce Caldwell, "Introduction" to F. A. Hayek, *Contra Keynes and Cambridge (The Collected Works of F. A. Hayek, vol. 9)*, ed. Caldwell (Chicago: University of Chicago Press, 1995), p. 28. "Body-line bowling" was the unsportsmanlike practice (soon banned) notoriously used by the English cricket team in its 1932-33 Ashes Cup tour of Australia. It was the equivalent of repeatedly throwing beanballs in baseball. "Duello" is Italian for "duel".

<sup>54</sup> F. A. von Hayek, "A Rejoinder to Mr. Keynes," *Economica* 34 (Nov. 1931), pp. 398-403.

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- <sup>55</sup> Piero Sraffa, "Dr. Hayek on Money and Capital," *Economic Journal* 42 (March 1932), pp. 42-53.
- <sup>56</sup> F. A. von Hayek, "Money and Capital: A Reply," op. cit., pp. 237-249.
- <sup>57</sup> Hayek, *Profits, Interest, and Investment*, op. cit.
- <sup>58</sup> Here I draw on my Introduction to F. A. Hayek, *The Pure Theory of Capital*, ed. Lawrence H. White (Chicago: University of Chicago Press, 2007).
- <sup>59</sup> Gene Epstein, "Mr. Market [Interview with Milton Friedman]." *Hoover Digest*, no. 1 (1999). <http://www.hooverdigest.org/991/epstein.html>
- <sup>60</sup> *Commanding Heights* interview with Lord Robert Skidelsky, transcript at [http://www.pbs.org/wgbh/commandingheights/shared/minitext/int\\_robertskidelsky.html](http://www.pbs.org/wgbh/commandingheights/shared/minitext/int_robertskidelsky.html).
- <sup>61</sup> This section and the next draw heavily on Lawrence H. White, "Did Hayek and Robbins Deepen the Great Depression?," *Journal of Money, Credit, and Banking* 40 (June 2008), pp. 751-68.
- <sup>62</sup> Friedrich A. Hayek, *A Discussion with Friedrich A. von Hayek* (Washington, DC: American Enterprise Institute, 1975), p. 5, 12.
- <sup>63</sup> Murray N. Rothbard, *America's Great Depression* (Los Angeles: Nash, 1972), chs. 7-12.
- <sup>64</sup> See David Glasner, "The Real-Bills Doctrine in the Light of the Law of Reflux," *History of Political Economy*, *History of Political Economy* 24 (Fall 1992), pp. 867-94.
- <sup>65</sup> David Laidler, "Misconceptions About the Real Bills Doctrine: A Comment on Sargent and Wallace," *Journal of Political Economy* 92 (Feb. 1984), p. 153.
- <sup>66</sup> Barry Eichengreen, "The Keynesian Revolution and the Nominal Revolution: Was There a Paradigm Shift in Economic Policy in the 1930s?," UC Berkeley working paper (March 1999), p. 12. Fed 1923 Report as quoted by Thomas M. Humphrey, "The Real Bills Doctrine," *Federal Reserve Bank of Richmond Economic Review* 68 (1982), p. 11. For more on Miller's views see Richard H. Timberlake, Jr., "Gold Standards and the Real Bills Doctrine in U. S. Monetary Policy," *Independent Review* 11 (2007), esp. pp. 239-43. For further evidence of the Fed's adherence to the Real Bills Doctrine see Richard H. Timberlake, Jr., *Monetary Policy in the United States: An Intellectual and Institutional History* (Chicago: University of Chicago Press, 1993), pp. 259-83; David C. Wheelock, *The Strategy and Consistency of Federal Reserve Monetary Policy, 1924-1933* (Cambridge: Cambridge University Press, 1991), p. 111; Allan H. Meltzer, *A History of the Federal Reserve, Vol. 1: 1913-1951* (Chicago: University of Chicago Press, 2003), pp. 76, 138-39, 263-66, 322; and David Laidler, "Meltzer's History of the Federal Reserve," *Journal of Economic Literature* 41 (Dec. 2003), pp. 1259-63.
- <sup>67</sup> Hayek, *Monetary Theory and the Trade Cycle*, op. cit., pp. 179-80.