

# 3

## Speculative Manias

### **Rationality of markets**

The word 'mania' in the chapter title suggests a loss of touch with rationality, something close to mass hysteria. Economic history is replete with canal manias, railroad manias, joint stock company manias, real estate manias, and stock price manias. Economic theory is based on the assumption that men are rational. Since the rationality assumption that underlies economic theory does not appear to be consistent with these different manias, the two views must be reconciled. The thrust of this chapter is with investor demand for a particular type of asset or security while the next chapter focuses on the supply of credit and changes in the supply.

The 'rational expectations' assumption used in economic models is that investors react to changes in economic variables as if they are always fully aware of the long-term implications of these changes, either because they are clairvoyant or because they have Superman-like kryptonite vision. Thus the cliché that 'all the information is in the price' reflects the view that prices in each market react immediately and fully to every bit of news so that no 'money is left on the table.'

Contrast the rational expectations assumption with the adaptive expectations assumption that the values of certain variables in the future are extensions of these values in the recent past. Thus the cliché that 'the trend is your friend,' reflecting the view that if prices have been increasing they will continue to increase. Instead the thrust of the rational expectations view is that the prices that are anticipated next week and next month determine the prices that prevail today, in effect a backward-looking view from the future to the present. Thus the price of gold in the

spot market today is the anticipated price of gold at a distant future date discounted to the present by an appropriate interest rate, usually the interest rate on risk-free government securities. The price of the U.S. dollar in terms of the Canadian dollar in the foreign exchange market today is the anticipated price of the U.S. dollar in terms of the Canadian dollar for a distant future date discounted to the present by the difference between the U.S. and the Canadian interest rates. If a government reduces tax rates to stimulate consumption spending or investment spending, the conclusion of the rational expectations view is that the policy won't be successful because investors will immediately realize that a larger fiscal deficit today implies higher tax rates on their incomes tomorrow and so they will increase the amount they save in anticipation of the forthcoming increase in their tax bills.

What does it mean to say that investors are rational?<sup>1</sup> One assumption is that most investors behave rationally most of the time. A second is that all investors behave rationally most of the time. A third is that each and every participant in the markets has the same intelligence, the same information, the same purposes, and the same economic model in mind. A fourth is that all investors behave rationally all the time.

Each of these assumptions has different implications for the way that investors behave in financial markets. Obtaining agreement on the assumption that most investors behave rationally most of the time is easier than obtaining agreement on the assumption that each investor behaves rationally all of the time. Frequently the argument seems to be between two polar positions, one that holds that no investor is ever rational while the other asserts that all investors always are rational. Harry G. Johnson offered this description of the difference between an older group of economists and a younger group interested in international monetary reform:

The difference can be encapsulated in the proposition that whereas the older generation of economists is inclined to say 'the floating rate system does not work the way I expected, therefore the theory is wrong, the world is irrational and we can only regain rationality by returning to some fixed rate system to be achieved by cooperation among national governments' while the younger group is inclined to say 'the floating rate system is a system that should be expected to operate rationally, like most markets; if it does not seem to work rationally by my standards, my understanding of how it ought to work is probably defective; and I must work harder at the theory of

rational maximizing behavior and its empirical consequences if I am to achieve understanding.' This latter approach is the one that is being disseminated, and intellectually enforced, through the [younger] network.<sup>2</sup>

Rationality is thus an a priori assumption about the way the world should work rather than a description of the way the world has actually worked. The assumption that investors are rational in the long run is a useful hypothesis because it illuminates understanding of changes in prices in different markets; in the terminology of Karl Popper, it is a 'pregnant' hypothesis. Hence it is useful to assume that investors are rational in the long run and to analyze economic issues on the basis of this assumption.

One interpretation of the rationality assumption is that prices in a particular market today must be consistent with the prices in the same market one and two months from now and one and two years from now adjusted for the 'costs of storage'; otherwise there would be a profitable and relatively riskless arbitrage opportunity.

Ragnar Nurkse summarized his survey of changes in the foreign exchange values of the French franc and the German mark in the 1920s with the statement that speculation in the foreign exchange market had been destabilizing. Milton Friedman asserted in response that destabilizing speculation cannot occur in the foreign exchange market because any investors that bought as prices were increasing and sold as prices were declining 'would be buying high and selling low'; their continuing losses would lead them either to go out of business or to change their strategy. The Friedman view is that since in a Darwinian sense the destabilizing speculators would fail to survive, destabilizing speculation cannot occur.<sup>3</sup> One response might be that from time to time some investors may follow strategies that would lead to losses.

There have been many historic episodes of destabilizing speculation, although at times the language has been imprecise and at times possibly hyperbolic. Consider some of the phrases in the literature: *manias... insane land speculation... blind passion... financial orgies... frenzies... feverish speculation... epidemic desire to become rich quick... wishful thinking... intoxicated investors... turning a blind eye... people without ears to hear or eyes to see... investors living in a fool's paradise... easy credibility... overconfidence... overspeculation... overtrading... a raging appetite... a craze... a mad rush to expand.*

Fernand Braudel used the terms 'craze' and 'passion' when he discussed everyday life in Europe from the fifteenth to the eighteenth centuries,

largely in connection with consumption but also extended to spices, styles of dress, craving for knowledge and purchases of land.<sup>4</sup>

The principals in the London banking firm of Overend, Gurney, which crashed on Black Friday in May 1866, were said to be 'sapient nincompoops.'<sup>5</sup> 'These losses,' said Bagehot, 'were made in a manner so reckless and so foolish that one would think a child who had lent money in the City of London would have lent it better.'<sup>6</sup>

Clapham's description of the Baring firm in 1890 is understated in a characteristic British fashion: 'They had not considered these enterprises or the expected investors in them coolly or wisely enough [but had] gone far beyond the limits of prudence.'<sup>7</sup>

Consider Adam Smith's comment on the South Sea Bubble: 'They had an immense capital dividend among an immense number of proprietors. It was naturally to be expected, therefore, that folly, negligence, and profusion should prevail in the whole management of their affairs. The knavery and extravagance of their stock-jobbing operations are sufficiently known [as are] the negligence, profusion and malversation of the servants of the company.'<sup>8</sup>

And finally in this parade of classical economists a description by the usually restrained Alfred Marshall:

The evils of reckless trading are always apt to spread beyond the persons immediately concerned . . . when rumors attach to a bank's credit, they make a wild stampede to exchange any of its notes which they may hold; their trust has been ignorant, their distrust was ignorance and fierce. Such a rush often caused a bank to fail which might have paid them gradually. The failure of one caused distrust to rage around others and to bring down banks that were really solid; as a fire spreads from one wooden house to another until even fireproof buildings succumb to the blaze of a great conflagration.<sup>9</sup>

### **Rationality of the individual, irrationality of the market**

Manias are associated on occasion with general 'irrationality' or mob psychology. The relationship between rational individuals and an irrational group of individuals can be complex. A number of distinctions can be made. One assumption is mob psychology, a sort of 'group thinking' when virtually all of the participants in the market change their views at the same time and move as a 'herd.' Alternatively different individuals change their views about market developments at different stages

as part of a continuing process; most start rationally and then more of them lose contact with reality, gradually at first and then more quickly. A third possible case is that rationality differs among different groups of traders, investors, and speculators, and that an increasing number of individuals in these groups succumb to the hysteria as asset prices increase. A fourth case is that all the market participants succumb to the 'fallacy of composition,' the view that from time to time the behavior of the group of individuals differs from the sum of the behaviors of each of the individuals in the group. The fifth is that there is a failure of a market with rational expectations as to the *quality* of a reaction to a given stimulus to estimate the appropriate *quantity*, especially when there are lags between the stimulus and the reaction. Finally irrationality may exist because investors and individuals choose the wrong model, or fail to consider a particular and crucial bit of information, or suppress information that does not conform to the model that they have implicitly adopted. The irrationality of the gullible and greedy in succumbing to swindlers is discussed in a later chapter.<sup>10</sup>

Mob psychology or hysteria is well established as an occasional deviation from rational behavior. Some economic models highlight the demonstration effect, which leads the Smiths to spend more than their incomes—at least for a while—as they seek to keep up with the Joneses. Another is the Duesenberry effect: both the Smiths and the Joneses increase their consumption expenditure when their incomes increase and both are reluctant to reduce their consumption spending when their incomes decline. Politics has its 'bandwagon effects' when individuals back the most probable winners (or 'rats desert the sinking ship' when they turn from losers—though if the ship is really sinking, the rational rats leave). The French historian Gustave LeBon discussed this subject in *The Crowd*.<sup>11</sup> Charles MacKay in his discussion of the South Sea Bubble<sup>12</sup> mentioned the case of a banker who purchased £500 worth of South Sea stock in the third subscription list of August 1720 saying, 'When the rest of the world are mad, we must imitate them in some measure.'<sup>13</sup>

Hyman Minsky highlighted a mild form of this type of irrationality in his discussion of 'euphoria' in markets. In an earlier day, such waves of excessive optimism perhaps followed by excessive pessimism might have been tied to sunspots<sup>14</sup> or the path through the heavens of Venus or Mars. In Minsky's formulation these waves of optimism start with a 'displacement' or shock to some structural characteristics of the system, which leads to an increase in optimism of investors and business firms and of the banks as lenders. More confident expectations of a steady

stream of prosperity and of an increase in profits induce investors to buy riskier stocks. Banks make riskier loans in this more optimistic environment. The optimism increases and may become self-fulfilling until it evolves into a mania.

### **The 1970s surge in the price of gold**

On January 1, 1970, the market price of gold was less than \$40 an ounce, on December 31, 1979, the price was \$970. Between 1934 and 1970, the market price of gold had been linked to the U.S. gold parity of \$35 an ounce. Beginning in the early 1970s, the formal link between gold and the U.S. dollar was broken and gold seemingly became 'just another commodity' like petroleum or pork bellies or eggs, freely traded on one of the commodity exchanges. (Obviously gold had a very different history from these other commodities; very few books have been written about the monetary history of pork bellies or of eggs.) The decade of the 1970s was one of accelerating inflation although not in a linear way, the price of gold increased to \$200 an ounce in 1973 and then declined to \$110 and surged in the second half of the decade.

One of the clichés is that 'gold is a good inflation hedge;' for four hundred years the real price of gold or its purchasing power in terms of a market basket of commodities had been more or less 'constant' over the long run. In the 1970s, in contrast, the annual percentage increase in the market price of gold was many times greater than the annual percentage increase in the consumer price level. The prices of petroleum, copper, wheat, and most other primary commodities were increasing in this inflationary episode, but the price of gold increased much more rapidly.

At some stage in the late 1970s the market price of gold was increasing because the market price of gold was increasing. Investors were extrapolating from the increase in the market price from Monday to Tuesday to project the market price on Friday; they purchased gold on Wednesday in anticipation that they could sell at a higher price on Friday. The 'greater fool theory' may have been at work, some of the buyers of gold may have realized that the increase in price was a bubble and anticipated that they would be able to sell their gold at a profit before the bubble imploded.

At the end of the 1990s the market price of gold was a bit less than \$300 an ounce, and once again the cliché that gold is a good inflation hedge seemed valid; the price of gold had increased by a factor of fifteen since 1900 and the price of a market basket of U.S. goods had increased by about the same amount.

Two earlier alternative explanations for this unsober upswing were provided by Irving Fisher and by Knut Wicksell who emphasized that the real rate of interest was too low.<sup>15</sup> Consumer prices increase in economic

expansions and while interest rates increase, they increase less rapidly than the inflation rate so the real rate of interest declines. Lenders have 'money illusion' and ignore the decline in the real rate of interest. In contrast borrowers recognize that the real rate of interest has declined; they do not have money illusion. Rational investors buy more stocks or real estate in this environment of increases in anticipated profits and declines in real interest rates. (The Fisher and Wicksell explanations were effective descriptions of the changes in nominal and real interest rates in the 1970s.)

This model relies on the ad hoc assumption that two groups of market participants systematically differ in their susceptibility to money illusion.

Too low an interest rate is a special case of what is perhaps a wider phenomenon—the pricing of financial innovations. Initially these innovations may be underpriced as 'loss leaders' so they will be more readily accepted, but the low price also may lead to excess demand. Or undue risks may be taken by recent entrants in an industry as they reduce prices to increase their market share relative to those of their established competitors. One notable example is that of Jay Cooke, the last prominent banker of the early 1870s to back a railroad, the Northern Pacific.<sup>16</sup> Other examples include Rogers Caldwell in the municipal bond market of the late 1920s,<sup>17</sup> Bernard K. Marcus of the Bank of the United States in mortgages in the same era,<sup>18</sup> and Michele Sindona of the Franklin National Bank in the early 1970s.<sup>19</sup>

Speculation often develops in two stages. In the first, sober, stage households, firms and investors, respond to a shock in a limited and rational way; in the second, the anticipations of capital gains play an increasingly dominant role in their transactions. 'The first taste is for high interest, but that taste soon becomes secondary. There is a second appetite for large gains to be made by selling the principal.'<sup>20</sup> In the 1830s in the United States investors initially bought land to expand the area of the cultivation of high-priced cotton; thereafter they purchased land for the anticipated capital gains they would realize when they sold the land to others. In the 1850s farmers and planters both 'consumed' land and speculated in land. In ordinary times they bought more land than they cultivated as a hedge against the declining value of the acres they planted; in booms this more or less sound basis was discarded, and farms were heavily mortgaged to buy *more* land, which in turn was mortgaged so they could buy still more land to profit from anticipated increases in land prices.<sup>21</sup> The 1830s railway boom in Great

Britain also had two stages: the first prior to 1835 when the projects were not bubbles, and a second after 1835 when they were. In the first phase, shares were sold by promoters to local chambers of commerce, Quaker capitalists, and hard-headed Lancashire businessmen, both merchants and industrialists—that is, to men of substance who anticipated benefits from the construction of the railroads. These groups were in a position to meet both the initial 5 to 10 percent payment and any subsequent calls for payment as the construction progressed. In the second phase, professional company promoters—many of them rogues interested only in quick profits—tempted a different class of investors, including ladies and clergymen.<sup>22</sup> The same stages are observed for building sites in Vienna in the early 1870s; initially these sites were bought for construction and then later like speculative poker chips for profitable resale.<sup>23</sup> Ilse Mintz noted a two-stage process in the sale of foreign bonds in New York in the 1920s; these bonds were sound prior to 1924 and the Dawes loan (which touched off the boom) and inferior thereafter.<sup>24</sup> The loans to Mexico and Brazil in the early 1970s were based on the realistic assessments of the credit standing of the borrowers; thereafter the banks wanted to increase their loans to these borrowers and so their concern with the quality of the projects that were being financed declined.

Essentially there was a reversal between the objective and the process, and in the end the objective became the process. The lenders became so enthusiastic about the process that they failed to appreciate the end-game and provide an answer to the question of where the borrowers would get the cash to pay the interest if the lenders stopped providing them with the cash in the form of new loans. Initially the junk bond market may have been rational, but then the supply of junk bonds surged and the creditworthiness of the borrowers declined sharply.

The market in just-built and unfinished houses in southern California, sold from one person to another at ever-increasing prices with the help of an active market in second mortgages, peaked in 1981 and then collapsed, with price declines of 40 percent.<sup>25</sup> There was a condominium ‘craze’ in Boston in 1985 and 1986; 60 percent of the buyers intended to sell the units. The condo market turned soft in 1988,<sup>26</sup> in a pattern similar to the ‘flat craze’ in Chicago in 1881.<sup>27</sup> A similar boom and dip occurred in the apartment market in Chicago in 2003.

The analysis in terms of two stages suggests two groups of speculators, the insiders and the outsiders. The insiders destabilize by driving the price up and up and then sell at or near the top to the outsiders. The losses of the outsiders necessarily are equal to the gains of the insiders.



Johnson pointed out that for every destabilizing speculator there must be a stabilizing one.<sup>28</sup> But the professional insiders initially destabilize by exaggerating the upswings and the downswings; these insiders follow the mantra that the 'trend is my friend.' At one stage, these investors were known as 'tape watchers;' more recently they have been called 'momentum investors.' The outsider amateurs who buy high and sell low are the victims of euphoria that affects them late in the day. After they lose, they go back to their normal occupations to save for another splurge five or ten years in the future.

Although Larry Wimmer concluded that destabilizing speculation did not occur in the gold panic of 1869, the evidence is consistent with the hypothesis that Gould and Fisk first drove up the gold price and then sold at the top in a manner that is consistent with destabilizing speculation.<sup>29</sup> The information available to the two groups of speculators differed. In the early stage, Gould tried to persuade the U.S. government of the desirability of forcibly depreciating the U.S. dollar by driving up the 'agio' or premium on gold to increase grain prices, while the outsider speculators operated on the expectation derived from past performance that the U.S. government would seek to drive the agio down so that greenbacks would again be convertible into gold at the pre-Civil War parity. On September 16 the outsiders abandoned this expectation and adopted Gould's; they bought gold and the price went up. On September 22 Gould learned from his associate, President Grant's brother-in-law, that the outsiders had originally been right and that his plan was not going to be adopted; Gould then sold. Belatedly the outsiders saw they were wrong. The result was the Black Friday of September 23, 1869, when stock prices collapsed.

Another case that involves two sets of speculators, insiders, and outsiders, is the 'bucket shop.' This term has practically disappeared from the language since the Securities and Exchange Commission declared the practice illegal, but the men and women who run the boiler shops are the children of those who ran bucket shops in an earlier generation. Bucket shops are described in novels; a classic picture is given in Christina Stead's excellent *House of All Nations*.<sup>30</sup> The insiders in a bucket shop take orders from the public to buy and sell securities but do not execute these orders because they assume that the outsider's bet will prove to be wrong. And the bucket shop has the advantage of a hedge. If the outsiders should turn out to be right by 'buying low and selling high,' the bucket-shop operators decamp. In *House of All Nations*, Jules Bertillon in 1934 fled to Latvia; today the destination might be Brazil, Costa Rica, or Cuba.

Bucket shops evolved into boiler shops that hustled untutored investors with promises of quick sure-fire gains. The owners of the boiler shops had brought forth their own firms; initially they owned nearly all or all of the shares in the firm. Robert Brennan of First Jersey Securities owned and operated or was associated with a series of boiler shops; the names kept changing but the scam was always the same. They used their buddies to hustle the increases in the prices of the stocks; once the stock prices were increasing, they used telemarketing to sell the stocks to the dentists and the undertakers in all the small towns of America. They managed to increase the prices of the stock day by day until most of the shares in the firms had been sold to the gullible investors who were congratulating themselves on how much money they had made—on paper. When one or several of these investors tried to sell to realize their profits, they found there were no buyers.

For a further example of an outside destabilizing speculator who bought high and sold low, there is the story of the great Master of the Mint, Isaac Newton, a world-class scientist. In the spring of 1720 he stated: 'I can calculate the motions of the heavenly bodies, but not the madness of people.' On April 20, accordingly, he sold his shares in the South Sea Company at a 100 percent profit of £7000. Later an infection from the mania gripping the world that spring and summer caused him to buy a larger number of shares near the market top and he lost £20,000. In the irrational habit of so many who experience financial disaster, he put it out of his mind and never for the rest of his life could he bear to hear the name South Sea.<sup>31</sup>

Yet euphoric speculation with insiders and outsiders may also lead to manias and panics when the behavior of every participant seems rational in itself. Consider the fallacy of composition when the whole differs from the sum of its parts. The action of each individual is rational—or would be if many other individuals did not behave in the same way. If an investor is quick enough to get in and out ahead of the others, he may do well, as insiders generally do. Carswell quotes a rational participant on the South Sea Bubble:

The additional rise above the true capital will only be imaginary; one added to one, by any stretch of vulgar arithmetic will never make three and a half, consequently all fictitious value must be a loss to some person or other first or last. The only way to prevent it to oneself must be to sell out betimes, and so let the Devil take the hindmost.<sup>32</sup>

'Devil take the hindmost,' '*sauve qui pent*,' '*die Letzen beissen die Runde*,' ('dogs bite the laggards'), and the like are recipes for a panic. The analogy is someone yelling fire in a crowded theater. The chain letter is another analogy; because the chain cannot expand infinitely, only a few investors can sell before the prices start declining. It is rational for an individual to participate in the early stages of the chain and to believe that all others will think they are rational too.

Closely akin to the fallacy of composition is the standard 'cobweb' demonstration in elementary economics in which demand and supply are linked with a lag rather than simultaneously, as in an auction that clears the market at each moment of time. 'Displacement' consists of events that change the situation, extend the horizon, and alter expectations. In such cases, otherwise rational expectations of some investors fail to take cognizance of the strength of similar responses by others. When there appears to be a shortage of physicists or mathematicians or schoolteachers many young people enter graduate school to study for one of these professions; by the time they have finished their studies, there may be an 'excess supply' of individuals trained for careers in these fields. After the belated surge in supply, job opportunities suddenly become scarce. But the excess supply becomes known only after the gestation period of study. Responses to shortages of coffee, sugar, cotton, or some other commodity may be similarly excessive. The price increases sharply in response to the initial surge in demand and then declines even more rapidly as the new supply becomes available after an extended investment period.

The history of manias and panics is replete with examples of destabilizing 'cobweb' responses to exogenous shocks. When Brazil became open as a market for British goods in 1808, more Manchester goods were sent to the market in a few weeks than had been consumed there in the previous twenty years, including ice skates and warming pans that, as Clapham noted, proved to be the accepted illustration of commercial madness among nineteenth-century economists.<sup>33</sup> In the 1820s, independence for the Spanish colonies triggered a boom in lending to new Latin American governments, investing in mining shares, and exporting to the area; the surge in investment proved excessive. 'The demand is sudden, and as suddenly stops. But too many have acted as if it were likely to continue.'<sup>34</sup>

In the 1830s the cobweb fluctuation had a two-year periodicity. 'Each merchant would be ignorant of the amount other merchants would be

bringing forward by the time his own merchandise was on the market.<sup>35</sup> The same was true in the United States in the 1850s following the discovery of gold in California:

The extraordinary and undue expectations entertained not only in the United States but in this country [Britain] as to the capability of California—after the 1849 gold discovery—unquestionably aided in multiplying and extending the disaster consequent on the American crisis. When it was again and again stated, both in London and in Boston, in regard to all shipments to San Francisco, that six, or at most eight, moderately-sized or assorted cargos per month were all that were required or could be consumed; instead of that eastern shippers dispatch twelve to fifteen first-class ships a month, fully laden.<sup>36</sup>

A rather far-fetched line of reasoning led from the phylloxera that ruined many vineyards and set back wine production in France to the 1880s boom in brewery shares in Great Britain, as one after another, private breweries sold shares to investors for the first time in the public-companies mania. Among them, Arthur Guinness and Co. was bought for £1.7 million and sold for £3.2 million.<sup>37</sup> ‘The success of the issue was like the firing of a starting pistol; by November 1890, 86 other brewery companies had issued new shares to the public for the first time.’<sup>38</sup>

There was a boom in Great Britain at the end of World War I when businessmen thought victory would ensure the elimination of German competition in coal, steel, shipping, and cotton textiles. Prices of industrial assets, ships, equities, and even houses increased. Companies were merged; many of the mergers were financed with large amounts of credit. Then sober realization set in from the summer of 1920 to the coal strike of the second quarter of 1921.<sup>39</sup>

Three more cases are on the borderline of rationality. The first deals with target workers, so to speak—individuals who get used to a certain level of income and find it difficult to adjust their spending downward when their incomes decline. In consumption theory, this is the Duesenberry effect already referred to. In labor supply, it constitutes the ‘backward-bending supply curve,’ which suggests that higher wages or salaries produce not more work but less and that the way to increase effort is to lower the wage per unit of time. In economic history books, this

principle is known as 'John Bull can stand many things but he cannot stand 2 percent.' John Stuart Mill put it thus:

Such vicissitudes, beginning with irrational speculation and ending with a commercial crisis, have not hitherto become less frequent or less violent with the growth of capital and the extension of industry . . . Rather they may be said to have become more so: in consequence, it is often said, of increased competition; but, as I prefer to say, of a low rate of profit and interest, which makes the capitalists dissatisfied with the ordinary course of safe mercantile gains.<sup>40</sup>

In France at the end of the Restoration and the beginning of the July Monarchy—that is, between 1826 and 1832—speculation was rife despite the 'distrust that the French always feel toward ill-gotten money.' Landowners earned 2.25 to 3.75 percent on their assets; industrialists tried to do better than the long-run interest rate on their fixed investments by 2 to 4 percentage points and earn 7 to 9 percent. Merchants and speculators in raw materials sought returns in the range of 20 to 25 percent on their investments.<sup>41</sup> Charles Wilson noted that earlier the Dutch were converted from merchants into bankers (accused of idleness and greed); they developed habits of speculation because of the decline in the rate of interest in Amsterdam to 2.5 and 3 percent.<sup>42</sup> Large-scale conversions of public debt in 1822 and 1824 and again in 1888 led to a decline in the rate of interest and induced British investors to buy more foreign securities.<sup>43</sup> Andréadès observed that 'When interest goes down, the English commercial world, unable to reduce its mode of life, deserts its usual business in favour of the more profitable, but on that very account more risky undertakings . . . speculation leads to disaster and ultimately must be borne by the central bank.'<sup>44</sup>

The boom in Third World bank-syndicated loans in the 1970s followed a sharp decline in interest rates on U.S. dollar securities in the spring of 1970 as the Federal Reserve adopted a more expansive policy. Banks were highly liquid and looked for attractive borrowers which they found in Third World governments and government-owned firms, mostly in Latin America. The 1960s had been a decade of accelerating internationalization for the major U.S. banks and they had rapidly increased the numbers of their foreign branches. Because of the sharp increase in commodity prices, nominal incomes and real incomes in Mexico, Brazil, and most other developing countries were increasing at above-trend rates. Commodity prices declined sharply in the early 1980s

in response to the surge in U.S. interest rates, and then nominal and real incomes declined in the developing countries. Should the banks have foreseen that the decline in commodity prices was inevitable?

The second borderline case involves hanging on in the hope of some improvement, or failing to take a specific type of action when changes in circumstances occur. On the first score, note the failures of the New York Warehouse and Security Company, of Kenyon, Cox & Co., and of Jay Cooke and Co. on September 8, 13, and 18, 1873, because of loans made to railroads (respectively, the Missouri, Kansas and Texas, the Canada Southern, and the Northern Pacific) with which they were associated. These railroads were unable to sell bonds to obtain the funds they needed to complete construction that was already under way because Berlin and Vienna had stopped lending to the United States.<sup>45</sup> Similarly, when U.S. long-term lending to Germany stopped in 1928, as U.S. investors turned to stocks and stopped buying bonds, New York banks and investment houses continued to make short-term loans to German borrowers. When riding a tiger or holding a bear by the tail, it seems rational to hang on—at least for a while.

For an error of omission, note the plight of Hamburg banks that had made large loans to Swedish banks during the Crimean War that were engaged in financing smuggled goods into Russia; the Hamburg banks failed to cancel these loans when peace came. The Swedes used the money to speculate in shipbuilding, factories, and mining, which helped embroil Hamburg in the world crisis of 1857.<sup>46</sup>

The third borderline case is to have a rational model in mind, but the wrong one. The most famous example in another field is the French 'Maginot Line psychology,' though this may be thought of less as a case of irrational expectations than one of an undistributed lag. "When a man's vision is fixed on one thing," thought Ponzi, "he might as well be blind".<sup>47</sup> Or Bagehot on Malthus: 'Scarcely any man who has evolved a striking and original conception ever gets rid of it.'<sup>48</sup> In the 1760s, Hamburg merchants were not hurt by the fall in commodity prices until the end of the Seven Years' War. Thus in 1799 while the Napoleonic Wars were continuing they were unprepared for the decline in prices that came with penetration of the blockade of Napoleon's 1798 Continental system.<sup>49</sup> Or take the French bankers and industrialists who formed the copper ring in 1888, patterned after the cartel movement in iron and steel, steel rails, coal, and sugar in the early part of the decade, attracted by the successes of the diamond syndicate in South Africa and of the Rothschilds' mercury monopoly in Spain. (Many economists and

analysts extrapolated from the apparent success of the Organization of Petroleum Exporting Countries in increasing the price of petroleum in the 1970s to assume that successful price fixing cartels would reduce the output of practically every other raw material and foodstuff and lead to much higher prices for these products.) By 1890 the French syndicate owned 60,000 tons of high-priced copper plus contracts to buy more; the older mines were reworked and firms began to process scrap while the copper price was declining rapidly. The collapse of the copper price from £80 a ton to £38 a ton in 1889 almost took with it the Comptoir d'Escompte, which was saved by an advance of 140 million francs from the Bank of France, reluctantly guaranteed by the Paris banks.<sup>50</sup>

Financial innovation in the form of deregulation or liberalization has often been a shock. In the early 1970s Ronald McKinnon led an intellectual attack on 'financial repression,' that is, the segmentation of financial markets in developing countries that led to preferential treatment of government borrowers, borrowers that were involved in foreign trade, and large firms as borrowers.<sup>51</sup> The message appealed particularly to Latin American countries already influenced by the Chicago doctrine of liberalism. A number of countries deregulated their financial systems, which was followed by a rapid growth of new banks and a rapid growth of credit, inflation, and then the collapse of some of the new banks.<sup>52</sup> McKinnon felt that the lesson from this debacle was that the several steps in the process of deregulation should be staged carefully.<sup>53</sup>

The same questions surfaced again in Poland and in the former Soviet Union in the 1980s and early 1990s in fierce debates over whether the shift from command economies to market economies should be carried through rapidly or slowly. The success of a transition from a command economy seems to depend on the extent to which individuals in the socialist economy remember the institutional background of its early capitalism before it turned socialist. The memory of the market economy was far greater in Poland than in Russia; long years of socialism and corruption had eradicated the memory in Russia. Such memory is more important to transitional success than the speed of decontrols and of the privatization of state monopolies.

#### **Charlie Ponzi was alive and well and living in Tirana**

The transition from the command economies to the market economies in what had been Eastern Europe in the early 1990s meant that the financial structures were no longer regulated. Entrepreneurs—some of them former

members of the army in Albania—started firms that promised high rates of return, often 30 percent a month. The public in these countries had accumulated lots of currency and lots of deposits in the state-owned banks; the interest rates on these deposits were extremely low. So the public was attracted to the high rates of returns promised by these newly established financial institutions. Competition among the several different ‘banks’ kept the promised interest rates high.

Some Albanians sold their homes to get the cash to buy these bank deposits and then rented the same properties from the buyers; the ‘interest income’ on their deposits was much higher than the rent they had to pay for the same homes. Often the buyers of the apartments were the same entrepreneurs who owned and managed the deposit banks. Albanians in its diaspora sent money from New York and Chicago and Frankfurt to their relatives in Tirana to be deposited in these new institutions. Some Albanians stopped working because the interest income on their deposits was so much higher than their wages and salaries.

Alas it was too good to be true and it wasn’t.

One purely irrational case involves a society that pins its hopes on some outstanding event of limited relevance to its current economic circumstances and another is when a society ignores evidence that it would prefer not to think about. Many Austrian enterprises had invested extensively in anticipation of the increase in business activity that would follow from the opening of the World Exhibition in Vienna on May 1, 1873; their liquid liabilities greatly exceeded their liquid assets and so they had acute financial distress. The objective of these world’s fairs and exhibitions is to increase business activity, so there is significant investment in facilities designed to accommodate the attendees at the fairs. The credit at banks was stretched to the limit; a move from commodities, land, shares, and debt back into money was under way and the chain of accommodation bills was extended as far as it would go. Nonetheless the banks and the firms hung on, waiting for the exhibition to open, because they thought or at least hoped that the increase in sales would save the situation. When the exhibition opened and the increase in sales was disappointing, on May 5 and 6 the market collapsed.<sup>54</sup>

As an illustration of repression of contradictory evidence—the cognitive-dissonance case—consider J.W. Beyen’s analysis of the German failure to restrict short-term borrowing from abroad at the end of the 1920s. He suggested that the dangers were not faced, even by Schacht, the German finance minister, and added: ‘It would not have been the first nor the last time . . . that consciousness was being “repressed.”’<sup>55</sup>



These examples suggest that despite the general usefulness of the assumption of rationality, markets have on occasions—infrequent occasions—acted in ways that were irrational even when each participant in the market believed he or she was acting rationally.

## Displacements

A displacement is an outside event or shock that changes horizons, expectations, anticipated profit opportunities, behavior—‘some sudden advice many times unexpected.’<sup>56</sup> A surge in the oil price is a displacement. An unanticipated devaluation is another displacement—although most devaluations have been anticipated. The shock must be sufficiently large to have an impact on the economic outlook. Each day’s events produce some changes in outlook, but few are significant enough to qualify as displacements.

War is a major displacement. Some crises occur immediately at the beginning or end of a war, or soon enough after the end to permit a few expectations to be falsified. For beginnings, the most notable is the crisis of August 1914. The displacements at the end of wars include the crises of 1713, 1763, 1783, 1816, 1857, 1864, 1873, and 1920. Moreover there have been an impressive series of crises seven to ten years after the end of a war, long enough for expectations formed at the end of the original crisis to be falsified; these included 1720, 1772, 1792, 1825, 1873 in the United States (if it be connected to the Civil War), and 1929.

Far-reaching political changes may also jar the system and change expectations. The Glorious Revolution of 1688 gave rise to a boom in company promotion. By 1695 there were 140 joint stock companies with a total capital of £4.5 million, more than 80 percent had been formed in the previous seven years. By 1717 total capitalization had reached £21 million.<sup>57</sup> In July 1720 the Bubble Act forbade formation of new joint-stock companies without explicit approval of parliament, a limitation that lasted until 1856. Although this regulation has normally been interpreted as a reaction against the South Sea Company speculation, Carswell asserts that it was undertaken in support of the South Sea Company, as king and parliament sought to repress the development of rival companies that might attract cash that was intensely needed by the South Sea promoters as the bubble expanded.<sup>58</sup>

The events of the French Revolution, Terror, Directorate, Consulate, and Empire, along with incidents of the Napoleonic Wars themselves, set in motion large-scale specie movements in 1792–1793 and 1797 and

opening and closing markets in Europe and elsewhere for British and colonial goods. Further political events of the kind in France were the Restoration (1815), the July Monarchy (1830), the February 1848 revolution, and the Second Empire (1852). The Sepoy Mutiny in India in May 1857, followed by a Hindustan military revolution, contributed to the distress of London financial markets.<sup>59</sup> These events were a precedent for the Invergordon disorder of September 1931, when a contingent of British sailors came close to striking over reductions in pay decreed by the new national government. Continental Europeans interpreted this response as a mutiny on the part of one great British institution, the navy, and this interpretation contributed to the British decision to stop pegging the pound to gold.<sup>60</sup>

War, revolution, restoration, change of regime, and mutiny come largely from outside the system. Monetary and financial displacements are more difficult to describe as exogenous. But maladroit recoinage, tampering with gold/silver ratios under bimetallism, conversions undertaken to economize on government revenue that unexpectedly divert investor attention to other avenues, new lending that proves successful beyond all anticipation—these can also be regarded as displacements.

*The Kipper- und Wipperzeit* of 1619–1623 (noted earlier) got its name from the action of money-changers who took the debased coins that were coming from the rising number of princely mints and rigged their scales as they sought to exchange bad money for good with naive peasants, shopkeepers, and craftsmen. Rapidly rising debasement spread from state to state until the coins used in daily transactions became worthless.<sup>61</sup>

Two later German recoinages provide a study in contrast. In 1763, Frederick II of Prussia bought silver in Amsterdam on credit to provide for a new coinage to replace that which had been debased during the Seven Years' War. He withdrew the old debased money from circulation before the new money was issued, which precipitated a deflationary crisis and the collapse of a chain of discounted bills.<sup>62</sup> More than 100 years later, after the Franco-Prussian indemnity, the German authorities issued new money but this time before the old money was withdrawn to save on their interest payments. In three years the circulation of coins rose threefold from 254 million thalers (762 million marks). The result was inflation.<sup>63</sup>

The crisis of 1893 in the United States, arising from the threat to gold convertibility from the Sherman Silver Act of 1890, has already been noted. So have the British debt conversions of 1822, 1824, 1888, and 1932, although the last was associated with a boom in housing that

did not lead to crisis. In France, conversion of the 5 percent *rente* was discussed after 1823 as the money supply expanded and the rate of interest would have fallen had investors not been reluctant to buy *rentes* at a premium. Each of three bankers had a different idea of the purpose of the conversion: Rothschild wanted to sell more *rentes*; Greffuhle (and Ouvrard) hoped to attract investors into canals while Laffitte wanted to ensure the development of industry. In the event, political obstacles prevented passage of the necessary legislation, and the market finally gave up its objection to maintaining the *rente* at a premium. This sharp decline in interest rates touched off speculation.<sup>64</sup> Canals were built by the government with private money,<sup>65</sup> and the faint glow of a railroad boom could be seen in France along the Loire, the Rhône, and the Seine. But the main object of speculation was building in and around the major cities—Paris, Mulhouse, Lyons, Marseilles, Le Havre.<sup>66</sup> Honoré de Balzac's novel *César Birotteau* was inspired by this experience. The novel, written in 1830, recounted the doleful story of a perfumier who was enticed into buying building lots in the vicinity of the Madeleine on borrowed money for 'one quarter of the value they were sure to have in three years.'<sup>67</sup>

The successes of loans in recycling reparations or indemnities after the Napoleonic and Franco-Prussian wars and World War I have been mentioned. Any surprising success of a security issue, with a large multiple oversubscription and a quick premium for subscribers, attracts borrowers, lenders, and especially investment bankers. The Baring loan of 1819—the first important foreign loan contracted by a British bank<sup>68</sup>—led quickly to a series of issues for France, Prussia, Austria, and, later, after independence, the countries that had been Spanish colonies. The Thiers *rente* made French banking houses salivate in the hope of foreign loans, a hunger that received a further fillip from the 1888 conversion loan for czarist Russia that bailed out German investors and sent French investors down a trail that was to end, after revolution in 1917, with a whimper rather than a bang. The Dawes loan in 1924 opened the eyes of American investors to the romance of buying foreign securities—at least for five years. The Thiers *rente* was oversubscribed fourteen times, and the Dawes loan eleven. Far more important than the size of the multiple, however, was its relation to expectation. Rosenberg described the three French loans of 1854 and 1855 as sensational, since they were oversubscribed almost two to one (468 million francs on an offering of 250 million), four to one (2,175 million francs for an issue of 500 million), and five to one (3,653 million against 750 million). In

Austria and Germany, however, when the speculative boom of the 1850s was under way, the Credit Anstalt opening stock sale was oversubscribed 43 times, largely by people who had stood in line all night; and when the Brunswick Bank sought 2 million thalers in May 1853, it was offered 112 times that amount in three hours.<sup>69</sup>

Among major recent displacements, as noted earlier, have been deregulation of bank and financial institutions; such innovations as derivatives (which existed earlier but only on a modest scale); mutual and hedge funds, offering new opportunities to acquire wealth, with however the risk of loss; REITs (Real Estate Investment Trusts); bank flotation of loans and mortgages as marketable securities; and initial public offerings (IPOs) of private companies.

The deregulation of financial institutions was a major contributory factor to the asset price bubble in Japan in the 1980s and especially the second half of that decade. Each Japanese bank was keenly interested in its position on the hit parade in terms of assets or deposits; each wanted to move to a higher position on the hit parade ladder—which meant that each had to ‘grow its loans’ more rapidly than the banks that were higher in the charts.

The technological revolution in the 1920s—the sharp increase in automobile production, the electrification of much of America, the rapid expansion of the telephone system, the increase in the number of movie theaters, and the beginning of radio—was a major shock. Investment surged. Similarly in the 1990s, especially in the second half of the decade, there was a major technological information revolution. The venture capital firms, especially those based in the San Francisco Bay area, were eager suppliers of finance to many of the engineers who had ideas. Then at a later stage these firms received ‘mezzanine financing.’ The next stage was that the firms had an initial public offering (IPO) arranged by one of the major investment banks like Merrill Lynch or Morgan Stanley or Credit Swiss First Boston. The investment banks would arrange ‘road shows’ for these firms as they were about to go public; the entrepreneurs would visit the mutual funds and the pension funds and the managers of other pools of cash. Based on the demand, the investment banks would price the shares at \$19 or \$23 or \$31 and perhaps 20 percent of the firms’ outstanding shares would be sold. Often the price of the shares at the end of the first day’s trading would be three or four times the IPO price.

The ‘pop’ in the share price on the first day’s trading was an advertisement that stock prices only increase. During the late 1990s an extremely high proportion of new stock issues experienced these large price pops

on the first day of trading. The price pops encouraged lots of new stock offerings.

**'Dow at 36,000,' 'Dow at 40,000,' 'Dow at 100,000'\***

Three books with nearly identical titles were published in 1999. Their themes were also almost identical—if interest rates remained low and corporate earnings continued to increase, then eventually the Dow Jones index of stock prices would reach much higher levels than ever before. The logic was irrefutable, more or less an extension of the Archimedes principle that he could move the world if he had a large enough lever. In the long run the level of stock prices reflects three factors: the rate of growth of GDP, the profit share of GDP and the relation of stock prices to corporate earnings or the price–earnings ratio. The profit share of U.S. GDP has been remarkably constant in the long run at about 8 percent and the price–earnings ratio has averaged about 18.

Investors continually choose between buying bonds and buying stocks. The interest rate on bonds has averaged about 5 percent; the earnings yield on bonds, the reciprocal of the interest rate, is thus 20.

Those who forecast the Dow at 36,000 believed that the price–earnings ratio should be much higher because stocks were no more risky than bonds.

\*James K. Glassman and Kevin A. Hassett, *Dow 36,000: the New Strategy for Profiting from the Coming Rise in the Stock Market* (Random House, 1999); David Elias, *Dow 40,000: Strategies for Profiting from the Greatest Bull Market in History* (McGraw-Hill, 1999); Charles W. Kadlec, *Dow 100,000: Fact or Fiction* (Prentice Hall, 1999).

## Objects of speculation

In the last several decades of the twentieth-century investors speculated primarily in real estate or stocks; in earlier periods the objects of speculation were more diverse. A stylized table of cycles is presented in the Appendix. The list shows the tendency for these objects to move from a few favored items at the beginning of our period to a wide variety of commodities and other assets and instruments at the end. The list is partial but suggestive.

How likely is it that a displacement will lead to a shock that induces individuals to invest for capital gains and especially capital gains in the near future? (Assume that destabilizing speculation can occur in a world of individuals whom it is convenient and fruitful to consider as normally rational. Then assume this world is disturbed by a shock

largely from outside the system, giving rise to prospects that individuals misjudge, either for themselves or for others.) There are many shocks: only a relatively small proportion of shocks lead to a speculative mania.

One question is whether two or more objects of speculation such as real estate and stock are likely to be involved before 'overtrading' reaches sufficient dimensions to result in crisis. Consider a few occasions when there seem to have been two or more objects.

The 1720 South Sea and Mississippi bubbles were related, and stoked by monetary expansion in the two countries that supported a high head of speculative steam. Speculation starting in the securities of the South Sea Company and the Sword Blade Bank in England and in those of the Mississippi Company and John Law's *banques* in France spread rapidly to other ventures and to commodities and land; many of these other ventures were swindles. The South Sea Company was brought down by its attempt to suppress rival speculations, bringing proceedings under the Bubble Act of June 1720 against York Buildings, Lustrings, and Welsh Copper. The effort boomeranged.<sup>70</sup> The spread of speculation from one object to another, to generalize the rise of prices, occurred because the speculators that sold South Sea stock when prices were approaching their peak purchased banks and insurance stocks and country houses.<sup>71</sup> So closely linked were the several markets that in time the price of land began to move with the South Sea Bubble quotations.<sup>72</sup> In France land prices rose in the fall of 1719 as speculators started to take their profits from the Mississippi Bubble.<sup>73</sup>

The 1763 boom was based exclusively on government war expenditure and its finance through chains of discount bills. The DeNeufville Brothers, whose failure set off the panic, sold 'commodities, ships, and securities like so many Dutch firms,'<sup>74</sup> with hundreds of thousands of florins in acceptance liabilities against which they rarely kept more than a few thousand guilders in cash reserves. Some contribution to the downturn in business may have been brought on by an unparalleled drought in England in 1762, with a shortage of hay and scarcities of meat, butter, and cheese.<sup>75</sup>

The crisis of 1772 was precipitated by speculation in Amsterdam and London in the stock of the East India Company and by the collapse of the Ayr Bank (Douglas, Heron & Co.). Numerous complex details are involved, including the political reverses of the East India Company and restriction on its credit by the Bank of England; the practice of the thrusting new Ayr Bank (which was left bad loans by the established banks) in borrowing from London when its acceptances came due; and the flight

in July 1772 of Alexander Fordyce, who had lost his firm's money selling East India Company stock prematurely. When the stock actually fell in the fall of the year, Clifford & Co., the Dutch bank that had headed a syndicate trying to push the price up, failed. These phenomena seem superficial, however. Heavy investment in Britain in houses, turnpikes, canals, and other public works had put a strain on resources and unleashed the excess credit.<sup>76</sup> One source relates the fall in coffee prices beginning in 1770 to the financial crisis of 1772–1773,<sup>77</sup> but this is not mentioned by Wilson, the standard source, or by Ashton, Clapham, or Buist.<sup>78</sup>

In 1793 there were several causes—country banks, canals, the Reign of Terror—that stimulated a flow of funds to Great Britain, as well as bad harvests. In 1799 there was one cause, the tightening and loosening of the blockade. Contrariwise, the crisis of 1809–1810 is said to have had 'two separate causes: a reaction from the speculation in South America; and a loosening and then tightening of the continental blockade.'<sup>79</sup> In 1815–1816 came a postwar boom in exports to Europe and the United States that exceeded all possibility of sales, plus a fall in the price of wheat. Canals and South American government bonds and mines combined in 1825; British exports, cotton, land sales in the United States, and the beginning of the railroad mania contributed to the crisis in the mid-1830s. The crisis of 1847 had as its cause the railway mania, the potato disease, a wheat crop failure one year and a bumper crop the next, followed by revolution in Europe.

Thus in most of the significant crises at least two objects of speculation were involved and at least two markets. Just as the national markets were connected, so the speculation was likely to be connected by the underlying credit conditions. But when a crisis like that of 1847 arises from objects as disparate as railroads and wheat, there is some basis for suggesting that the crisis is accidental in origin unless the monetary weakness that feeds it is systematic.

In Japan and in the Asian countries, bubbles in real estate and stocks have generally occurred together. In some countries, especially small countries, the market value of real estate companies is a relatively high proportion of the market value of all stocks as a group. When real estate prices increase, the value of the assets owned by real estate companies increases, and the market value of the real estate companies is likely to increase. Those investors who have sold the real estate stocks have cash to invest and much of their cash is likely to be invested in stocks of firms not involved in the real estate business. Moreover when the real estate prices increase, then the construction business is likely to boom and the

market value of the construction companies is likely to increase. The bank loan losses are likely to be below trend at a time when real estate prices are increasing. And of course the symbiotic relationship is symmetric; when real estate prices decline, stock prices are likely to decline.

### **National differences in speculative temperament**

One suggestion is that investors in some countries are more likely to speculate than those in other countries. Despite Ruth Benedict's distinction between cultures with Apollonian (balancing) and those with Dionysian (orgiastic) temperaments,<sup>80</sup> the proposition is dubious. And despite this implausibility, the opinion among historians seems general that the Brabanters had a strong gambling temperament in the sixteenth century, and that those tens of thousands who migrated to the United Provinces after the sack of Antwerp in November 1576 and its devastating siege in 1585 took it with them.<sup>81</sup> In the Dutch Republic, the gambling instinct of bankers, investors, and even common folk existed in great tension with Calvin and Lutheran frugality and abstemiousness.<sup>82</sup> There may then yet be something to the notion that banking institutions give more play to speculation in one country than in another. Juglar, for example, claims the French crises in the eighteenth century were less abrupt and less violent than those of Great Britain because (after the John Law affair) credit in France was less used and less abused.<sup>83</sup> A different view ascribes French experience to a severe bankruptcy law:

Whether by the education forces of law and established institutions, or by tradition, a high standard of business honesty prevails in France. The act of sons in toiling for years to pay the debts of their fathers, and of notaries in paying for the defalcations of one of their number, for the sake of the profession, although without personal association with him, indicates a standard of compliance with business obligations which cannot be without influence upon the material prosperity of a people. It may be surprising that the nation whose soldiers are so noted for dash in war should furnish financiers and business men who are the embodiment of conservatism in their methods, but such is clearly the case.

This same author goes on to say: 'England is the country in which a spirit of adventure and speculation has done most to promote crises and depressions.'<sup>84</sup>



One historian has suggested that mining and sheep grazing contributed to a love of gambling, and that Australians, starting with the gold discoveries of 1851–1852, developed a particular love of gambling, expressed both through horse racing and speculation in land.<sup>85</sup>

A common view is that the United States is ‘the classic home of commercial and financial panics,’ presumably because of wildcat banking.<sup>86</sup> This was observed in the 1830s by Michel Chevalier who contrasted French moderation with American speculation (but who believed, however, that the latter was a stimulus to the production of canals, railroads, roads, factories, and villages).<sup>87</sup> Letter 25 of his letters from America to France is devoted entirely to a discussion of speculation: ‘All the world speculates and it speculates on everything. From Maine to the Red River (in Arkansas) the United States has become an immense Rue Quincampoix [the Wall Street of the Mississippi Bubble].’<sup>88</sup> Partly the origins lie in permissive institutions. But it is easy to find abundant and contradictory views on the demand side for other countries as well. ‘The French nation is prudent and economical, the English nation is enterprising and speculative.’<sup>89</sup> ‘France has not shown proofs of prudence equal to those of Scotland; its nerves are extremely susceptible, impressionable in matters of credit.’<sup>90</sup> ‘The character of this nation [Britain] is in carrying everything to excess... virtue, vice.’<sup>91</sup> After 1866, a new arrogance was said to have taken hold of the Germans, but they surpassed the French only in ‘stock-market swindling and speculation horrors.’<sup>92</sup> Morgenstern finds ten panics in France, exceeding by two even the United States, which is ‘not surprising, given the unstable character of French politics.’<sup>93</sup> (To be sure, this addresses displacements rather than love of speculation.) Contrast, however, the opinion of a French financier who claims that ‘the French love money not for the possibilities of action which it opens, but for the income it assures.’<sup>94</sup> Or consider two views, at the level of a Harvard–Yale debate, from a fictional Frenchman and an Englishman in 1931:

WILLIAM BERTILLION: England’s such a Christmas tree for sharepushers.

Noble lords will sit on the board of any company for a couple of quid a sitting. And the public. Loco or idiotic. God, I’ve never heard of such people, except perhaps some peasants in Bessarabia, or the niggers in the Cameroons, who believe in what they believe in. Magic. Put up any sort of business that sounds utterly impossible and they gulp it down.<sup>95</sup>

STEWART: England's the world's banker. Never failed yet, never failed yet. She keeps her word, that's why . . . None of this—none of this speculation you get in the American stock market. Every Tom, Dick and Harry trying to make a pile-like in France.<sup>96</sup>

It's a stand-off. The speculative temperament may differ among countries. Levels of speculation may also differ from time to time for a given country, say, in moods of national elation or depression.

# 4

## Fueling the Flames: The Expansion of Credit

Axiom number one. Inflation depends on the growth of money.  
Axiom number two. Asset price bubbles depend on the growth of credit.

Speculative manias gather speed through expansion of money and credit. Most expansions of money and credit do not lead to a mania; there are many more economic expansions than there are manias. But every mania has been associated with the expansion of credit. In the last hundred or so years the expansion of credit has been almost exclusively through the banks and the financial system; earlier, nonbank lenders expanded the supply of credit. The tulip bubble mania of the seventeenth century developed with credits from sellers of the bulbs, a seventeenth-century version of 'vendor financing.'<sup>1</sup> John Law had his Banque Générale, later the Banque Royale, as his source of credit while the South Sea Company relied on the Sword Blade Bank. In 1763 credit expansion in Holland was financed by the *Wisselruiti*, or chains of accommodation bills from one merchant to another. The canal mania of 1793 in Great Britain was fed by spending facilitated by loans from many newly-established country banks to the entrepreneurs who were developing the canals.

In many cases the expansion of credit resulted from the development of substitutes for what previously had been the traditional monies. In the United States in the first part of the nineteenth century, the expansion of credit resulted from the substitution of bills of exchange for silver in triangular trade between the United States, China, and Great Britain. The United States had a bilateral trade deficit with China and China had a bilateral trade deficit with Great Britain. Previously the United

States bought silver from Mexico which was then shipped to China to finance the U.S. trade deficit; then the silver was shipped to Great Britain to finance China's trade deficit. The institutional innovation was that American merchants sent sterling bills of exchange to China in payment for goods, and the Chinese in turn then shipped these bills to Great Britain to finance its trade deficit. The transactions costs involved in making cross-border payments using bills of exchange were much smaller than those which involved the shipment of silver. The result of this innovation was that the silver stayed in the United States and was added to the U.S. money supply.<sup>2</sup>

The global boom of the 1850s followed from the combination of new gold discoveries, the formation of new banks in Great Britain, France, Germany, and the United States, the establishment of clearing-houses by the banks in New York and in Philadelphia and the expansion of the London bank clearinghouse. The expansion of the bank clearing-houses led to the increased use of credit in the transactions between the banks which were members of the clearing-house; payments imbalances between these banks were settled by transfer of clearing-house certificates—a new form of money. The expansion of credit in Great Britain in 1866 resulted from the increase in loans by the newly formed joint-stock discount houses. The boom in Central Europe in the 1870s was based on the gold reparations payments from France to Prussia and on the creation of *Maklerbanken* (brokers' banks) in Germany, which spread into Austria, and *Baubanken* (construction banks) in Austria, which expanded into Germany.

One of the many different institutional avenues for the expansion of credit that occurred in France in 1882 was based on a system of fortnightly clearing of stock exchange transactions which provided credit to speculators through a system of delayed payments called *reportage*. The buyers of stocks had up to fourteen days before they had to pay for their purchases, so in effect they got interest-free loans until the date of payment (although the value of the loans may have been reflected in the prices paid for the stocks).<sup>3</sup> Similarly the expansion of credit in the call-money market in New York helped finance the stock market boom in the late 1920s. The catalyst for the expansion of credit in the United States in 1893 was the addition of silver coins to the U.S. money supply; in 1907, the increase in the supply of credit resulted from the expansion of loans by the trust companies. In the years before and after World War I, the international credit base was expanded by the development of the gold-exchange standard that facilitated the financing of a much larger

volume of international trade with the existing stock of monetary gold. The rapid increase in installment credit in the United States in the 1920s facilitated the surge in automobile ownership (although the dramatic increases in the number of automobiles and other consumer durables led to rapid growth in demand for staggered payments arrangements).

After World War II, the development of negotiable certificates of deposit (CDs) contributed to the expansion of credit. The Austrian banks had developed a new financial instrument similar to the negotiable CD in the 1870s (the so-called *Cassenscheine*) that paid interest; the expansion in the demand for these instruments led to an increase in credit and hence to an increase in spending on the same amount of high-powered money or reserves. In the 1950s and the 1960s the large U.S. banks adopted the practice of liability management which meant that the growth of their deposits depended on the pace at which they wanted to increase their loans; under the earlier practice of asset management the growth of their loans depended on the growth of their deposit liabilities. Liability management enabled the banks to be much more aggressive in managing the growth of their loans and their deposits.

One unique form of the expansion of 'bank credit' occurred in Kuwait between 1977 and 1982 when shares and real estate were bought and sold on the Kuwaiti Souk al-Manakh (stock exchange) with post-dated checks; eventually the value of these checks in circulation increased to billions of dinars—nearly U.S. \$100 billion at its peak. The values of post-dated checks written by the buyers of the shares and real estate were much, much larger than their bank deposits. The sellers of the shares and real estate increased their spending as their wealth was increasing; they hoped that there would be money in the bank accounts of the payors when the due dates of the checks arrived. In July 1982 some sellers of stocks tried to collect on checks on the due dates; the checks bounced.<sup>4</sup>

The inference from these examples is that the expansion of credit is not a series of accidents but instead a systematic development that has continued for several hundred years as the participants in financial markets sought to reduce the costs both of transactions and of holding liquidity and money balances. The form each event takes may seem accidental—the substitution of bills of exchange for silver in payments to China, or the development of deposits in the Eurocurrency market because ceilings prevented U.S. banks from increasing the interest rates that they could pay on deposits in New York, Chicago, and Los Angeles.

The development of new substitutes for the existing monies seems to occur periodically in response to different changes in institutional arrangements but the process is a continuing one. Monetary expansion is systematic and endogenous rather than random and exogenous.

During economic booms the amount of money defined as means of payment has been continuously expanded and the existing money supply has been used more efficiently to finance both increases in economic activity and the purchases of real estate and securities and commodities in search of capital gains. The efforts of central bankers to limit and control the growth of the money supply have been offset in part by the development of new and very close substitutes for money. Such efforts have a long history, including the resumption of specie payments and the return to convertibility of national currencies into gold after the ends of wars. The demonetization of the lesser metallic monies—initially copper was displaced by silver and subsequently silver’s monetary role was eclipsed by gold—was an effort to obtain greater control over the money supply. Central banks sought to obtain a monopoly of the issue of currency notes, which restricted and then eliminated the rights of private, country, and joint-stock (corporate) banks to issue currency notes. Legislation and custom limited the amounts of deposit money that could be issued against primary bank reserves, starting shortly after the Bank Act of 1844 and continuing through the application by the Federal Reserve System of reserve requirements against both demand and time deposits (as embodied in the Federal Reserve Act of 1913) and then against certificates of deposit and subsequently against the borrowings by U.S. banks from their branches in offshore financial centers including London, Zurich, and Luxembourg. The process is Sisyphean, a *perpetuum mobile*; the history of money is a story of continuing innovations so that the existing supply of money can be used more efficiently and the development of close substitutes for traditional money that circumvent the formal requirements applied to money. The Eurocurrency deposit market surged in the 1960s as an end-run around the costs of regulation imposed on U.S. banks by the Federal Reserve and the Federal Deposit Insurance Corporation; the U.S. dollar deposits produced by the branches of U.S. banks in London, Luxembourg, and Zurich were not subject to interest rate ceilings, reserve requirements, and deposit insurance premiums. The U.S. stock brokerage firms developed money market funds in the 1970s and paid interest on the deposits in these funds (the deposits were not guaranteed by any agency of the U.S. government).

## Currency School vs Banking School

One aspect of the history of monetary theory is a continuing debate between two different views—the Currency School and the Banking School—about how best to manage the growth of the money supply. The proponents of the Currency School advocated a firm limit on the expansion of the money supply to avoid inflation. The adherents of the Banking School believed that increases in the supply of money would not lead to inflation as long as these increases were associated with business transactions. In the 1890s in the United States more or less the same breakdown in ideology and economic analysis separated the hard-money school, which was concerned about inflation, from the populists who did not believe that increases in the money supply would lead to increases in the price levels as long as these increases were associated with increases in economic activity. The debate between these two views of managing the growth in the money supply has continued for at least three hundred years.

The Currency School wanted a simple rule that would fix the growth rate of the money supply at 2, 4, or 5 percent, much like today's monetarists.<sup>5</sup> Viner's discussion of the nineteenth-century controversy is succinct:

The currency school tended also to minimize or to deny the importance of bank credit in other forms than notes as a factor affecting prices, or as in the case of Torrens, to claim that the fluctuations in the deposits were governed closely by the fluctuations in the note issues. They had a hankering also for a simple automatic rule, and could find none suitable for governing the general credit operations of the Bank. They also had *laissez faire* objections to extending legislative control of the banking system any further than seemed absolutely necessary.<sup>6</sup>

Neither the Currency School nor the Banking School paid much attention to the expansion of nonbank credit. The Bank of Amsterdam, founded in 1609, was a giro-bank that issued notes against deposits of precious metals; in effect these notes were warehouse receipts and the amounts outstanding of these notes were tied to the deposits of the metal on a one-to-one basis. Initially the Bank of Amsterdam did not expand credit; subsequently in the eighteenth century the bank expanded its loans in the effort to rescue the Dutch East India Company during

the fourth Anglo-Dutch War. The Bank of Amsterdam was also a *Wisselbank* where bills of exchange (*Wissel* in Dutch, *Wechsel* in German) were paid. Merchants kept deposits at the Bank of Amsterdam to meet bills presented for collection. Deposits of precious metals enabled the Bank of Amsterdam to earn seignorage on its minting operation so it was able to pay a low interest rate on deposits. In 1614 a Bank of Lending (*Huys van Leening*) was established by the Municipality of Amsterdam; this bank enabled merchants to establish their own credit efficiently but it was not an active lender.<sup>7</sup> This credit created by the merchants led to an excessive expansion of the *Wisselruiti*; when the chain of bills of exchange broke in 1763 because one of the merchants did not have the money to pay on a maturing bill, the DeNeufville bank failed.

The Swedish Riksbank, established in 1668, had two departments, a Bank of Exchange patterned after the Bank of Amsterdam (*Wisselbank*) and a Bank of Lending (*Liinebank*).<sup>8</sup> These two departments foreshadowed the Bank Act of 1844 in Great Britain, which was a compromise between the two schools; an Issue Department, which would provide bank notes against deposits of coin or bullion above a specified fiduciary issue that represented the Bank of England's holdings of British government debt, and a Banking Department that would make loans and discounts up to a multiple of its reserves of bank notes that had been produced by the Issue Department. The establishment of the Issue Department was a victory for the Currency School, which had criticized the Bank of England's granting of loans and issuance of bank notes after the suspension of the gold standard in 1797. (The Bank of England's defense of this practice was that the inflation rate did not increase when loans were made to finance trade.) The establishment of the Banking Department was a victory for the Banking School and for those who believed that an expansion of credit would help finance the initial upswing in the early stages of an economic recovery.

The Currency School's view that the expansion of credit based on the availability of attractive business opportunities would eventually lead to inflation was correct. The Banking School's view that an increase in the supply of credit was needed at the start of an economic expansion was also correct. The Currency School's view that the discounts be limited to acceptances that were related to actual commercial transactions became known as the 'real bills doctrine.' The larger the number of business opportunities, the greater the scope for discounting, and the greater the increase in the money supply and eventually the higher the inflation rate. The central policy questions, once an expansion of credit



has started, are whether it is practicable to decree a stopping place and whether this limit could be determined by an automatic rule.

The core issue is that it is easier to define money than it is to measure the effective money supply. Walter Bagehot wrote 'Men of business in England do not...like the currency question. They are perplexed to define accurately what money is: *how* to count they know, but *what* to count they do not know.'<sup>9</sup>

The stylized historical fact is that every time the monetary authorities stabilize or control some quantity of money,  $M$ , either in absolute volume or at a predetermined rate of growth, more of the money and the near-money substitutes will be produced in periods of euphoria. If the definition of money is fixed in terms of designated liquid securities the euphoria may lead to the 'monetization' of credit in ways that are beyond the definition; the velocity of money (velocity is defined either as total spending or national income divided by the money supply) will increase even if the amount of money defined in the traditional way remains unchanged. The debate was over whether money should be defined as  $M_1$ , currency plus demand deposits adjusted;  $M_2$ , equal to  $M_1$  plus time deposits;  $M_3$ , consisting of  $M_2$  plus highly liquid government securities; or some other designation.

The process seemed endless; fix any  $M_i$  and in economic booms the market will create new forms of money and near-money substitutes to get around the limit.

The Radcliffe Commission in Great Britain in 1959 claimed that in a developed economy there is 'an indefinitely wide range of financial institutions' and 'many highly liquid assets which are close substitutes for money, as good to hold, and only inferior when the actual moment for a payment arrives.' The Radcliffe Commission did not use the concept of velocity of money because it 'could not find any reason for supposing, or any experience in monetary history indicating, that there is any limit to the velocity of circulation.'<sup>10</sup> The commission was primarily interested in the recommendation that a complex of controls of a wide range of financial institutions be developed as a substitute for the traditional control of the money supply: 'Such a prospect would be unwelcome except as a last resort, not mainly because of its administrative burdens, but because the further growth of new financial institutions would allow the situation continually to slip out from under the grip of the authorities.'<sup>11</sup>

Economists have debated the items that should be included in 'money' for two centuries. One view is that the most appropriate definition is the

one that provides the strongest correlation with changes in economic activity. Measuring economic activity is relatively unambiguous. The identification of the monetary variables that have the highest correlation with the economic activity variable might change over time and differ across countries. 'In common parlance, *bank currency* means *circulating bank notes*—"paper money." Yet, it would seem that some writers include under the same head, checks and *promissory notes*, if not also loans and deposits' (italics in original).<sup>12</sup>

The debate was neatly summarized by John Stuart Mill:

The purchasing power of an individual at any moment is not measured by the money actually in his pocket, whether we mean by money the metals, or include bank notes. It consists, first, of the money in his possession; secondly, of the money at his banker's, and all the other money due him and payable on demand; thirdly of whatever credit he happens to possess.<sup>13</sup>

A valiant attempt has been made to improve the concept of the quantity of money to include the total of all the credit or debt.<sup>14</sup> This approach gets away from defining exactly what money is although it may lead into other muddy waters when the need arrives to decide which credit items should be included and which should not be included. But in theory the analyst wants to know, with Mill, what credit a household, firm, or government would be able to command at a given time, and the amount is almost certain to vary over a wide range because the access to credit depends on satisfying certain conditions and the households and firms are better able to satisfy these conditions in euphoric periods. Banks and other lenders have often extended credit lines to firms and household borrowers, but the amount of credit available under the lines at each moment may require that the borrowers meet certain tests.

Consider the rapid growth of U.S. dollar deposits in London and other offshore banking centers in the 1960s, 1970s, and the 1980s, which was a response to the increases in interest rates on these deposits relative to interest rates on bank deposits produced in the United States which were subject to regulatory ceilings. The banks that sold these deposits in the offshore banking centers used the funds to make loans denominated in the U.S. dollar to American firms that they might otherwise have made loans to from one of their U.S. offices. The firms that borrowed U.S. dollar funds from the offshore banks in London were as likely to

spend these funds in the United States as if they had had borrowed the U.S. dollar funds in New York, Chicago, or Los Angeles. Should the U.S. dollar deposits produced in London and other offshore banking centers be included in the measurement of the U.S. money supply?

The home-equity credit line is a recent financial innovation; banks and other lenders offer to lend homeowners an amount that may be equal to the value of the equity in their homes or in some cases an amount modestly in excess of the homeowner's equity. (At an earlier period the loans that used the equity in the home as collateral were known as second mortgages; a home-equity credit line represents potential borrowing until the homeowner draws on the line, while the second mortgage was an actual loan.) The availability of home equity credit lines means that homeowners economize on their holdings of money and near-monies, so the increase in the availability of these credit lines leads to increases in spending with the same money supply. Thus the development of the home-equity credit line permits households to engage in liability management of the type that banks developed thirty and forty years earlier.

The purchasing power of the individual cannot readily be extrapolated to that for a country since an increase in the amount of credit extended to one individual may or may not subtract from the amounts of credit available to others, depending on both banking institutions and on the scope of euphoria. One novelist wrote on credit:

Beautiful credit! The foundation of modern society. Who shall say this is not the age of mutual trust, of unlimited reliance on human promises? That is a peculiar condition of modern society which enables a whole country to instantly recognize point and meaning to the familiar newspaper anecdote, which puts into the speculator in lands and mines this remark: 'I wasn't worth a cent two years ago, and now I owe two million dollars.'<sup>15</sup>

The basis for this generalization is the historical development of close substitutes for money that led to increases in the amount of credit and total spending. Consider only bills of exchange, call money, and the gold-exchange standard from a list that also includes bank notes, bank deposits, clearing-house certificates, the liabilities of specialized banks (e.g., *banques d'affaires*, *Maklerbanken*, or *Baubanken*), the liabilities of trust companies, negotiable CDs, the Eurocurrency deposits, installment credit, credit cards, and NOW accounts.

## Quality of debt<sup>16</sup>

The credit-rating agencies were established to rank the quality of the debt of individual borrowers—firms, governments, and even households. Minsky's taxonomy of corporate debt used a three-part distinction based on the relationship between cash inflows to the borrowers from their operating activities and their projected cash outflows for debt-servicing payments. 'Hedge finance' occurred when the cash from the firm's operating activities would be larger than the cash needed for its scheduled debt-servicing payments. 'Speculative finance' occurred when the cash from the firm's operating activities would be large enough to enable the firm to pay the interest on its debt on a timely basis; however the firm would need to borrow the amount necessary to get the cash to pay some or all of the principal due on maturing loans. 'Ponzi finance' occurred when the cash from the firm's operating activities would not be large enough to pay all of the interest due on debt on a timely basis. The firms involved in Ponzi finance either will need to borrow to pay some or all of the interest or they will need a capital gain on some of their assets to get the cash to pay the interest.<sup>17</sup> (This distinction between Ponzi finance and speculative finance is comparable to that used in the public finance literature between a 'primary fiscal balance' which involves the relationship between the government's tax and other receipts and its total payments exclusive of those for interest. A government with a primary fiscal deficit needs to borrow more than the amount necessary to pay all of the scheduled interest.)

Minsky emphasized the 'quality' of debt to gauge the fragility of the credit structure; the terms 'speculative' and 'Ponzi' highlight this fragility. The implication of the term 'Ponzi finance' is that the firm may not be able to make a debt service payment on a timely basis unless there is a 'miracle.'<sup>18</sup> An edifice of debt contracted to finance risky ventures is inherently unstable.

The model set forth in the previous chapter emphasizes that in periods of economic euphoria the quantity of debt increases because the lenders and investors become less risk-averse and more willing—or less unwilling—to make loans that had previously seemed too risky. During economic slowdowns, many firms experience less rapid increases in their revenues than they had anticipated, with the result that some firms that had been in the hedge finance group are shunted into the speculative finance group while some firms that had been in the speculative finance group move into the Ponzi finance group.

**Drexel Burnham Lambert, Michael Milken, and 'junk bonds'**

One of the great financial innovations in the 1980s was the development of the 'junk bond' market—the bonds of firms that had not been ranked by one of the major credit-rating agencies. The interest rates on these bonds were generally 3 to 4 percentage points higher than interest rates on the bonds that had been ranked in one of the 'investment grades.' Many of these bonds had been 'fallen angels'—issued by firms when their economic circumstances were more favorable so they received a credit rating. A series of mishaps would lead to a reduction in the credit rating and eventually to the lowest investment grade, one more mishap and the credit-rating agencies would move the firm to the noninvestment grade or speculative ranking.

A large number of financial institutions are prohibited by the regulatory authorities from holding bonds that are below investment grade, and once this threshold was crossed, these banks and insurance companies would sell these bonds so the interest rates on the bonds would increase sharply.

The sales pitch was that the buyers of junk bonds—say of a diversified portfolio of these bonds—had a 'free lunch' because the additional interest income would be more than enough to cover the losses when one or several of these bonds tanked because the borrowers went bankrupt.

The innovation in the 1970s and 1980s was that Drexel Burnham Lambert, then a second-tier investment bank, began to issue junk bonds, known in more polite circles as high yield bonds; the mastermind of this innovation was Michael Milken. The firms that issued these high yield bonds had such low credit ratings that investors would buy their bonds only if the interest rates were high. Many firms issued junk bonds to get the cash to finance leverage buyouts; often the senior executives of a firm would seek to buy all of the publicly traded shares. Or Firm A might issue high yield bonds to get the cash to acquire Firm B before Firm B got the cash to buy Firm A.

Because the bonds had not been rated by one of the credit-rating agencies, the interest rates that borrowers paid on these bonds typically were 3 to 4 percentage points higher than the interest rates on the investment grade bonds that had been reviewed by one of the credit-rating agencies.

So much for the facts that are not in dispute. What is in dispute is whether some parts of the underwriting transactions by Milken were illegal or unethical. The polite critics note that many of the firms that were buyers of junk bonds were savings and loan associations and other thrift institutions and insurance companies; the managers and the owners of some of these firms had used Drexel Burnham Lambert as the underwriter to raise the money so they might buy ownership and control. The thrift institutions sold deposits based on the guarantee of the U.S. government, they offered very high interest rates on their deposits and they then used the cash from the sale of deposits to buy the junk bonds that Milken

and Drexel Burnham Lambert had underwritten. About half of the firms that had issued the junk bonds through Drexel Burnham Lambert went bankrupt and as a consequence the thrift institutions incurred large losses; many of these institutions, that had provided the ready market for the high yield bonds, went bankrupt with losses to the American taxpayers of many tens of billions. But it was all legal.

In 1988 the Revco D.S., Inc. drugstore chain filed for bankruptcy, unable to pay the interest on the \$1.3 billion borrowed to finance its 1987 buyout.<sup>19</sup> By the time the 1980s chapter in the junk bond story was over, more than half of the issues underwritten by Drexel Burnham Lambert had gone into default with losses to the bondholders—and the U.S. taxpayers—of tens of billions of dollars.

In a Cassandra-like book, Henry Kaufman decried the increase of all kinds of debt—consumer, government, mortgage, and corporate, including junk bonds; Kaufman argued that the quality of debt declined as the quantity of debt increased.<sup>20</sup> Felix Rohatyn, a distinguished investment banker and the head of the U.S. office of Lazard Frères, called the United States ‘a junk-bond casino.’

Still the owners of junk bonds were earning much higher interest rates than the owners of traditional bonds—at least for a while.

In the economic slowdown of the late 1980s and early 1990s, many of the firms that had issued junk bonds went bankrupt. A new set of studies showed that the owners of junk bonds on average lost one-third of their money and that the additional 3 to 4 percentage points of interest income per year of these bonds was insufficient to compensate for the large number of defaults.

The large number of failures among the issuers of junk bonds was consistent with Minsky’s taxonomy: many of these bonds might have been in his speculative group in the good economic times when they were initially issued. When the U.S. economy moved into a recession, the cash receipts of the firms issuing these bonds declined, and the bonds would have shifted to the Ponzi group. An economic miracle would have been necessary to avoid a default.

A very expensive free lunch.

## **Bills of exchange**

Bills of exchange were claims for future payment made by a seller of goods and were initially developed because the supply of coin was inelastic; the bills were a form of vendor financing.<sup>21</sup> The seller of the goods provided credit to the buyers of the goods to facilitate the sale; the buyer would be obliged to repay the loan in 90 or 120 days. These bills of exchange were frequently discounted with banks that provided the holder of the bills with cash in the form of bank notes or coin and, in

the nineteenth century, bank deposits. The bills of exchange were often used directly in payment, much like post-dated checks. Once the seller of the goods had received a bill of exchange from the buyer, the seller in turn transferred the bill to someone else in payment. Each recipient of a bill would add its name to the bill, much like endorsing a check; there might be five or ten endorsers on the bill. 'The bill was now money.' Ashton said that even if some of the parties in the chain of endorsers were of doubtful credit, the bill would still circulate as if it were a bank note.<sup>22</sup> In the first half of the nineteenth century, some bills for as little as £10 circulated with fifty or sixty names on them.

Payment practices differed. Bank notes were disliked in Lancashire, and at the beginning of the nineteenth century coins and bills of exchange were the primary items used for payments.<sup>23</sup> Because of the increase in the use of bills of exchange in payments, Bank of England note circulation declined by £9 million from 1852 to 1857, a period of economic expansion. The deposits of five banks in London rose from £17.7 million to £40 million. The average volume of bills of exchange in circulation, however, expanded during the same period from £66 million to £200 million, according to the contemporary estimates of Newmarch.<sup>24</sup>

Initially the bills of exchange were issued in connection with specific transactions and the amount of the bill more or less matched the exact value of the sale. Subsequently the link between the sale of goods and the issue of a bill of exchange was broken. In 1763 in Sweden, Carlos and Claes Grill bills on Lindegren in London could not be identified with particular shipments, which were often made in rapid succession, but were drawn when the firm needed money, generally for remittances to creditors.<sup>25</sup> Thus the credit of a house or individual was gradually separated from that of particular transactions and the bill had become 'accommodation paper' or a post-dated check or a promissory note.

Some economists were firmly opposed to 'accommodation paper' because it was believed to be of lower quality than self-liquidating commercial bills since there was less assurance that the firms that issued the bills would have the cash to pay the holders of the bills on the dates that the bills matured.<sup>26</sup> In a period of falling prices, however, the merits of the higher quality commercial bills were exaggerated, since the buyers of the goods might not have the cash to settle their obligations on the due dates because they might not be able to sell the goods at a profit.<sup>27</sup> The ratio of the debt to the debtor's income or wealth is a more meaningful measure of the quality of credit.

The bill of credit, as Franklin said:

is found very convenient in Business; because a great Sum is more easily counted in them, lighter in Carriage, concealed in less Room, and therefore safer in Travelling or Laying Up, and on many other Accounts they are very much valued. The Banks are the General Cashiers of all Gentlemen, Merchants, and Great Traders . . . This gives Bills a Credit; so that in *England* they are never less valuable than Money, and in *Venice* and *Amsterdam* they are generally more so.<sup>28</sup>

The statement that in Great Britain bills were ‘never less valuable than Money’ is somewhat optimistic, but the efficiency of bills when they were as good as money is clear. During the first half of the nineteenth century there was a continuous debate as to whether bills of exchange were ‘money,’ ‘means of payment,’ or ‘purchasing power.’ The members of the Currency School agreed that only the supply of bank notes needed to be controlled, and that there was no need to control or limit the amounts of bills of exchange and of bank deposits.<sup>29</sup>

Problems were likely to arise when the ratio of the debt represented by the outstanding value of bills of exchange issued by a borrower became large relative to the borrower’s wealth which often happened in periods of euphoria. Drawing of bills of exchange in chains was infectious. Described by Adam Smith as a normal business practice, it could easily be overdone.<sup>30</sup> A draws on B, B on C, C on D, and so on, which increases the supply of credit. The vice of the accommodation bill, according to Hawtrey, was its ‘use for construction of fixed capital when the necessary supply of bona-fide long-run savings cannot be obtained from the investment market.’ Hawtrey claimed the system was particularly abused in the London crisis of 1866 and the New York crisis of 1907.<sup>31</sup> The spectacular failure of the DeNeufvilles in Amsterdam in 1763 has been noted. This produced a panic in Hamburg, Berlin, and to a lesser extent in London as well as in Amsterdam because a particularly impressive chain of bills was unraveled. If one house in the chain of houses that had endorsed the bill failed, the chain collapsed and might bring down good names, those with a reasonable ratio of debt to capital as well as those with much higher ratios. Each endorser on the bill was liable for the full payment. Accommodation bills enabled traders with limited capital to borrow large amounts of money, and these short-term loans in effect stretched into longer-term loans because they were rolled over