

Federal Reserve Bank of Richmond



MERCANTILISTS and CLASSICALS:

*Insights From
Doctrinal History*

A Message from the President and First Vice President

We are pleased to present the Bank's *Annual Report* for 1998. The Federal Reserve System faced important challenges in 1998, including considerable turbulence in domestic and international financial markets in the second half of the year, continued rapid consolidation in the banking industry, and strong demand from depository institutions for efficient and innovative financial services. Ensuring that data processing and communications systems make a smooth transition to the next century and that the general public is provided with clear and useful information about System activities and accomplishments were also priorities throughout the year.

We believe this Bank made important contributions to the System's efforts to meet these challenges, as highlighted in the "Year in Review" section of this *Report*. The Bank opened a new supervision and regulation office in Charlotte to enhance supervisory oversight; some of the largest banking organizations – the result of the latest wave of bank mergers – are based in North Carolina. Our financial services activities fully met their cost recovery and quality objectives for priced services in 1998, and several Bank staff members played leadership roles in Systemwide efforts to improve payments and other services to depository institutions and the U.S. Treasury. In an effort to increase our communication and interaction with new constituencies, our Community Affairs Office formed a new Community Development Advisory Council comprised of community group leaders from across the District. Also, a member of our Public Affairs staff was instrumental in establishing a new national center for economic education for the hearing impaired at Gallaudet University. Finally, in 1998, the Bank achieved all of its benchmark objectives with respect to its preparation for the century date change.

The approach to the new millennium provides a particularly appropriate occasion to review, in broad perspective, the long discussion over what monetary policy can and cannot accomplish. During the past three centuries, a succession of events, episodes, and policy controversies reveal that certain classical theories of monetary policy have stood the test of time far better than other theories whose superficial, albeit fallacious, logic makes them perennially popular with the general public. It is important to distinguish the robust from the fallacious theories and to lock the former into place so that past policy errors will not be repeated. We are pleased to have Tom Humphrey, arguably the world's leading historian of the quantity theory of money, review the debates between mercantilist and classical theories of monetary policy in the feature article.

J. Alfred Broaddus, Jr.
PRESIDENT

Walter A. Varvel
FIRST VICE PRESIDENT

MERCANTILISTS

and CLASSICALS:

Insights From Doctrinal History

Thomas M. Humphrey

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Introduction

Economists typically view their discipline as a progressive science in which superior new ideas relentlessly supplant inferior old ones in a Darwinian struggle toward the truth. Thus it came as something of a shock when Milton Friedman challenged this belief in the May 1975 issue of the *American Economic Review*. In response to the question “What have we learned in the past 25 years?”, Friedman argued that what monetary economists have learned since 1950 are hardly new ideas but rather a rediscovery of old ideas inherited from David Hume and his contemporaries more than 200 years ago.

Three years later, the British economist Ivor F. Pearce shocked his readers even more. He denied that the Keynesian Revolution had contributed a single new or useful idea to monetary economics. Instead, he (1978, p. 93) insisted that “human history is guided not by new ideas, for there are none,” but rather by “some ephemeral sub-group of...old ideas.” Such old ideas, “often believed to be new,” are “seized upon as the...solution to whatever difficulties immediate experience has made to seem important, and congealed into a crust of dogma by endless repetition and obeisance.”

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The above sentiments express what every doctrinal historian knows, namely that much of what passes for novelty and originality in monetary theory and policy is really ancient teaching dressed up in modern guises. To be sure, the increasing application of mathematical modeling has given these concepts greater rigor and precision. Likewise, better data and more powerful empirical techniques have improved our statistical estimates of the relevant quantitative magnitudes. Still, the basic ideas themselves often remain much the same. Thus instead of a steady progression of new paradigms, one sees repeated cycles of existing ones whose periodic rise and fall perpetually casts them in and out of fashion.

By itself, this recycling of established ideas need be no cause for alarm. Theories may survive because experience indicates that they possess a high degree of validity and because no better theories have been found. The trouble is, however, that sound theories are not the only ones to survive. Unsound theories may coexist with the sound ones.

Unfortunately, policymakers and the general public are in no position to realize as much. Preoccupied by the pressing problems of the day, they have neither the time, inclination, or training, nor indeed the duty to trace the history of the ideas they employ or endorse. They have no reason to be aware of earlier policy debates in which sound theories were distinguished from fallacious ones. The result is twofold. Policymakers may subscribe to old theories under the mistaken impression that those theories are new. Worse, they may unwittingly deploy policies whose underlying theory has been challenged and found wanting in earlier policy debates.

Here is where the doctrinal historian can help. His comparative advantage lies in identifying the origin and tracing the evolution of rival monetary doctrines across a succession of writers, events, episodes, and policy controversies.

Each such incident constitutes a test, or observation, of the relative strengths and weaknesses of the competing doctrines. While no single test can yield conclusive results, many such tests may do so. Taken together, they reveal which doctrine has emerged from past experience as the more robust analytically. By demonstrating as much, the historian specifies those ideas that seem to offer the most effective basis for public policy. Of course, there is no assurance that the policymaker will heed the doctrinal historian and employ the best ideas. On the contrary, he may reject them or temporarily accept and subsequently abandon them. Here again the historian has something to say. His study of the forces influencing the receptivity and implementation of ideas permits him to predict a doctrine's prospective success or failure. In this manner, the unique perspectives of doctrinal history may prove their worth.

This article puts those perspectives to work. It shows that from a broad standpoint, much of the history of monetary theory reduces to a struggle between opposing mercantilist and classical camps. Mercantilists, with their fears of hoarding and scarcity of money together with their prescription of cheap (low interest rate) and plentiful cash as a stimulus to real activity, tend to gain the upper hand when unemployment is the dominant problem. Classical, chanting their mantra that inflation is always and everywhere a monetary phenomenon, tend to prevail when price stability is the chief policy concern.

Currently, the classical view is in the driver's seat. By all rights it should remain there since it long ago exposed the mercantilist view as fundamentally flawed. It is by no means certain, however, that the classical view's reign is secure. For history reveals that, whenever one view holds center stage, the other, fallacious or not, is waiting in the wings to take over when the time is ripe. In this manner, the mercantilism of John Law and Sir James Steuart gave way to the classicism of David Hume and David Ricardo, the Currency School's classicism bowed to John

Maynard Keynes's mercantilism, the mercantilist doctrines of Keynes's disciples yielded to Milton Friedman's classical monetarism, and so forth. Even today, with central bankers in several nations expressing commitment to the classical goal of price stability and monetarists advocating systematic, zero-inflation rules for monetary policy, mercantilist undercurrents still run strong. Supply-siders who argue that monetary policy must be accommodative to allow tax cuts to work their magic echo mercantilist opinion. So too do those who contend that, with global competition and rapid technological progress holding inflation in check, monetary policy is free to pursue nonprice objectives such as boosting growth and achieving full employment. Finally, observers who believe that monetary policy is powerless to stimulate the currently depressed Japanese economy harbor mercantilist fears of unspent hoards of idle cash.

The following paragraphs attempt to spell out the core propositions of the original mercantilist and classical views and to establish the centrality of those propositions in the famous Currency School-Banking School and Keynesian-monetarist controversies – the two leading monetary policy debates of the nineteenth and twentieth centuries.¹ From this doctrinal historical exercise, three themes emerge. First, with some exceptions, classicals tend to be quantity theorists; mercantilists, anti-quantity theorists. Second, classicals prefer rules; mercantilists, discretion. Third, for all their cogency, classicals may be doomed to face a perpetual mercantilist challenge. As long as some observers continue to believe, rightly or wrongly, that inflation and deflation are nonmonetary, or real, phenomena and that unemployment is a monetary one capable of correction by the central bank, the debate will be unending.

Mercantilist and Classical Monetary Doctrines

The roots of the debate trace back to the original mercantilist writers of the preclassical era 1550-1770. Those writers argued that a nation's stock of precious metals constituted the source of its plenty (wealth), power, prestige, and prosperity. For countries possessing no gold mines, augmentation of those conditions required the accumulation of specie through foreign trade. Accordingly, mercantilists advocated protectionist policies in the form of export promotion and import restriction schemes to obtain a permanent trade balance surplus matched by corresponding persistent inflows of specie from abroad.

This policy prescription was of course the mercantilists' main claim to fame. But the hallmark that secures them a permanent niche in the history of monetary doctrines was their contra- or anti-quantity theory of money.² They used that theory to deny that money determines prices and to tout the employment benefits of money-stock expansion fueled either by specie inflows or by paper money creation should those inflows languish. Consisting of at least seven propositions, the mercantilists' contra-quantity theory held that (1) money stimulates trade, (2) real cost-push forces determine the price level and the inflation rate, (3) the interest rate is a purely monetary variable whose level, high or low, is proof of the scarcity or abundance of money, (4) idle hoards absorb any cash not employed in driving trade, (5) causality runs

from prices and real activity to money such that the money stock passively adapts to the needs of trade, (6) overissue is impossible when the money stock is backed by the nominal value of real property, and (7) discretion outperforms rules in the conduct of monetary policy.

John Law (1671-1729)

The clearest and most emphatic statements of the foregoing propositions came from John Law and Sir James Steuart, two economists writing near the close of the mercantilist era.³ Of the two, Law's name is synonymous with the money-stimulates-trade doctrine that forms the central core and theme of his 1705 *Money and Trade Considered; with a Proposal for Supplying the Nation with Money*. Writing against the backdrop of a chronically depressed and underemployed Scottish economy (his home country), he argued that a shortage of metallic money was to blame, that a bank-issued paper currency must replace the deficient metallic one, and that the resulting expansion of the stock of paper notes would permanently increase the level of output and employment without increasing prices.⁴ His argument stemmed from his assumptions of (1) the availability of idle resources at unchanged prices and (2) constant returns to scale in production. Given these conditions, it followed that the economy's long-run aggregate supply curve was perfectly horizontal up to the point of full

Classicals sought to anchor money

with a fixed physical quantity

– mercantilists with the nominal dollar value – of some real object.

The mercantilist plan leaves money anchorless. Essentially, it anchors each dollar with another dollar – no anchor at all.



employment. It likewise followed that money-induced increases in aggregate commodity demand would, via rightward shifts along the supply curve, generate matching increases in equilibrium real output without raising prices. Indeed, Law suggested that the price level might even fall if scale economies in production rendered the aggregate supply curve negatively sloped.⁵ In no case, however, would expansion of the stock of paper money raise prices.

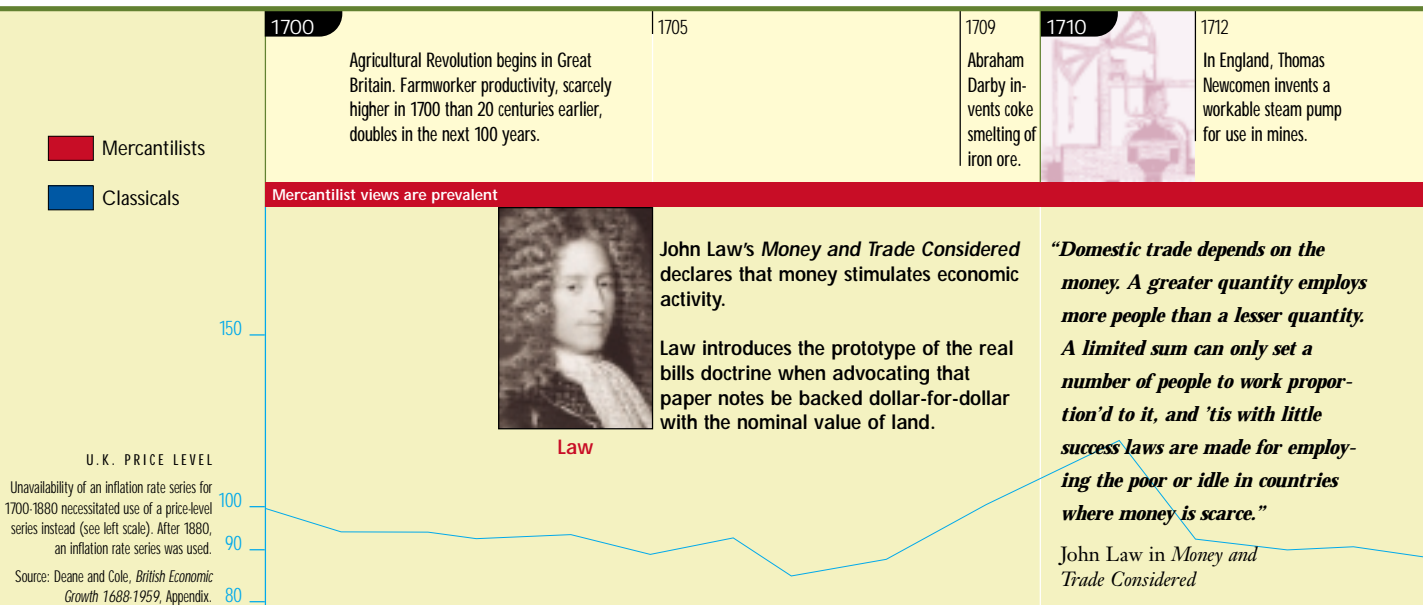
Having argued that causation runs from money to output, Law perceived that it could be made to run in the opposite direction too. With appropriate financial linkages put in place, output could induce the very monetary means of its own expansion. Indeed, Law thought this outcome was assured provided that banks issued money on productive loans secured by claims to future product or its equivalent. Coaxed forth by real output in this fashion, the paper money stock would grow in step with the real demand for it such that its purchasing power would be preserved unchanged. To ensure that the nominal money stock automatically expanded equally with the real demand for it, he advocated that paper notes be backed dollar-for-dollar with the nominal value of land. Collateralized by land, money would, he thought, enjoy stability of value. When economic development or cyclical recovery brought more land into cultivation, the money stock, secured by the extra land, could expand to meet the growing needs of trade at unchanged prices. Here was the prototype of the real bills doctrine later attacked

so vigorously by classical writers.

As for the doctrine that low interest rates spell monetary ease and high rates monetary tightness, Law accepted it without reservation. Anticipating Keynes's liquidity preference theory of interest, Law saw interest rates as the price of money's use, a price that varied inversely with the quantity available to use. Being purely monetary phenomena, low rates unambiguously signified an abundance of money and high rates a scarcity of it. Law, an ardent advocate of low rates, argued that they reduced the businessman's cost of capital and so spurred investment and real activity. For him, money exerted its stimulus through indirect interest rate channels as well as through direct expenditure ones.

Sir James Stewart (1721-1780)

To Law's doctrines, Stewart in his 1767 *An Enquiry into the Principles of Political Oeconomy* added four more. First was his explicit rejection of a monetary for a real cost-push theory of inflation. Tracing a causal chain from the degree of competition in labor markets to wage rates to unit labor cost to product prices, he concluded that cost and competition determine the prices of all goods and thus the price level as a whole. Likewise, he held that the monopoly power of producers determines their profit margins as embodied in the profit mark-up component of individual and aggregate prices. In other words, he alleged that the same real forces – market power and cost – that govern



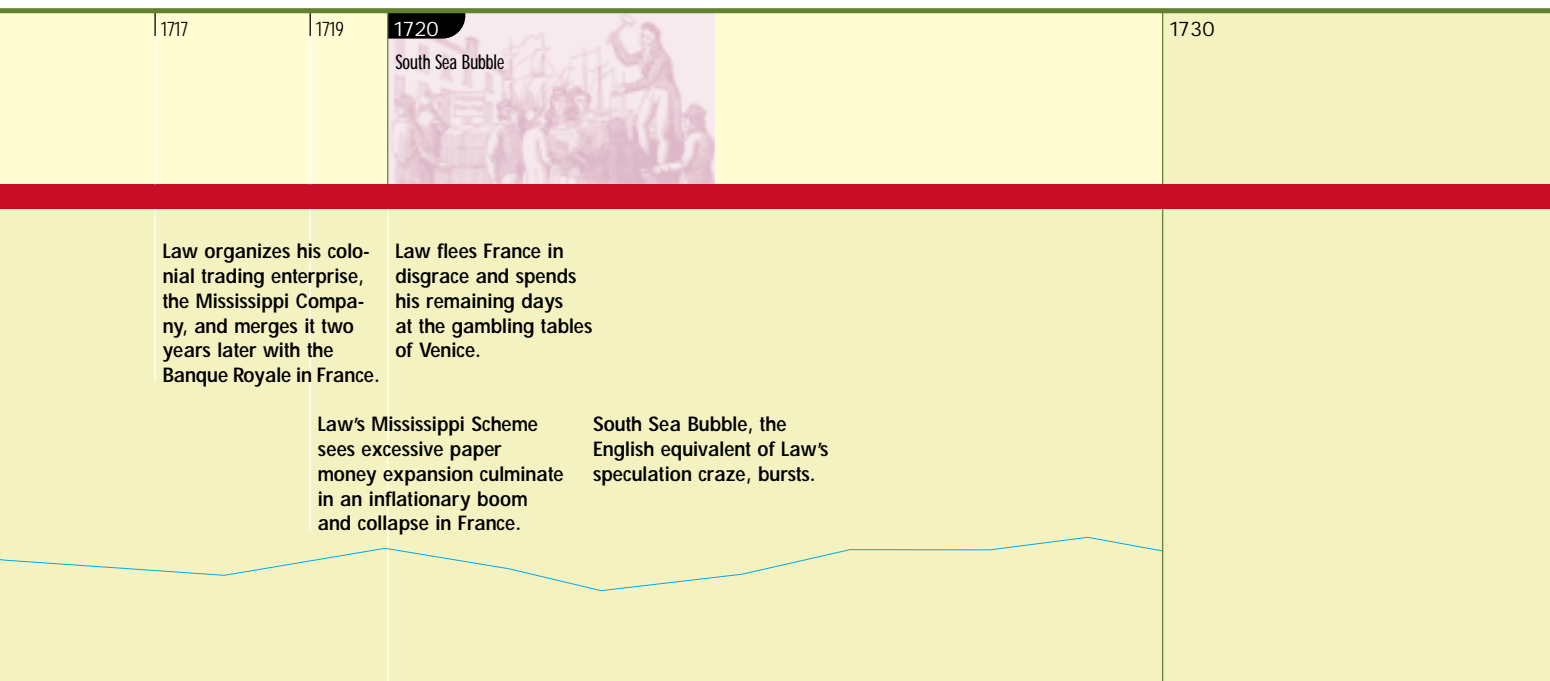
relative prices account for absolute prices as well. He advanced a relative price theory of the absolute price level.⁶

Steuart's second contribution was his doctrine of the hoards which he used to bolster his denial that money determines prices. He argued that idle hoards of specie absorb excess cash from circulation just as they release into circulation additional coin to correct a monetary shortage. Consequently, there can be no monetary excess or deficiency to spill over into the commodity market to affect prices. The hoarding-dishoarding mechanism ensures as much.⁷ For those occasional increases in the money stock that do manage to elude the hoarding mechanism and spill over into the commodity market, he argued, like Law, that they produce matching shifts in commodity demand along a horizontal supply schedule such that quantities of output alter at unchanged prices.

Third was his reverse causation doctrine according to which causality runs from prices to money and its circulation velocity rather than vice-versa as in the quantity theory. Positing a two-step process, he said that cost and competition first determine prices. Then, with prices settled, the circulation velocity of coin adjusts to render the existing stock sufficient to accommodate the prevailing level of real activity at the given prices.⁸ If the money stock is excessive, wealth-holders remove the excess from circulation, melt it down, and hold it in the form of ornaments and bullion such that velocity falls. Conversely, if coin is deficient, the resulting

recourse to paper substitutes and other expedients allows transactors to economize on coin whose velocity therefore rises. Via such devices, velocity adjusts to ensure that the stock of coin is just enough to purchase all the goods offered for sale at the predetermined level of prices. In this way, causation runs from prices to money and velocity. Here is the origin of the notion that changes in the stock of circulating media (coin and its paper substitutes) merely validate price changes that have already occurred and do nothing to produce such changes.

Finally, there was Steuart's uncompromising stance on the perennial issue of rules versus discretion in the conduct of policy. Like all mercantilists, Steuart sided with discretion. Monetary rules, whether of fixed or feedback variety, met with his skepticism as did all self-correcting adjustment mechanisms, natural or designed. To him, nothing but discretionary fine-tuning would do.⁹ Such enlightened intervention was the hallmark of his omnipotent, ever-active, benevolent *statesman* whose job was to manipulate the volume of real activity in the national interest.¹⁰ Steuart's statesman alone possessed the detailed knowledge necessary to conduct what today is known as a successful cheap-money, full-employment policy. The gap between actual and potential output, the monetary injection required to close the gap, and the interest rate necessary to draw the required metal from idle hoards: all revealed themselves to the statesman's astute and vigilant scrutiny. So too did the ever-changing circumstances to which he tailored his actions.



These propositions formed the core of mercantilist monetary theory which Law and Steuart deployed to analyze the underemployed economies of their time. Of the two writers, only Law, the paper money mercantilist, was able to translate his theory into action. His famous Mississippi scheme, which merged France's national bank of issue with a trading and land development firm (the Mississippi Company) while simultaneously promising to reduce the French public debt, involved paper money expansion on a mammoth scale.¹¹

The resulting spectacular inflationary boom and collapse of Law's system had three consequences.¹² It revealed that the initial output stimulus of a monetary expansion eventually vanishes leaving only inflation in its wake. It served to discredit paper money and financial innovation schemes for many years to come. It, together with the similar debacle of the *assignats*, a nominally land-backed paper currency issued by the French revolutionary government to inflationary excess in the years 1794 to 1796, provoked classicals to reject mercantilist trade and monetary theory root and branch.

Classical Counterpropositions

Denouncing the mercantilist identification of wealth with precious metals, Adam Smith observed that national wealth consists not of specie or bullion but rather of stocks of productive resources – land, labor, and capital – and the efficiency with which they are used. With

respect to the mercantilist prescription of protectionism as the path to opulence, both Smith and David Ricardo noted that wealth-enhancing, efficient resource allocation requires not protectionism but rather free trade in order to exploit comparative advantages stemming from specialization and division of labor.¹³

Price-Specie-Flow and Quantity Theory Propositions

Other classicals joined the attack. David Hume (1752) used his price-specie-flow mechanism to demonstrate the impossibility of the mercantilist goal of a permanently favorable trade balance and corresponding persistent specie inflow. Hume (pp. 62-3) noted that the additional specie, by raising domestic prices relative to foreign ones and so discouraging exports and spurring imports, would render the trade balance unfavorable and reverse the specie flow.¹⁴ The resulting drain of monetary metal would continue until domestic prices fell to the level consistent with trade balance equilibrium. Similarly, Hume (pp. 33, 37, 48) showed that the mercantilist fear of scarcity of money was unwarranted since any quantity of money, via a proportionate adjustment in the price level, could drive the trade of a nation. To prove as much, Hume (pp. 62-3) advanced a rigid version of the quantity theory according to which an exogenously given one-time reduction in the stock of money has no lasting effect on real activity but leads ultimately to a proportionate change in the money price of goods.

1730



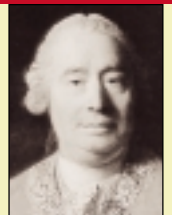
1733

John Kay invents the flying shuttle, a device for throwing a weaving shuttle faster than could be done manually. It, together with other inventions including the spinning jenny and the power loom, lead to the mechanization of industry and the development of textile mills in England.

1740

Mercantilist views are prevalent

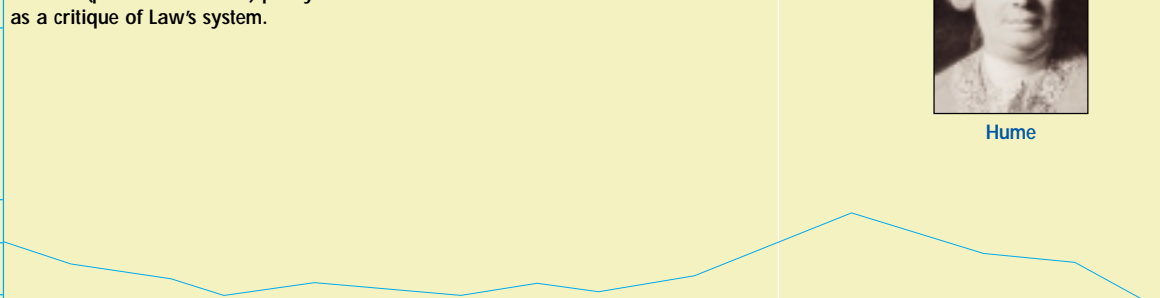
Richard Cantillon writes *Essai sur la Nature du Commerce en Général* (published in 1755) partly as a critique of Law's system.



Hume

U. K. PRICE LEVEL

150
100
90
80



Distinction between Absolute and Relative Prices

Hume's classical followers immediately seized upon his quantity theory and deployed it against the mercantilists. David Ricardo applied it to refute cost-push theories of the price level.¹⁵ Accusing cost-pushers of confounding relative prices (market exchange ratios) with the absolute, nominal, or general level of prices, Ricardo flatly denied that a rise in costs – wage costs in particular – could raise general prices without an accompanying expansion of the money stock. True, he did acknowledge that a wage hike might raise the prices of labor-intensive goods and so require consumers to spend more on those goods. But he also insisted that without accommodating increases in the money stock to foster spending, consumers would have less to spend on capital-intensive goods whose prices would therefore fall. The upshot was clear. Any wage-induced rise in some relative prices would be offset by compensating falls in others leaving the general average of all prices unchanged.

Short-Run Nonneutrality and Long-Run Neutrality Propositions

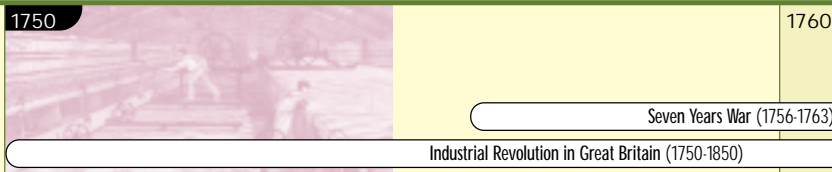
Classicals reserved their severest criticism for John Law's money-stimulates-trade doctrine. Hume insisted that the doctrine holds in the short run but not the long.¹⁶ At first, money-stock changes indeed affect output and employment. Eventually, however, the output stimulus vanishes and only higher prices remain. Law's doctrine holds in the short run because prices

are temporarily sticky, or inflexible, in response to money stock changes. Such stickiness Hume attributed to the imperfect information price-setters possess on money-stock changes and their resulting failure to perceive and act upon the changes. Distribution effects constituted for him another source of temporary nonneutrality, or transitory influence on real activity, inasmuch as new money is initially concentrated in few hands and only gradually becomes dispersed throughout the economy.¹⁷

With prices sticky and money's circulation velocity given, it follows that changes in the money stock are absorbed by output which accordingly deviates temporarily from its natural equilibrium level. Prices only begin to adjust when price-setters discover that their inventories of goods and labor are abnormally high or low. Eventually, monetary and price-perception errors are corrected as are initial distribution effects. At that point, the price level fully adjusts to the new money stock and output returns to its natural equilibrium level. Here is the source of the classical doctrine of the short-run nonneutrality and long-run neutrality of money.¹⁸

Classical Case For Rules

Four remaining mercantilist arguments clamored for demolition. Classicals were glad to oblige. First was the mercantilist claim that discretion was superior to rules. Classicals countered with the opposite claim that rules replaced destabilizing activist intervention with smoothly operating, or stabilizing, automatic



“Money, however plentiful, has no other effect, if fixed, than to raise the price of labour... and... commodities.... In the progress toward these changes, the augmentation may have some influence, by exciting industry; but after the prices are settled, suitably to the new abundance of gold and silver, it has no manner of influence.”

David Hume in “Of Interest”

David Hume, in his essays “Of Money,” “Of Interest,” and “Of the Balance of Trade,” advances the classical ideas of the price-specie-flow mechanism, the quantity theory, and the long-run neutrality and short-run nonneutrality of money.

Swedish Bullionist Controversy (1755-1765)*

*After Sweden switched from a metallic to an inconvertible paper currency in 1745, the resulting price inflation and exchange rate depreciation provoked a policy debate over the cause of these phenomena. Mercantilists traced the cause to external real shocks to the balance of payments and prescribed export promotion and import restriction schemes as remedies. Others, notably P. N. Christiernin, found the cause in the Riksbank's overissue of notes. He urged halting the excess issue but refrained from prescribing a roll-back of prices to their pre-inflation level fearing such deflation would bring an intolerable transitory loss of output and employment.

adjustment mechanisms. Unlike Steuart, classicals held a low opinion of the knowledge, capabilities, and motivation of the policy authorities. In particular, classicals, especially Ricardo, John Wheatley, and other Bullionist critics of the Bank of England, feared that central bankers operating under the kind of floating exchange rate, inconvertible paper regime prevailing in England during the Napoleonic Wars, would, if left to their own discretion, pursue inflationary policies.

Since classicals regarded stability of the value of money as the overriding policy objective, they advocated rules obligating policymakers to achieve that goal. One such rule was the gold standard. By requiring the maintenance of a fixed currency price of gold, this rule, provided that the gold price of goods also remained fairly steady, was tantamount to stabilizing the money price of goods. And with the price level stable, money could function reliably as a unit of account and medium of exchange. In so doing, it could make its maximum contribution to the efficient operation of the real economy and cease to be a source of financial crises and panics.

Say's Law of Markets

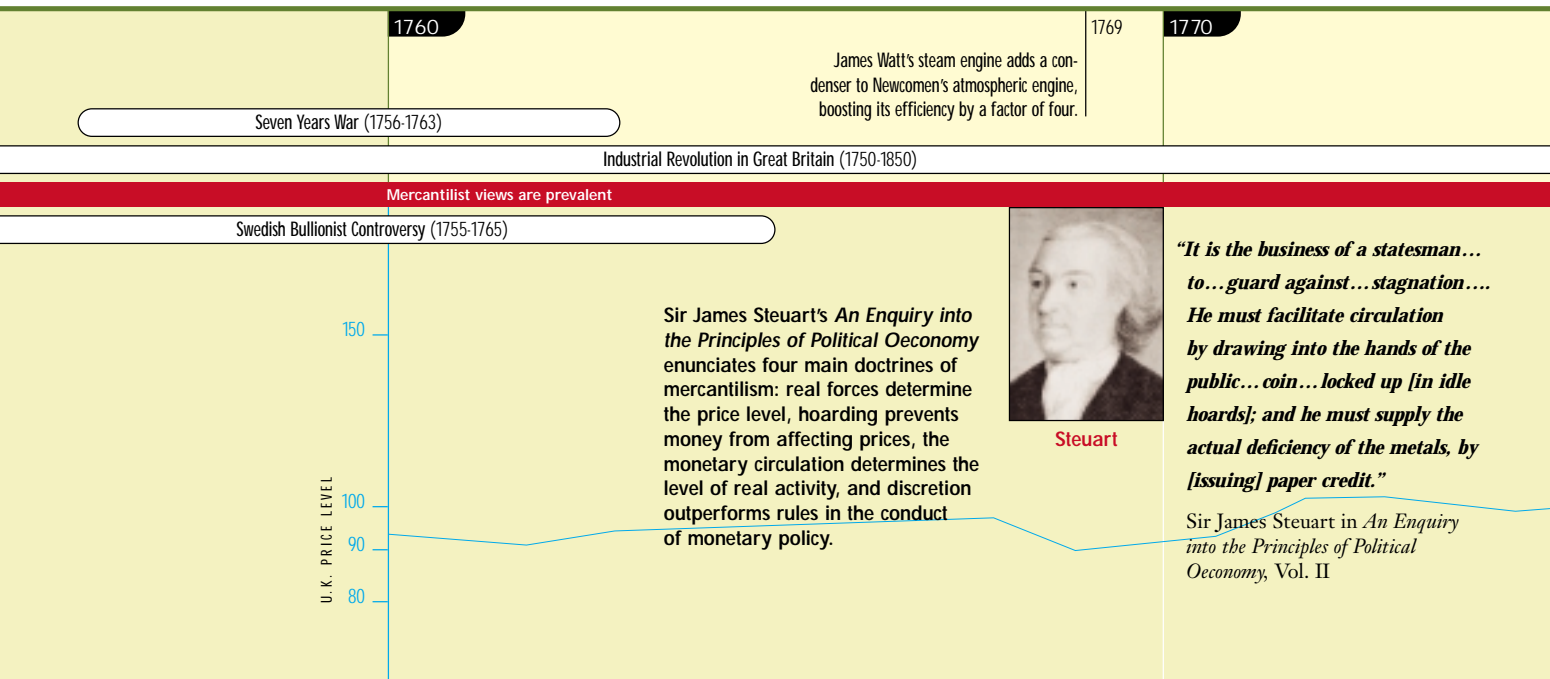
Next in line for rejection was the mercantilist claim that deficient aggregate demand condemns cash-poor economies to perpetual unemployment. Not so, wrote the classicist Jean Baptiste Say in his 1803 *Traité d'économie politique*. The value of goods produced equals the cost of the inputs absorbed in their fabrication. It follows that the very act of production

creates, in the form of factor payments, incomes sufficient to buy the goods off the market. And those incomes indeed will be spent. The insatiability of wants together with the unlikelihood that rational people would hoard their savings indefinitely in the form of sterile money ensures as much.

Far from going unspent, saving automatically translates itself into investment. People deposit their savings with banks to earn interest. Those intermediaries, upon lending the saving to capitalist entrepreneurs to finance investment projects, guarantee that it enters the spending stream just as surely as if it were consumption spending. The upshot is that full-capacity supply creates its own demand such that mercantilist fears of general gluts and permanent stagnation are unfounded. Say's Law of Markets identifies the natural level of real activity with full employment.¹⁹

Real Interest Rate

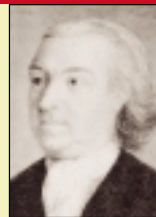
As for the mercantilist argument that the interest rate is purely a monetary phenomenon, Hume, Ricardo, and Henry Thornton all repudiated it.²⁰ They contended (1) that the natural equilibrium rate of interest is a real magnitude determined by productivity and thrift, and (2) that money, being neither of those variables, cannot affect the natural rate whose level is therefore resistant to monetary control. True, they conceded that a one-time monetary injection could temporarily depress the loan rate of interest below its equilibrium level. But they stressed the transience of this effect. They



Mercantilist views are prevalent

Swedish Bullionist Controversy (1755-1765)

Sir James Steuart's *An Enquiry into the Principles of Political Oeconomy* enunciates four main doctrines of mercantilism: real forces determine the price level, hoarding prevents money from affecting prices, the monetary circulation determines the level of real activity, and discretion outperforms rules in the conduct of monetary policy.



Steuart

"It is the business of a statesman... to...guard against...stagnation.... He must facilitate circulation by drawing into the hands of the public... coin... locked up [in idle hoards]; and he must supply the actual deficiency of the metals, by [issuing] paper credit."

Sir James Steuart in *An Enquiry into the Principles of Political Oeconomy*, Vol. II

pointed out that the monetary injection puts upward pressure on prices. And since with higher prices more loans are needed to finance a given real quantity of investment projects, it follows that loan demands increase. The rise in loan demands reverses the initial fall in the loan rate and restores it to its natural level thereby frustrating attempts to keep it low. Supplementing the price-induced rise in loan demand is a fall in loan supply. For as prices rise, people need more cash to mediate hand-to-hand transactions. The resulting conversion of notes and deposits into coin precipitates a cash drain from banks that diminishes bank reserves. To protect their reserves from depletion, banks raise their loan rates. Or what is the same thing, they contract their loan supply. The contraction of loan supply combines with the rise in loan demand to restore the interest rate to its natural equilibrium level determined by productivity and thrift.

Criticism of Backing Theories of Money

Last but not least was Law's idea of a land-collateralized paper money stock. Henry Thornton was merciless in his criticism. He excoriated the plan on the grounds that it would fail to limit the money supply and in so failing would render the price level indeterminate.²¹ The plan's flaw, wrote Thornton, is that it ties money to the nominal or dollar value, rather than to the fixed physical acreage, of land. By anchoring each dollar to another dollar, it sets up a dynamically unstable price-money-price feedback loop rendering prices indeterminate. The result is

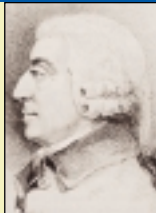
that any random shock which raises land's price would, by raising land's value, increase money's backing and so justify an expansion of its supply. The consequent expansion would further bid up land's price thereby justifying still further increases in the money stock which would raise prices again and so on ad infinitum. In short, backing money with the nominal value of land – or, for that matter, with commercial paper representing the nominal value of goods in the process of production and distribution – would destabilize prices rather than stabilize them. Price stability required another principle of monetary limitation.

Thornton's refutation of the nominal backing idea completed the list of the original classical rebuttals of mercantilist monetary doctrine. Having contested this doctrine once, however, classicals and their descendants were called upon to counter it repeatedly throughout the nineteenth and twentieth centuries. Mercantilist views, despite their devastating initial rejection, reemerged to form the Banking School position in the famous Currency School-Banking School controversy that took place in England in the mid-1800s. Most of the usual suspects – cost-push, hoarding, reverse causality, discretion, nominal backing – appeared in the Banking School's roundup. In opposing them, classicals, in their Currency School guise, found occasion to deploy the same quantity theoretic, price-specie-flow concepts they had earlier deployed against Law and Stuart.

<p>1776 Signing of the Declaration of Independence American Revolution (1775-1783)</p>	<p>1780 Henry Cort invents the puddling process leading to larger-scale iron furnaces and a 30-fold expansion in the output of iron between 1760 and 1899.</p>	<p>1788</p>	<p>1790 French Revolution (1789-1799)</p>
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Classical views are prevalent

Adam Smith publishes *Wealth of Nations*, refuting mercantilist protectionist doctrines with classical free trade principles. He also refutes the mercantilist claim that money (gold) constitutes national wealth.



Smith

“Some of the best English writers...set out with observing, that the wealth of a country consists, not in its gold and silver only, but in its lands, houses, and consumable goods..., however, the lands, houses, and consumable goods... slip out of their memory, and... their argument frequently supposes that all wealth consists in gold and silver.”

Adam Smith in *Wealth of Nations*

“Without once mentioning it [Sir James Steuart's book], I flatter myself that every false principle in it will meet with a clear and distinct confutation in mine.”

Smith in a letter to William Pulteney (1772)

Assignat Experiment in France (1789-1795)*

*Instituted by the French revolutionary government, the assignat experiment reprises Law's land-backed paper money scheme. The resulting inflation provokes a classical, or anti-mercantilist, backlash in monetary thought.

Currency School-Banking School Debate (1830-1850)

Ending a 24-year experiment with inconvertible paper, Britain had restored the gold convertibility of her currency in 1821. The ensuing Currency-Banking debate focused on whether the note component of such a convertible, gold-standard currency required regulation to prevent overissue.²² The Currency School's classical predecessors, notably David Ricardo, Henry Thornton, and others, had assumed that a convertible currency needed no such protection. If the currency were convertible, they reasoned, any excess note issue which raised British prices relative to foreign prices would be converted into gold to make cheaper purchases abroad.²³ The resulting loss of specie reserves would immediately force banks to contract their note issue thus quickly arresting the drain and restoring the money stock and prices to their pre-existing equilibrium level. Given smooth and rapid adjustment (monetary self-correction), convertibility alone was its own safeguard.

A series of monetary crises in the 1820s and 1830s, however, convinced the Currency School that adjustment was far from smooth and that convertibility per se was by no means a guaranteed safeguard to overissue. It was an inadequate safeguard because it allowed banks, commercial and central, too much discretion in the management of their note issue. Banks, facing no mini-

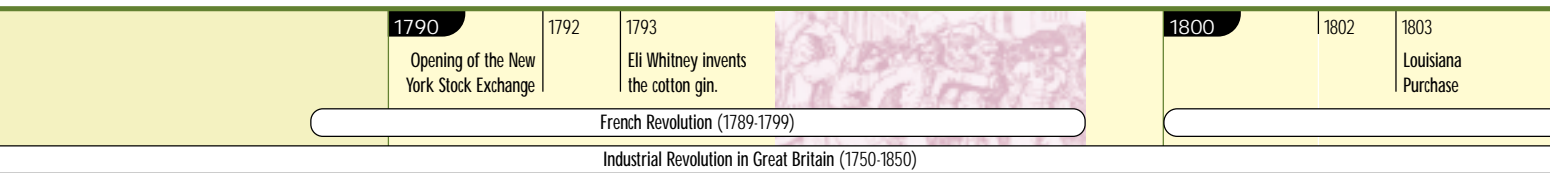
mum required reserve ratio and willing to sacrifice safety for profit, could and did continue to issue notes even as gold was flowing out, delaying contraction until the last possible moment, and then contracting with a violence that sent shock waves throughout the economy.

Currency School's Monetary Rule

What was needed, the Currency School thought, was a rule removing the note issue from the discretion of bankers and placing it under strict regulation. To be effective, this rule should require the banking system to contract its note issue one-for-one with losses of gold reserves so as to put a gradual and early stop to specie drains. Such a rule would embody the Currency School's *principle of metallic fluctuation* according to which a mixed currency of paper and coin should be made to behave exactly as if it were wholly metallic, automatically expanding and contracting to match inflows and outflows of gold.²⁴

Departure from this rule, the Currency School argued, would permit persistent overissue of paper. Such overissue, by forcing a protracted efflux of specie through the balance of payments, would in turn endanger the gold reserve, threaten gold convertibility, compel the need for sharp contraction, and thereby precip-

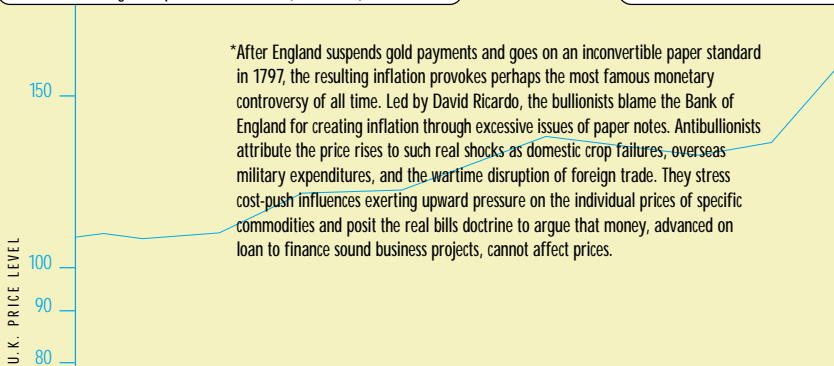
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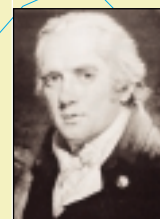
Classical views are prevalent

Assignat Experiment in France (1789-1795)

Bullionist-Antibullionist Debate (1797-1821)*



*After England suspends gold payments and goes on an inconvertible paper standard in 1797, the resulting inflation provokes perhaps the most famous monetary controversy of all time. Led by David Ricardo, the bullionists blame the Bank of England for creating inflation through excessive issues of paper notes. Antibullionists attribute the price rises to such real shocks as domestic crop failures, overseas military expenditures, and the wartime disruption of foreign trade. They stress cost-push influences exerting upward pressure on the individual prices of specific commodities and posit the real bills doctrine to argue that money, advanced on loan to finance sound business projects, cannot affect prices.



Thornton

Henry Thornton in his *Paper Credit of Great Britain* refutes Law's idea of backing money with the nominal value of land saying it would render the price level indeterminate.

Jean Baptiste Say enunciates his Law of Markets (1803).

itate financial panics. Such panics would be exacerbated if internal gold drains coincided with external ones as domestic money holders, alarmed by the possibility of immanent suspension of cash payments, sought to convert paper currency into gold. No such consequences would ensue, the School felt, if the currency conformed to the metallic principle. Forced to behave like gold (regarded by the School as the stablest of monetary standards), the currency would be spared those sharp procyclical fluctuations in quantity that amplified disturbances arising from real shocks.

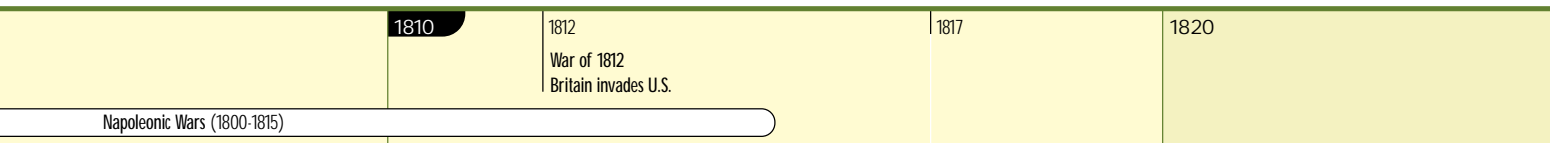
The Currency School scored a triumph when its monetary rule was enacted into law. The Bank Charter Act of 1844 embodied its prescription that, except for a small fixed amount of notes issued against government securities, bank notes were to be backed by an identical value of gold. In modern terminology, the Act established a marginal gold reserve requirement of 100 percent behind note issues. With notes rigidly tied to gold in this fashion, their volume would start to shrink as soon as specie drains signaled the earliest appearance of overissue. Monetary overexpansion would be corrected automatically, swiftly, and gently before it could do much damage. Here was a practical policy application of Hume's quantity theoretic, specie flow doctrines. Here was the notion of a channel of influence running from note overissue to rising prices to trade deficits to gold drains to corrective reductions in the

note issue, reductions that restore general prices to their target equilibrium level. Here too was the classical preference for rules – in this case a 100 percent gold reserve requirement rule – rather than discretion in the conduct of banking policy.

Banking School

The rival Banking School flatly rejected the Currency School's prescription of mandatory 100 percent gold cover for notes. Indeed, the Banking School denied the need for statutory note control of any kind. Instead, the School argued that a convertible note issue was automatically regulated by the needs of trade and required no further limitation. This conclusion stemmed directly from the *real bills doctrine* and the *law of reflux* which together posited guaranteed safeguards to overissue obviating the need for monetary control.

The School's real bills doctrine stated that the money stock could never be inflationary or deflationary if issued by way of collateralized loans advanced to finance transactions in the nominal volume of real goods and services. Similarly, the law of reflux asserted that overissue was impossible because any excess notes would be returned instantaneously to the banks for conversion into coin or for repayment of loans. Both doctrines embodied the notions of a passive, demand-determined money supply and of reverse causality running from prices and



“Mr. Law considered security as every thing, and quantity as nothing. He forgot that there might be no bounds to the demand for paper; that the increasing quantity would contribute to the rise of [the price of] commodities; and [that] the rise... require, and seem to justify, a still further increase.”

Henry Thornton in a speech on the *Bullion Report* (May 11, 1811)

David Ricardo's *The High Price of Bullion* blames inflation on the Bank of England.

Thornton (1802) and Ricardo (1817) write that the equilibrium interest rate, being determined by productivity and thrift, is resistant to monetary control. Classicals reject Law's money-stimulates-trade doctrine saying that the neutrality-of-money proposition renders it invalid in the long run.



Ricardo

Ricardo writes *Principles of Political Economy and Taxation*. He denies that a rise in wage rates could raise prices without an accompanying expansion of the money stock.

**Led by Thomas Attwood, the Birmingham School opposes restoration of gold convertibility of the British pound at the pre-war parity. They fear the resulting deflation will cause unemployment. They advocate continuation of the wartime regime of floating-exchange-rate inconvertible paper currency that brings high and rising prices. In short, the inflationist, full-employment-at-any-cost writers of the Birmingham School oppose a return to the gold standard.

economic activity to money rather than vice versa as in the Currency School's view.²⁵ According to the reverse causality hypothesis, changes in the level of prices and production induce corresponding shifts in the demand for bank loans which banks accommodate via variations in their note issue. In this way, prices help determine the note component of the money stock, the expansion of which is the result, not the cause, of price inflation. As for the price level itself, the Banking School attributed its determination to factor incomes or costs (wages, interest, rents, etc.), thus positing a cost-push theory of price movements. The importance of cost-push theorizing to the Banking School cannot be overestimated. It even led Thomas Tooke, the School's leader, to argue that high-interest-rate tight-money policies were inflationary since they raised the interest component of business costs.²⁶

Mercantilist Ideas

The concepts of cost inflation, reverse causality, and passive money are the hallmarks of an extreme anti-quantity theory of money to which the Banking School adhered. Additional mercantilist hallmarks included the School's propositions (1) that international gold movements are absorbed by idle hoards of excess specie reserves without affecting the volume of money in active circulation, (2) that gold drains stem from real shocks to the balance of payments rather than from domestic price infla-

tion, (3) that changes in the stock of money are offset by compensating changes in the stock of money substitutes leaving the total circulation unchanged, and (4) that discretion is superior to rules in the conduct of monetary policy.

The Banking School put these propositions to work in its critique of the classical monetary doctrines of the Currency School. Those doctrines, of course, contended that note overissue is the root cause of domestic inflation and specie drains. In opposing them, the Banking School argued as follows: Overissue is impossible since the stock of notes is determined by the needs of trade and cannot exceed demand. Therefore, no excess supply of money exists to spill over into the goods market to bid up prices. In any case, causality runs from prices to money rather than vice versa. Finally, specie drains stem from real rather than monetary shocks to the balance of payments and are totally independent of domestic price-level movements.

These arguments severed all but one of the links in the Currency School's monetary transmission mechanism running from money to prices to the trade balance, thence to specie flows and their impact on the monetary base, and finally back again to the money stock. The final link was broken when the Banking School asserted that gold flows come from idle hoards – buffer stocks of excess specie reserves – and not from the volume of money in circulation. Falling solely on the hoards, gold drains would find their monetary effects neutralized (steril-

<p>1820 U.K. overtakes the Netherlands in man-hour productivity.</p>		<p>1829 G. Stephenson's steam locomotive, Rocket, wins contest.</p>
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<p>1830 Stephenson's engines pull the first fully scheduled trains. Railroad age begins.</p>
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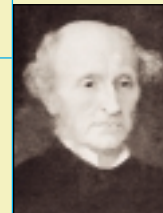
Industrial Revolution in Great Britain (1750-1850)

Classical views are prevalent

“Restore the depreciated state of the currency and you restore the reward of industry, ... confidence, ... production, ... consumption, [and] everything that constitutes the commercial prosperity of the nation.”

Thomas Attwood in *The Remedy: or, Thoughts on the Present Distresses*

U. K. PRICE LEVEL

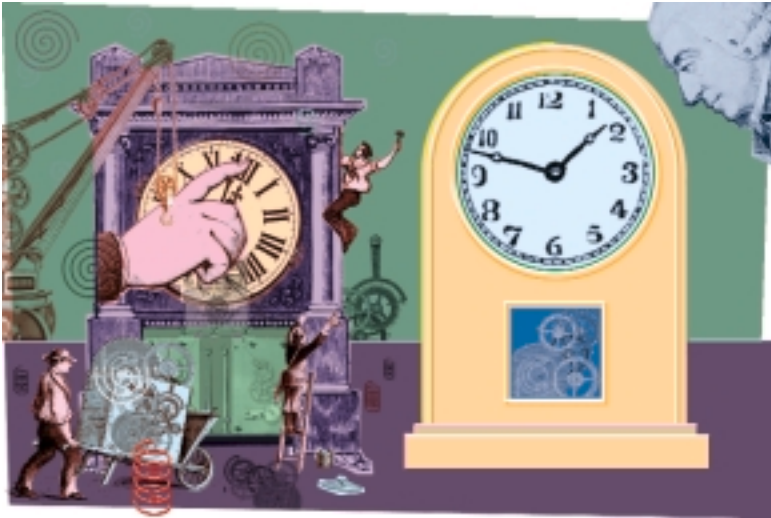


Mill

“Mr. Attwood opines, that the multiplication of the circulating medium, and the consequent diminution of its value... give employment to labour... to an indefinite extent.... Mr. Attwood's error is that of supposing that a depreciation of the currency really increases the demand for all articles, and consequently their production, because, under some circumstances, it may create a false opinion of an increase of demand; which false opinion leads, as the reality would do, to an increase of production, followed, however, by a fatal revulsion as soon as the delusion ceases.”

John Stuart Mill in “The Currency Juggle”

Thomas Tooke, leader of the Banking School and author of the six-volume *History of Prices* (1837-1857), stresses the real bills doctrine, the notion of reverse causality, and the cost-push theory of price movements. Lord Overstone (Samuel Jones Loyd), leader of the Currency School, uses the quantity theory to argue that mandatory 100 percent gold cover for bank notes is needed to prevent overissue.



Classicals see the economy as inherently self-regulating. Mercantilists see it as requiring government intervention and discretionary fine-tuning.

ized) by the implied fall in excess reserves. To ensure that these hoards would always be sufficient to accommodate gold drains, the Banking School recommended that the Bank of England hold larger metallic reserves.

With regard to the Currency School's prescription that discretionary policy be replaced by a fixed rule, the Banking School rejected it on the grounds that rigid rules would prevent the banking system from responding to the needs of trade and would hamper the central bank's power to deal with financial crises.

Finally, the Banking School asserted the impossibility of controlling the monetary circu-

lation via control of the gold and bank note component alone since limitation of that component would simply induce the public to resort to money substitutes (deposits and bills of exchange) instead. In other words, the circulation is like a balloon; when squeezed at one end, it expands at the other. More generally, the Banking School questioned the efficacy of base control in a financial system that could generate an endless supply of money substitutes.

The Currency School, however, rejected this criticism on the grounds that the volume of deposits and bills was rigidly constrained by the volume of gold and notes and therefore could

1840	1844	1846 Potato crop failure in Ireland spurs waves of emigration to America.	1848 Gold is discovered in California.	1850
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Currency School-Banking School Debate (1830-1850)



Tooke

“The prices of commodities do not depend on the... amount of the whole of the circulating medium: but... on the contrary, the amount of the circulating medium is the consequence of prices.”

Thomas Tooke in *An Inquiry into the Currency Principle*

The 1844 Bank Charter Act embodies the Currency School prescription that, except for a small fixed fiduciary issue, bank notes must be backed pound-for-pound by gold, thus establishing a marginal gold reserve requirement of 100 percent.

Tooke's *An Inquiry into the Currency Principle* uses cost-push theorizing to claim that interest rate hikes and reductions, by raising and lowering business costs, cause corresponding rises and falls in the price level.

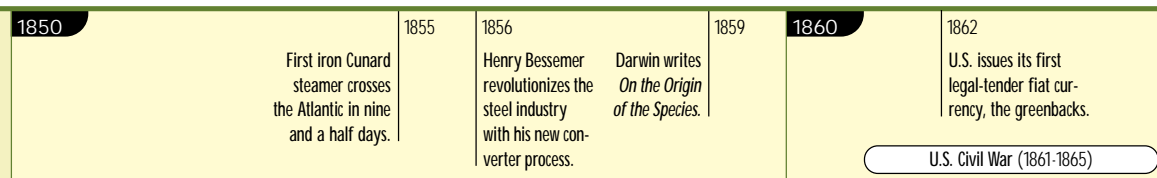
be controlled through the latter alone. In short, the total circulation was like an inverted pyramid resting on a gold and bank note base, with variations in the base inducing equiproportional variations in the superstructure of money substitutes. In counting deposits as part of the superstructure, the Currency School excluded them from its concept of money. It did so on the grounds that deposits, unlike notes and coin, were not generally acceptable in final payments during financial crises.

Evaluation

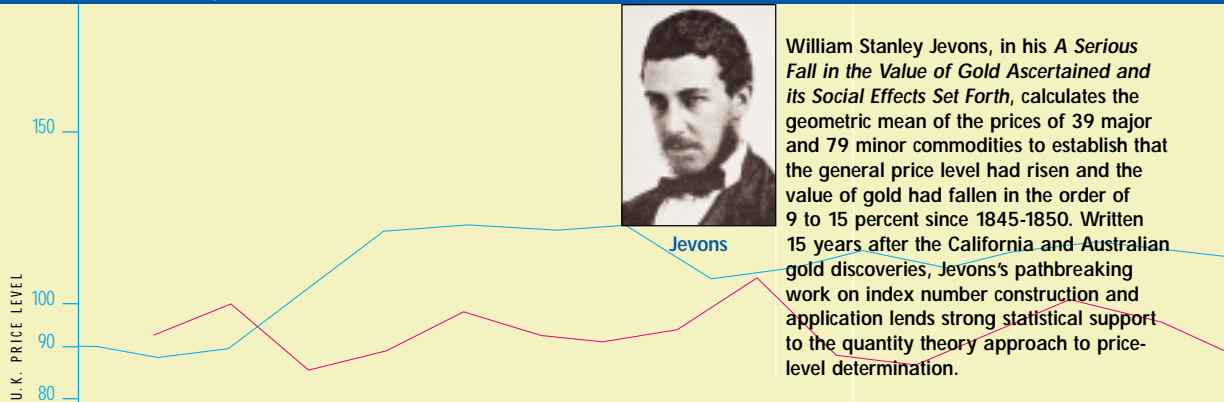
In retrospect, the Currency School erred in failing to define deposits as money to be regulated like notes. This failure enabled the Bank of England to exercise discretionary control over a large and growing part of the circulating medium, contrary to the School's intentions. The School also erred in failing to recognize the need for a lender of last resort to avert liquidity panics and domestic cash drains. By the end of the nineteenth century it was widely recognized that the surest way to arrest an internal drain was through a policy of liberal lending. Such drains were caused by panic-induced demands for high-powered money (gold coin and Bank of England notes) and could be terminated by the Bank's announced readiness to satiate those demands. The Currency School nevertheless remained opposed to such a policy, fearing it would place too much discretionary

power in the hands of the central bank. These shortcomings in no way invalidated the School's monetary theory of inflation which was superior to any explanations its critics had to offer.

As for the Banking School, it rightly stressed the importance of checking deposits in the payments mechanism. But it was wrong in insisting that the real bills doctrine, which tied note issues to loans made for productive purposes, would prevent inflationary money growth. Like Henry Thornton, the Currency School triumphantly exposed this flaw by pointing out that rising prices would generate a growing demand for – and nominal collateral backing of – loans to finance the same level of real transactions. These collateralized loan demands, when accommodated in the form of deposit and note creation, would enlarge the money stock. In this way inflation would justify the monetary expansion necessary to sustain it and the real bills criterion would fail to limit the quantity of money in existence. Also, by 1900 Knut Wicksell and Irving Fisher had rigorously demonstrated the same point made by Thornton in 1802, namely that an insatiable demand for loans and a corresponding inexhaustible supply of eligible bills results when the loan rate of interest is below the expected rate of profit on capital. In such cases, the real bills criterion provides no bar to overissue.



Classical views are prevalent



The Keynesian Revolution and Monetarist Counter-Revolution (1936-1985)

Classicals won the Currency-Banking dispute. Their victory lasted until ex-classical John Maynard Keynes, having defected to the opposite side, routed them in 1936.²⁷ But they regained their crown when monetarists (with help from the new classical school) dislodged Keynesian macroeconomics in the 1970s and 1980s.

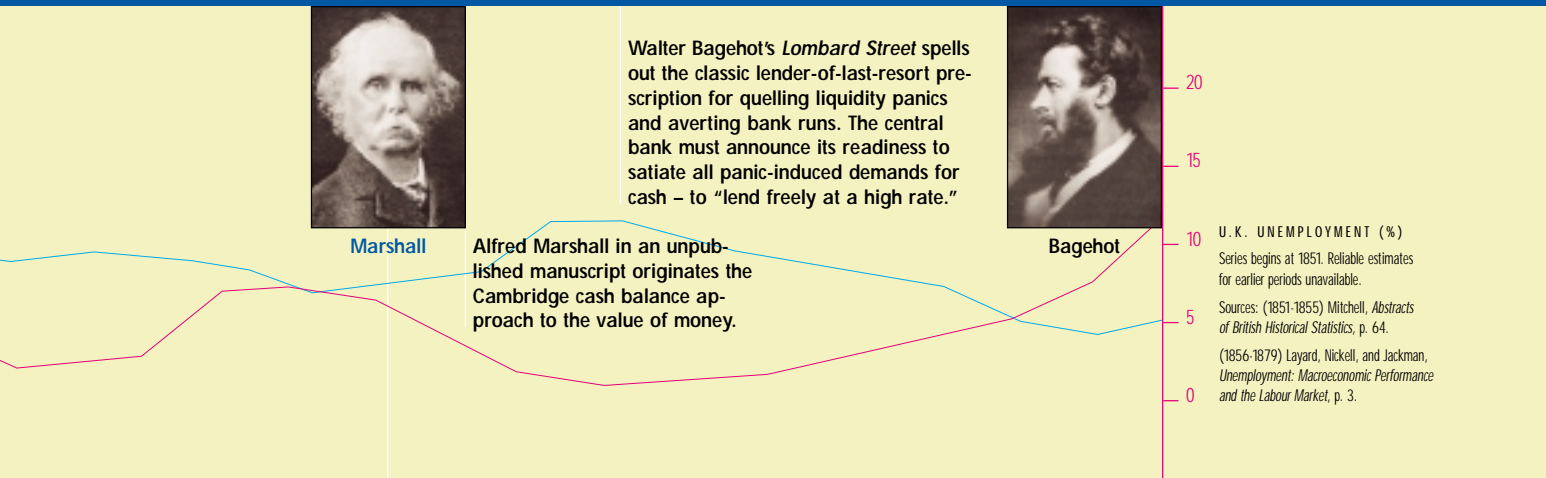
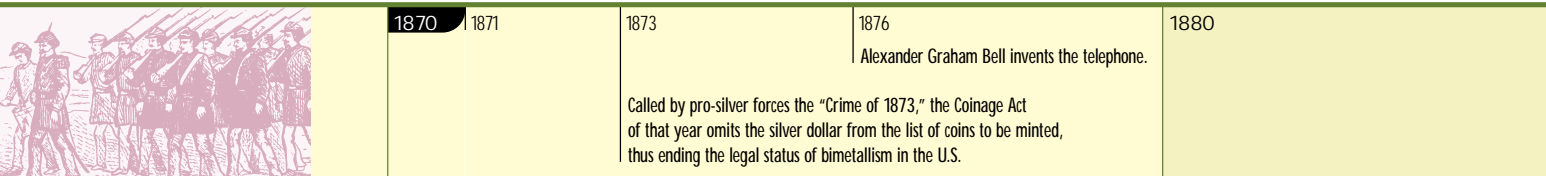
Keynes launched his attack in the midst of the Great Depression when the stark conditions of stagnation, poverty, and mass unemployment mocked the classical notion of a self-equilibrating, fully employed economy. Clearly the time was ripe for a mercantilist revival. That revival took the form of the Keynesian Revolution with the leader's *General Theory* as its bible. In that book, Keynes replaced the full capacity, quantity theoretic doctrines of the classicals with at least four propositions inherited from Law and Steuart.

Keynes's Mercantilist Propositions

First, like Law, he argued that in times of mass unemployment the primary stimulative effects of expansionary monetary policy fall on real output and employment rather than on prices. That is, they do so unless negated by liquidity traps and interest-insensitive investment demand schedules, both of which cause velocity

reductions to absorb the impact of monetary expansion. Absent such phenomena, however, Keynes's model implied that monetary stimuli affect real activity rather than prices. Like Law, he stressed that the stimulus works through an interest rate channel. More money means lower interest rates, a cheapened cost of capital, and thus a rise in investment spending. The increased investment induces additional rounds of consumption spending causing aggregate demand to rise by a multiple of the new investment spending. With idle resources available to draw upon, production expands to meet the increased aggregate demand. In expounding his interest rate transmission mechanism, Keynes praised his mercantilist forebears for anticipating it. Indeed, the "Notes on Mercantilism" section of his *General Theory* argues that the notion of a linkage running from money to interest rates to investment to output constituted the rationale for the mercantilists' advocacy of export surpluses financed by specie inflows.

Second, like Steuart, Keynes held that product prices are determined by unit labor cost plus a markup to cover profits and nonlabor costs. Here is the mercantilist notion of the price level as a nonmonetary phenomenon.²⁸ True, Keynes admitted that monetary expansion through its stimulus to employment might,




because of diminishing returns to labor, raise unit labor costs and so prices. But he tended to minimize or disregard money's price-raising effects. Instead, he treated the price level as an institutional datum governed by nominal wage rates which autonomous forces – union wage-setting policy, worker money illusion, and the like – render downwardly inflexible at low levels of employment. By expressing prices in terms of exogenously given factor costs, he pointed the way to a cost-push theory of the price level. His immediate followers, Joan Robinson, Nicholas Kaldor, and Richard Kahn, certainly interpreted him this way and accordingly denied money a role in price determination.²⁹

Third, Keynes restated Stuart's doctrine of hoarding in the form of his concept of the liquidity trap. The trap, he wrote, might come into operation in deep depressions when the interest rate falls to a level so low that everybody unanimously believes it cannot stay there but must return to its conventional normal height. At the floor rate, all are indifferent between holding cash or earning assets whose prices, which vary inversely with the interest rate, are expected to fall. Indeed, asset prices are expected to fall by an amount such that the resulting anticipated capital loss just equals the interest return on the assets. As there is no advantage to holding such assets instead of zero-yield cash, the latter becomes a perfect substitute for the former in individuals' portfolios. At this point, the demand for money becomes insatiable and infinitely sensitive to the slightest change in

interest rates. Keynes called this pathological condition *absolute liquidity preference*.

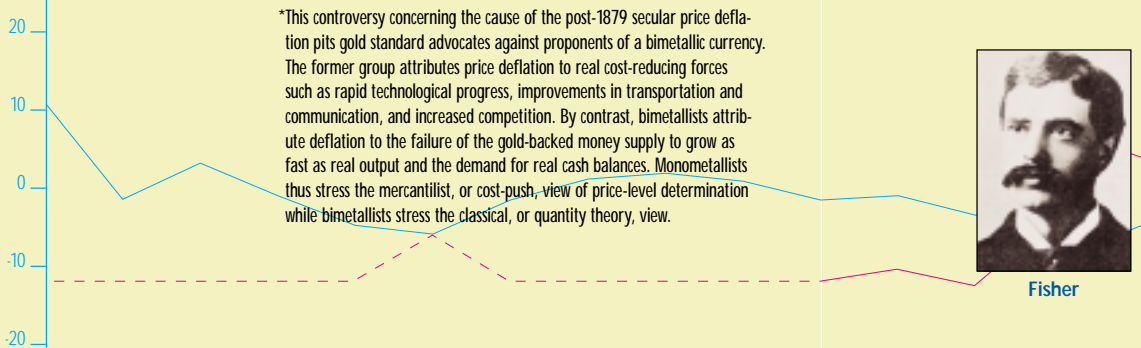
When this condition rules, no increase in the money stock, no matter how large, can reduce the interest rate. Suppose the central bank expands the money stock by purchasing bonds on the open market. Such bidding puts incipient upward pressure on bond prices. But the slightest rise of the latter induces bondholders to sell to the central bank and then to hoard the cash proceeds. Since at the floor rate of interest the demand for money is insatiable and the willingness to sell bonds absolute, no amount of open market operations can overcome absolute liquidity preference and reduce interest rates. And with rates at their irreducible minimum, they cannot fall to stimulate real activity. Here is Keynes's expression of the mercantilist fear that monetary expansion cannot be counted upon to stimulate spending because the new money may disappear into idle hoards.

Fourth, Keynes found still another obstruction to block the interest rate channel. Even if monetary injections were successful in lowering interest rates, those injections still might fail to stimulate real activity if investment spending were unresponsive to the lower rates. If so, then two obstacles – an interest-insensitive investment schedule as well as a liquidity trap – could render monetary policy ineffective in a depression. In both cases, a rise in the money stock would be offset by a fall in velocity leaving total spending unchanged. With variable velocity absorbing the impact of money stock changes,

1880	1883 Thomas Alva Edison invents the electric light bulb.		1890 U.S. overtakes U.K. in man-hour productivity.	1893 Bank panic and gold runs sap U.S. gold reserve.
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Classical views are prevalent

Bimetallism Debate (1880-1896)*



none would be transmitted to nominal income. The rigid links connecting money to nominal income and prices as postulated by the classics would be severed or severely weakened. Steuart had said exactly the same thing in 1767.

Post-Keynesian Extensions

To Keynes's own mercantilist doctrines, Keynes's followers writing in the inflationary post-World War II period added others. Some interpreted inflation as a cost-push phenomenon emanating from union bargaining strength, business monopoly power, oligopoly administered prices, commodity shortages, supply shocks, and other real and institutional forces putting upward pressure on factor costs and profit mark-ups. Then too, "cheap money" advocates held that expansionary monetary policy could be used to peg interest rates at low levels so as to minimize the interest burden of the public debt while simultaneously stimulating real activity. An alternative version of the same argument, associated with the Phillips curve trade-off approach to policy questions, held that monetary policy could peg the unemployment rate at permanently low levels at the cost of a stable (nonaccelerating) rate of inflation.

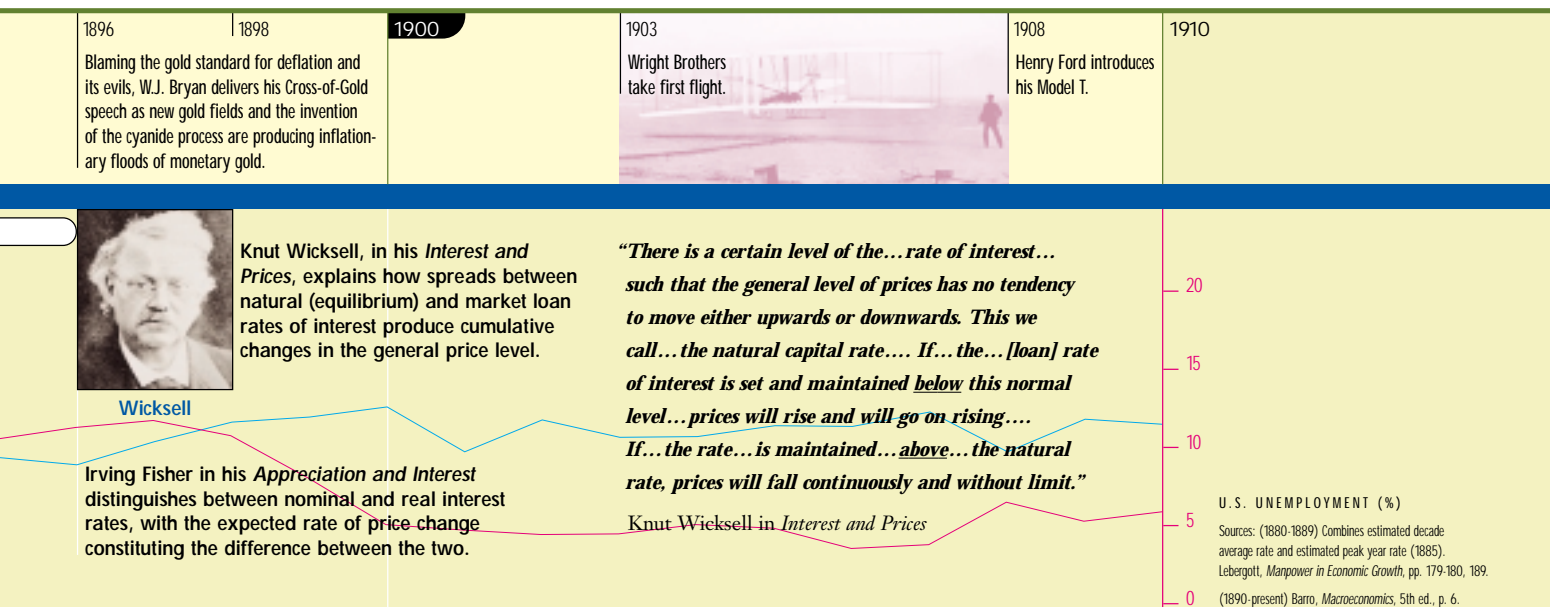
Underlying all these arguments were the presuppositions (1) that full employment is the dominant policy concern, (2) that the employment benefits of monetary stimuli exceed their inflationary costs, and (3) that disinflationary monetary policy, because entrenched inflation is

so resistant to it, would produce intolerably large and protracted reductions in output and employment. John Law of course held similar presuppositions, as did other mercantilists.³⁰

There remained the mercantilist ideas of reverse causation, passive money, and futility of base control of money and of inflation. Nicholas Kaldor supplied these ideas in his 1982 *The Scourge of Monetarism*. Representing the peak of post-Keynesian skepticism of the relevance of the quantity theory, Kaldor's *Scourge* denied the possibility of base control given the central bank's duty to guarantee bank liquidity and the financial sector's ability to engineer changes in the turnover velocity of money via the manufacture of money substitutes. Kaldor's transmission mechanism runs from trade unions to wages to prices to money and thence to bank reserves. Unions determine wages, wages determine prices, prices influence loan demands, and loan demands, via their accommodation in the form of bank-created checking deposits, determine the money stock, with central banks permissively supplying the necessary reserves. Far from exerting an activating influence, money appears at the end of the causal chain.

Monetarists' Response to Keynes and the Keynesians: the Classical Comeback

Even as Keynesianism was riding high, critics were sniping at it from the sidelines. Eventually these criticisms would culminate in a monetarist



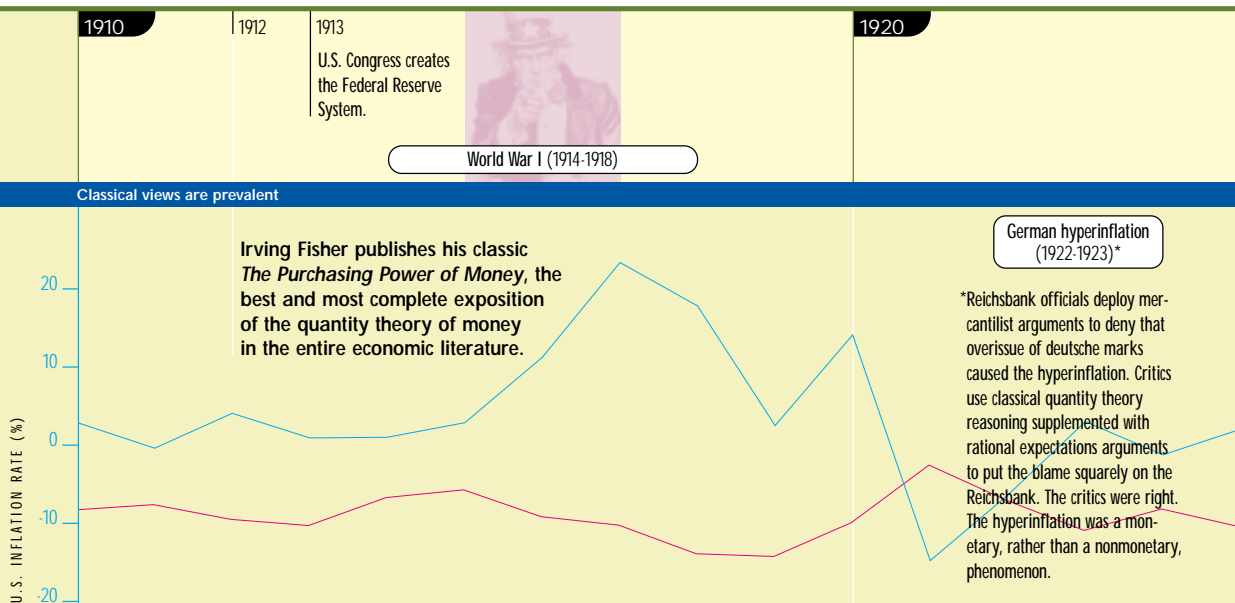
counterrevolution that would dethrone mercantilist doctrines and restore classical ones. At least eight mileposts mark the route of the classical comeback.

First came the theory of the real balance effect. Enunciated by Gottfried Haberler, A. C. Pigou, and Don Patinkin, it denied that Keynesian liquidity traps and interest-insensitive investment schedules could bar full employment.³¹ That is, it denied they could do so provided (1) wealth in the form of real money balances influences consumers' spending decisions, and (2) prices possess some downward flexibility. The latter condition should hold in a slump since a depressed economy implies an excess supply of goods exerting downward pressure on prices. Lower prices in turn raise the real value, or purchasing power, of cash balances in consumers' wealth portfolios. The rise in real cash balances stimulates consumption spending until full employment is reached. Indeed, it is unnecessary to wait for falling prices to activate the real balance effect. The central bank can achieve the same result directly by increasing the money supply. In principle, then, Say's Law holds and money is hardly powerless to affect aggregate demand even under extreme Keynesian conditions. Keynes might have realized as much had he incorporated real balances into his consumption function.

Second came the empirical work of Clark Warburton, Milton Friedman, and Anna Schwartz confirming money's power to affect spending. Contrary to Keynes's claim that idle

hoards and offsetting velocity movements might negate money's impact on nominal expenditure, Warburton established that (1) an erratic money stock through its impact on spending had been the chief factor causing most U.S. recessions, (2) money's initial impact was on output, and (3) with a lag, prices eventually adjusted to fully absorb the money stock change.³² Friedman and Schwartz (1963) then corroborated Warburton by showing that a one-third contraction of the money stock was the cause of the Great Depression of the 1930s. These studies, together with Friedman's findings that persistent inflation is largely or solely the result of excessive monetary growth, effectively reestablished the classical doctrine of the short-run nonneutrality and long-run neutrality of money. They also showed that classical doctrine could account for the Great Depression.

Third came Karl Brunner's and Allan Meltzer's 1967 critique of the Law-Keynes theory of interest rates as a policy guide. That theory claimed that the interest rate, a purely monetary variable, accurately measured the degree of monetary ease or tightness. Brunner and Meltzer disagreed. The rate, they said, is an unreliable indicator of monetary ease or tightness. It is unreliable because it registers the impact of nonmonetary determinants – notably business loan demands – as well as monetary ones. The rate might be low or high not because money was easy or tight but rather because loan demand was weak or strong. Neglect of this important consideration could



lead to perverse, destabilizing policy. For example, in times of depression, when slack business loan demands rendered the rate low, the authorities, misinterpreting the low rate as signifying easy money, might contract the money stock and thereby intensify the depression.

Contrariwise, in times of inflation when booming credit demands rendered the interest rate high, the authorities, misinterpreting the high rate as signaling tight money, might expand the money supply and so escalate the inflation. By confounding the effects of loan demands with those of monetary ease or tightness, the central bank would engineer a perverse, procyclical monetary policy. This critique did much to discredit the Law-Keynes theory of the interest rate.

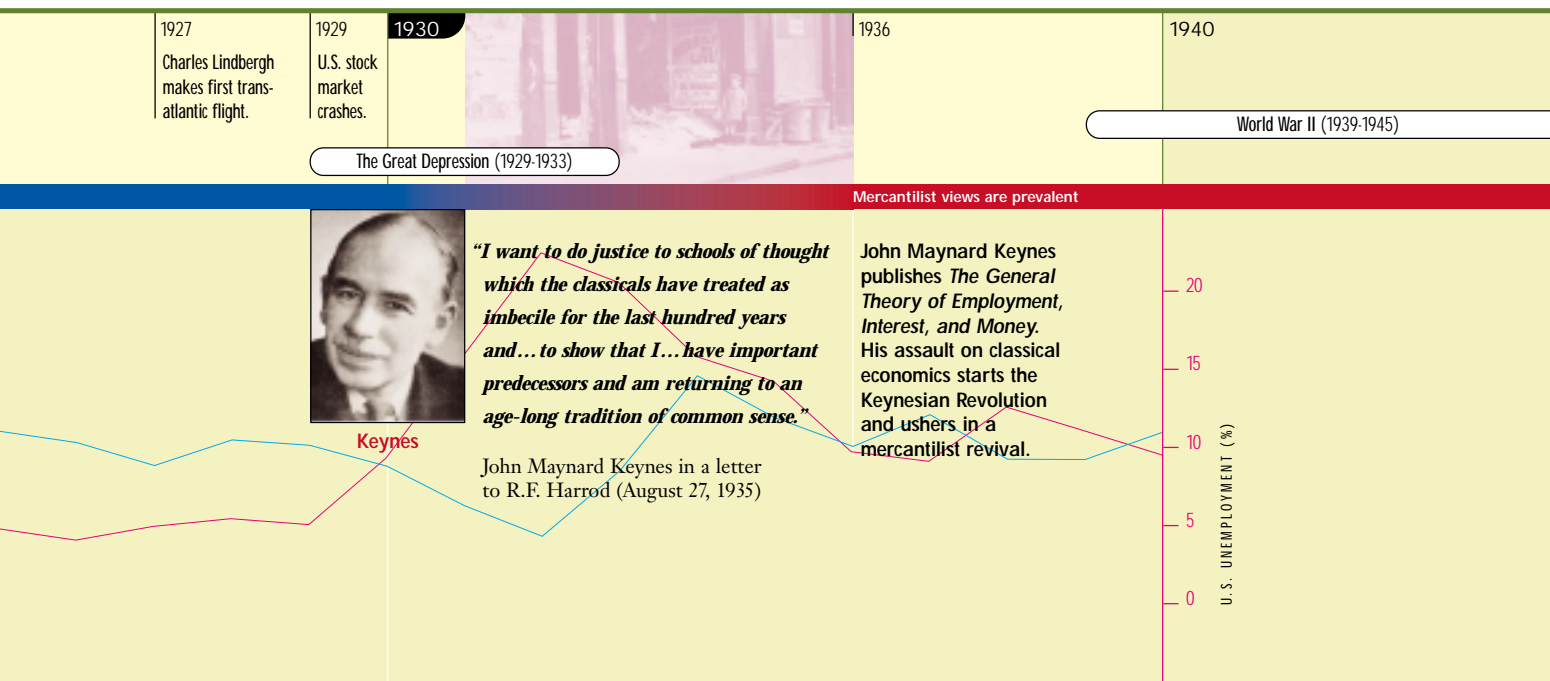
Milton Friedman's case for monetary rules constituted the fourth monetarist milestone. Friedman (1960) argued that long and variable time lags render discretionary countercyclical monetary policy destabilizing. Because such lags make forecast errors inevitable, the central bank cannot predict the short-run impact of its moves. The result is that expansionary actions aimed at fighting recessions may take effect at precisely the wrong time when the economy is booming just as contractionary anti-inflation actions may hit the economy when it is already mired in a slump. Friedman's solution was to recommend a rigid rule fixing the money stock's growth rate equal to the trend growth rate of output. Such a rule would operate as an automatic stabilizer working to restore aggregate

spending to its long-run non-inflationary, full-employment path. Inflationary spending that outruns the rule-determined money stock could not be sustained and must slacken. Conversely, spending that falls short of money stock growth, as in recessions, would eventually quicken under the impact of the monetary stimulus. In this way, such rule-induced corrections would ensure that money acts countercyclically and that long-run aggregate demand grows at the same trend rate as real output such that prices remain stable.

The fifth milestone, and the one that more than any other turned the tide in favor of the classicals, was the stagflation experience of the 1970s. That episode saw the simultaneous appearance of rapid monetary growth, rising unemployment, and accelerating inflation – an impossible combination according to the predictions of John Law and the Keynesian school. This experience did much to discredit mercantilist beliefs that money stimulates trade and that the price level is independent of the money supply.

Natural Rate Hypothesis

The sixth milestone was the monetarists' natural rate hypothesis according to which unemployment returns to its natural, equilibrium level regardless of the inflation rate. Milton Friedman (1968) and Edmund Phelps (1967) established this conclusion with the aid of an expectations-augmented Phillips curve. They showed that when inflationary expectations are incorporated into the Phillips curve, no permanent



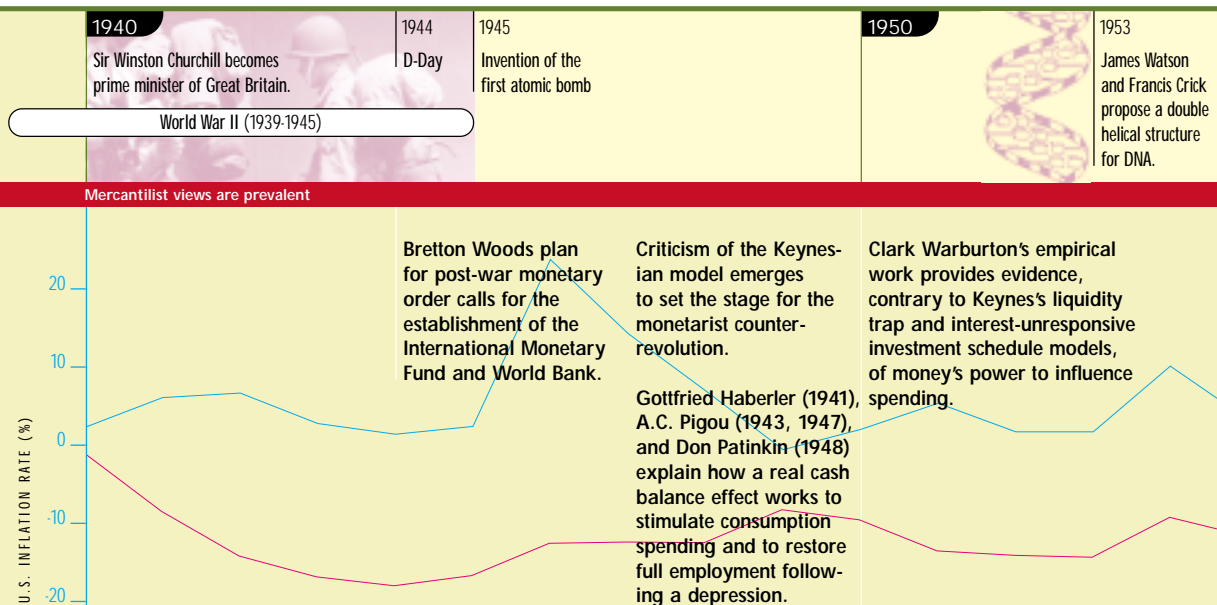
inflation-unemployment trade-offs remain to be exploited. True, like David Hume, they acknowledged that short-run trade-offs might still exist. Unanticipated rises in inflation, by lowering real wages, could stimulate employment and output temporarily. But once the increased inflation was fully perceived, anticipated, and therefore incorporated into nominal wage rates, the resulting rise in real wages would restore unemployment to its natural equilibrium level. In this way, the adjustment of expected to actual inflation transforms downward-sloping Phillips curves into a vertical line at the natural rate of unemployment. The classicals were right. Inflationary stimuli are temporary, never permanent. One cannot use a higher stable rate of inflation to peg the unemployment rate at arbitrarily low levels since there are no permanent employment gains to be had at any steady rate of inflation. Such gains can be had, if indeed they are available at all, only at the cost of ever-accelerating inflation.

Many Keynesians eventually came to accept the natural rate hypothesis. Even so, they still contended that disinflation was too costly to pursue. Their fear stemmed from early versions of the expectations-augmented Phillips curve.³³ Those versions embodied the assumption that agents revise their inflationary anticipations downward in mechanical, or adaptive, error-learning fashion only when actual, reported inflation turns out to be lower than expected. Accordingly, if the authorities sought to eradicate inflationary expectations – an absolute

requirement of any successful disinflationary policy – they would have to force actual inflation below expected inflation thereby inducing the latter to adjust toward the former as it converged on the desired target rate. This sequence required the central bank to employ contractionary monetary policy to raise unemployment above its natural level. The resulting excess unemployment would put downward pressure on the actual rate of inflation to which the expected rate would adjust with a lag. Through this long and painful error-learning adjustment process, both actual and anticipated inflation eventually would be squeezed out of the economy, albeit at the cost of much lost output and employment.

Rational Expectations Lower the Cost of Disinflation

The seventh monetarist/new classical milestone disposed of this Keynesian concern. Pairing John Muth's (1961) seminal work on rational expectations with Friedman's natural rate hypothesis, Robert Lucas (1972) and Thomas Sargent and Neil Wallace (1975) showed that if expectations are formed rationally rather than mechanically then disinflation need not be a painful drawn-out process. On the contrary, the unemployment cost of disinflation might be far less than Keynesians feared. For if people formed their anticipations rationally, they would take into account all systematic, and therefore predictable, future disinflationary policy actions and embody them in their price forecasts. Provided



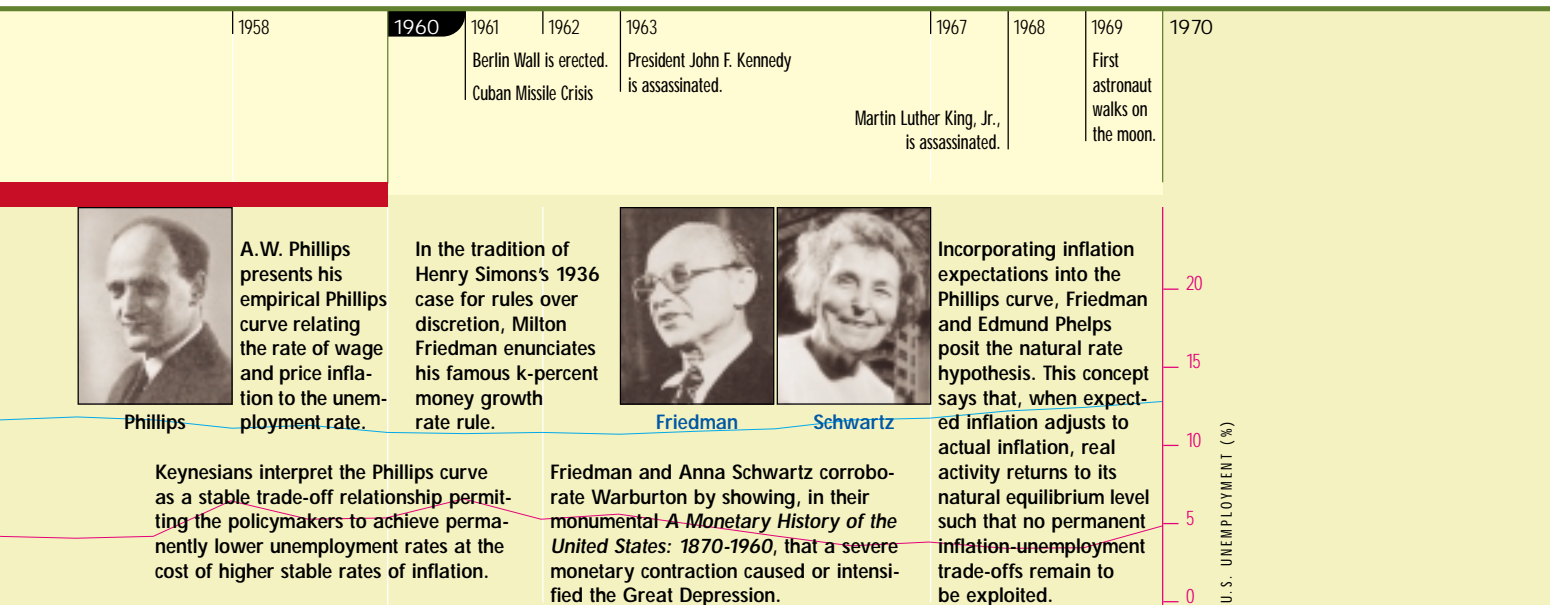
policymakers behaved in a non-haphazard, credible fashion, actual and expected rates of inflation and disinflation would coincide such that no gap would develop between them. With no gap, there would be no need for excess unemployment to generate it. Consequently, inflation, actual and expected, would be brought to its zero target level with no cost in terms of excess unemployment. In actuality, of course, this conclusion proved to be a bit too facile and sanguine. In a world in which wages and prices are to some degree sticky or inflexible such that markets fail to clear instantaneously, even rationally expected disinflation would incur some unemployment cost. Nevertheless, the analysis showed that these costs could be much lower than Keynesians feared.

Time Inconsistency Case For Rules

The last milestone was the time inconsistency argument which strengthened the classical case for rules by showing how they reinforce policy credibility. Enunciated by Finn Kydland and Edward Prescott (1977) and by Robert Barro and David Gordon (1983a,b), the argument is simplicity itself. Suppose a discretionary, fine-tuning central bank wants to eradicate inflationary expectations so it can have a favorable temporary inflation-unemployment trade-off to exploit. The bank announces its intention to pursue a policy of price stability. It assumes people will believe the announcement and revise their inflation predictions accordingly. The announcement, however, lacks credibility. Private agents

realize that once their new price predictions are formulated and acted upon, the bank will be tempted to renege on its promise and create a surprise inflation in order to boost output and employment. Such knowledge induces the rational public to discount the announcement and to maintain inflationary expectations at levels high enough to remove the bank's temptation to cheat. The result is that equilibrium unemployment is no lower than it otherwise would be, and yet equilibrium inflation is too high. What prevents inflation from immediately dropping to zero at the natural rate of unemployment is the central bank's inability to promise credibly not to create surprise inflation. Needed is something to convince the public that the central bank will not succumb to the temptation to inflate. That something is a monetary rule replacing the bank's discretionary power with a precommitment binding it irrevocably to price stability.³⁴ In demonstrating as much, the time inconsistency argument reinforced the classical case for rules.³⁵

The cumulative effect of the foregoing developments was to shift mainstream monetary opinion away from the extremes of Keynesian mercantilism toward classical monetarism. Not all Keynesian doctrines were abandoned, of course. Nor were all monetarist ones embraced. On the contrary, mainstream opinion assimilated an eclectic amalgam of competing views. But a new consensus definitely had emerged. After four or five decades of mercantilist dominance, the classical view was at the wheel once again.



Conclusion

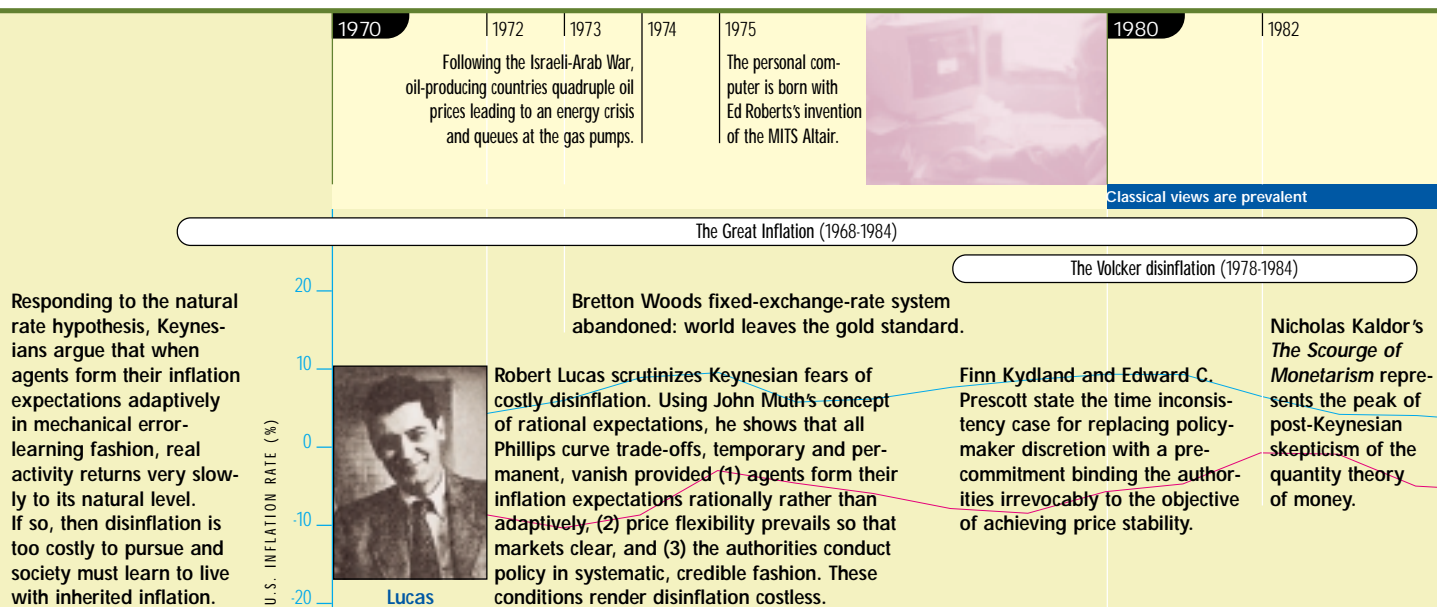
Three centuries of monetary controversy and experience have established certain hard-won classical truths. Inflation and deflation are monetary rather than cost-push phenomena. There are no long-run inflation-output trade-offs to exploit; central banks cannot permanently peg real variables at disequilibrium levels. Attempts to do so produce explosive, ever-worsening inflation or deflation. Money-stock changes at best affect output and employment temporarily. The output effect vanishes when prices adjust; all that remains is a changed rate of inflation. Stability of the value of money is a prerequisite of an efficiently functioning real economy. All non-negligible inflation rates violate this prerequisite and are therefore harmful. Monetary rules contribute to such stability.

Presently these truths are in the driver's seat. The proof is that many central bankers now view their primary mission as providing a stable price-level environment within which businesspeople can receive accurate market signals and allocate resources efficiently. Still the classical wisdom, though ruling, is hardly secure. For mercantilist views continue to abound. Even today, some economists still insist that it is better to live with inherited inflation than to fight it because disinflation is too costly to pursue. Others echo Stuart's cost-push theory, attributing the disinflation of the 1990s to such nonmonetary forces as increased global competition, rapid techno-

logical progress, falling computer and health-care costs, weakened power of labor unions, and the like. Still others evoke the Steuart-Keynes image of liquidity traps in holding that monetary policy is powerless to stimulate the currently depressed Japanese economy. Commentators even parrot Law's monetary theory of interest when they cite Japan's low interest rates as proof that the country is awash with money when the opposite is true. And always there are those who argue that, with prices determined by real considerations, monetary policy should be free to pursue nonprice objectives such as achieving full employment and maximizing real growth.

The challenge then is to ensure that the classical truths will not be forgotten. But that is a tall order given that memories fade, that central bank leadership changes, that the current generation of economists familiar with the Keynesian-monetarist controversy is passing from the scene, that revisionist scholars can be counted upon to reinterpret the record radically, and that future generations may well be as reluctant as the present one to study the lessons of the past. The task of countering these influences and preserving the classical wisdom falls to the doctrinal historian. As curator of the stock of eclipsed and unfashionable ideas, he has his work cut out for him.

An even more important challenge is to embed, or lock, the classical truths into endur-



Responding to the natural rate hypothesis, Keynesians argue that when agents form their inflation expectations adaptively in mechanical error-learning fashion, real activity returns very slowly to its natural level. If so, then disinflation is too costly to pursue and society must learn to live with inherited inflation.

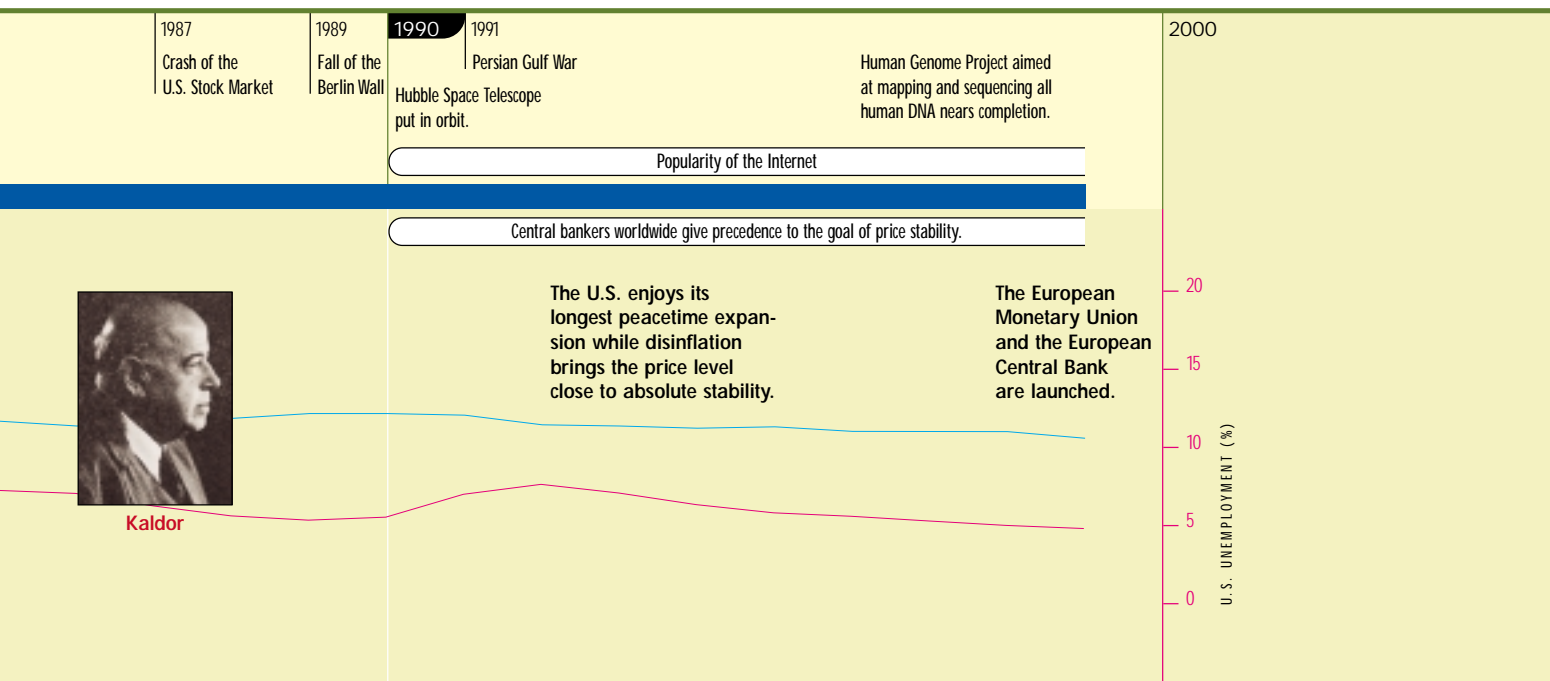


The Fed worked hard to build credibility as an inflation-fighter and desires to maintain that credibility; policy rules help.

ing institutional arrangements that allow no room for mercantilist policy alternatives. To this end, proponents of the classical view propose a variety of possible arrangements. These include (1) congressional mandates for price stability, (2) formal contracts between elected governments and central banks fixing quantitative targets for price-level behavior, (3) guaranteed independence for central bankers to insulate them from the political pressure to inflate, and (4) the appointment of conservative, inflation-averse central bankers committed to the goal of price stability. The trouble is, however, that none of these proposed arrangements can assure that classical policies will reign supreme for all time. Mandates can be changed, contracts terminated, guarantees revoked, and appointments altered. The upshot is that it is too early to

declare a permanent victory for the classical view. Indeed, there may always be a market for the opposing view that central banks need not and must not be bound to the goal of price stability. For better or worse, that view will challenge the classical view whenever the public perceives unemployment or sluggish real growth rather than inflation to be the dominant economic problem.

Still, the inherent cyclicity of ideas suggests an inevitable classical response to that challenge. Classicism, in short, will return to prominence to be confronted anew. For history shows it to be nothing if not resilient. Over long spans of time, it has proved resistant to the kinds of economic shocks that occasionally propel mercantilists to prominence. That is one of the chief insights of doctrinal history.



ENDNOTES

1. Additional famous policy debates pitting mercantilists and classicals include (1) the Swedish Bullionist controversy (1755-1765), (2) the English Bullionist-Antibullionist, or Bank Restriction, dispute (1797-1821), (3) the Bimetallism debate (1880-1896), and (4) the German hyperinflation debate (1922-1923).
2. Because anti-quantity theory elements also characterize the fixed-exchange-rate, small-open-economy case of the monetary approach to the balance of payments, some observers may be tempted to equate mercantilism with that approach. In fact, however, the two theories differ markedly. First, the monetary approach applies the quantity theory, rather than its opposite, to closed-economy and inconvertible-paper, floating-exchange-rate regimes. By contrast, mercantilists, with few exceptions, tended to apply the anti-quantity theory indiscriminately to all regimes. Second, the monetary approach rejects the mercantilist money-stimulates-trade doctrine.
3. On Law's monetary theory, see Murphy (1997, Chs. 6 and 8) and Hutchison (1988, pp. 134-40). On Steuart's theory, see Eltis (1986), Hutchison (1988, pp. 341-51), Meek (1967), and Skinner (1981).
4. Law's fear of monetary shortage under a metallic standard is incompatible with the monetary approach to the balance of payments. The latter sees a small open economy, like Scotland, taking its price level as given from the closed world economy with money then flowing in through the balance of payments to support that price level such that no monetary shortage occurs. Of these two propositions, Law recognized the first but denied the second. See Murphy (1997, Ch. 8).
5. See Blaug (1996, p. 16).
6. On Steuart's cost-push theory, see Screpanti and Zamagni (1993, p. 53).
7. Not all mercantilists were as sanguine as Steuart on hoards. Indeed they were somewhat ambivalent on the subject. Hoards to them could be either desirable or undesirable. On the one hand, hoards, by draining excess cash from circulation, would tailor the remaining stock precisely to the needs of trade. On the other hand, if output and so the needs of trade were expandable under the impact of a monetary stimulus, such hoards, by removing the source of that stimulus, could unduly constrain real activity. Even so, such hoards would see to it that no monetary excess ever developed to spill over into the commodity market to bid up prices.
8. See Screpanti and Zamagni (1993, p. 53).
9. Steuart of course never resorted to such modern terminology. Nevertheless, the concepts were his.
10. On Steuart's statesman, see Eltis (1986) and Skinner (1981).
11. Law denied that the monetary expansion was excessive on the grounds that much of it went to redeem outstanding government bonds and equity claims to his trading firm. Since to him bonds and stocks shared money's characteristic as a transactions medium, he saw them as exerting the same influence on spending. In his view, money swapped for bonds and equities leaves the total supply of financial purchasing power – money, bonds, and stocks – unchanged. Such monetary issue therefore is noninflationary. He erred. *Not* being transactions media, bonds and stocks are far from perfect substitutes for money in spending. Monetizing them can be inflationary. See Niehans (1990, p. 51).
12. See Murphy (1997) for an exhaustive account of the rise and fall of Law's system.
13. Thus a follower of Smith might attribute Scotland's penury not to monetary deficiency and the absence of banks, but rather to lack of specialization and division of labor resulting from a small population.
14. Cesarano (1998) argues that Hume actually rejected the price-specie-flow mechanism and its attendant relative price effects for the monetary approach to the balance of payments. By contrast, the standard view emphasized here holds that neither Hume nor his classical followers subscribed to the approach's proposition of instantaneous purchasing power parity, or law of one price.
15. See Ricardo (1951-73, I, pp. 46, 61-3, 104-5, 126, 302-3, 307-8, 315).
16. See Hume ([1752] 1955, pp. 37-8, 47-8).
17. Classicals recognized still other sources of short-run nonneutrality including sticky nominal interest rates, fixed nominal charges such as rents and taxes, fixed nominal incomes of wage earners and rentiers, confusion of relative- for absolute price changes, market size encouragement to specialization and division of labor, and deliberate efforts on the part of organized groups to maintain real incomes. See Humphrey (1993, pp. 251-63).
18. Hume ([1752] 1955, pp. 39-40) admitted that money might exhibit long-run super-nonneutrality. Being unanticipated (perhaps because agents formulate their expectations in a backward-looking way), a steady succession of money stock changes might perpetually frustrate the attempt of prices to catch up and therefore permanently affect the level of real output.
19. Perhaps too cavalierly, classicals dismissed or minimized the problem of unemployment. To them joblessness, while it certainly occurred from time to time, was necessarily short-lived and self-correcting through automatic wage, price, and interest-rate reductions. Only their inflationist,
- full-employment-at-any-cost counterparts of the Birmingham School, especially the Attwood brothers, Thomas and Matthias, were gravely concerned with it.
20. See Hume (1752, pp. 47-59); Ricardo (1951-73, I, pp. 363-4; III, pp. 88-89, 91, 92; IV, p. 233; V, p. 445); Thornton ([1802] 1939, pp. 253-56).
21. Thornton ([1811] 1939, p. 342). He ([1802] 1939, pp. 244, 253-6) applies the same criticism to the real bills doctrine which ties the issue of bank money (notes and checking deposits) to the nominal volume of commercial paper that borrowers offer as collateral for bank loans.
22. For classic accounts of the Currency School-Banking School debate, see Viner (1937, Ch. 5), Fetter (1965, Ch. 6), Robbins (1958, Ch. 5), and Mints (1945, Ch. 6). For recent interpretations, see O'Brien (1975, pp. 153-59) and Schwartz (1987).
23. With the exception of John Wheatley, classicals held that national price levels could deviate temporarily from their purchasing power parity, or long-run equilibrium, levels.
24. O'Brien (1975, p. 153) credits Joplin, Drummond, Page, Pennington, and McCulloch with the simultaneous enunciation of the metallic principle.
25. Because these doctrines are consistent with those of the monetary approach to the balance of payments, Skaggs (1999) interprets the Banking School as early anticipators of that approach. Even so, the School hardly derived its conclusions from the logic of the monetary approach. The conclusions may have been the same, but they were reached by a different route.
26. On Tooke's interest cost-push theory and Knut Wicksell's definitive critique of it, see Humphrey (1998, pp. 60-64).
27. Before he abandoned classicism, Keynes was one of its luminaries. Both his 1923 *A Tract on Monetary Reform* and his 1930 *A Treatise on Money* are squarely in the classical tradition. He returned to the classical fold shortly before his death in 1946.
28. Keynes applied this notion to a closed economy. He was not referring to the case where, with foreign prices given and the exchange rate fixed, the real terms of trade drives the price level in a small open economy.
29. On the cost-push pricing theories of Keynes and his followers, see Tavlas (1981, pp. 324-330).
30. On the mercantilists' policy goal of full employment, see Grampp (1952).
31. See Haberler (1941, pp. 242, 389, 403), Pigou (1943, 1947), and Patinkin (1948, 1965).
32. See Warburton (1966) for a collection of his relevant papers, many published between 1944 and 1953.

33. See Taylor (1997, pp. 278-9).

34. Alternatively, an established reputation as a zealous inflation fighter would do.

35. The time consistency case for rules differs a bit from Friedman's argument. He sees rules as overcoming the central bank's inability to predict the short-run impact of its actions. By contrast, the time inconsistency argument is that rules are good for commitment reasons even though central bankers have full knowledge of the impact of their moves.

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Year in Review

Despite considerable domestic and international financial turbulence in the latter part of the year, the U. S. economy continued its robust growth in 1998. Unemployment fell to its lowest level since the early 1970s, real wages rose more rapidly than at any time since that period, and inflation remained low. The Fifth District's economy shared in the national prosperity, particularly in the areas of employment growth and construction activity – residential and commercial. Accompanying the region's strong economic conditions was substantial bank merger activity, including the creation of two of the nation's largest banking companies headquartered in the District. The Federal Reserve System's monetary policy strategy aimed at price-level stability helped set the stage and establish the financial framework for the national and Fifth District growth. Through its research and communication efforts, the Federal Reserve Bank of Richmond contributed to the support of this strategy as well as to banking and payments system policymaking. The Bank worked to achieve these and other System objectives not only through research and communications, but also its activities in public and community affairs, banking supervision, and financial services.

Economic Research and Public Outreach

The Bank continued to produce economic research relevant to Federal Reserve monetary and banking policy, the Fifth District economy, and the payments mechanism. Research staff analyzed current policy issues and advised Mr. Broaddus in preparation for Federal Open Market Committee meetings and presented monetary policy research in both Federal Reserve and academic forums. The Research Department also provided Mr. Broaddus and Mr. Varvel strong analytical support in meeting their banking and payment system responsibilities. In addition, the Bank provided valuable input to Systemwide understanding of the reserve accounting, Federal Reserve credit extension, data reporting, banking supervision, and payment policy needs of interstate banking organizations.

Public outreach efforts bolstered current initiatives and introduced new products and public programs. Mr. Broaddus continued to meet with business and community leaders around the District and maintained an active public speaking schedule. Direct contact with District businesses increased in 1998 to meet growing public demand for timely and comprehensive information about the region's economy.

The Bank used its publications and web site to communicate information about the Fifth District, the national economy, and Federal Reserve monetary policy. The Bank's business magazine, *Region Focus*, received several awards and increased its circulation. Articles from the *Economic Quarterly* earned media recognition and international acknowledgment. With new sections on economic education, financial services, and century date change preparations, the Bank's web site became a popular source of information. State Economic Profiles were reformatted on the web site to better meet user needs for information on state economic activity.

Continuing to build on established partnerships with economic education organizations around the District, the Bank helped establish a new national center for Economic Education at Gallaudet University in Washington, D.C., a four-year liberal arts college serving the deaf and hearing impaired. In addition, the District held three "Fed Challenge" competitions for high school students and one for college students.

The Bank also formed a new Community Development Advisory Council to increase communication between the Bank and consumer, community, and labor groups across the District. In other communication efforts, the Community Affairs Office sponsored more than 20 public seminars and distributed over 25,000 copies of its publications.

Banking Supervision

The financial condition of banking organizations in the Fifth District remained strong, and banking industry consolidation continued at a rapid pace. At year-end 1998, 220 Fifth District bank holding companies controlled total assets of \$1.1 trillion, an increase of \$420 billion from the previous year. This increase resulted from

several large bank acquisitions, most notably NationsBank Corporation's acquisition of Barnett Banks, Inc., and subsequent merger with BankAmerica Corporation; and First Union Corporation's purchase of CoreStates Financial Corp. Consolidation activity also spurred the opening of several *de novo* banks in the District. Seven new banks opened as state member banks during 1998, while four existing banks converted to state member status.

In response to increased supervisory responsibilities for three large interstate banking organizations headquartered in North Carolina, the Bank opened a new banking supervision and regulation office in Charlotte. Banking Supervision strengthened its new approach to conducting examinations that focuses on each institution's management and control of business risks. This risk-based supervisory approach and joint efforts with the Office of the Comptroller of the Currency and state banking authorities reduced the supervisory burden imposed on bank holding companies and state member banks.

Financial Services and Other Operations

The financial services areas continued to offer quality services to meet the needs of depository institutions and the U.S. Treasury. The Bank realized 105.8 percent cost recovery in 1998, exceeding its financial targets for priced services. Also, the financial services functions improved their unit cost and productivity measures and met their key quality targets. Surveys of the accounting, automated clearinghouse (ACH), check, customer support, funds transfer, and securities transfer areas indicated that customers were well satisfied with the Bank's services.

The Bank continued to pursue payment system efficiencies through the expansion of ACH, electronic check presentment and image-based services. Partnering with the District's three ACH associations, the ACH function conducted successful educational and promotional campaigns for direct deposit and direct bill payment programs. ACH also introduced new software to support financial electronic data interchange. Operating efficiencies permitted the Federal Reserve to further reduce the price of ACH services during the year and

to effect substantial reductions in funds transfer fees. In addition, government check processing operations were converted to a high-speed image capture platform in August 1998. Commercial electronic check presentment and truncation volume as a percentage of numbers of items processed grew from 8.7 percent at year-end 1997 to 13.6 percent at year-end 1998, resulting in the second highest check truncation volume in the System.

The Bank also provided extensive support to the U.S. Treasury in 1998. A senior Bank officer continued to serve as the System's Treasury Liaison; he coordinated 20 joint Treasury and Federal Reserve initiatives and provided consultative support. The Currency Technology Office supported the Treasury in introducing new currency and in counterfeit sampling, and assisted the Bureau of Engraving and Printing with the design of the new \$20 note. Finally, the Bank provided full support for the U.S. Treasury's Automated Standard Application for Payments and the Department of Agriculture's Account Management Agent applications, and served as one of five regional processing sites for savings bonds.

The Reserve Accounting and Loans areas played a major role in supporting the numerous account changes associated with bank mergers and in encouraging depository institutions to make preparations to borrow from the Fed's discount window should the need arise. Accounting and Control implemented a COSO-based framework for evaluating the adequacy of internal controls associated with the Bank's financial reporting. PricewaterhouseCoopers LLP reviewed and attested to the internal control evaluation performed by Bank management in 1998.

Preparations for the century date change (CDC) were intense. The Bank met end-of-year targets and milestones for its critical hardware and software systems. It also provided extensive automated systems test support for depository institutions and supervisory oversight for CDC preparations at bank holding companies and state member banks. During 1999, CDC preparations will include follow-up supervisory examinations, continued test support for institutions, and refinement of the Bank's contingency and event management plans.

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Washington, D. C.

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President and CEO
The Bank of Tidewater
Virginia Beach, Virginia

James E. Haden

President/CEO
Martha Jefferson Hospital
Charlottesville, Virginia

J. Walter McDowell

President – North Carolina Banking
Wachovia Bank, N. A.
Winston-Salem, North Carolina

Craig A. Ruppert

President/Owner
The Ruppert Companies
Laytonsville, Maryland

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Reynolds Metals Company
Richmond, Virginia

Wesley S. Williams, Jr.

Partner
Covington & Burling
Washington, D. C.



MEMBER, FEDERAL ADVISORY COUNCIL

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President
Bank of America Corporation
Charlotte, North Carolina



Baltimore Office

FROM LEFT TO RIGHT

George L. Russell, Jr.; Jeremiah E. Casey; Daniel R. Baker;
Virginia W. Smith; Morton I. Rapoport



Charlotte Office

FROM LEFT TO RIGHT

Joan H. Zimmerman; Cecil W. Sewell, Jr.;
Dennis D. Lowery; James O. Roberson; Elleveen T. Poston;
Laura M. Fleming; William H. Nock

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Jessup, Maryland

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International Secretary-Treasurer
Service Employees International Union
AFL-CIO, CLC
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Owings Mills, Maryland

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Rocky Mount, North Carolina

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Southern Shows, Inc.
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Joseph C. Kincheloe; Billy W. Stephenson



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David E. Lowe; William J. Callis; Catherine L. Hughes

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Principal, Chief Investment Officer
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Sibyl S. Malatras; Martin W. Patterson;
Donald G. Chapman



FROM LEFT TO RIGHT

Jack H. Goldstein; Robert L. Dargan;
Gregory G. Bolac; David G. Poole



FROM LEFT TO RIGHT

B. Martin Walker; Marshall E. Tyner;
G. Dodson Mathias; Robert E. Dael

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Blacksburg, Virginia

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Manager of Production Services*
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Lynchburg, Virginia

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Columbia, South Carolina

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Vice President/Cashier
The Bank of the Eastern Shore
Cambridge, Maryland

Burnell T. Rogers
Executive Vice President
Centura Bank
Rocky Mount, North Carolina

Charles E. Thomas
President, Financial Services
West Virginia Corporate Credit Union
Parkersburg, West Virginia

Marshall E. Tyner
Senior Vice President
Branch Banking and Trust Company
Wilson, North Carolina

B. Martin Walker
Senior Vice President
NationsBanc Services, Inc.
Richmond, Virginia

Community Development Advisory Council



FROM LEFT TO RIGHT
Joe Barker; Greta J. Harris; Brian D. Coyle; Abdul Sm Rasheed



FROM LEFT TO RIGHT
Raymond A. Skinner; John Sidor; Donna S. DeWitt; James W. Middleton

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Executive Director
Council of State Community
Development Agencies
Washington, D. C.

VICE CHAIRMAN

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President and CEO
North Carolina Community
Development Initiative
Raleigh, North Carolina

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Executive Director
West Virginia Rural
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Charleston, West Virginia

Gilda Cobb-Hunter
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CASA/Family Systems
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*Senior Vice President and Community
Development Manager*
Branch Banking and Trust Company
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President
South Carolina AFL-CIO
Columbia, South Carolina

Greta J. Harris
Program Director
Local Initiatives Support Corporation
Richmond, Virginia

James W. Middleton
Executive Director
Southside Community Development
and Housing Corporation
Richmond, Virginia

Raymond A. Skinner
Deputy Secretary
Maryland Department of Housing
and Community Development
Crownsville, Maryland

Changes in Official Staff

In the Audit Department, B. Wayne Deal* was promoted to vice president and assistant general auditor. Jodie S. Kitchens* and David J. League* were appointed audit officers.

Donna A. Stroup* was promoted to assistant vice president in the Information Security Department. Mattison W. Harris was appointed operations officer with responsibility for the Building and Equipment and General Services Departments.

Donna J. Webb was appointed accounting and control officer with responsibility for the Bank's general ledger, accounts payable, fixed assets, and payroll and expense accounting.

In the Research Department, Page W. Marchetti* was appointed statistical officer and John R. Walter* was appointed associate research officer.

Jeffrey K. Thomas was appointed examining officer with responsibility for the Banking Supervision and Regulation Department's office established in Charlotte.

* indicates changes effective January 1, 1999



FROM LEFT TO RIGHT
Senior Vice Presidents

Seated: James D. Reese; Marvin S. Goodfriend; Robert E. Wetzell, Jr.

Standing: Joseph C. Ramage; Michael W. Newton; James McAfee; William J. Tignanelli; Lloyd W. Bostian, Jr.

Officers

Richmond

J. Alfred Broaddus, Jr.
President

Walter A. Varvel
First Vice President

Lloyd W. Bostian, Jr.
Senior Vice President

Marvin S. Goodfriend
*Senior Vice President
and Director of Research*

James McAfee
*Senior Vice President
and General Counsel*

Michael W. Newton
*Senior Vice President
and Chief Financial Officer*

Joseph C. Ramage
Senior Vice President

James D. Reese
Senior Vice President

Malcolm C. Alfriend
Vice President

Fred L. Bagwell
Vice President

Kemper W. Baker, Jr.
Vice President

William H. Benner, Jr.
Vice President

Jackson L. Blanton
Vice President

William A. Bridenstine, Jr.
Associate General Counsel

Bradford N. Carden
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Michael Dotsey
Vice President

Betty M. Fahed
Vice President

Sharon M. Haley
Vice President and Secretary

Robert L. Hetzel
Vice President

Richard L. Hopkins
Vice President

Thomas M. Humphrey
Vice President

Eugene W. Johnson, Jr.
Vice President

Jeffrey S. Kane
Vice President

Jeffrey M. Lacker
Vice President

Harold T. Lipscomb
Vice President

Yash P. Mehra
Vice President

Joseph F. Morrisette
Vice President

Virginus H. Rosson, Jr.
Vice President

G. Ronald Scharr
Vice President

John W. Scott
Vice President

Marsha S. Shuler
Vice President

Roy H. Webb
Vice President

Howard S. Whitehead
Vice President

Gwen W. Byer
Assistant Vice President

Janice E. Clatterbuck
Assistant Vice President

Whitley K. Crane
Assistant Vice President

Burrie E. Eaves, III
Assistant Vice President

A. Linwood Gill, III
Assistant Vice President

Howard S. Goldfine
Assistant Vice President

Charles L. Huffstetler
Assistant Vice President

Frederick B. Johnson
Assistant Vice President

Thomas P. Kellam
Assistant Vice President

Claudia N. MacSwain
Assistant Vice President

John W. Moore, Jr.
Assistant Vice President

Susan Q. Moore
Assistant Vice President

Edward B. Norfleet
Assistant Vice President

Ruth S. Pratt
Assistant Vice President

Arlene S. Saunders
Assistant Vice President

James R. Slate
Assistant General Counsel

Charlotte L. Waldrop
Assistant Vice President

John A. Weinberg
Research Officer

John N. Weiss
Assistant Vice President

William F. White
Assistant Vice President

Karen J. Williams
Assistant Vice President

Arthur J. Zohab, Jr.
Assistant Vice President

Hattie R. C. Barley
Human Resources Officer

Roland Costa
Currency Technology Officer

Floyd M. Dickinson, Jr.
Examining Officer

Mattison W. Harris
Operations Officer

William R. McCorvey, Jr.
Assistant Counsel

Barbara J. Moss
Examining Officer

P. A. L. Nunley
Assistant Counsel

Raymond E. Owens, III
Associate Research Officer

Donna A. Stroup
Information Security Officer

Jeffrey K. Thomas
Examining Officer

Donna J. Webb
Accounting and Control Officer

Robert E. Wetzel, Jr.
*Senior Vice President and
General Auditor*

B. Wayne Deal
Assistant Vice President

Susan A. Saavedra
Assistant Vice President

Baltimore

William J. Tignanelli
Senior Vice President

R. William Ahern
Vice President

Margaret M. Murphy
Vice President

David E. Beck
Assistant Vice President

John S. Frain
Assistant Vice President

Patricia S. Tunstall
Assistant Vice President

John I. Turnbull, II
Assistant Vice President

Charlotte

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Lyle C. DeVane
Vice President

Marsha H. Malarz
Vice President

Samuel W. Powell, Jr.
Vice President

Ronald D. Steele
Vice President

Bobby D. Wynn
Vice President

Richard J. Kuhn
Accounting Officer

Charleston

Richard L. Hopkins
Vice President

Columbia

Ronald D. Steele
Vice President

December 31, 1998

To the Board of Directors:

The management of the Federal Reserve Bank of Richmond ("FRB Richmond") is responsible for the preparation and fair presentation of the Statement of Financial Condition, Statement of Income, and Statement of Changes in Capital as of December 31, 1998 (the "Financial Statements"). The Financial Statements have been prepared in conformity with the accounting principles, policies, and practices established by the Board of Governors of the Federal Reserve System and as set forth in the Financial Accounting Manual for the Federal Reserve Banks, and as such, include amounts, some of which are based on judgments and estimates of management.

The management of the FRB Richmond is responsible for maintaining an effective process of internal controls over financial reporting including the safeguarding of assets as they relate to the Financial Statements. Such internal controls are designed to provide reasonable assurance to management and to the Board of Directors regarding the preparation of reliable Financial Statements. This process of internal controls contains self-monitoring mechanisms, including, but not limited to, divisions of responsibility and a code of conduct. Once identified, any material deficiencies in the process of internal controls are reported to management, and appropriate corrective measures are implemented.

Even an effective process of internal controls, no matter how well designed, has inherent limitations, including the possibility of human error, and therefore can provide only reasonable assurance with respect to the preparation of reliable financial statements.

The management of the FRB Richmond assessed its process of internal controls over financial reporting including the safeguarding of assets reflected in the Financial Statements, based upon the criteria established in the "Internal Control – Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). Based on this assessment, the management of the FRB Richmond believes that the FRB Richmond maintained an effective process of internal controls over financial reporting including the safeguarding of assets as they relate to the Financial Statements.

Federal Reserve Bank of Richmond

J. Alfred Broaddus, Jr.
PRESIDENT

Walter A. Varvel
FIRST VICE PRESIDENT

Report of Independent Accountants

To the Board of Directors of the Federal Reserve Bank of Richmond:

We have examined management's assertion that the Federal Reserve Bank of Richmond ("FRB Richmond") maintained effective internal control over financial reporting and the safeguarding of assets as they relate to the Financial Statements as of December 31, 1998, included in the accompanying Management's Assertion.

Our examination was made in accordance with standards established by the American Institute of Certified Public Accountants, and accordingly, included obtaining an understanding of the internal control over financial reporting, testing, and evaluating the design and operating effectiveness of the internal control, and such other procedures as we considered necessary in the circumstances. We believe that our examination provides a reasonable basis for our opinion.

Because of inherent limitations in any internal control, misstatements due to error or fraud may occur and not be detected. Also, projections of any evaluation of the internal control over financial reporting to future periods are subject to the risk that the internal control may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

In our opinion, management's assertion that the FRB Richmond maintained effective internal control over financial reporting and over the safeguarding of assets as they relate to the Financial Statements as of December 31, 1998, is fairly stated, in all material respects, based upon criteria described in "Internal Control - Integrated Framework" issued by the Committee of Sponsoring Organizations of the Treadway Commission.



Richmond, Virginia
March 5, 1999

Report of Independent Accountants

To the Board of Governors of The Federal Reserve System
and the Board of Directors of The Federal Reserve Bank of Richmond:

We have audited the accompanying statements of condition of The Federal Reserve Bank of Richmond (the "Bank") as of December 31, 1998 and 1997, and the related statements of income and changes in capital for the years then ended. These financial statements are the responsibility of the Bank's management. Our responsibility is to express an opinion on the financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

As discussed in Note 3, the financial statements were prepared in conformity with the accounting principles, policies, and practices established by the Board of Governors of The Federal Reserve System. These principles, policies, and practices, which were designed to meet the specialized accounting and reporting needs of The Federal Reserve System, are set forth in the "Financial Accounting Manual for Federal Reserve Banks" and constitute a comprehensive basis of accounting other than generally accepted accounting principles.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Bank as of December 31, 1998 and 1997, and results of its operations for the years then ended, on the basis of accounting described in Note 3.



Richmond, Virginia
March 5, 1999

Statements of Condition

(IN MILLIONS)	AS OF DECEMBER 31, 1998	AS OF DECEMBER 31, 1997
Assets		
Gold certificates	\$ 807	\$ 965
Special drawing rights certificates	792	792
Coin	53	63
Items in process of collection	624	474
U.S. government and federal agency securities, net	35,974	41,294
Investments denominated in foreign currencies	3,066	1,177
Accrued interest receivable	340	391
Interdistrict settlement account	4,985	—
Bank premises and equipment, net	201	217
Other assets	85	86
Total assets	\$46,927	\$45,459
Liabilities and Capital		
Liabilities:		
Federal Reserve notes outstanding, net	\$41,577	\$32,459
Deposits:		
Depository institutions	1,898	2,062
Other deposits	54	40
Deferred credit items	676	650
Surplus transfer due U.S. Treasury	157	47
Interdistrict settlement account	—	8,468
Accrued benefit cost	64	59
Other liabilities	25	23
Total liabilities	44,451	43,808
Capital:		
Capital paid-in	1,238	833
Surplus	1,238	818
Total capital	2,476	1,651
Total liabilities and capital	\$46,927	\$45,459

The accompanying notes are an integral part of these financial statements.

Statements of Income

(IN MILLIONS)	FOR THE YEAR ENDED DECEMBER 31, 1998	FOR THE YEAR ENDED DECEMBER 31, 1997
Interest Income:		
Interest on U.S. government securities	\$2,212	\$2,309
Interest on foreign currencies	65	26
Total interest income	2,277	2,335
Other Operating Income (Loss):		
Income from services	65	62
Reimbursable services to government agencies	31	26
Foreign currency gains (losses), net	290	(179)
Government securities gains, net	3	1
Other income	4	2
Total other operating income (loss)	393	(88)
Operating Expenses:		
Salaries and other benefits	157	141
Occupancy expense	24	24
Equipment expense	84	104
Cost of unreimbursed Treasury services	—	6
Assessments by Board of Governors	57	48
Other expenses (credits)	(60)	(57)
Total operating expenses	262	266
Net income prior to distribution	\$2,408	\$1,981
Distribution of Net Income:		
Dividends paid to member banks	\$ 61	\$ 34
Transferred to surplus	420	515
Payments to U.S. Treasury as interest on Federal Reserve notes	733	—
Payments to U.S. Treasury as required by statute	1,194	1,432
Total distribution	\$2,408	\$1,981

The accompanying notes are an integral part of these financial statements.

Statements of Changes in Capital

FOR THE YEARS ENDED DECEMBER 31, 1998
AND DECEMBER 31, 1997
(IN MILLIONS)

	Capital Paid-in	Surplus	Total Capital
Balance at January 1, 1997			
(6.4 million shares)	\$ 318	\$ 310	\$ 628
Net income transferred to surplus	—	515	515
Statutory surplus transfer to the U.S. Treasury	—	(7)	(7)
Net change in capital stock issued			
(10.3 million shares)	515	—	515
Balance at December 31, 1997			
(16.7 million shares)	\$ 833	\$ 818	\$1,651
Net income transferred to surplus	—	420	420
Net change in capital stock issued			
(8.0 million shares)	405	—	405
Balance at December 31, 1998			
(24.7 million shares)	\$1,238	\$1,238	\$2,476

The accompanying notes are an integral part of these financial statements.

Notes to Financial Statements

1. Organization

The Federal Reserve Bank of Richmond ("Bank") is part of the Federal Reserve System ("System") created by Congress under the Federal Reserve Act of 1913 ("Federal Reserve Act") which established the central bank of the United States. The System consists of the Board of Governors of the Federal Reserve System ("Board of Governors") and twelve Federal Reserve Banks ("Reserve Banks"). The Reserve Banks are chartered by the federal government and possess a unique set of governmental, corporate, and central bank characteristics. Other major elements of the System are the Federal Open Market Committee ("FOMC"), and the Federal Advisory Council. The FOMC is composed of members of the Board of Governors, the president of the Federal Reserve Bank of New York ("FRBNY") and, on a rotating basis, four other Reserve Bank presidents.

Structure

The Bank and its branches in Baltimore, Maryland, Charlotte, North Carolina, Columbia, South Carolina, and Charleston, West Virginia serve the Fifth Federal Reserve District, which includes Maryland, North Carolina, South Carolina, Virginia, District of Columbia, and a portion of West Virginia. In accordance with the Federal Reserve Act, supervision and control of the Bank is exercised by a Board of Directors. Banks that are members of the System include all national banks and any state chartered bank that applies and is approved for membership in the System.

Board of Directors

The Federal Reserve Act specifies the composition of the board of directors for each of the Reserve Banks. Each board is composed of nine members serving three-year terms: three directors, including those designated as Chairman and Deputy Chairman, are appointed by the Board of Governors, and six directors are elected by member banks. Of the six elected by member banks, three represent the public and three represent member banks. Member banks are divided into three classes according to size. Member banks in each class elect one director representing member banks and one representing the public. In any election of directors, each member bank receives one vote, regardless of the number of shares of Reserve Bank stock it holds.

2. Operations and Services

The System performs a variety of services and operations. Functions include: formulating and conducting monetary policy; participating actively in the payments mechanism, including large-dollar transfers of funds, automated clearinghouse operations and check processing; distribution of coin and currency; fiscal agency functions for the U.S. Treasury and certain federal agencies; serving as the federal government's bank; providing short-term loans to depository institutions; serving the consumer and the community by providing educational materials and information regarding consumer laws; supervising bank holding companies, and state member banks; and administering other regulations of the Board of Governors. The Board of Governors' operating costs are funded through assessments on the Reserve Banks.

The FOMC establishes policy regarding open market operations, oversees these operations, and issues authorizations and directives to the FRBNY for its execution of transactions. Authorized transaction types include direct purchase and sale of securities, matched sale-purchase transactions, the purchase of securities under agreements to resell, and the lending of U.S. government securities. Additionally, the FRBNY is authorized by the FOMC to hold balances of and to execute spot and forward foreign exchange and securities contracts in fourteen foreign currencies, maintain reciprocal currency arrangements ("F/X swaps") with various central banks, and "warehouse" foreign currencies for the U.S. Treasury and Exchange Stabilization Fund ("ESF") through the Reserve Banks.

3. Significant Accounting Policies

Accounting principles for entities with the unique powers and responsibilities of the nation's central bank have not been formulated by the Financial Accounting Standards Board. The Board of Governors has developed specialized accounting principles and practices that it believes are appropriate for the significantly different nature and function of a central bank as compared to the private sector. These accounting principles and practices are documented in the "Financial Accounting Manual for Federal Reserve Banks" ("Financial Accounting Manual"),

which is issued by the Board of Governors. All Reserve Banks are required to adopt and apply accounting policies and practices that are consistent with the Financial Accounting Manual.

The financial statements have been prepared in accordance with the Financial Accounting Manual. Differences exist between the accounting principles and practices of the System and generally accepted accounting principles ("GAAP"). The primary differences are the presentation of all security holdings at amortized cost, rather than at the fair value presentation requirements of GAAP, and the accounting for matched sale-purchase transactions as separate sales and purchases, rather than secured borrowings with pledged collateral, as is required by GAAP. In addition, the Bank has elected not to present a Statement of Cash Flows or a Statement of Comprehensive Income. The Statement of Cash Flows has not been included as the liquidity and cash position of the Bank are not of primary concern to the users of these financial statements. The Statement of Comprehensive Income, which comprises net income plus or minus certain adjustments, such as the fair value adjustment for securities, has not been included because as stated above the securities are recorded at amortized cost and there are no other adjustments in the determination of Comprehensive Income applicable to the Bank. Other information regarding the Bank's activities is provided in, or may be derived from, the Statements of Condition, Income, and Changes in Capital. Therefore, a Statement of Cash Flows or a Statement of Comprehensive Income would not provide any additional useful information. There are no other significant differences between the policies outlined in the Financial Accounting Manual and GAAP.

The preparation of the financial statements in conformity with the Financial Accounting Manual requires management to make certain estimates and assumptions that affect the reported amounts of assets and liabilities and disclosure of contingent assets and liabilities at the date of the financial statements and the reported amounts of income and expenses during the reporting period. Actual results could differ from those estimates. Unique accounts and significant accounting policies are explained below.

a. Gold Certificates

The Secretary of the Treasury is authorized to issue gold certificates to the Reserve Banks to monetize gold held by the U.S. Treasury. Payment for the gold certificates by the Reserve Banks is made by crediting equivalent amounts in dollars into the account established for the U.S. Treasury. These gold certificates held by the Reserve Banks are required to be backed by the gold of the U.S. Treasury. The U.S. Treasury may reacquire the gold certificates at any time and the Reserve Banks must deliver them to the U.S. Treasury. At such time, the U.S. Treasury's account is charged and the Reserve Banks' gold certificate accounts are lowered. The value of gold for purposes of backing the gold certificates is set by law at \$42 2/9 a fine troy ounce. The Board of Governors allocates the gold certificates among Reserve Banks once a year based upon Federal Reserve notes outstanding in each District at the end of the preceding year.

b. Special Drawing Rights Certificates

Special drawing rights ("SDRs") are issued by the International Monetary Fund ("Fund") to its members in proportion to each member's quota in the Fund at the time of issuance. SDRs serve as a supplement to international monetary reserves and may be transferred from one national monetary authority to another. Under the law providing for United States participation in the SDR system, the Secretary of the U.S. Treasury is authorized to issue SDR certificates, somewhat like gold certificates, to the Reserve Banks. At such time, equivalent amounts in dollars are credited to the account established for the U.S. Treasury, and the Reserve Banks' SDR certificate accounts are increased. The Reserve Banks are required to purchase SDRs, at the direction of the U.S. Treasury, for the purpose of financing SDR certificate acquisitions or for financing exchange stabilization operations. The Board of Governors allocates each SDR transaction among Reserve Banks based upon Federal Reserve notes outstanding in each District at the end of the preceding year.

c. Loans to Depository Institutions

The Depository Institutions Deregulation and Monetary Control Act of 1980 provides that all depository institutions that maintain reservable transaction accounts or nonpersonal time deposits, as defined in Regulation D issued by the Board of Governors, have borrowing privileges at the discretion of the Reserve Banks. Borrowers execute certain lending agreements and deposit sufficient collateral before credit is extended. Loans are evaluated for collectibility, and currently all are considered collectible and fully collateralized. If any loans were deemed to be uncollectible, an appropriate reserve would be established. Interest is recorded on the accrual basis and is charged at the applicable discount rate established at least every fourteen days by the Board of Directors of the Reserve Banks, subject to review by the Board of Governors. However, Reserve Banks retain the option to impose a surcharge above the basic rate in certain circumstances. There were no outstanding loans to depository institutions at December 31, 1998 and 1997 respectively.

d. U.S. Government and Federal Agency Securities and Investments Denominated in Foreign Currencies

The FOMC has designated the FRBNY to execute open market transactions on its behalf and to hold the resulting securities in the portfolio known as the System Open Market Account ("SOMA"). In addition to authorizing and directing operations in the domestic securities market, the FOMC authorizes and directs the FRBNY to execute operations in foreign markets for major currencies in order to counter disorderly conditions in exchange markets or other needs specified by the FOMC in carrying out the System's central bank responsibilities.

Purchases of securities under agreements to resell and matched sale-purchase transactions are accounted for as separate sale and purchase transactions. Purchases under agreements to resell are transactions in which the FRBNY purchases a security and sells it back at the rate specified at the commencement of the transaction. Matched sale-purchase transactions are transactions in which the FRBNY sells a security and buys it back at the rate specified at the commencement of the transaction.

Reserve Banks are authorized by the FOMC to lend U.S. government securities held in the SOMA to U.S. government securities dealers and to banks participating in U.S. government securities clearing arrangements, in order to facilitate the effective functioning of the domestic securities market. These securities-lending transactions are fully collateralized by other U.S. government securities. FOMC policy requires the lending Reserve Bank to take possession of collateral in amounts in excess of the market values of the securities loaned. The market values of the collateral and the securities loaned are monitored by the lending Reserve Bank on a daily basis, with additional collateral obtained as necessary. The securities loaned continue to be accounted for in the SOMA.

Foreign exchange contracts are contractual agreements between two parties to exchange specified currencies, at a specified price, on a specified date. Spot foreign contracts normally settle two days after the trade date, whereas the settlement date on forward contracts is negotiated between the contracting parties, but will extend beyond two days from the trade date. The FRBNY generally enters into spot contracts, with any forward contracts generally limited to the second leg of a swap/warehousing transaction.

The FRBNY, on behalf of the Reserve Banks, maintains renewable, short-term F/X swap arrangements with authorized foreign central banks. The parties agree to exchange their currencies up to a pre-arranged maximum amount and for an agreed upon period of time (up to twelve months), at an agreed upon interest rate. These arrangements give the FOMC temporary access to foreign currencies that it may need for intervention operations to support the dollar and give the partner foreign central bank temporary access to dollars it may need to support its own currency. Drawings under the F/X swap arrangements can be initiated by either the FRBNY or the partner foreign central bank, and must be agreed to by the drawee. The F/X swaps are structured so that the party initiating the transaction (the drawer) bears the exchange rate risk upon maturity. The FRBNY will generally invest the foreign currency received under an F/X swap in interest-bearing instruments.

Warehousing is an arrangement under which the FOMC agrees to exchange, at the request of the Treasury, U.S. dollars for foreign currencies held by the Treasury or ESF over a limited period of time. The purpose of the warehousing facility is to supplement the U.S. dollar resources of the Treasury and ESF for financing purchases of foreign currencies and related international operations.

In connection with its foreign currency activities, the FRBNY, on behalf of the Reserve Banks, may enter into contracts which contain varying degrees of off-balance sheet market risk, because they represent contractual commitments involving future settlement, and counter-party credit risk. The FRBNY controls credit risk by obtaining credit approvals, establishing transaction limits, and performing daily monitoring procedures.

While the application of current market prices to the securities currently held in the SOMA portfolio and investments denominated in foreign currencies may result in values substantially above or below their carrying values, these unrealized changes in value would have no direct effect on the quantity of reserves available to the banking system or on the prospects for future Reserve Bank earnings or capital. Both the domestic and foreign components of the SOMA portfolio from time to time involve transactions that can result in gains or losses when holdings are sold prior to maturity. However, decisions regarding the securities and foreign currencies transactions, including their purchase and sale, are motivated by monetary policy objectives rather than profit. Accordingly, earnings and any gains or losses resulting from the sale of such currencies and securities are incidental to the open market operations and do not motivate its activities or policy decisions.

U.S. government and federal agency securities and investments denominated in foreign currencies comprising the SOMA are recorded at cost, on a settlement-date basis, and adjusted for amortization of premiums or accretion of discounts on a straight-line basis. Interest income is accrued on a straight-line basis and is reported as "Interest on U.S. government securities" or "Interest on foreign currencies," as appropriate. Income earned on securities lending transactions is reported as a component of "Other income." Gains and losses resulting from sales of securities are determined by specific issues based on average cost. Gains and losses on the sales of U.S. government and federal agency securities are reported as "Government securities gains, net." Foreign currency denominated assets are revalued monthly at current market exchange rates in order to report these assets in U.S. dollars. Realized and unrealized gains and losses on investments denominated in foreign currencies are

reported as "Foreign currency gains (losses), net." Foreign currencies held through F/X swaps, when initiated by the counter party, and warehousing arrangements are revalued monthly, with the unrealized gain or loss reported by the FRBNY as a component of "Other assets" or "Other liabilities," as appropriate.

Balances of U.S. government and federal agencies securities bought outright, investments denominated in foreign currency, interest income, amortization of premiums and discounts on securities bought outright, gains and losses on sales of securities, and realized and unrealized gains and losses on investments denominated in foreign currencies, excluding those held under an F/X swap arrangement, are allocated to each Reserve Bank. Securities purchased under agreements to resell and the related premiums, discounts and income, and unrealized gains and losses on the revaluation of foreign currency holdings under F/X swaps and warehousing arrangements are allocated to the FRBNY and not to other Reserve Banks. Income from securities lending transactions is recognized only by the lending Reserve Bank.

e. Bank Premises and Equipment

Bank premises and equipment are stated at cost less accumulated depreciation. Depreciation is calculated on a straight-line basis over estimated useful lives of assets ranging from 2 to 50 years. New assets, major alterations, renovations and improvements are capitalized at cost as additions to the asset accounts. Maintenance, repairs and minor replacements are charged to operations in the year incurred.

f. Interdistrict Settlement Account

At the close of business each day, all Reserve Banks and branches assemble the payments due to or from other Reserve Banks and branches as a result of transactions involving accounts residing in other Districts that occurred during the day's operations. Such transactions may include funds settlement, check clearing and automated clearinghouse ("ACH") operations, and allocations of shared expenses. The cumulative net amount due to or from other Reserve Banks is reported as the "Interdistrict settlement account."

g. Federal Reserve Notes

Federal Reserve notes are the circulating currency of the United States. These notes are issued through the various Federal Reserve agents to the Reserve Banks upon deposit with such Agents of certain classes of collateral security, typically U.S. government securities. These notes are identified as issued to a specific Reserve Bank. The Federal Reserve Act provides that the collateral security tendered by the Reserve Bank to the Federal Reserve Agent must be equal to the sum of the notes applied for by such Reserve Bank. In accordance with the Federal Reserve Act, gold certificates, special drawing rights certificates, U.S. government and agency securities, loans allowed under Section 13, and investments denominated in foreign currencies are pledged as collateral for net Federal Reserve notes outstanding. The collateral value is equal to the book value of the collateral tendered, with the exception of securities, whose collateral value is equal to the par value of the securities tendered. The Board of Governors may, at any time, call upon a Reserve Bank for additional security to adequately collateralize the Federal Reserve notes. To satisfy its obligation to provide sufficient collateral for its outstanding Federal Reserve notes, the Reserve Banks have entered into an agreement that provides that certain assets of the Reserve Banks are jointly pledged as collateral for the Federal Reserve notes of all Reserve Banks. In the event that this collateral is insufficient, the Federal Reserve Act provides that Federal Reserve notes become a first and paramount lien on all the assets of the Reserve Banks. Finally, as obligations of the United States, Federal Reserve notes are backed by the full faith and credit of the United States government.

The "Federal Reserve notes outstanding, net" account represents Federal Reserve notes reduced by cash held in the vaults of the Bank of \$9,343 million, and \$6,713 million at December 31, 1998 and 1997, respectively.

h. Capital Paid-in

The Federal Reserve Act requires that each member bank subscribe to the capital stock of the Reserve Bank in an amount equal to 6% of the capital and surplus of the member bank. As a member bank's capital and surplus changes, its holdings of the Reserve Bank's stock must be adjusted. Member banks are those state-chartered banks that apply and are approved for membership in the System and all national banks. Currently, only one-half of the subscription is paid-in and the remainder is subject to call. These shares are nonvoting with a par value of \$100. They may not be transferred or hypothecated. By law, each member bank is entitled to receive an annual dividend of 6% on the paid-in capital stock. This cumulative dividend is paid semiannually. A member bank is liable for Reserve Bank liabilities up to twice the par value of stock subscribed by it.

i. Surplus

The Board of Governors requires Reserve Banks to maintain a surplus equal to the amount of capital paid-in as of December 31. This amount is intended to provide additional capital and reduce the possibility that the Reserve Banks would be required to call on member banks for additional capital. Reserve Banks are required by the Board of Governors to transfer to the U.S. Treasury excess earnings, after providing for the costs of operations, payment of dividends, and reservation of an amount necessary to equate surplus with capital paid-in. Payments made after September 30, 1998 represent payment of interest on Federal Reserve notes outstanding.

The Omnibus Budget Reconciliation Act of 1993 (Public Law 103-66, Section 3002) codified the existing Board surplus policies as statutory surplus transfers, rather than as payments of interest on Federal Reserve notes, for federal government fiscal years 1998 and 1997 (which began on October 1, 1997 and 1996, respectively). In addition, the legislation directed the Reserve Banks to transfer to the U.S. Treasury additional surplus funds of \$107 million and \$106 million during fiscal years 1998 and 1997, respectively. Reserve Banks were not permitted to replenish surplus for these amounts during this time. The Reserve Banks made these transfers on October 1, 1997 and October 1, 1996, respectively. The Bank's share of the 1997 transfer is reported as "Statutory surplus transfer to the U.S. Treasury."

In the event of losses, payments to the U.S. Treasury are suspended until such losses are recovered through subsequent earnings. Weekly payments to the U.S. Treasury vary significantly.

j. Cost of Unreimbursed Treasury Services

The Bank is required by the Federal Reserve Act to serve as fiscal agent and depository of the United States. By statute, the Department of the Treasury is permitted, but not required, to pay for these services. The costs of providing fiscal agency and depository services to the Treasury Department that have been billed but will not be paid are reported as the "Cost of unreimbursed Treasury services."

k. Taxes

The Reserve Banks are exempt from federal, state, and local taxes, except for taxes on real property, which are reported as a component of "Occupancy expense."

4. U.S. Government and Federal Agency Securities

Securities bought outright and held under agreements to resell are held in the SOMA at the FRBNY. An undivided interest in SOMA activity, with the exception of securities held under agreements to resell and the related premiums, discounts and income, is allocated to each Reserve Bank on a percentage basis derived from an annual settlement of interdistrict clearings. The settlement, performed in April of each year, equalizes Reserve Bank gold certificate holdings to Federal Reserve notes outstanding. The Bank's allocated share of SOMA balances was approximately 7.877% and 9.515% at December 31, 1998 and 1997, respectively.

The Bank's allocated share of securities held in the SOMA at December 31, that were bought outright, were as follows (in millions):

	1998	1997
Par value:		
Federal agency	\$ 27	\$ 65
U.S. government:		
Bills	15,343	18,756
Notes	14,801	16,575
Bonds	5,473	5,652
Total par value	35,644	41,048
Unamortized premiums	582	590
Unaccreted discounts	(252)	(344)
Total allocated to Bank	\$35,974	\$41,294

Total SOMA securities bought outright were \$456,667 million and \$434,001 million at December 31, 1998 and 1997, respectively.

The maturities of U.S. government and federal agency securities bought outright, which were allocated to the Bank at December 31, 1998, were as follows (in millions):

Maturities of Securities Held	Par value		Total
	U.S. Government Securities	Federal Agency Obligations	
Within 15 days	\$ 91	\$—	\$ 91
16 days to 90 days	7,809	2	7,811
91 days to 1 year	11,315	6	11,321
Over 1 year to 5 years	8,486	5	8,491
Over 5 years to 10 years	3,531	14	3,545
Over 10 years	4,385	—	4,385
Total	\$35,617	\$27	\$35,644

At December 31, 1998, and 1997, matched sale-purchase transactions involving U.S. government securities with par values of \$20,927 million and \$17,027 million, respectively, were outstanding, of which \$1,648 million and \$1,620 million were allocated to the Bank. Matched sale-purchase transactions are generally overnight arrangements.

5. Investments Denominated in Foreign Currencies

The FRBNY, on behalf of the Reserve Banks, holds foreign currency deposits with foreign central banks and the Bank for International Settlements and invests in foreign government debt instruments. Foreign government debt instruments held include both securities bought outright and securities held under agreements to resell. These investments are guaranteed as to principal and interest by the foreign governments.

Each Reserve Bank is allocated a share of foreign-currency-denominated assets, the related interest income, and realized and unrealized foreign currency gains and losses, with the exception of unrealized gains and losses on F/X swaps and warehousing transactions. This allocation is based on the ratio of each Reserve Bank's capital and surplus to aggregate capital and surplus at the preceding December 31. The Bank's allocated share of investments denominated in foreign currencies was approximately 15.499% and 6.906% at December 31, 1998 and 1997, respectively.

The Bank's allocated share of investments denominated in foreign currencies, valued at current exchange rates at December 31, were as follows (in millions):

	1998	1997
German Marks:		
Foreign currency deposits	\$1,620	\$ 571
Government debt instruments including agreements to resell	368	222
Japanese Yen:		
Foreign currency deposits	103	40
Government debt instruments including agreements to resell	960	338
Accrued interest	15	6
Total	\$3,066	\$1,177

Total investments denominated in foreign currencies were \$19,769 million and \$17,046 million at December 31, 1998 and 1997, respectively, which include \$15 million and \$3 million in unearned interest for 1998 and 1997 respectively, collected on certain foreign currency holdings that is allocated solely to the FRBNY.

The maturities of investments denominated in foreign currencies which were allocated to the Bank at December 31, 1998, were as follows (in millions):

Maturities of Investments Denominated in Foreign Currencies	
Within 1 year	\$2,917
Over 1 year to 5 years	77
Over 5 years to 10 years	72
Total	\$3,066

At December 31, 1998 and 1997, there were no open foreign exchange contracts or outstanding F/X swaps.

At December 31, 1998, the warehousing facility was \$5,000 million, with nothing outstanding.

6. Bank Premises and Equipment

A summary of bank premises and equipment at December 31 is as follows (in millions):

	1998	1997
Bank premises and equipment:		
Land	\$ 16	\$ 16
Buildings	115	115
Building machinery and equipment	32	31
Construction in progress	3	1
Furniture and equipment	288	310
	454	473
Accumulated depreciation	(253)	(256)
Bank premises and equipment, net	\$201	\$217

Depreciation expense was \$44 million and \$61 million for the years ended December 31, 1998 and 1997, respectively.

Bank premises and equipment at December 31 include the following amounts for leases that have been capitalized (in millions):

	1998	1997
Bank premises and equipment	\$86	\$77
Accumulated depreciation	(77)	(66)
Capitalized leases, net	\$ 9	\$11

The Bank leases unused space to outside tenants. Those leases have terms ranging from 1 to 3 years. Rental income from such leases was \$1.4 million and \$1.3 million for the years ended December 31, 1998 and 1997, respectively. Future minimum lease payments under agreements in existence at December 31, 1998, were (in millions):

1999	\$1.2
2000	1.0
2001	0.9
	\$3.1

7. Commitments and Contingencies

At December 31, 1998, the Bank was obligated under noncancelable leases for premises and equipment with terms ranging from 1 to approximately 6 years. These leases provide for increased rentals based upon increases in real estate taxes, operating costs or selected price indices.

Rental expense under operating leases for certain operating facilities, warehouses, and data processing and office equipment (including taxes, insurance and maintenance when included in rent), net of sublease rentals, was \$37 million and \$38 million for the years ended December 31, 1998 and 1997, respectively. Certain of the Bank's leases have options to renew.

Future minimum rental payments under noncancelable operating leases and capital leases, net of sublease rentals, with terms of one year or more, at December 31, 1998, were (in millions):

	Operating	Capital
1999	\$1.3	\$0.7
2000	0.9	0.5
2001	0.6	0.4
2002	0.3	—
2003	0.2	—
Thereafter	0.1	—
	\$3.4	1.6
Less: Amount representing interest		(0.1)
Present value of net minimum lease payment		\$1.5

At December 31, 1998, there were no other commitments and long-term obligations in excess of one year.

Under the Insurance Agreement of the Federal Reserve Banks dated as of June 7, 1994, each of the Reserve Banks has agreed to bear, on a per incident basis, a pro rata share of losses in excess of 1% of the capital of the claiming Reserve Bank, up to 50% of the total capital and surplus of all Reserve Banks. Losses are borne in the ratio that a Reserve Bank's capital bears to the total capital of all Reserve Banks at the beginning of the calendar year in which the loss is shared. No claims were outstanding under such agreement at December 31, 1998 or 1997.

The Bank is involved in certain legal actions and claims arising in the ordinary course of business. Although it is difficult to predict the ultimate outcome of these actions, in management's opinion, based on discussions with counsel, the aforementioned litigation and claims will be resolved without material adverse effect on the financial position or results of operations of the Bank.

8. Retirement and Thrift Plans

Retirement Plans

The Bank currently offers two defined benefit retirement plans to its employees, based on length of service and level of compensation. Substantially all of the Bank's employees participate in the Retirement Plan for Employees of the Federal Reserve System ("System Plan") and the Benefit Equalization Retirement Plan ("BEP"). The System Plan is a multi-employer plan with contributions fully funded by participating employers. No separate accounting is maintained of assets contributed by the participating employers. The Bank's projected benefit obligation and net pension costs for the BEP at December 31, 1998 and 1997, and for the years then ended, are not material.

Thrift plan

Employees of the Bank may also participate in the defined contribution Thrift Plan for Employees of the Federal Reserve System ("Thrift Plan"). The Bank's Thrift Plan contributions totaled \$3 million and \$4 million for the years ended December 31, 1998 and 1997, respectively, and are reported as a component of "Salaries and other benefits."

9. Postretirement Benefits Other Than Pensions and Postemployment Benefits

Postretirement benefits other than pensions:

In addition to the Bank's retirement plans, employees who have met certain age and length of service requirements are eligible for both medical benefits and life insurance coverage during retirement.

The Bank funds benefits payable under the medical and life insurance plans as due and, accordingly, has no plan assets. Net postretirement benefit cost is actuarially determined using a January 1 measurement date.

Following is a reconciliation of beginning and ending balances of the benefit obligation (in millions):

	1998	1997
Accumulated postretirement benefit obligation at January 1	\$54.1	\$54.9
Service cost-benefits earned during the period	1.8	1.6
Interest cost of accumulated benefit obligation	3.9	3.7
Actuarial loss (gain)	9.3	(4.4)
Contributions by plan participants	0.3	0.3
Benefits paid	(2.2)	(2.0)
Plan amendments, acquisitions, foreign currency exchange rate changes, business combinations, divestitures, curtailments, settlements, special termination benefits	—	—
Accumulated postretirement benefit obligation at December 31	\$67.2	\$54.1

Following is a reconciliation of the beginning and ending balance of the plan assets, the unfunded postretirement benefit obligation, and the accrued postretirement benefit cost (in millions):

	1998	1997
Fair value of plan assets at January 1	\$ —	\$ —
Actual return on plan assets	—	—
Contributions by the employer	1.9	1.7
Contributions by plan participants	0.3	0.3
Benefits paid	(2.2)	(2.0)
Fair value of plan assets at December 31	\$ —	\$ —
Unfunded postretirement benefit obligation	\$67.2	\$54.1
Unrecognized initial net transition asset (obligation)	—	(1.4)
Unrecognized prior service cost	0.7	0.6
Unrecognized net actuarial gain (loss)	(12.7)	(1.8)
Accrued postretirement benefit cost	\$55.2	\$51.5

Accrued postretirement benefit cost is reported as a component of "Accrued benefit cost."

The weighted-average assumption used in developing the postretirement benefit obligation as of December 31 is as follows:

	1998	1997
Discount rate	6.25%	7.00%

For measurement purposes, an 8.5% annual rate of increase in the cost of covered health care benefits was assumed for 1999. Ultimately, the health care cost trend rate is expected to decrease gradually to 4.75% by 2006, and remain at that level thereafter.

Assumed health care cost trend rates have a significant effect on the amounts reported for health care plans. A one percentage point change in assumed health care cost trend rates would have the following effects for the year ended December 31, 1998 (in millions):

	1 Percentage Point Increase	1 Percentage Point Decrease
Effect on aggregate of service and interest cost components of net periodic postretirement benefit cost	\$ 1.2	\$ (1.1)
Effect on accumulated postretirement benefit obligation	13.0	(12.2)

The following is a summary of the components of net periodic postretirement benefit cost for the years ended December 31 (in millions):

	1998	1997
Service cost-benefits earned during the period	\$1.8	\$1.6
Interest cost of accumulated benefit obligation	3.9	3.7
Amortization of prior service cost	—	—
Recognized net actuarial loss	—	—
Net periodic postretirement benefit cost	\$5.7	\$5.3

Net periodic postretirement benefit cost is reported as a component of "Salaries and other benefits."

Postemployment benefits:

The Bank offers benefits to former or inactive employees. Postemployment benefit costs are actuarially determined and include the cost of medical and dental insurance, survivor income, and disability benefits. Costs were projected using the same discount rate and health care trend rates as were used for projecting postretirement costs. The accrued postemployment benefit costs recognized by the Banks at December 31, 1998 and 1997, were \$8.8 million and \$7.6 million, respectively. This cost is included as a component of "Accrued benefit cost." Net periodic postemployment benefit costs included in 1998 and 1997 operating expenses were \$1.9 million and \$1.8 million, respectively.

Summary of Operations

(UNAUDITED)

	DOLLAR AMOUNT		VOLUME	
	1998	1997	1998	1997
Cash				
Currency received and counted	30.9 Billion	35.8 Billion	2.5 Billion	2.5 Billion
Currency destroyed	7.0 Billion	8.2 Billion	609.5 Million	711.9 Million
Coin bags received and counted	71.5 Million	106.7 Million	124.5 Thousand	184.4 Thousand

Noncash Payments

Commercial checks processed	1.2 Trillion	1.0 Trillion	1.6 Billion	1.5 Billion
Commercial checks, packaged items handled	494.2 Billion	274.3 Billion	783.2 Million	578.1 Million
U.S. government checks processed	62.2 Billion	76.3 Billion	35.7 Million	43.6 Million
Automated Clearing House transactions:				
Commercial	650.5 Billion	586.2 Billion	178.0 Million	150.8 Million
Government	347.3 Billion	382.1 Billion	17.8 Million	17.6 Million
Fedwire funds transfers	18.7 Trillion	18.5 Trillion	9.9 Million	7.8 Million

Loans to Depository Institutions

Discount window loans made	2.0 Billion	3.5 Billion	39	33
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Securities Services

Safekeeping balance of book-entry securities as of December 31	278.0 Billion	180.1 Billion	N/A	N/A
Fedwire securities transfers	10.1 Trillion	5.2 Trillion	674.9 Thousand	489.5 Thousand

Services to U.S. Treasury and Government Agencies

Issues, redemptions and exchanges of U.S. savings bonds	760.2 Million	935.0 Million	8.8 Million	8.6 Million
Federal tax deposits processed	239.8 Million	263.5 Million	10.9 Thousand	12.4 Thousand
Food stamps redeemed	902.7 Million	1.1 Billion	176.1 Million	211.2 Million

N/A = not applicable

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Feature Article

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1800 Woodcuts by Thomas Bewick and his School, Dover Publications – Trading scene (p. 7)

Corbis Images – Yarn-spinning plant (pp. 9, 14)

The Edison and Ford Winter Estates – *The Edison Effect* (p. 18)

Federal Reserve Bank of Minneapolis – Anna Schwartz photo (p. 23)

Handbook of Early Advertising Art, Dover Publications – Civil War (p. 16)

The Library of Congress – Signing of the Declaration of Independence (p. 11), Prospector photo (p. 15), *First Flight* (p. 19), WWI poster (p. 20)

The Library of Virginia – *The Liberty of the Subject* (p. 12), WWII photo (p. 22)

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