

december



Inflation and a Role for Monetary  
Policy

A Shifting Capital Mix for District  
Member Banks

The Use and Control of Heroin:  
An Economic Perspective

The Fed in Print

**FEDERAL RESERVE BANK of PHILADELPHIA**

# business review



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**On our cover:** Valley Forge, Pennsylvania, the site of General George Washington's winter encampment (1777–78), is not a valley but a high plateau overlooking the western approaches to Philadelphia. Among the sites of interest in the historic area are replicas of the huts used by the Continental soldiers during their stay at Valley Forge. These huts were extremely primitive habitations, with crude wooden bunks and table, and a fireplace. Even though the Continental Army moved into the camp in December, it was not until the following January that all troops were under roof. (Photo courtesy of the Valley Forge Park Commission, Valley Forge, Pa.)

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# Inflation and a Role For Monetary Policy

*By James M. O'Brien*

Prices are rising—and so's the consumer's temperature. In the first three quarters of 1973, the GNP Price Deflator, the nation's price thermometer, moved up at an annual rate of about 6.7 percent. While this most recent advance in prices might be exceptionally high, it seems to be the continuation of an inflation story that has been with us for some time. Since 1965 inflation has been on a strong uphill path. During this period price increases have eroded the value of the dollar at an annual rate of more than 4 percent. This compares to a 2-percent average hike in prices in the preceding ten years. With all the heat that this accelerating inflation has engendered, Uncle Sam's policy managers have been scouring the cupboards for an effective antidote to the bulging cost of living. Wage and price controls, normally resorted to only in wartime, are being "phased" in under a variety of guises. Government incentives are being provided to farmers to increase production. Even exports are

being pinched—balance of payment problems and all!

However, the prescription which is able to curb the higher rate of price hikes will be the one that gets to the heart of the problem. For many economists it is important to distinguish between the short term and the long term in diagnosing inflation. In the short term there can be any number of causes of a bulge in prices. But over the long term, the rate of increase in the money supply becomes a key economic force in setting the inflation trend. Economic events, such as Government spending for the Vietnam build-up in the mid-'60s and, particularly, recent grain shortages, have undoubtedly added to price hikes in their respective periods. But, a major element in the higher inflation trend over *the past nine years* is likely to have been the accompanying higher trend in money expansion.

From this vantage, any prescription for bringing down inflation over the long haul must entail a lower long-term trend of monetary growth. However a *sharp* pullback on the monetary reins could result in a significant slowdown in production and employment during the period of transition. Especially now, when the economic soothsayers see some softening in economic activity for 1974, a degree of gradualism in slowing money growth may be the most appropriate method for curbing inflation.

### MONEY AND INFLATION

**The Long . . .** One of the oldest propositions in economics is that in the *long* term inflation owes its source to the rate of increase in the money supply. This conclusion is based on the premise that people are stubborn about keeping a certain part of their wealth in readily available purchasing power; that is, in the form of money balances (currency, checking deposits, and possibly savings deposits) adjusted for the level of prices.<sup>1</sup> As wealth increases over time individuals' money demands will also be rising. But if the money supply grows at a rate faster than demand, inflation will result (see Box on how the money supply is controlled in the U. S.).

To see this, suppose that initially there is no inflation and that the supply of money is growing at a pace which keeps in balance with the demand. If for some reason money growth should be upped a notch, people will find too much of their wealth accumulating in the form of money balances—supply exceeds demand. Individually, wealthholders will try to readjust their asset positions by purchasing more stocks, bonds, houses, and other nonmoney assets. These attempts to reduce the rate of growth in money balances cannot succeed for everyone, however, since a reduction in one man's balances

will mean an increase in another's. But the attempt will cause spending to be increased. A greater volume of spending, according to traditional economics, can only lead to higher prices *in the long term*. "Real" forces—resource endowments; the preferences of individuals to work, consume, and save; and the state of technology—ultimately fix the *amounts* of goods and services produced.

The resulting price hikes will, however, pare the purchasing power of money. To maintain the desired share of their wealth in readily available purchasing power, individuals will now need more dollars. The demand for money will rise, bringing it back into balance with the (faster growing) supply. Thus, in the longer term, it is argued, inflation is essentially an indicator that money growth is "too" rapid.<sup>2</sup>

This view of money and inflation simplifies many of the complexities of real world finance and economic activity. In order to judge the practical usefulness of the resulting uncomplicated picture of long-term inflation, appeal must be made to the facts. The facts, however, appear to be in significant agreement with the prognosis. As the figures in Chart 1 indicate, changes in prices do tend to follow changes in the money supply over long periods of time. Appearances may be deceiving and a high degree of coincidence, by itself, says little about causation. But economists who have devoted detailed study to this strong coincidence contend that, in fact, over the long term, the rate of growth in the money supply has been the most consistently important determinant of the secular rate of inflation.<sup>3</sup>

<sup>1</sup>It is to be expected that the amount of wealth held as money balances will be sensitive to how much the individual can earn on other nonmoney assets. This dependency of money demand on the opportunity cost of holding money need not, however, weaken the basic relation between money and longer-term inflation.

<sup>2</sup>The argument assumes that the rate at which peoples' wealth, and hence demand for real money balances, increase is relatively stable. Otherwise the long-term inflation pace might be at the mercy of a will-o-the-wisp pattern in wealth or real income.

<sup>3</sup>See Phillip Cagan, *Determinants and Effects of Changes in the Stock of Money, 1857-1960* (New York: Columbia University Press, 1965); and Milton Friedman and Anna Jacobson Schwartz, *A Monetary History of the United States, 1867-1960* (Princeton: Princeton University Press, 1963).

## HOW UNCLE SAM CONTROLS THE MONEY SUPPLY

In the United States, the Federal Government and the commercial banks are the issuers of money (currency plus demand and, possibly, time deposits at commercial banks \*). However, the Federal Reserve System, an agency of the Federal Government, has the responsibility for controlling the money supply. The Fed exercises control through its own liabilities—currency and reserves of member banks (so-called high-powered money). It is through injecting or withdrawing high-powered money into or from the economy that the money supply is changed.

**Changing High-Powered Money.** There are two methods the Fed uses to alter the amount of high-powered money in the economy. By far the most important of these is the use of “open-market operations.” Using this method the Fed buys or sells (U. S. Government) securities in the financial marketplace. When securities are bought, the sellers (individuals, corporations, and security dealers) receive payment in dollars which they either hold as currency or deposits in the bank. When securities are sold, the buyer usually pays by check and the Fed debits the reserve account of the bank on which the check was drawn. A second significant but far less important method is directly making loans to banks. Again, however, the Fed has the ultimate power to limit how much it will lend.

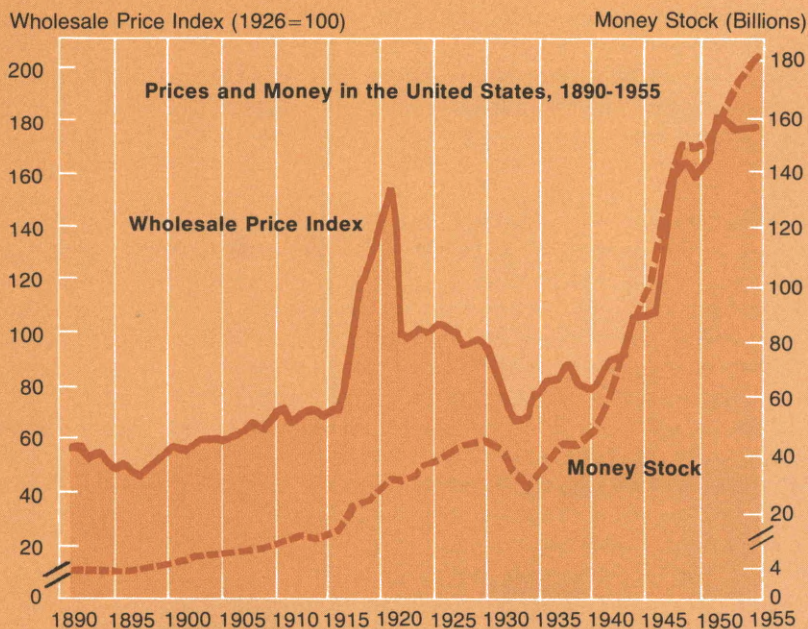
**Changes in High-Powered Money Change the Money Supply.** Adding high-powered money to individuals’ currency holdings directly adds to the money supply. However, since individuals and businesses keep only a small part of their total money holdings in currency form (about a fourth), most of the high-powered money goes into reserves in the commercial banks. With an increase in reserves, a bank is able to increase its checking (or savings) account liabilities—in part by crediting the account of the depositor of the high-powered money and in part by making more loans and, hence, crediting the borrower’s account by the amount of the loan. Thus, by changing banks’ reserves, the money supply is also changed. In fact, since banks keep less than a dollar in reserves for every dollar of deposits issued, a change in bank reserves of a dollar results in a change in deposits and, hence the money supply, of more than one dollar.

The Fed’s control over the money supply is by no means absolute, especially within the space of a month of even one to two quarters. For example, the Fed cannot be sure exactly how much the money supply will change every time it puts in or takes out a given amount of high-powered money. Nonetheless, the relation is fairly predictable over several quarters and over the space of, say, one year Fed actions become the major determinant of changes in the money supply.

\*The criterion for including time deposits in the money supply is whether individuals regard this asset as a close substitute for assets accepted as a means of payment—that is, for currency or demand deposits. For policy matters, current practice is often to consider both the narrower and more inclusive definition. Because movements in the money supply according to one definition tend to parallel movements according to the other definition, the use of either definition usually leads to similar policy implications or conclusions.

CHART 1A

OVER THE LONG TERM, PRICE CHANGES HAVE TENDED TO FOLLOW CHANGES IN THE MONEY SUPPLY



Note: Lack of data in the earlier years necessitates the use of a wholesale price index and the inclusion of time deposits with currency and demand deposits in the money supply.

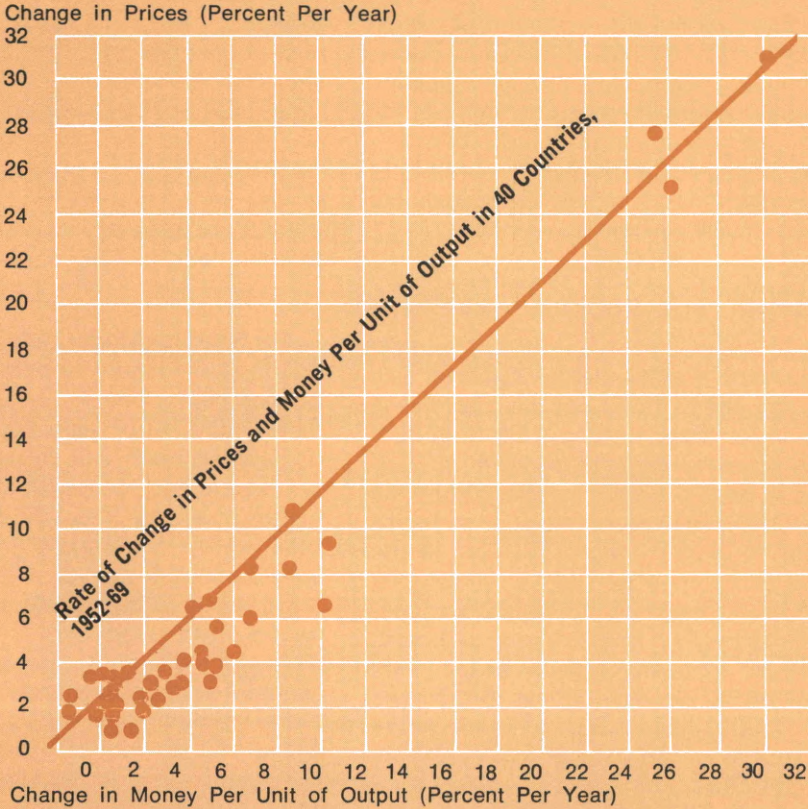
Sources: Money—M. Friedman and A. J. Schwartz, *Monetary Statistics of the United States*; Prices—*Historical Statistics of the United States, Colonial Times to 1957*, pp. 116-117.

... **And the Short of it.** In this black-and-white world of long-run economics, diagnosing inflation is greatly simplified—inflation is a monetary event. Unfortunately for both economic analysts and policymakers, over the short haul price increases may owe their debt to any number of sources. Consumers becoming less thrift-minded, increasing power of labor unions precipitating higher wage costs, or Uncle Sam's stepping up the pace of Government spending are all situations which can precipitate temporary hikes in prices.

Consider Uncle Sam's fiscal stimuli to the economy as one example of a source of "short-term" inflation. A step-up in the rate of, say, defense spending financed by larger Government borrowing (without a step-up in monetary growth) may put upward pressure on the overall level of prices. The increasing prices cannot be permanent because individuals, finding their money holdings depreciating in value, would attempt to restore the real value of their balances by exchanging other assets for money. This would raise interest rates, reduce spending, or its

CHART 1 B

COUNTRIES WITH A HIGHER MONEY GROWTH RATE HAVE ALSO TYPICALLY HAD A HIGHER INFLATION RATE



Note: Each dot plotted on this chart represents the average inflation rate and monetary growth rate (currency plus demand deposits) between 1952 and 1969 for each of the 40 countries observed. The pattern of observations indicates that typically countries that have had a higher growth rate in their money supply per unit of output also have had a higher inflation rate.

Source: A. J. Schwartz, "Secular Price Change in Historical Perspective," *Journal of Money, Credit and Banking* 5 (1973): 267.

rate of growth, and eventually halt the fiscal policy-induced price hikes.<sup>4</sup>

However, the length of time that it would take the short-term inflation to dissipate is subject to a

<sup>4</sup>Higher interest rates resulting from greater borrowing demands may raise the opportunity costs of holding money balances. This is likely to make individuals more willing to accept a lower level of real money balances and possibly

raise the equilibrium level of prices. But because the effect of a rise in interest rates is a once-and-for-all reduction in the demand for real money balances, its impetus to price increases can only be temporary.

good deal of uncertainty. The slowdown in prices must "wait for" the effects of the slowdown in spending. The slowdown in spending, in turn, must be precipitated by the attempts of individuals to reestablish their desired money balances. Many, if not most, economists might agree that the primary *long-run* effects of higher defense spending (without a step-up in monetary growth) would simply be a greater share of the nation's production going for defense purposes rather than higher inflation. But their estimates of the "temporariness" of the unsustainable price hikes could likely vary over a wide range.

### DIAGNOSING THE RECENT INFLATION TREND

**The Importance of Monetary Growth.** The economic arguments point out the importance and difficulty of distinguishing short-term from long-term bouts with inflation. An upward movement in price hikes over a short time span may be getting its impetus from one or more of a multiple of economic forces. If however the higher rate of inflation persists, a harder look must be given to the pace of monetary expansion. Thus, it might be unreasonable to zero in on the rate of monetary growth as the main catalyst of the 1973 bulge in prices. But in tracing a key source of the higher trend in price hikes since the mid-'60s, the path of money expansion warrants closer attention.

The expectation of a strong coincidence between money growth and inflation does appear to square with the facts of recent years. From 1961 to 1965 money (currency plus checking account balances) grew at an annual rate of 3.5 percent (compared to a 1 percent growth between 1956 and 1960). The pace of money expansion was upped to 5.3 percent between 1966 and 1970. Over the past two and one-half years the money supply has grown at an annual rate of more than 7 percent. As Chart 2 indicates, the trend of inflation has, with some lag, followed a similar uphill path.

The strong observed correspondence between the rate of growth of the money supply and the inflation pace over the past decade does not

mean that other forces such as the Vietnam buildup in the mid-'60s or the more recent world grain shortages have not contributed measurably to the price hikes in their respective periods. At least, however, it suggests that a very old law in economics which relates monetary changes to price level changes is still very much at work. Thus, the prescription for slowing the longer-term inflation rate should give an important place to bringing down the trend in the growth of the money supply. Maintaining a lower rate of monetary growth is not going to eliminate every spurt in prices but it can be expected to reduce inflation over the long haul.

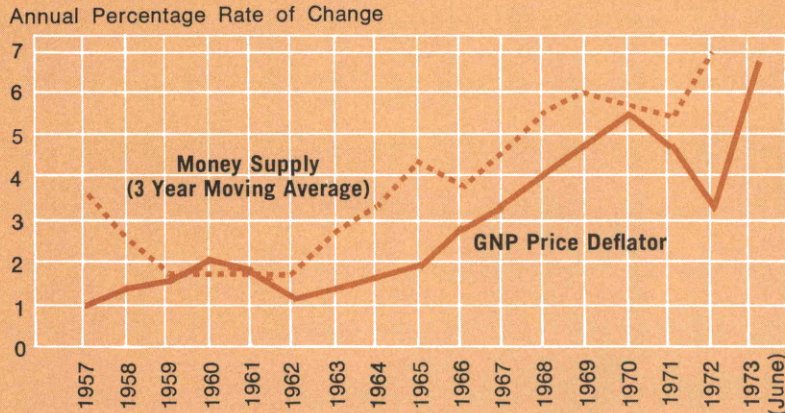
**The Need for Moderation.** While the prescription for less inflation should entail a lower rate of money expansion, getting "from here to there" may not be easy. Reducing the pace of monetary growth will cause people to find an insufficient part of their wealth accumulating as money balances. They will attempt to rectify the situation by disposing of some of their assets for money. A decreased willingness of savers to buy stocks and bonds and of consumers to buy houses and durables will put a damper on business and consumer expenditures. While the eventual outcome may only be to reduce prices or the inflation pace, the *initial* (and temporary) effects of a slowdown in spending are likely to fall significantly on production and employment.

Producers and workers rely on past trends in economic conditions in setting their price and wage demands. The established pricing and wage patterns will be altered only when it becomes apparent that such patterns will mean greater difficulty in selling a house, filling a ball park, or finding a job. It is by experiencing some slack in the demand for their wares or services caused by a slowdown in spending that producers and workers will be persuaded to moderate price and wage demands. Lower prices and wages (or less price and wage inflation) will tend to eliminate the induced slack in labor and product markets as consumers and businesses respond to lower costs by stepping up purchases



## CHART 2

## AN INCREASING GROWTH IN THE MONEY SUPPLY SINCE THE EARLY '60s HAS BEEN FOLLOWED BY INCREASING INFLATION



Note: Money is defined as currency plus demand deposits. The three-year moving average ends at the current time period.

and hiring.<sup>5</sup> In the end, slower monetary growth can be expected to blunt mainly the trend in price hikes. But the process is necessarily indirect and the transition to a less inflationary economy may be accompanied by some painful readjustments.

Experience, particularly since World War II, bolsters these arguments concerning the expected shorter-term impacts of changes in the trend of monetary growth. The conclusion emerging from most studies of the postwar period is that monetary changes do exert an important in-

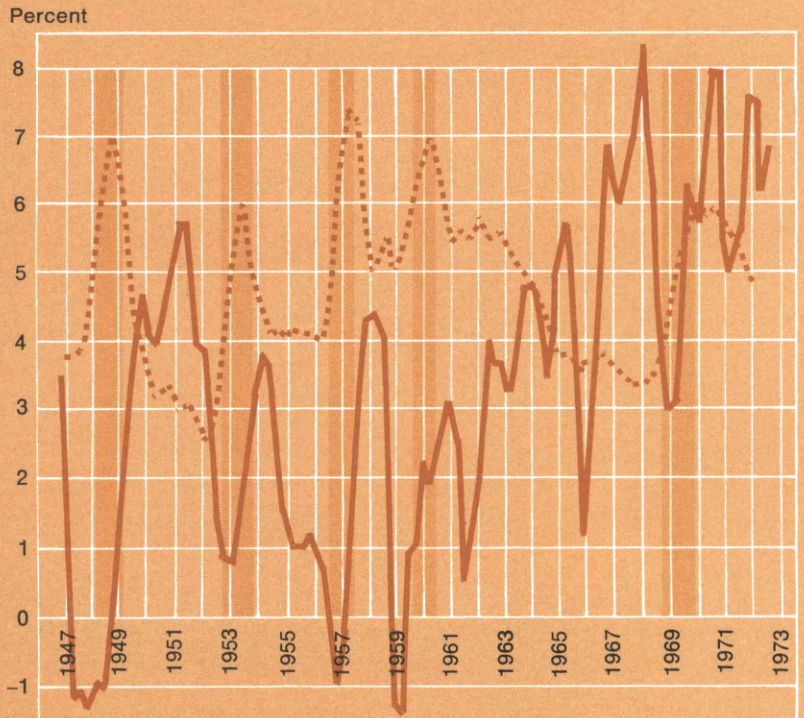
fluence on the pace of economic activity (as an indication, see Chart 3).<sup>6</sup> A most recent example is the late 1960s. Supported by a strong public concern over the existing pace of inflation, Government authorities moved to restrictive fiscal and monetary policies in the latter part of 1968. The Federal budget was tightened, and in 1969 money expansion was sharply reduced to a

<sup>5</sup>The behavior of output, employment, and prices in disequilibrium has been subject to an increasingly rigorous formulation in recent years. See, for example, E. S. Phelps et al., *Microeconomic Foundations of Employment and Inflation Theory* (New York: W. W. Norton and Company, 1970).

<sup>6</sup>Two of the most recent studies examining the role of money in its effects on economic activity are Christopher Sims, "Money, Income, and Casuality," *American Economic Review* 62 (1972): 540-52; and Peter Schmidt and Roger N. Waud, "The Almon Lag Technique and the Monetary versus Fiscal Debate," *Journal of the American Statistical Association* 68 (1973): 11-19. One argument against this interpretation of the observed short-term coincidence between money and the level of economic activity is that to an important extent the causation may have run from economic activity to money rather than from changes in the money supply to

CHART 3

IN THE SHORT TERM SIGNIFICANT CHANGES IN MONETARY GROWTH HAVE TENDED TO PRECEDE SIGNIFICANT CHANGES IN ECONOMIC ACTIVITY



- Unemployment Rate
- Rate of Growth in Money (3 Quarter Moving Average with money defined as demand deposits plus currency)

Shaded areas represent official NBER business contractions

Sources: Unemployment Rate—*Business Conditions Digest*, April and August 1973, pp. 109 and 75 respectively; Money—*Business Conditions Digest*, June and August 1973, pp. 113 and 81 respectively; Business Contractions—*Business Conditions Digest*, April 1973, p. 115.

pace of 3.6 percent versus a 7.5 percent growth in the 1967-68 period.<sup>7</sup> At least partly because of this monetary restrictiveness, as well as the fiscal belt tightening, business activity began to slide in December 1969, and production and employment drifted downward for almost a year. Only by 1971 did inflation show some slowing.

Economic forecasters are currently predicting some softening in economic activity for '74. A sharp pullback on the monetary reins maintained for three or four quarters, such as in 1969, could possibly turn a mild slowdown into a recession. The high costs of greater unemployment incurred during a recession could then lead policymakers to revert to highly expansionary policies and, hence, a return of monetary growth to its previously fast pace.<sup>8</sup>

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changes in economic activity. However, the Sims study found no support for this hypothesis.

<sup>7</sup>In its *Annual Report* (1969), the Board of Governors of the Federal Reserve System noted, "During 1969 the Federal Reserve moved to a very restrictive monetary policy in an effort to slow the expansion of aggregate money demands in the economy and to dissipate deeply rooted expectations of continuing inflation . . . The intensity of monetary restraint is suggested by the marked slowdown that developed in the rates of growth of the money stock and bank credit. During the second half of 1968 these two variables had increased at seasonally adjusted annual rates of 7 and 15 percent, respectively. But over the corresponding period of 1969 the growth rate for each dropped to less than 1 percent" (p. 3).

<sup>8</sup>As the Board of Governors of the Federal Reserve System noted in its *Annual Report* (1971), "In 1971 monetary policy encouraged further substantial growth in bank reserves,

A more cautious, but possibly more hopeful, anti-inflation policy might instead be to pursue a course of small cutbacks in the monetary growth rate spread over several years. This gradualistic method can still be expected to have some restraining influence on growth in production and employment. Its advantage is that the loss is not all heaped on a short time period. And for this reason citizens and policymakers may find the prescription more palatable.

## A SUMMING UP

Since the mid-1960s inflation has registered a strong uphill growth. The average rate of price increase has been in excess of 4 percent. Theory and fact point to the pace of monetary growth as an important element in accounting for this higher trend in price hikes. Reducing the longer-term growth rate in money is likely to be a necessary condition for bringing the trend of inflation to a lower path. However, the expected near-term impacts of a monetary tightening argue for some moderation in the speed with which money growth is reduced. Particularly now, with some softening in the economy being predicted, a gradual approach in reducing monetary growth may be desirable. When a desired long-term target is reached, avoiding substantial swings in the rate of growth of the money supply could help contribute to greater long-term price (or inflation) stability. 

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money, and bank credit in helping to stimulate economic recovery from the mild recession of 1969-70" (p. 3).

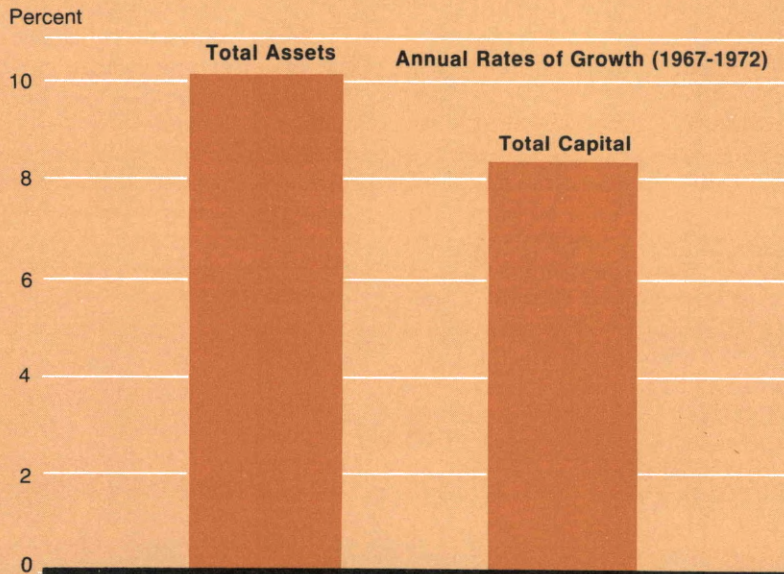
## ANNUAL BUSINESS FORECASTS DISCONTINUED

The Federal Reserve Bank of Philadelphia is no longer publishing "Business Forecasts." "Annual Business Forecasts" can be obtained from the Federal Reserve Bank of Richmond, P. O. Box 27622, Richmond, Va. 23261.

# A Shifting Capital Mix for District Member Banks

CHART 1

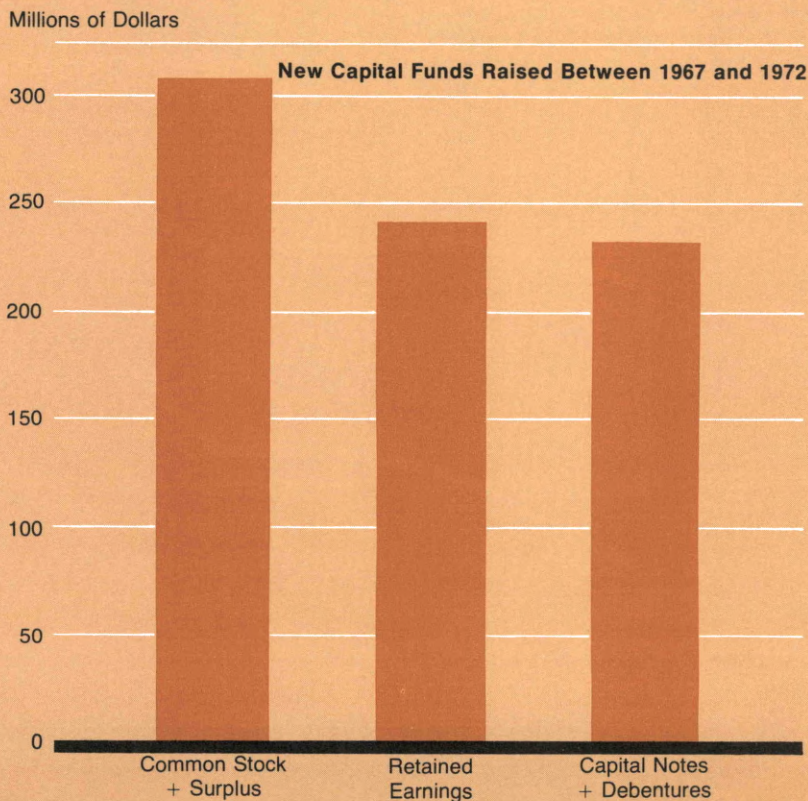
ASSETS OF MEMBER BANKS IN THE THIRD FEDERAL RESERVE DISTRICT HAVE EXPANDED RAPIDLY IN RECENT YEARS, BUT THEIR CAPITAL STOCK ACCOUNTS HAVE NOT QUITE KEPT PACE.



Source: Summary publications for *Call Reports* published by the Federal Deposit Insurance Corporation, the Comptroller of the Currency, and the Board of Governors of the Federal Reserve System.

CHART 2

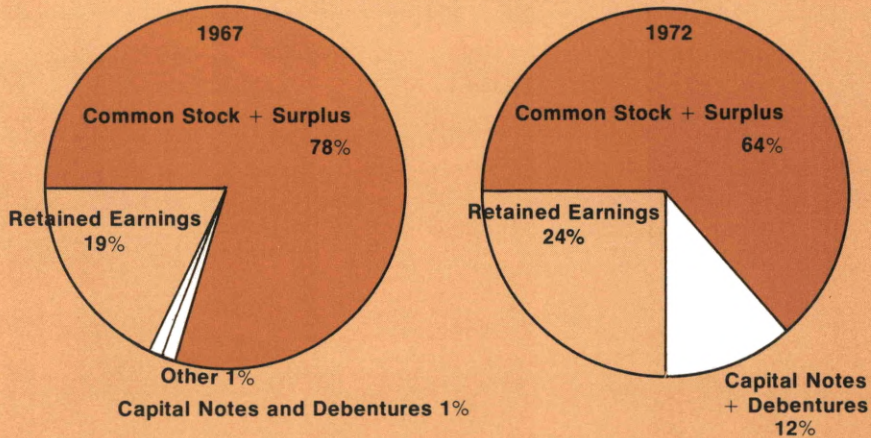
DURING THIS PERIOD, THE THREE PRINCIPAL SOURCES OF BANK CAPITAL WERE EACH TAPPED FOR ROUGHLY EQUAL AMOUNTS OF NEW FUNDS. . .



**CHART 3**

BUT THIS REPRESENTS ONLY A 4½ PERCENT ANNUAL GROWTH RATE FOR "COMMON STOCK PLUS SURPLUS"—BY FAR THE MOST IMPORTANT SOURCE OF CAPITAL IN THE PAST. AS A RESULT, THE RELATIVE IMPORTANCE OF BOTH THE "RETAINED EARNINGS" AND "CAPITAL NOTES AND DEBENTURES" COMPONENTS OF CAPITAL HAS EXPANDED RAPIDLY. . .

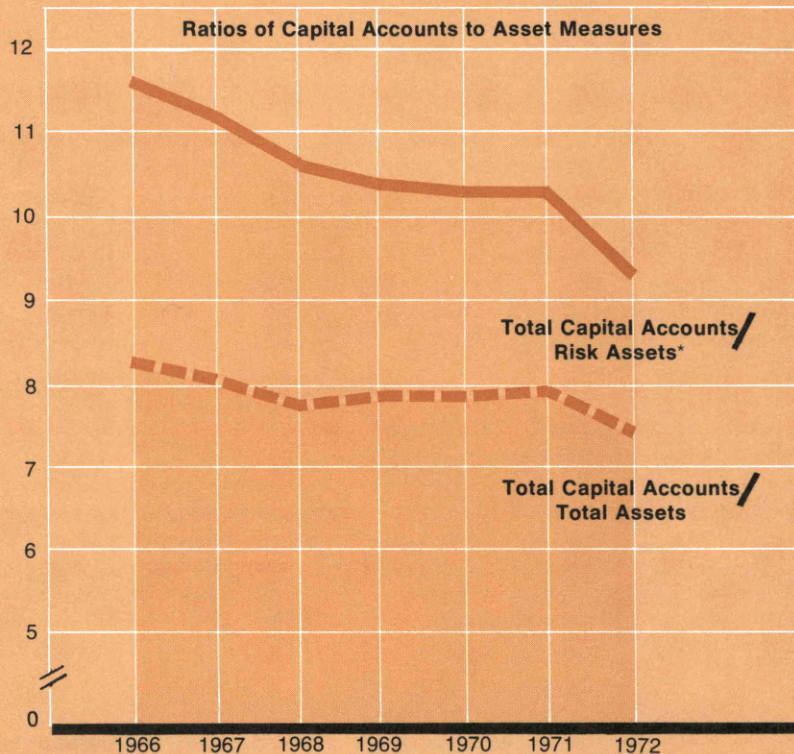
**Composition of Member Bank Capital Accounts**



**CHART 4**

AND THERE HAS BEEN A REDUCTION OF THE PROPORTION OF LONG-TERM FUNDS USED TO FINANCE THE EXPANSION OF MEMBER BANK PORTFOLIOS.

Percent



# The Use and Control of Heroin: An Economic Perspective

By Stephen L. Mehay\*

By all accounts the illegal trade in heroin has grown steadily in recent years. Addiction rates, drug-law arrests,<sup>1</sup> and drug-related crime and deaths have soared so much that, in many big cities, the drug problem has become an explosive public issue. While narcotic addiction is an age-old phenomenon, it has confronted today's public policymakers with an entirely new set of problems.

For openers, it has been discovered that merely injecting massive doses of funds will not

necessarily solve the problem.<sup>2</sup> The overzealous funding phase of the "war on drugs" created a patchwork of uncoordinated drug programs. Policymakers realize that resources are still scarce and that funding drug programs at levels desired by their proponents is neither possible nor desirable. Difficult choices among programs are necessary. A second problem is that programs often run at cross purposes. These conflicts result partly from lack of an overall drug policy and partly from the fact that most programs cannot simultaneously meet all the objectives set for them.

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\*Dr. Mehay, formerly an economist at the Federal Reserve Bank of Philadelphia, is Research Economist at the Institute of Government and Public Affairs, University of California at Los Angeles.

<sup>1</sup>Nationally, narcotic drug law arrests of persons 18 years and older, the age group most likely to be serious drug offenders, increased 604 percent from 1960-70. In Philadelphia, total drug law arrests rose 674 percent from 1965-71.

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<sup>2</sup>For example, in the last five years Federal expenditures for drug related programs grew from \$66.4 to \$791.3 million—nearly a twelve-fold increase. National Commission on Marijuana and Drug Use, *Drug Use in America: Problem in Perspective, Second Part*. (Washington: Government Printing Office, March, 1973.)

The two ingredients of scarcity and choice provide a tailor-made situation for economists. The channels of supply, the organization of the industry, and the nature and sources of demand are all grist for the economist's mill. By concentrating on the strictly economic aspects of the heroin industry, economists have unearthed important clues about the effects and value of alternative law enforcement strategies and treatment programs, thus providing valuable information to decision-makers.

### THE ECONOMIC IMPACT OF HEROIN

Public concern for the heroin problem is rooted in the many costs that society bears as a result of addiction and its consequences. Even when an addict's actions seem to harm only himself, others are usually affected. For example, the morbidity and premature death of addicts affect society because a potentially valuable resource is wasted. The same is true when narcotic dependence prevents an addict from holding a job. In both cases the welfare of society and of the addict coincide, and the economic value of the losses can be measured by the addict's lost earnings.

Addict-caused crime is considered to be one of the most serious external effects of narcotic addiction. Addicts often must earn as much as \$20-\$30 per day to feed their habits, frequently turning to theft and other prohibited enterprises as a means of generating the required income. To make matters worse, an addict may need to steal merchandise valued at between \$90 and \$120 every day just to net about \$30 after the merchandise is sold directly or "fenced." Addict-caused crime is estimated to constitute between a third and a half of all property offenses in some of our biggest cities.<sup>3</sup> To these crime costs must also be added expenses of the criminal

justice system—police, courts, and corrections—which result from dealing with the high volume of drug-related crime and processing narcotics law violators.

Other damaging rips in the social fabric also can be directly traced to heroin, even though no solid quantitative estimates of the size of the tears are available. Most links in the heroin distribution chain from importer to street retailer are characterized by some degree of monopoly and by high profit rates. These monopoly profits might be used to "purchase" the cooperation of law enforcement and other criminal justice officials.<sup>4</sup> When it is discovered, this debasement of law enforcement services can seriously weaken citizens' confidence in public officials. In addition, organized crime is involved at least in the upper links of the distribution chain. The profits that organized crime derives from the narcotics trade help maintain its large-scale criminal enterprise and provide funds to finance its activities in other fields, legal as well as illegal. In many cities, the narcotics trade, police corruption, and organized crime are closely related problems.

Adding up the direct costs, or at least those which can be easily measured, yields a rough picture of the magnitude of the heroin problem. It is estimated that each man year of addiction creates unnecessary monetary costs of approximately \$14,000.<sup>5</sup> Because of a lack of reliable data on the country's addict population, estimates of the total social cost of heroin range anywhere from four to eight billion dollars.

<sup>4</sup>For example, the quality of law enforcement declined significantly during Prohibition and helped bring about the downfall of the experiment in social control.

<sup>5</sup>Estimate from Alan Craig Leslie, *A Benefit-Cost Analysis of New York City's Heroin Addiction Problems and Programs—1971*, New York City, Health Services Administration, 1971. Leslie's estimate is broken down in the following way: \$3,260 for lost employment earnings; \$1,890 as the economic value of premature death and morbidity; almost \$4,000 in crime costs; \$1,640 in costs to the criminal justice system; and close to \$3,000 in costs resulting from spreading the addiction to other users.

<sup>3</sup>These estimates have sparked much controversy. Some observers argue that the proportion of crime which is drug-related is overstated since many addicts are predisposed to criminal activity, which they would pursue regardless of their addiction.

It is important to develop better information about these cost elements to define more precisely what it is worth to society to prevent or reduce addiction. The welfare of the addict, drug-related crime, and police corruption are all important considerations guiding public drug policies. Before a drug program can be evaluated fully, information about its effects on these variables must be at hand.

A closer look at the workings of the heroin "industry" will provide clues to many of these effects. Nearly all drug programs attempt either to reduce demand (prevention, treatment, and rehabilitation programs) or to reduce supply (law enforcement programs and international crop-reduction efforts).

### THE HEROIN INDUSTRY

Except for the unusual nature of the product, the heroin industry might resemble that of many other commodities. However, because possession and sale are illegal, the structure of the industry has evolved into an unusual form, mostly in an effort to reduce the risks of discovery and arrest to sellers.<sup>6</sup>

**The Structure.** Heroin is derived from the opium poppy which is grown mainly in Turkey and Southeast Asia. Much of this opium is converted into heroin in secret laboratories in France and Lebanon. Between the producer and the final consumer are often as many as six distribution stages—importer, kilo connection, connection, weight dealers, street dealers, and "jugglers." Few, if any, dealers operate at more than one of these distribution stages; that is, there is virtually no vertical integration in the industry. The unusually long distribution chain and the lack of vertical integration help to minimize the number of transactions each dealer must make. The fewer transactions each dealer must make the less visible he is to the authorities and the less vulnerable to arrest. The peculiar

organization of the industry serves to minimize sellers' risk.

The heroin distribution chain resembles a pyramid with a few large firms at the top and many small firms at the bottom. At the top levels—importers and kilo connections—very few firms serve each geographical market area. Also, the grip of organized crime tends to be tightest at these levels. Both of these factors contribute to the high profit rate earned by distributors at the top.

At the base of the pyramid, suppliers, especially street dealers and jugglers, are more numerous. Also, there are few barriers (for example, capital requirements or technological) to block the entry of new competitors. Heroin retailers are often addicts themselves; they can do few other things as well as they can traffic in heroin. Economists would say that the "opportunity cost"—the value of occupations they forego—to them of being in this line of business is very low. So the combination of greater competition<sup>7</sup> and lower opportunity cost tend to depress profit levels for heroin retailers compared to higher-level distributors.

**Profits—The Motivating Factor.** Heroin dealers are as profit-conscious as the next small businessman, but profits to an illegal operation are expected rather than actual; because the operation is illegal the owner never knows for certain whether he will realize his anticipated revenues. Expected profits are the difference between the expected revenue from a given sale (revenue from the sale times the probability of successfully receiving it) and the expected cost (probability of arrest and conviction times the cost of being caught including fines and time spent in jail). Any action which lowers expected profits lowers suppliers' incentives.

Most heroin suppliers attempt to pass their risk

<sup>6</sup>The discussion of the heroin industry relies heavily on Mark H. Moore, *The Economics of Heroin Distribution* (Croton-on-Hudson, N. Y.: The Hudson Institute, 1970).

<sup>7</sup>Because it is relatively safer to deal only with known persons, buyers and sellers avoid dealing with persons outside of their regular contacts. It is similar to the situation in the gasoline distribution industry where customers consistently buy one brand of gasoline because of location of the station or brand loyalty.



costs on to their customers, but their ability to do so depends on market conditions. While all distribution stages in the heroin business are risky, some stages are riskier than others. In general, street retailers face a greater chance of discovery and arrest because transactions at their level are more frequent, making their operations more visible to the police. However, greater competition among retailers makes it more difficult for them to pass these risk costs on to their customers. In contrast, distributors at the top, who are virtual monopolists, find little difficulty in passing their risk costs on to their customers, yet another reason why profits are higher at the top of the heroin trade and lower at the bottom.<sup>8</sup>

### CUTTING OFF SUPPLY

Most narcotic law enforcement efforts aim to reduce the illicit supply of heroin by reducing suppliers' expected profits. Increased law enforcement activity raises the risk of arrest and the cost of each sale. Since the cost per delivered ounce rises the supply of heroin coming on the market tends to fall. Each dealer either engages in fewer transactions than before, asks for higher prices, dilutes the quality, or all three.

Both Federal and local law enforcement agencies have been involved in efforts to reduce the supply of illegal heroin. Federal policies to purchase foreign crops (mainly in Turkey) or directly

subsidize foreign growers not to produce opium have been explored and in some cases implemented.<sup>9</sup> Other international narcotic control efforts have been aimed at breaking the kilo connection links. Finally, local police have attempted to raise the cost to weight dealers, street dealers, and jugglers of doing business.

The effect of a reduction in the supply of heroin is the same as it is in most other markets; everything else equal, it tends to raise the price. An important question for policymakers is what effect does a price increase have on the quantity demanded?

### THE DEMAND FOR HEROIN

The demand for heroin differs from other commodities primarily because possession is illegal. Because of a need for secrecy a seller cannot advertise his wares. Thus, it is expensive for a would-be consumer to obtain information about availability price, quality of the product, and sales locations. These characteristics are shared by other commodities such as marijuana, abortion, and prostitution when made illegal. In the case of heroin, quality is so unreliable and varies so greatly that death can often result from its use. As a result, many new heroin users rely on friends to introduce them to heroin and to verify its quality. Thus, the spread of heroin addiction is much like a contagious disease, spread by person-to-person contact.

Like other commodities, the market demand for heroin depends on its own price and the price and availability of close substitutes. A unique feature of heroin is that continual use tends to produce physiological dependence. A widely held view is that this addictive quality means that the quantity demanded will not vary with changes in the market price, and that ad-

<sup>8</sup>Moore estimates that the value added (which includes profit) at the importer and kilo connection stages is 200 percent and 167 percent, respectively. On the other hand, the value added at the street dealer and juggler levels is only 61 percent and 35 percent, respectively. See *Economics of the Heroin Distribution Industry*, pp. 69-70.

The total markup on a given quantity of heroin may reach as high as 8,000 percent before it reaches the final consumer. The cost of the opium required to produce a kilogram (2.2 lbs.) of heroin is only about \$250, wholesale value at first sale is about \$5,000, and the retail value may reach \$400,000. This enormous markup is possible in part because the original kilo is diluted by each distributor, usually by about 50 percent. A kilo which originally is imported as 80 percent pure heroin may end up in street "bags" (160 milligrams of material) which are only 6 percent pure heroin.

<sup>9</sup>See John Holahan, "The Economics of Control of the Illegal Supply of Heroin," *Public Finance Quarterly* 1 (October 1973), for an economic appraisal of these Federal policies. He concludes that these policies appear doomed to failure because of the difficulties in controlling the legal and illegal production of opium in the many nations involved.

dicts will buy whatever amount is physiologically necessary to feed their habit, regardless of price. (Economists would say that the demand in this case is highly "inelastic"; that is, demand does not respond to price changes.) This view is reinforced by the lack of good substitutes for heroin. Apparently, the potential substitutes—amphetamines, barbituates, alcohol, or marijuana—neither produce equivalent euphoric states nor relieve the physical dependence.

Despite the addictive qualities of heroin, the presence of potential and infrequent users, or "dabblers," in the market weakens this conventional wisdom. Such consumers are likely to be more responsive to price changes than confirmed addicts. Furthermore, price increases are more likely to discourage such persons from buying and experimenting with heroin. This distinction between types of users, while seemingly minor, has helped to resolve a longstanding dilemma for law enforcement officials.

### THE EFFECTS OF LAW ENFORCEMENT— A DILEMMA RESOLVED

By intercepting illegal heroin shipments or running distributors out of business, the effect of law enforcement efforts is to reduce heroin supply and to drive up retail prices. If it were true that all heroin buyers were hopeless addicts and totally unresponsive to price shifts, they would not reduce their consumption when prices rose. Instead, addicts would perpetrate more property crimes to obtain income sufficient to maintain their previous consumption level. Thus, tighter law enforcement would fail to reduce the total quantity of heroin consumed and would actually *raise* crime rates. The police would be caught in a quagmire, and success on the drug front would lead to failure on the crime front.

However, if inexperienced users are as responsive to price changes as is currently thought, the effects of greater police activity will be somewhat easier to swallow. Higher prices stemming from police-induced supply reductions will drive many novices out of the market, and total consumption of heroin will tend to fall.

More important, the fact that two groups of

buyers have different sensitivities to price changes holds out tantalizing prospects for the future course of drug policy. If policies can be formulated which keep the effective price to inexperienced users or nonusers relatively high but keep the price to addicts relatively low, novice users will be discouraged from experimenting with heroin and addicts will not be forced to rely so heavily on criminal earnings to purchase needed heroin supplies. Thus, both groups of users and society as a whole might be made better off.

If they could be adopted, such policies would achieve a form of "price discrimination,"<sup>10</sup>—a practice where different customers are charged different prices for the same good. Moreover, these policies would reverse the form of price discrimination now practiced. Currently, a profit-conscious dealer seeks to entice nonusers to experiment with heroin by offering the novice a low price. The dealer hopes that, once addicted, the nonuser will become a regular customer. Under this practice, the novice pays a fairly low effective price and the experienced user pays a relatively high price—just the opposite of the desired price structure.

A desirable price discrimination scheme would be guided by several goals: (1) reducing the rate of new addictions; (2) reducing crime caused by addicts; and (3) improving the addict's welfare. Unfortunately, these eminently worthwhile objectives often conflict so that, depending on which policy is adopted, it may be impossible to achieve all three simultaneously. Each policy must be evaluated in terms of how

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<sup>10</sup>Several conditions must be satisfied before price discrimination can be profitably employed: the responsiveness (elasticity) of demand with respect to price must vary between at least two groups of customers; resale between the two groups of customers must be prohibitively expensive (otherwise one group could buy the good at a low price and undercut the original seller by reselling it to the group paying the higher price); and, firms must be able to control prices to some extent (if there is perfect competition prices will be competed back to a uniform level). Government policies will need to be especially alert to the second condition by making it difficult for resale between groups.

far it goes to meeting these three goals. Whether a given policy is adopted or not will depend largely on which of the goals society weighs the heaviest.

## FRAMING DRUG POLICY

Drug policy is not set by any single agency which oversees all public narcotics programs. Instead, policy is set independently at almost every government level, and a wide variety of agencies, techniques, and approaches are encompassed. The criminal justice system, especially law enforcement activities, aims to affect suppliers, while most treatment and rehabilitation programs aim to affect consumers.<sup>11</sup> These efforts are not usually substitutes for one another but, instead, tend to complement one another. Thus, setting an ideal drug policy is actually a search for the preferred combination of strategies and policies most likely to achieve the desired goals, including the “twist” in the price structure. What possibilities are most prominent among existing or proposed drug control policies?

**Law Enforcement Policies.** To increase the incentives for street dealers to price discriminate “correctly,” the police could pursue a combined policy of using undercover agents to make purchases and maintaining surveillance of known transaction locations, together with attacks on higher levels in the distribution chain. Street dealers will be motivated to discriminate against unknown and usually inexperienced users when the risk that they are undercover police agents climbs.

Attacking higher distribution levels reduces the total supply available and street dealers

might respond by taking action to reduce their risk of discovery, in addition to increasing prices. One way for a dealer to reduce risk would be to deal only with high-volume, known buyers and to avoid dealing with low-volume, infrequent users. This tactic would result in relatively higher effective prices to novices and, it is hoped, would reduce the rate of new addictions.

A dealer’s incentives can also be affected by the punishment he expects if caught and convicted. If state legislatures increase sentence lengths meted out to convicted heroin dealers or make existing sentences mandatory, a dealer’s risk costs will rise. Again, supply will fall and dealers will be encouraged to cease selling to inexperienced users. One problem is that general supply reductions may cause the average price to *all* buyers to rise, even though the price twist is achieved. Thus, other programs must be implemented with this price discrimination scheme in mind in order to be consistent with overall law enforcement policy.

**Heroin and Methadone Maintenance Programs.** The effects of the two types of maintenance programs are quite similar and can be viewed together (see Box for a more detailed discussion of both). Both programs provide a legal, low-cost substitute for illegal heroin, thus reducing the market demand. Both programs can potentially achieve the desired price discrimination by excluding nonaddicts from the program combined with vigorous enforcement of severe penalties for resale of narcotics to nonaddicts. Four program combinations are possible depending on whether each program is administered strictly or permissively. Strict programs require that participants meet certain conditions for continued enrollment, such as not consuming heroin outside the program and submitting to long-run rehabilitation efforts. Permissive programs, however, impose few requirements. Permissive programs tend to reduce crime at the expense of participants’ welfare. Strict programs stress rehabilitation of the addict but, by forcing many addicts to drop out, have a lesser effect on crime. The ugly dilemma of conflicting goals confronts policymakers at every turn.

<sup>11</sup>Many drug treatment programs are available. The chemotherapy programs include methadone maintenance, heroin maintenance, and narcotic antagonist programs. The latter two programs are experimental in this country. Some maintenance programs implicitly rely on price discrimination by making maintenance dose to the addict free while attempting to prevent resale. The nonchemotherapy programs include detoxification, therapeutic communities, and civil commitment, among others.

## A CLOSER LOOK AT MAJOR DRUG PROGRAMS

**Methadone Maintenance.** Methadone is an artificial substitute for heroin which works by blocking the addict's craving for heroin. Methadone maintenance programs can be either strict or permissive. A strict program controls both the dosage and the outside consumption of illegal heroin, seeking long-run rehabilitation of the addict. A permissive program controls neither dosage nor outside consumption and seeks to maximize the number of addicts exposed to methadone. The decision whether to make the program strict or permissive illustrates the thorny tradeoffs among the three major objectives facing policymakers. A permissive program makes an effective substitute to heroin available at a very low cost. This undoubtedly reduces the amount of addict-caused crime and, therefore society benefits. However, individual addicts may suffer if they are not encouraged to enter into long-run rehabilitation efforts. Chances are they will develop an addiction to methadone which may be as harmful as heroin addiction. However, if the program strictly controls the enrollee's illicit heroin use and tries to force acceptance of long-run rehabilitation efforts, many addicts will drop out. If the dropout returns to crime, society will suffer.

The effects of a methadone maintenance system on the rate of new addictions is uncertain. While nonusers can easily be excluded from these programs, a strict program will not eliminate the illegal demand for heroin and therefore new users will find an existing supply system. This dilemma may be partly resolved, however, by setting and vigorously enforcing severe penalties for resale to nonaddicts (or, say, persons under 18).

But a permissive program will further reduce but not entirely eliminate the demand for heroin. The market price of heroin will tend to fall, encouraging novices to experiment and raising dealer incentives to recruit new users. Thus, the rate of new addictions may rise as a feedback from this program.

**Heroin Maintenance.** Heroin maintenance programs are in effect in the United Kingdom but have not been tried in this country. The effects of this type of program are similar to that of methadone maintenance. In this program a perfect substitute for illegal heroin becomes freely available. The outcome of the program depends on the generosity of dose, whether the drug is injected or taken orally, and the severity and type of punishment to violators of the program's conditions. Recipients are encouraged to enter methadone maintenance and/or rehabilitation programs as soon as possible.

This scheme would dry up a large part, but not necessarily all, of the illegal market for heroin. It also would drastically reduce addict-caused crime. Since nonaddicts would be excluded from such a program they and others who might wish to avoid contact with authority would constitute the remaining source of demand. The few remaining suppliers would raise prices to them because of the reduced demand and the risk of dealing with unknown, low-volume buyers. This would have the desired effect of discouraging experimentation.

The objections to heroin maintenance center around the effects on the addict's welfare. On the one hand, it is argued that removing the need for an addict to resort to crime to finance his heroin habit will enable him to pursue legal employment. On the other hand, some observers argue that addicts who are allowed to receive as much heroin as they want may become apathetic and ineffective. Both effects have been observed under England's heroin maintenance program, and it is difficult to predict which might dominate. It would depend on the individual's desire to return to normal and the extent of his addiction and health deterioration. But this problem serves once again to emphasize the dilemma facing policymakers between protecting the interests of society as a whole versus those of the addict.

Still another proposal is to legalize all currently illegal drugs.\* This suggestion would not lessen the personal costs of addiction to the user. But it would result in a much lower price for the drugs, thereby saving most of society's drug-crime costs and eliminating the profits now being reaped by those willing to risk dealing in illegal drugs.

**Other Programs.** This brief sketch of potentially workable schemes to cure the nation's heroin problem has not intended to be exhaustive. Many proposals have been excluded, such as one to quarantine addicts and force them to undergo a variety of treatment modes (detoxification methadone rural camps) or face imprisonment.\*\* (This attacks the disease-like nature of the spread of addiction.) Also, the status of various voluntary therapeutic communities (such as Synanon in California, and Phoenix House in Philadelphia) has been ignored. Although the success rate of therapeutic communities has been low, a small percentage of addicts are rehabilitated by them. One of the criticisms of the heroin maintenance programs is that those addicts who might have willingly entered one of the rehabilitation programs will be less likely to do so if heroin is freely available.

**Narrowing the Information Gap.** Because of a lack of basic data, the net effect of these programs is uncertain. While research efforts are underway more research is essential. For example, the fraction of heroin consumption accounted for by "dabblers" and the elasticity of demand for heroin are unknown. Another important piece of missing information concerns the effect on the crime rate of a change in the addiction rate. This and other information is needed for measuring the effects of alternative drug programs.

\*See Milton Friedman, "Prohibition and Drugs," *Newsweek*, May 1, 1972, p. 104.

\*\*For a fuller discussion of this particular proposal, see Christopher Clague, "Legal Strategies for Dealing with Heroin Addiction," *American Economic Review* 63 (1973): 262-70.

## WHITHER DRUG POLICY?

Economic analysis cannot predict the precise effects of the many possible variations and combinations of alternative drug policies. But to the extent that consumer behavior in the market for heroin matches behavior for normal "goods," economics can certainly improve our understanding of the underlying forces at work. Policymakers must balance the likely effects of adopted policies with the objectives of the policies.

Reconciling the conflicting goals of reducing crime, preventing drug use, and rehabilitating

the addict is not easy. Programs must be carefully designed and their results carefully monitored to find a suitable mix of law enforcement and rehabilitation efforts. The economic analysis suggests that adopting policies leading to price discrimination—keeping the price of heroin to novice users high and availability low, while keeping price low and availability high to addicts—offers the best hope of balancing these multiple objectives. Law enforcement efforts need not be self-defeating if they are combined with suitable methadone or heroin maintenance policies and with strict penalties for the resale of heroin by experienced to inexperienced users.

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# The Fed in Print

*Business Review Topics,  
Third Quarter 1973,  
Selected by Doris Zimmermann*

Articles appearing in the Federal Reserve Bulletin and in the monthly reviews of the Federal Reserve banks during the third quarter of 1973 are included in this compilation. A cumulation of these entries covering the years 1970 to date is available upon request. If you wish to be put on the mailing list for the cumulation, write to the Publications Department, Federal Reserve Bank of Philadelphia.

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- "The Economic Folklore of Party Politics: Myths or Realities?" by *Donald J. Mullineaux*  
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**DECEMBER**

- "Inflation and a Role for Monetary Policy" by *James M. O'Brien*  
 "A Shifting Capital Mix for District Member Banks"  
 "The Use and Control of Heroin: An Economic Perspective" by *Stephen L. Mehay*  
 "The Fed in Print" by *Doris Zimmermann*



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**NOW AVAILABLE  
BROCHURE AND FILM STRIP ON  
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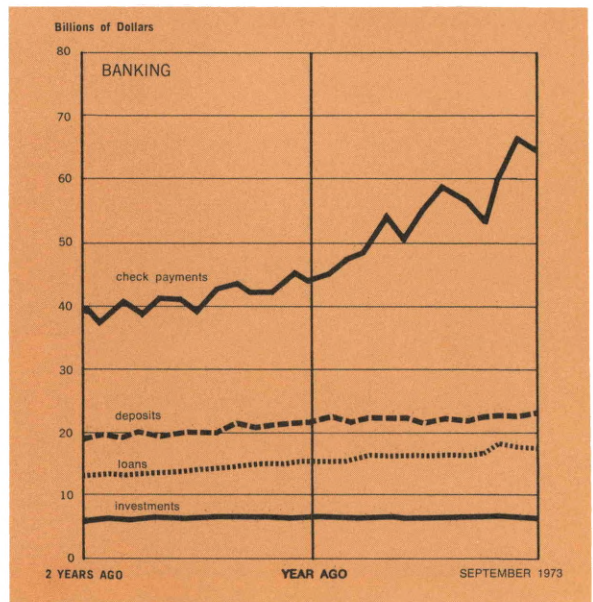
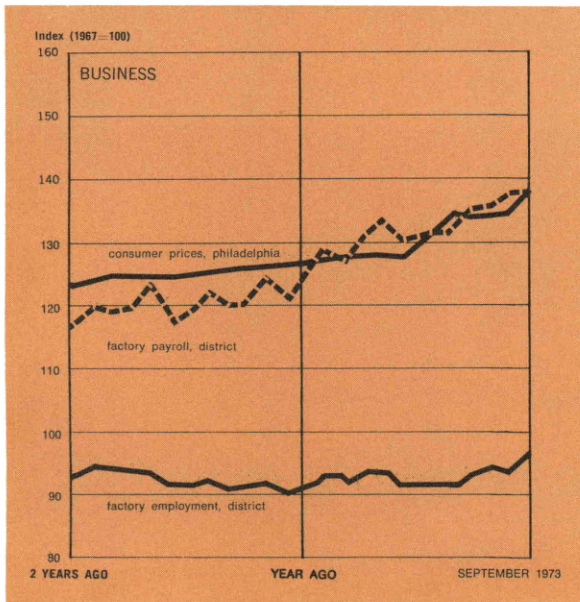
Truth in Lending became the law of the land in 1969. Since then the law, requiring uniform and meaningful disclosure of the cost of consumer credit, has been hailed as a major breakthrough in consumer protection. But despite considerable publicity, the general public is not very familiar with the law.

A brochure, "What Truth in Lending Means to You," cogently spells out the essentials of the law. Copies in both English and Spanish are available upon request from the Department of Bank and Public Relations, Federal Reserve Bank of Philadelphia, Philadelphia, Pennsylvania 19101.

Available in English is a film strip on Regulation Z, Truth in Lending, for showing to consumer groups. This 20-minute presentation, developed by the Board of Governors of the Federal Reserve System, is designed for use with a Dukane project that uses 35mm film and plays a 33 RPM record synchronized with the film. Copies of the film strip can be purchased from the Board of Governors of the Federal Reserve System, Washington, D. C. 20551, for \$10. It is available to groups in the Third Federal Reserve District without charge except for return postage.

Persons in the Third District may direct requests for loan of the film to Truth in Lending, Federal Reserve Bank of Philadelphia, Philadelphia, Pennsylvania 19101. Such requests should provide for several alternate presentation dates.

# for the record ...



SUMMARY	Third Federal Reserve District			United States		
	Percent change			Percent change		
	Sept. 1973 from		9 mos. 1973 from	Sept. 1973 from		9 mos. 1973 from
	mo. ago	year ago	year ago	mo. ago	year ago	year ago
<b>MANUFACTURING</b>						
Production .....	N/A	N/A	N/A	+ 4	+ 9	+11
Electric power consumed.	- 1	+ 6	+ 8	.....	.....	.....
Man-hours, total* .....	N/A	N/A	N/A	.....	.....	.....
Employment, total .....	N/A	N/A	N/A	.....	.....	.....
Wage income* .....	N/A	N/A	N/A	.....	.....	.....
<b>CONSTRUCTION**</b>	-59	+11	+24	-21	+ 1	+12
<b>COAL PRODUCTION</b> .....	+ 3	-15	- 3	.....	.....	.....
<b>BANKING</b>						
(All member banks)						
Deposits .....	+ 2	+ 6	+ 7	+ 2	+12	+12
Loans .....	+ 1	+12	+14	+ 1	+22	+22
Investments .....	0	- 4	0	+ 1	0	+ 2
U.S. Govt. securities ....	0	-11	- 6	0	-12	- 6
Other .....	+ 1	0	+ 2	+ 1	+ 6	+ 6
Check payments*** .....	- 4†	+44†	+36†	+ 2	+28	+26
<b>PRICES</b>						
Wholesale .....	N/A	N/A	N/A	- 2	+17	+13
Consumer .....	+ 1‡	+ 8‡	+ 6‡	0	+ 8	+ 5

\*Production workers only  
 \*\*Value of contracts  
 \*\*\*Adjusted for seasonal variation

‡15 SMSAs  
 †Philadelphia

LOCAL CHANGES Standard Metropolitan Statistical Areas*	Manufacturing				Banking			
	Employment		Payrolls		Check Payments**		Total Deposits***	
	Percent change Sept. 1973 from		Percent change Sept. 1973 from		Percent change Sept. 1973 from		Percent change Sept. 1973 from	
	month ago	year ago	month ago	year ago	month ago	year ago	month ago	year ago
Wilmington .....	N/A	N/A	N/A	N/A	-12	+ 17	+ 2	-88
Atlantic City .....	- 3	+61	- 4	+18	+ 2	+ 11	0	+11
Bridgeton .....	+ 1	- 1	N/A	N/A	N/A	N/A	+ 2	+14
Trenton .....	0	+ 1	+ 5	+ 4	- 5	+275	+ 1	+10
Altona .....	- 1	- 1	- 3	+ 3	+ 4	+ 15	- 2	+ 6
Harrisburg .....	0	+ 4	+ 3	+16	- 8	+ 11	0	+10
Johnstown .....	0	+ 3	+ 9	+16	- 4	+ 11	+ 3	+14
Lancaster .....	- 1	+ 4	+ 2	+10	+25	+138	+ 5	+16
Lehigh Valley .....	- 1	+ 3	+ 2	+12	- 7	+ 23	0	+ 6
Philadelphia .....	0	+ 1	+ 1	+ 7	- 2	+ 40	+ 2	+10
Reading .....	0	+ 3	+ 5	+ 8	-15	+ 9	+ 2	+10
Scranton .....	- 1	- 2	+ 1	+ 6	- 6	+ 11	0	+10
Wilkes-Barre .....	- 2	+ 3	- 2	+10	+ 3	+ 16	- 2	+ 9
Williamsport .....	- 1	- 2	+ 5	+ 3	- 4	+ 31	0	+13
York .....	- 1	+ 2	0	+10	- 1	- 45	+ 3	+12

\*Not restricted to corporate limits of cities but covers areas of one or more counties.  
 \*\*All commercial banks. Adjusted for seasonal variation.  
 \*\*\*Member banks only. Last Wednesday of the month.



**FEDERAL RESERVE BANK of PHILADELPHIA**  
**PHILADELPHIA, PENNSYLVANIA 19101**

## **business review**

**FEDERAL RESERVE BANK  
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