
Inflation, Finance and Capital Markets

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Simon Kuznets remarked in his *Capital in The American Economy*, "... extrapolation of inflationary pressures over the next thirty years raises a specter of intolerable consequences. . . ." ¹ Fifteen of the thirty years are over, and inflation has accelerated. The central concern of this paper is whether Kuznets' prediction of "intolerable consequences" for capital markets and capital accumulation is on track or patently wrong. ²

Monetary theory distinguishes between "immaculate" inflation, "clean" inflation, and "dirty" inflation. It is the last of these that Kuznets dreaded and that we have endured. The first section below deals very briefly with differences between the three styles of inflation. The second section is a catalogue of ways in which dirty inflation may obstruct and distort capital flows and capital accumulation. The third section considers some ways, including "indexing," to cleanse a dirty inflation and some ways to prevent it.

Styles of inflation

Immaculate inflation can be visualized most easily for a competitive economy that is firmly settled on a path of steady growth. Final outputs are produced by three forms of wealth. There is human wealth, growing at a constant

rate. There is physical wealth, its ownership represented by an homogeneous financial asset in the form of common stock or "equity," and there is wealth in the form of real money balances. Accumulation of physical and monetary wealth derives from a constant rate of saving for the community. Inflation occurs because the growth rate of nominal money exceeds the growth rate of real money demanded.

The inflation is immaculate because its pace is constant and perfectly foreseen and because the inflation tax on real money balances is compensated precisely by a deposit-rate of interest on money. It is fully anticipated, and it does not impose a relative penalty on the money form of wealth. Money-wage rates rise faster than output prices in the degree that labor productivity is growing. The price of common stock rises in precise accord with the marginal reproduction cost of corporate capital goods, and the earnings-price ratio of corporations equals the real marginal productivity of physical capital. Stocks are a perfect hedge against inflation, and so is money whether the rate of inflation is positive or negative, high or low. It is evidently not immaculate inflation that bothered Kuznets.

Clean inflation is also constant and perfectly foreseen. However, money-holders are not compensated for the inflation tax, so that a rise in the rate of inflation makes money wealth a less attractive alternative, in the optimum portfolio, to human and physical wealth. Depend-

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ing upon the functions attributed to money and upon other considerations, the higher rate of clean inflation may lower the growth rate of output, the yield to human wealth, and the earnings-price ratio on equities or it may raise them. For example, if money is a consumer good, an uncompensated inflation tax can increase the community's savings-income ratio and accelerate growth of wealth and output. On the other hand, if money is a producer good, a negative yield or tax on it can reduce the productivities of complementary physical and human wealth. Then workers and stockholders suffer along with money-holders, and all of them should dread the "specter" of inflation. They should insist that the monetary system link growth of nominal money precisely with growth in real money demanded.

Immaculate and clean inflation are figments of monetary theory. The real world is not firmly settled on a stable growth path for output, human wealth, and physical wealth. Wealth is not riskless and homogeneous, its ownership represented by homogeneous common stock of gilt-edge quality. In particular, the growth paths of price levels for output and wealth are not straight lines into infinity. Inflation proceeds, instead, at unstable rates on markets for output, factors, and securities. Its variance defies foresight and can be regarded as a disease of capitalism's guidance mechanism, the price system. The inflation tax is not compensated. The inflations that we experience are dirty, and an increase in the inflation rate or its variance has real consequences that the simple models of immaculate and clean inflation do not comprehend.

Capital costs of inflation

We turn now to the obstacles that dirty inflation puts in the way of efficient wealth or capital accumulation. The list of obstacles below is not all-inclusive, and the costs they impose are not measured. It is not balanced against a list of social gains from inflation. One alleged gain is that inflation shifts income from low-saving sectors to high-saving sectors and accelerates cap-

ital growth. We pass this by, because inflation often reduces the social rate of saving and because more efficient devices to increase aggregate savings are available. Another alleged gain is that inflation demolishes a complex and awkward structure of claims against wealth and permits a purified financial system to concentrate on incremental growth of capital. This may be a benefit of once-and-for-all hyperinflation, but it is not the result of chronic inflation. Still another gain is said to be that inflation imposed as a tax to yield government revenues impedes efficient capital formation less than do alternative sources of revenue. This is true for some but not for all alternative taxes. To continue down our list, inflation of product prices is said to be an essential, though second-best, defense for full employment against autonomous inflation of factor prices. It must be not merely tolerated but validated by monetary expansion until there can be a "social contract" to inhibit monopoly practices in factor markets. We pass this by, partly on the grounds that monopoly in its various guises is characteristically laggard in adjusting its price demands to inflation: autonomous inflation tends to be catch-up inflation. Finally, there is Phillips-ism which tells us that inflation is the right way to reduce marginal real labor costs to employers and so to excite demand for labor to the full-employment level: unstable and unanticipated inflation clears the labor market. This allegation we put aside because we do not know the inflation-unemployment rate of exchange nor how often the rate of exchange may vary, and the evidence is strong that chronic unemployment responds less durably to inflation stimulus than to improvement in labor training and mobility.

The safety principle

Every segment of economic theory about finance emphasizes benefits that accrue to individuals and society from the existence of some safe asset or assets; that is, of assets bearing real yields of negligible unanticipated variance. The hypothesis here is that dirty inflation deals

brutally with safe assets and, as a consequence, with financial markets. Financial markets are segmented; relative financial prices are distorted; financial stocks are destroyed; and financial adaptations to dirty inflation are costly and inefficient.

The first principle of monetary theory is that society benefits if some asset has a fixed price in terms of the numeraire. That asset, with its zero variance in the numeraire price, is money. It is indispensable for the efficient organization of markets and for extension of their boundaries beyond limits that are feasible with barter. Monetary theory emphasizes also the welfare gains of creating a "common-currency area" in which two or more local monies are linked by an exchange rate of zero variance.

Monetary theory distinguishes a third price of money, the real deposit rate. This price is the algebraic sum of any nominal deposit rate of interest (d) and the rate of change in money's purchasing power (P) over a representative bundle of all other things. It is an interest rate, expressed as d . The mean of its expected value (d^*) and the expected variance (v) of (d) around (d^*) are significant for the public's choice to hold money rather than some other asset and to hold one money rather than another. If (d^*) is low, because of anticipated inflation, and (v) is high, because inflation is expected to be unstable, an investor "... will be beginning to look about for some new money asset—a foreign money, perhaps—with which to satisfy his requirement for a certain element in his portfolio."³ The risk of money-holding is undervalued by (v) since dirty inflation is associated with increased dispersion in rates of change among individual prices; for example, consumer prices may move one way and equity prices another. Inflation and its variance tend to demonetize an economy.

Portfolio theory stresses the role of some safe asset or assets, not necessarily money, in raising the efficiency frontier of portfolio investment. Risk-averse investors may raise the utility index of their portfolios if they can substitute a safe asset for unsafe assets with both low yields and

relatively low variance of yield. Risk-takers may supply the safe asset that risk-aversers desire and invest the proceeds in unsafe assets with both high mean yields and high variance. Both classes of investor are "better-off," and society benefits because savings are diverted to capital accumulation at high mean yields. Accumulation of safe assets is complementary with accumulation of productive and risky assets, reducing the supply price of savings to riskier uses. The implication seems to be that, in so far as relatively low (d^*) and its relatively high (v) demote money and such other safe assets as government securities from the "safe" category, productive real investment is depressed by inflation.

The theory of financial intermediation is another exercise in the social complementarity of assets yielding low-safe rates of return and assets yielding high-risky rates of return. At a cost, an intermediary can divert savings of risk-averse asset-holders into "safe deposits" and pass them on to investors with the portfolio taste and technical capacities for investment at relatively high yield and high variance. When the deposits are rendered less safe by a decline of (d^*) and an increase in its (v), venturesome investment is crowded out by shrinkage of intermediation.

Inflation in the United States has dealt roughly with assets traditionally rated as safe. A long-term Treasury bond issued at the price of \$100 in 1967 fell in real value, as measured by the consumer price index, to \$59 in 1973. This depreciation, at an annual rate of approximately 9 percent, reflects both an increase in market rates of interest from 4.9 percent to 6.3 percent, the result of expected inflation, and realized inflation of the price index from 1.00 to 1.385. Part of the loss, to be sure, was compensated by interest payments at contract rate. During the same seven years, the average deviation of nominal bond rates, measured as annual averages, was 10 percent. The depreciation rate of 9 percent and the average deviation of 10 percent during 1967-1973 may be compared with a depreciation rate of 3 percent and

an average deviation of 4.5 percent during 1960-1966. In view of the deteriorating yield and quality of Treasury bonds in particular and of other Treasury issues in smaller degree, it is not surprising that private domestic investors made no net purchases of Treasury issues during 1967-1973 and elected to hold in their portfolios only \$122 billion of Treasury debt, at values in 1967 prices, in 1973 as compared with \$206 billion in 1967.

From the mid-1960's to the 1970's, dirty inflation has reduced the safety of money, claims on intermediaries, and government bonds. Complementary investments with high-risky returns have been affected as one expects. One particle of evidence comes from the market for venture capital, a principal source of finance for small, new enterprise. The flow of funds to this market is down to a trickle, and the terms have become more severe. The Department of Commerce is concerned that the effect may be to inhibit technological innovation as well as competition with relatively large, established enterprise.⁴ We consider this "complement-shift" at greater length in the following section.

Complement - shift of Portfolios and the Stockmarket. Some assets that qualify as "safe" when inflation is negligible deteriorate along the risk scale when inflation is substantial and dirty. Asset portfolios are adjusted to this decay of safety in two ways. For one, there is a shift away from the assets with high-risky returns that are complementary with assets qualifying as safe when inflation is negligible. For the other, there is a shift to assets that are relatively inflation-proof. Disappearance of venture capital during the past few years in the United States may be one bit of evidence on the former or complement-shift. The behavior of stockmarket indices during inflation is another bit of evidence.

Many studies have made it clear that stocks are not a secure inflation hedge during dirty inflation. One study has regressed annual growth rates in stock-price indices, during 1953-1969, on growth rates of commodity prices and industrial production for twenty-two countries.⁵ The

pooled experience was that stock prices gained approximately one-half of one percent for each percentage point of inflation. Inflation reduced the real value of equities. James Tobin has reported a reduction from 1.62 to .995, during 1965-1973, in the ratio of aggregate market values for stocks and debt of American corporations to reproduction cost of corporate capital.⁶ Data assembled by Henry Kaufman indicate that the ratio of market value to stated book value for Dow Jones industrials declined during 1965-1974 to its lowest level since World War II.⁷ Michael Keran, exploring quarterly data for the United States during 1956-1970, found a negative and highly significant relationship between Standard and Poor's 500 index and the gross national product deflator lagged from one to sixteen quarters.⁸ These and other studies leave little doubt that dirty inflation is not a happy context for bulls on stock exchanges.

Complement-shift is by no means the only explanation for the perverse response of stock prices to inflation. That it does count is suggested by varying degrees of response in price indices for stocks of different grades and qualities. If aversion to stocks arises from decay of safe assets, one would expect aversion to hit least the large, blue-chip issues, to hit hardest the issues of relatively new and small firms. This is what happens. From the end of 1972 to the end of 1974, for example, the Dow Jones index for thirty industrials declined by thirty-six percent, the NASDAQ index for over-counter stocks by fifty-two percent. Dirty inflation increases the cost of capital to extraordinarily, even infinitely high levels for industry on the safety fringes. It tends to close the door of this particular habitat to capital inflows.

Substitute-shift and The Term Structure of Interest Rates. If inflation were immaculate or clean, borrowers and lenders could not err in forecasts of nominal or real rates of interest. Information about forward rates of interest would be just as precise and reliable as information about spot rates. Differences in trading cost aside, short-term and long-term securities

would be perfect substitutes and occupants of the same habitat. Issues at various terms to maturity are not perfect substitutes in the real world. One reason is that inflation imposed in the past at random rates generates expectations of inflation at unpredictably variable rates in the future. Then nominal and real forward rates cannot be forecast precisely. This means, of course, that short-term securities provide a margin of safety for risk-averse investors over long-term securities. The latter lose gilt-edginess, and dealings in them take place in a distinctive risk habitat.

When dirty inflation has done its mischief with such safe assets as, say, money or Treasury bonds or endowment life insurance, one can count on a substitute-shift by investors. One obvious way to retrieve an element of safety for portfolios is to substitute short-term claims for longer maturities. Security markets must respond to this shift with an increase in the liquidity premium on the longer maturities that can be explained, in part, by the variance of past and, hence, of expected inflation.

Especially since 1965, the liquidity premium on longer-term securities has increased in this country. Modigliani and Shiller have traced part of the increase, for the premium on AAA corporate bonds relative to prime commercial paper, to growth in the rate of inflation. They have traced part of the increase to growth in the standard deviation of the market rate of interest for commercial paper.⁹ This short-term rate has become less stable because inflation has been dirtier, but there are other reasons including higher variability of the money supply. Whether and by how much inflation's variance affects the liquidity premium for long-term securities has yet to be determined, but exploratory work by Rose McElhattan indicates that the substitute-shift does occur along the maturity spectrum.¹⁰

The maturity shift poses hazards for economic welfare. Shorter mean maturity of business debt can result in difficult cash-flow problems for both borrowers and lenders, especially including banks. Even if financial crisis does not result, the risks of borrowing and lending

short must put a damper on capital formation in the private business sector.

The lag principle

In immaculate or clean inflation, the future path of inflation can be foreseen precisely by participants in all markets. In dirty inflation, the mean inflation rate for some long period is approached by successive accelerations of inflation interspersed with slow-downs of price-level growth. Current and past short-run inflation rates are not an accurate guide to expectations of the mean rate: historic price behavior becomes unreliable information about prices in the future. On general principle, of course, any decline in the efficiency of the price mechanism as a device for disseminating information and for coordinating economic activities is bound to have its social costs in the capitalist system.¹¹ Some of these costs must be evident on capital markets where present prices of capital assets depend in complex ways upon both prices in the present and past and prices expected for the future. We turn now to three examples.

Relative Prices of Debt and Equity. Michael Keran has developed a subtle model, with strong empirical verification, in which unstable inflation generates changes in relative rates of return to corporate debt and corporate equity.¹² The market rate for corporate bonds of AAA quality, a measure of both return to savers and of capital's supply price to corporate investors, is determined by expected rates of change in the GNP deflator (with positive effect), by rates of change in real GNP (with positive effect), and by change in the real money stock (with negative effect). When inflation is unstable and accelerating, this interest rate rises sensitively in response to inflationary anticipations. The supply price of capital on the stock markets responds even more sharply. Security buyers there insist upon a rate of return that is competitive with bond rate. They bid prices on the stock exchanges to the low levels that will yield the competitive rate, given anticipated corporate earnings. However, they are relatively myopic

about the effect of inflation in raising future earnings: they are inflation-sensitive on the bond market, inflation-insensitive on the stock market. The result is that the supply price of equity capital, computed from earnings that are adjusted to inflation, is driven upward relative to bond rate. In due time, as the higher inflation rate is prolonged, the error in stock valuations is corrected and a "normal" relationship is restored between yields on bonds and yields on equities. Conversely, as inflation slows, market returns to equities diminish temporarily relative to bond rate, then rise as deflationary anticipations are applied to forecasts of corporate profits.

The Keran model dramatizes the uneven impact of inflation and inflationary expectations on different segments of the capital market. One suspects that this model can be augmented, to explain the impact of unstable growth rates in nominal money. When monetary growth is accelerated, there tends to be a "first" effect reducing corporate bond rate and raising stock prices. "Second" effects follow, including increases in real national product that tend to raise bond rate and increases in real corporate profits that tend to raise stock prices. Keran's model is concerned mainly with "third" effects, as inflation sets in, that tend to raise bond rate and to raise the supply price of equity capital even more.¹⁸ Extended or not, the Keran model generates a clear account of fragmentation on capital markets during dirty inflation. Bond markets and stock markets become more distinctive habitats as the result of changing lag patterns in output, prices, profits, and inflationary anticipations.

With increased variance in yield, equities slip down the scale of safety relative to corporate bonds, and there must be a trend during dirty inflation toward the higher leveraging of corporate investment. In view of increases in the liquidity premium against long-term debt that develop during inflation, the higher leveraging must involve a rising ratio of short-term debt to equity. This trend involves obvious risks for corporate liquidity and solvency, particularly

during periods when profits are depressed relative to interest payments.

Lags and Wealth Effects. Dirty inflation leaves a trail of wealth effects. For the moment, we are concerned only with those effects that can be attributed to imperfect foresight regarding inflation and to lags in anticipations regarding inflation's mean and variance. More wealth effects follow from other aspects of inflation, especially from governmental pricing and tax policies, and we turn to them later.

During economic growth, the private sector generates a stock of debt and financial assets. The public sector has become a chronic borrowing sector. Financial accumulation is the counterpart of private capital accumulation and expansion of the public domain. At low and stable rates of inflation, only a negligible share of the financial accumulation is explicitly "indexed." As inflation increases and becomes more variable, indexing is extended in various guises, but its costs are apparently so high that it lags behind inflation. It is discussed in a later section. Indexing is perfect, of course, in immaculate inflation.

Dirty inflation imposes a quadruple tax on holders of the bulk of financial assets. First, the real value of claims that promise a given flow of nominal returns is diminished by each increment of realized but unanticipated inflation. Second, the value of such claims is diminished by increases in market rates of interest that reflect anticipated inflation. Third, many varieties of claims slip down the scale of security ratings. Fourth, holders of equity claims are injured by the lag of stock prices behind inflation of labor and commodity prices. It may be noted in passing that claimants in such contingency contracts as insurance bear inflation taxes along with holders of financial assets. These penalties on contingency contracts should be expected to have effects on portfolio choice and substitution similar to effects of dirty inflation on "safe" assets.

No accurate and complete estimates of these costs to holders of financial assets have been

made. Bach and Stephenson have published estimates for the first tax on our list.¹⁴ For the quarter-century 1946-1971, real capital losses from unanticipated inflation may have amounted to \$600 billion. For each one-percentage point of inflation after 1971 in this country, the cost to creditors may amount annually to \$35 billion at the 1971 level of commodity prices. Of course, this tax is objectionable on all canons of taxation. For one thing, who the beneficiaries are is not clear. They must include taxpayers who benefit from government's debt exposure or, when government does not pass on to taxpayers the benefits of its inflation windfall, users of public goods and purveyors of various services to government. They seem to include, too, stockholders of corporations with exceptional debt leverage. Recipients of low and high incomes are taxed for the benefit of middle-income households, and elderly people are taxed for the benefit of the young. The distribution of benefits and burdens is not random, but it is obscure and is not determined by explicit political choice or by efficient market choice. The tax is biased against savings, and it is biased for relative growth of the government sector.

The second, third, and fourth taxes on holders of financial assets have no beneficiaries. Their effect, it was argued earlier, is to distort capital markets, twisting the structure of interest rates against risky and long-term assets. In more general terms, they add to the risks and hazards of capital accumulation. The long-run result of augmented risk can be only to diminish economic productivity and growth.

Valuation Lags. Valuation of assets, liabilities, and net worth of both companies and individuals is based on the principle that "a dollar is a dollar is a dollar." They are afflicted with money-illusion. They are rarely adjusted to the fact that last year's dollar and this year's are quite different when price levels are unstable. The result is that levels of income and wealth and change in the levels are misrepresented. Fabricant estimates that corporate profits for 1973, reported as \$118 billion before income

tax, may be overstated by at least \$30 billion. He suggests, too, that use of a constant dollar in measuring profits would reduce the reported increase from 40 percent to 10 percent in 1966-1973.¹⁵ Terborgh reports that corporation profits during 1946-1970 were overstated by nearly 20 percent because of just one instance of money-illusion, underestimation of depreciation charges.¹⁶ Bach and Stephenson note the remarkably diverse impact upon companies of correcting income statements for bias in the dollar as measuring rod.¹⁷ Valuations of aggregates by the Department of Commerce have been no more immune to illusion-error than micro-valuations by accountants and tax collectors. The American Institute of Certified Public Accountants has nominated inflation-bias as the pre-eminent issue in reform of corporate accounting procedures.¹⁸

The economy travels through time with a slowly changing stock of "old" tangible wealth and "old" financial assets and debt. The stocks are substantial multiples of annual flows of incomes, cost, and debt service. The ages of the stock range from the new to the well-nigh infinitely old (land). One result is that, if assets and debt are measured in original values, reported net worth of individuals, firms, and the economy can vary substantially between periods just because the vintage of assets and debts changes. Reported income can be over-stated or under-stated just because the current price level differs from the weighted mean of price levels at which old assets and debt were acquired. All by itself, the calendar produces variance in net worth and income.

Instances of illusory valuation are familiar. There is original-cost depreciation, which is correct only partially when depreciation charges are accelerated. There is FIFO costing of inventory and costing of debt at contract instead of market rates of interest. These and other distortions in accounting information are the heritage of more or less prolonged dirty inflation.

Bach and Stephenson have made the essential point about the effect of these distortions on

capital markets. They sought but could not find evidence that stock markets discriminate successfully between business profits that are illusory, based on the age-pattern of old assets and debt, and profits that are corrected for money illusion.¹⁹ Stock markets are not efficient enough, in valuing profits, to draw the line where illusion ends and efficiency begins. They cannot be as selective as we would like them to be in allocating scarce savings.

Inflation and government

Dirty inflation should be labeled, "Made in Government." Inflation is generated by excessive growth rates of nominal money, dirty inflation by excessive and unstable growth rates of nominal money, and the determination of these rates is government's prerogative. In this section, we sample other government actions that, by adding to the turmoil of inflation, distort capital markets. The hypothesis is proposed, in passing, that dirty inflation increases the economic size of government relative to private sectors: in particular, it increases governmental relative to private demands upon capital markets, governmental relative to private financial intermediation, and governmental manipulation of private financial choice. If government were motivated to self-aggrandizement, dirty inflation would be the instrument to use.

Tax Effects of Inflation. The list of tax effects of inflation is long, and we draw only a small sample from it. The most obvious, of course, is that unstable inflation imposes unpredictable rates of taxation upon private balances of government debt and high-powered money. These private balances are depreciated during inflation and, since income taxation is afflicted with money-illusion, the depreciation cannot be counted by the private sector as a tax-deductible loss or business expense. Government imposes the loss and declines to allow relief for it in explicit taxes, even declines to report it as a fiscal revenue. One result, as we have seen, is to take away from investors the haven of safe assets, and another is to reduce private savings, given constant savings-income ratios.

The second tax effect depends on the progressivity of tax schedules. Inflation drives nominal and real incomes along different paths. The United States is aware, from its experience of 1973-1975, that nominal and real incomes may move in different directions, the former rising and the latter declining. Progressive taxation pays no heed to the path of real incomes. It imposes higher tax rates as nominal incomes increase, and government seems not to be concerned that, because real incomes lag, the progression of taxes against them is steeper still. Real incomes, then, are subject to "double progression" as the result of dirty inflation.²⁰ The double progression is especially notable for the profit share of income since it is so sensitive to change in real national product. Of course, the impact of inflation *cum* progressive taxation on after-tax, distributed real profits and the stock markets' valuation of private capital formation must be adverse to private investment. Since the impact is variable, it increases the variance of real yield to capital, the risk of investment, and the aversion to investment at each mean rate of return. Dirty inflation *cum* progressive taxation makes safe assets risky, risky assets riskier still.

We observed earlier that business income varies with the vintage of business wealth when there is variable, unanticipated inflation. It is overstated by original-cost depreciation and FIFO accounting for inventory when prices are rising, under-stated when prices are falling. Business taxes are assessed on measured or "vintage" income, and so they are progressive to inflation at rates which vary from taxpayer to taxpayer according to the vintage of capital goods and inventory. After-tax incomes are not unbiased measures of firms' relative efficiencies. They are biased by the relative ages of business assets.

The vintages of debt also count in measurements of income and assessment of taxes during inflation. Any firm with debts that are not indexed, by the market or by contract, receives real income from the inflation tax on its creditors. The tax is higher as the debt is older. Of

course, this real income of private debtors is not counted as income subject to government tax, and the inflation costs of creditors are not deductible from income subject to government assessment. Since the corporate sector at large is a net debtor, this exemption of real income from assessment is a partial offset against the punitive tax effect of original-cost depreciation and FIFO accounting for inventory. Musgrave takes the position that, since there is offset in some degree, tax assessments should not be corrected for vintage of either assets or debts.²¹

Inter-Government Finance. Inflation affects in arbitrary and unexpected ways the relative flows of real revenues and savings for different levels of government and their relative ease of access to capital markets. For example, only central government collects the inflation tax by issue of nominal money to excess. This tax is one that state and local governments are precluded from using. However, there are more important differences.

In the main, lesser governmental units do not employ progressive taxation of private incomes or the rate progression is gentler than the federal progression. They do not enjoy automatic growth of real revenues from income taxation. Again, much of local government depends only to a slight degree on income taxation and relies instead on property taxation. Revenues from property taxes characteristically lag behind inflation because reassessments of property are infrequent and because collections are annual rather than quarterly or by withholding. Still again, local government bears first the brunt of taxpayers' resistance to automatic growth of total real tax burdens in inflation. In some degree, that is to say, growth of real federal tax revenues turns out to be at the expense of real local tax revenues.

Lags in revenue growth for local government relative to expenditure growth tend both to increase government bids for funds on capital markets and to lower the markets' valuation of the debt offerings. Of course, the markets do take into account the increasing value, during

inflation, of tax-exemption clauses in issues of local government. Still, one notes that the mean ratio of market rates of interest on U.S. Treasury bonds to market rates on high-grade issues of local government declined from 1.15 on the average in 1960-1963 to 1.07 in 1970-1973. During the same period, quality ratings were reduced for numerous issues of local governments in response to lags in local revenues behind local interest obligations. It may be more important, from an efficiency standpoint, that the incidence of relative increases in cost of capital was uneven among local governments, depending in some substantial way on differences in styles of taxation and composition of tax bases. Demands for revenue-sharing by the Federal government must have arisen in part because of the differential impacts of inflation on different levels of public administration.

Price Controls. Government is nourished by inflation, then bites gently the hand that feeds it by imposing selective price ceilings. Whether the ceilings are numerous, as in Phases I-III during 1971-1973, or more selective, their effect is to differentiate the impact of inflation upon various kinds of wealth and upon the markets for wealth. In much the same way that old assets and old debt affect gains and losses from inflation, old prices stabilized by controls adjust the relative burdens of inflation on the processes of capital accumulation.

One expects two principal effects of specific price ceilings on capital markets. Wealth yielding services that are subject to effective price controls must yield declining real revenues during inflation and, at any discount rate, must decline in real market value. Probability that controls will be imposed must increase the risk of wealth ownership so that a higher discount rate is appropriate. Market values of wealth are diminished, relative to reproduction costs, by either the fact of control or by the prospect of control.

There are numerous illustrations of the impact of inflation, dirtied by price controls, on capital values. Private residential construction

has been damped in New York City since World War II, as in Paris and London and elsewhere, because of the lethal combination of rent ceilings and general inflation. Cattle herds in Argentina are destroyed as their effective rate of return relative to free market rates of interest is reduced by over-valuation of the peso on the foreign exchanges and by controls on export prices for beef and mutton. Cocoa plantings in Ghana recede when price ceilings discriminate against cocoa production during inflation and then expand when ceilings are raised or inflation reduced.²²

Keran has demonstrated the impact of conventional "fair-return" pricing of services of public utilities, during inflation, by regulatory commissions.²³ The commissions have been charged with responsibility for thwarting the disposition of utility companies to price their services monopolistically and so to extract excessive returns for their stockholders as well as to supply smaller and poorer flows of services than might be expected in a competitive context. Of course, there is no perfectly competitive market for utility services that might generate standards of price and output quality for the non-competitive markets that commissions regulate. The regulators must look to competitive capital markets for their criteria.

The common regulatory rule is that a utility qualifies as competitive if the aggregate market value of its equity issues is in line with book value of net worth. Presumably then stockholders can realize, from the anticipated earnings of their company, the rate of return that accrues to stockholders of competitive and unregulated industry. The rule guarantees that inflation will reduce the market price of the utilities' stock issues relative to prices for equities of unregulated firms. The reason is, of course, that the equity market anticipates inflation in some degree—imperfectly in the short run, more adequately in the long run—and arrives at a rate of return for unregulated industry that tends to equate market value of equities with the reproduction cost, not the book value, of net worth. Regulation depends on book value as the right

criterion for market value of utilities' net worth while the free capital market, adapting to inflationary experience and expectations, depends on reproduction cost. Here is another case in which an old price distorts capital markets during inflation.

Keran's results demonstrate that, during inflation, the market values of utilities' equity issues take the same path as the market prices of old bonds. Book value of net worth is comparable with the initial price of a bond, and "fair return" is comparable with the bond's contractual interest yield. When unanticipated inflation sets in, the market prices of utility issues and old bonds must decline, and the effective nominal rates of return to investors must rise so that the real rates of return do not decline. Regulatory commissions do not recognize the distinction between nominal "fair return," which seems to them the appropriate criterion of competitiveness, and real competitive return. The consequences of their money-illusion are an increase in the cost of new capital to utilities and retardation of growth in the utilities' productive capacity. It would be interesting to compare the relative effects, on growth of power production, of OPEC's pricing policies for petroleum and the commissions' "fair return" rule.

Disintermediation. Unanticipated inflation deals roughly with financial intermediation, shrinking its real and even its nominal volume of characteristic indirect debt. Variance of inflation necessarily increases the supply price of equity capital to intermediaries. Whether the sources of funds are indirect debt or equity issues, their stocks and flows tend to be reduced in volume, destabilized, and made more expensive. The impact upon savings and loan associations is familiar but not unique among classes of intermediary; for example, the real value of life insurance reserves declined during 1967-1974 as well as in the earlier inflationary periods of 1946-1948 and 1950-1951.

Some intermediaries are victimized along with taxpayers, public utilities, and others by the familiar burdens of old assets, old debt, and

governmental price-fixing. Their problems are not unique. Their portfolios are dominated by long-term bonds and mortgages, acquired at low contractual rates of interest, and by equities, acquired before inflation has had its first effect of depreciating equity prices. Unanticipated inflation generates capital losses for them, and it raises operating expenses other than interest costs relative to revenues of interest and dividends. Rates of interest on their debt are fixed, by contract in some cases, by ceiling in the style of Regulation Q in other cases. When free-market rates of interest are driven up by inflation, creditors of intermediaries demand liquidation of their claims in some substantial amounts at prices fixed by contract or regulation. Unless someone rides to the intermediaries' rescue, their plight can be serious indeed, caught as they are between constant revenues and rising expenses, depreciating assets and liquidation of debts.

The public eye has been caught by episodes of disintermediation. They disturb capital formation, at least in terms of its composition, but the trend of disintermediation during prolonged dirty inflation may be a source of more fundamental change. It reverses the secular increase over a century in intermediation relative to direct finance of investment and of government deficits.²⁴ For given aggregate ratios of savings to income, secular disintermediation implies that alternative modes of finance will develop. They may include greater reliance on private self-finance of investment from retained earnings, but that seems improbable while the trend in after-tax real corporate profits continues downward. They may include increasing substitution by consumers of durable goods for financial assets, but that will be damped by the rising price of energy. Of course, secular decay of traditional intermediation may stimulate innovation of modes of indirect finance: the Euro-dollar market is a case in point. The certainty is that the government sector will substitute for private intermediation either by taxation and by issue of direct government debt to savers or by proliferation of government financial intermedi-

aries. Inflation's effect on intermediation, like its effect on taxation, expands the public sector at the expense of the private. Even if ratios of savings and investment to income in the aggregate do not fall, the pattern of investment must change, with emphasis on the production of merit goods and public goods. Inflation and government constraints, such as Regulation Q, tend to shrink private intermediation, and government intermediaries are slipped into the financial gap, with at least qualitative effects upon capital accumulation.²⁵

Decline in the real growth rate of their resources induces private intermediaries to innovate. Pension funds develop variable annuities; mutual funds proliferate in variety; savings and loan associations introduce long-term deposits and payments services. Then there is pursuit of these innovations by new government regulations. One may suggest the principle that government, imposing inflation, induces private financial innovation and pursues it with a net of new regulations. Dirty inflation is a stimulus both to growth of government finance and to government regulation of private finance.

Palliatives and remedies for dirty inflation

Three ways of dealing with dirty inflation come to mind: live with it, cleanse it, stop it. This disease of the price system might simply be endured or tolerated except for the probability, discussed first below, that it gets worse when treated with benign neglect. Alternatively, society might try to cleanse it and transform it to immaculate or clean inflation. We consider some cleansing techniques, such as indexing in the second section below. Then the discussion turns to methods and costs of stopping inflation. Convalescence can be expensive.

Dynamics of Inflation. Inflation in the United States is not damped, tending to wear itself out, nor does it tend toward a steady state. It is a rhythmic process, and the rhythm tends to become more violent. The driving force is fiscalized monetary policy. Fiscal deficits run in cycles of increasing amplitude, and the Federal Reserve, together with other central banks, fi-

nances the deficits by issue of high-powered money including currency and reserves of commercial banks. There is another, complementary force at work; namely, lags in the rate of inflation behind changes in unemployment rates and in real national product.

When growth in real national product is near its cyclical low point and unemployment is at its high, automatic fiscal processes increase federal deficits, and the Congress authorizes discretionary increases in spending and decreases in rates of taxation. The discretionary measures take effect, in the main, after recovery of output and employment has begun. The Federal Reserve applies downward pressure upon interest rates, as seems necessary for economic recovery, by taking Treasury issues into its own portfolio, and the volume of purchases increases well into the recovery. Low interest rates in this country and rising aggregate demand for goods and services including internationally traded items generate deficits in the official settlements account of the balance of payments. Then a share of fiscal deficits here is financed by central banks abroad.

Cyclical recovery, with its rising output and rising rate of inflation, eventually reduces fiscal deficits. As deficits decline and as the rate of inflation rises relative to growth of output, monetary policy becomes restrictive. It is most restrictive after the peak of the business cycle and, in pursuit of accelerating inflation, depresses output and employment. When inflation has been reduced and when unemployment has reached unacceptable levels, the cycle of fiscalized monetary policy is over, and a new one is ready to begin. Successive troughs of output and employment occur at higher price levels and rates of inflation, and the monetized deficits are larger for each percentage point of unemployment. Fiscalized monetary policy generates unstable inflation along with a rising trend of inflation. The remedy is not benign neglect.

Cleansing Techniques. Old assets, debts, contracts, prices, and tax schedules are the source of numerous inflationary distortions in

both financial and non-financial sectors. It would seem that rejuvenation of these relics from the past could reduce inflation's costs substantially. In fact, there have been numerous experiments with rejuvenation since at least the early eighteenth century, and now it appears that their use is spreading.²⁶

Rejuvenation of an old price simply by removing floors under it and ceilings over it is the simplest of "corrections." Foreign-exchange rates can be floated; usury and rental ceilings can be lifted and Regulation Q discarded; utility rates might be allowed to find their own levels, and union contracts might be renegotiated oftener. Some of these corrections do occur, at some times and places, but always in the face of strong resistance.

Objections to turning prices loose, for markets to determine, are familiar. One is that there are social costs. So frequent adjustments of labor contracts would waste resources on bargaining and negotiation. Release of utility rates from the control of regulatory commissions would permit producers to exercise monopoly power. Floating the dollar cleanly would disqualify it as a payments medium internationally and raise costs of trading. Another familiar objection is that increases in liberated prices would aggravate inflation of other prices. They would add cost-push to demand-pull as a source of inflation. A third objection is recurrent, that there would be unfortunate results in terms of equity: the poor would pay rents, interest rates, and utility rates that they can ill afford. Still another objection is that, without Regulation Q, financial institutions would compete themselves into insolvency and crisis. Good and bad, these objections and others have such strong appeal that this cleansing technique, turning old prices loose, is not used effectively.

When markets are not trusted to correct old prices, corrections are sometimes imposed by public authority. Rules are adopted for the linkage of controlled individual prices with market-basket indexes of free prices. The rules vary. For example, they may link single prices with cost-of-living indexes, indexes of wholesale

prices, or foreign-exchange rates. They may link single prices with experienced or anticipated change in general indexes. The linkage is sometimes complete, sometimes partial or fractional. Price adjustments may be frequent or infrequent, at regular or irregular intervals. There is opportunity for administrative discretion, and it is commonly used for a variety of purposes including production and export incentives for sellers at managed prices, income redistribution, and fiscal effects. It can be and usually is a technique of official intervention in real aspects of economic behavior.²⁷ Then, of course, it is not a cleansing technique.

Rejuvenation of old debts by indexing is familiar where inflation has been unstable along a rising trend. It is a way, perhaps, of reducing the liquidity premium on securities of longer terms and of preserving markets for them. It might be a way of limiting or preventing disintermediation when market rates of interest rise. It might give some protection to creditors against redistribution of income and wealth to debtors. The technique is to adjust each contractual payment on an old debt, for interest and principal, to change in some index, partly or completely, often or infrequently. There has been no consensus about the appropriate index: a short-term rate of interest, a foreign-exchange rate, an index of commodity prices, and other indexes have been tried.

Presumably the ideal correction for bonds would protect the proportion of the creditors' claims to the market value of wealth that they have helped to finance. It would adjust the market value of claims in the same degree as inflation changes the market value of underlying wealth. Any adjustment larger or smaller than this would redistribute wealth between creditors and equity-owners. However, there is no index of inflation's and only inflation's effect on market values of wealth. Furthermore, since dirty inflation tends to reduce market values of some large aggregates of wealth, such as corporations, the ideal correction could be punitive for creditors. The effect would be to increase the liquidity premium on long-term issues, not to reduce

it, and to shrink the market for such issues, not broaden it.

Current yields on bonds and mortgages have been adjusted to such indicators as market rates of interest on short-term securities, including Treasury bills. This variety of correction is clearly defective. Change in the current or imminent rate of inflation is not the only component of change in bill rates. They can rise because the central bank is constraining growth of the money supply. They can rise, too, because the real national product is rising or because bill rates abroad are going up. Indexing to bill rates does not cleanse yields on bonds and mortgages and put them at levels which would prevail during immaculate or clean inflation.

Argentina, Brazil, Canada, Denmark, the Netherlands and other countries have developed various styles of correction for nominal assessment values in property taxation as well as for nominal exemptions, deductions, and income brackets in income taxation.²⁸ It is not uncommon, in business taxation, to permit indexing of depreciation charges, inventory valuations, and capital gains. Corrections are imposed or permitted for a variety of purposes; to protect the real value of tax collections, to manipulate the value of collections, to protect the poor against erosion of tax concessions, to prevent double progression, to encourage business capital formation. Choice of correction indexes has varied, from cost-of-living indexes to minimum wage rates and foreign-exchange rates. There can be no pretense that the corrections purge tax systems of distortion by inflation. The corrections change the impact of unstable inflation.

All prices, taxes, and contracts are indexed in a model of immaculate inflation. However, unstable inflation cannot be made immaculate by indexing. One reason is that unstable inflation involves different rates of response among individual prices to aggregate effective demand. Then there is no neutral index of change in money's purchasing power. Another reason is that initial costs of indexing are not small: some substantial investment is required in bargaining

about precise forms of insurance against the contingency of inflation. Again, unless all contracts are on short term, indexing can increase downward rigidity of prices and increase the cost, in terms of unemployment, of shifting from higher to lower inflation rates.²⁹ Finally, it appears that government simply cannot resist the temptation to manipulate indexing for social objectives. Indexing becomes another instrument for aggrandizement of the public sector.^{30,31}

Damping. If one prefers cures to palliatives for unstable inflation, three severe treatments may be considered. They are damping, to stabilize the price level's growth path; financial deepening, to reduce the slope of the path; and formalized linkage of monetary with fiscal policy, to fix the locus of responsibility for inflation. These treatments work best in combination. In the following paragraphs, we describe the first two treatments in some detail, leaving discussion of the third treatment for another forum.

The rhythm of the American economy in the past decade has consisted of an up-beat, driven by fiscal and monetary ease, to correct unemployment at the cost of some inflation, and a down-beat, driven by fiscal and especially monetary tightness, to correct inflation at the cost of some unemployment. The rhythm appears to be anti-damped so that successive rounds of fiscal-monetary measures generate more inflation, in the process of reducing unemployment, and more unemployment in the process of reducing inflation. One damping technique is sheer sadism. It maintains monetary restraint, at high levels of resource unemployment, long enough to erase memories and expectations of inflation. Experiments with this technique in countries where anti-damped cycles have continued for a decade and more have been painful indeed. The technique is applied at high risk of social discord.

A preferable damping program would have two elements, one fiscal and one monetary. On the fiscal side, longer-term government debt would be indexed, its yields linked to an index

of its market rates of interest. There would be indexing, too, of bases for federal taxation including especially brackets for progressive income taxation. The preferred index would include only prices for a basket of government purchases. Furthermore, the federal budget would include estimates of revenues from the inflation tax. Finally, on the fiscal side, the Federal Reserve would be required to pay interest, at a rate indexed to Treasury bill rate, on members' reserve balances. The purpose of these measures is to impose new constraints on government expenditure in later phases of cyclical recovery and to provide new incentives for shifting the expenditure to recession and early recovery. If the central bank were addicted to even-keeling, protecting interest rates against disturbance from government financing, its interventions would perhaps be cyclically stabilizing, accelerating monetary growth in recession and early recovery, decelerating monetary growth in later phases of recovery. Even-keeling, to stabilize market rates of interest, may stabilize more important things, such as output and employment, *if it happens at the right time.*

However, the second element of the damping program would preclude even-keeling in the money markets. It would impose, by legislative prescription, a rule for steady growth of the monetary base in the range of 6 to 8 percent quarterly. Evidently, it sounds the melancholy notes of "taps" over six decades of experimentation in the United States with flexible, discretionary monetary policy. It takes the case as proved by experience with monetary policy in, for example, 1920, 1931, 1937, 1957, 1966, 1969, and 1972-1974 that contrived discontinuity of monetary growth is destabilizing. The case for steady growth does not deny that control theory can design some superior rule of money management in an hypothesized economy. It denies simply that monetary management will find and apply a superior rule before public patience is exhausted.

The 6-8 rule, in combination with any reasonable trend of high-powered money's income velocity, is compatible with an attainable growth

rate of real national output and growth rate of the price level that does not offend public taste and tolerance. Its purpose is to take advantage of the long-run neutrality of money that seems to characterize the American economy, permitting the growth path of real output to cling more closely than in the past to the path of resource supplies and technology. Any inflation that results would at least be clean.

Deepening. When variance of fiscal deficits and monetary growth rates, price levels and output levels, interest rates and foreign-exchange rates has been increasing for a decade, damping can hardly be expected to reduce it quickly. Even before damping has been effective in straightening the paths of inflation and output, deepening can be put to work in reducing the mean growth rate of inflation and raising the mean growth rate of output. First straighten the paths and then tilt them.

It is difficult not to be pessimistic about prospective relative changes in the price component (P) and the output component (T) of growth in nominal national income. The probability is not small that, without effective "real" policies, growth in nominal expenditure at the rate permitted by the 6-8 rule (M) and by the trend in velocity of high-powered money (V) will raise (P) relative to (T) as the years go by. Each determinant of (T) is cause for worry. For one, the cost of capital, which was falling from World War II to the nineteen-seventies, seems to be rising.³² Again, the cost of labor inputs is under upward pressure by, for example, minimum

wage laws and labor oligopoly. Still again, the outlook is not bright with regard to terms of trade for imported raw materials. There appears, moreover, to be retardation in technological change that economizes factor inputs. Costs of intermediated inputs by government do not decline. While all of these determinants of (T) and some others are worrisome, only the cost of capital and, marginally, the efficiency of capital allocation concern us here.

Growth of capital relative to labor, or capital deepening, obviously is inhibited by the cost of capital. There are some things to do about deepening. Of course, damping inflation is one of them. It would reduce the risk component of the supply price of capital, invigorate financial intermediation, and draw capital away from uses that dirty inflation makes attractive. Another deepening technique is a shift in the balance of government budgets from the deficit to the surplus side, in the manner of Germany, Japan, and other countries. A third technique is equilibrium pricing of the dollar in foreign-exchange markets, avoiding the over-valuation that induces capital flight. The American economy, one knows, resists pressures to increase the national ratio of savings to income, but incentives to reduce the ratio can be eliminated. Since the United States has used inflation to force savings from holders of dollars here and abroad, one knows there is excess demand for savings at full employment of resources and at a modest rate of growth in output. Deepening is an essential substitute for the inflation tax.

FOOTNOTES

1. Page 460.
2. Nordhaus, for one, seems to say that Kuznets was wrong: "There is, however, no evidence that the allocational effects of the mild inflations observed in advanced countries are significant." William D. Nordhaus, "The Effects of Inflation on the Distribution of Economic Welfare," *Journal of Money, Credit and Banking*, 1973, p. 465.
3. John Hicks, *Critical Essays in Monetary Theory*, p. 28.
4. *The Wall Street Journal*, December 4, 1974, pp. 1, 24.
5. Ben Branch, "Common Stock Performance and Inflation: An International Comparison," *The Journal of Business*, January 1974, pp. 48-52.
6. James Tobin, "Monetary Policy in 1974 and Beyond," *Brookings Papers on Economic Activity*, I, 1974, pp. 223-227.
7. Henry Kaufman, "Financial Roadblocks to a New Economic Recovery," *Hearings*, Subcommittee on International Finance, Committee on Banking and Currency, House of Representatives, December 3, 1974, pp. 26-37.
8. Michael Keran, "Expectations, Money, and The Stock Market," *Review*, Federal Reserve Bank of St. Louis, January 1971, p. 25.
9. Franco Modigliani and Robert J. Shiller, "Inflation, Rational Expectations and the Term Structure of Interest Rates," *Economica*, February 1973, pp. 12-43.
10. See Rose McElhattan's article in this issue.
11. Harry G. Johnson, *Inflation and The Monetarist Controversy*, pp. 26-35.
12. Michael W. Keran, "Forecasting Stock Prices," October 1974.
13. For conclusions compatible with Keran's, see Bruno A. Oudet, "The Variation of the Return on Stocks in Periods of Inflation," *Journal of Financial and Quantitative Analysis*, March 1973, pp. 247-258.
14. G. L. Bach and James B. Stephenson, "Inflation and the Redistribution of Wealth," *The Review of Economics and Statistics*, February 1974, pp. 1-13.
15. Solomon Fabricant, "Inflation Accounting: Issues for Research," National Bureau of Economic Research, *54th Annual Report*, pp. 10-15.
16. George Terbough, *Essays in Inflation*, pp. 53-54.
17. G. L. Bach and James B. Stephenson, *op. cit.*, pp. 11-12.
18. Frank T. Weston, "Adjust Your Accounting for Inflation," *Harvard Business Review*, January-February 1975, pp. 22-29.
19. G. L. Bach and James B. Stephenson, *op. cit.*, pp. 12-13. See also Eric Schiff, *Inflation and the Earning Power of Depreciable Assets*, American Enterprise Institute for Public Policy Research, 1974, p. 28.
20. The impact of double progression on capital values of income-producing assets is analyzed in Eric Schiff, *op. cit.*
21. Richard A. Musgrave and Peggy B. Musgrave, *Public Finance in Theory and Practice*, pp. 288-289.
22. According to Friedman, "The great German economic miracle of 1948 was produced simply by the elimination of price controls. Ludwig Erhard, then the economics minister, removed all the price controls one Sunday afternoon. He did it on Sunday, because the offices of the American, British, and French occupation authorities were closed on Sunday, and he was sure that they would have countermanded his order if they had been open." Milton Friedman, "Monetary Policy in Developing Countries," *Nations and Households in Economic Growth* (Essays in Honor of Moses Abramovitz: David and Reder, eds.) p. 274.
23. Michael W. Keran, "Inflation, Regulation and Utility Stock Prices," *Bell Journal of Economics*, (forthcoming, Spring 1976).
24. Simon Kuznets, *op. cit.*, pp. 421-423.
25. Joint Economic Committee, *Achieving Price Stability Through Economic Growth*, December 1974, pp. 56-74.
26. For discussions and for references to a large literature, see: Robert P. Collier, *Purchasing Power Bonds and Other Escalated Contracts*, Utah University Press, 1969; Albert Fishlow, "Indexing Brazilian Style: Inflation without Tears?" *Brookings Papers on Economic Activity*, I, 1974, pp. 261-282; Edward Foster, "Costs and Benefits of Inflation," *Studies in Monetary Economics*, Federal Reserve Bank of Minneapolis, 1972; Milton Friedman, "Using Escalators to Help Fight Inflation," *Fortune*, July 1974, pp. 94-97, 174-176; Herbert Giersch *et al.*, *Essays on Inflation and Indexation*, American Enterprise Institute, 1974; Jai-Hoon Yang, "The Case for and Against Indexation," *Review*, Federal Reserve Bank of St. Louis, October 1975, pp. 2-11.
27. Albert Fishlow, *op. cit.*, p. 268.
28. Amalio Humberto Petrei, "Inflation and Personal Income Tax," *Finance and Development*, September 1974, pp. 38-41.
29. William Fellner, "The Controversial Issue of Comprehensive Indexation," in Herbert Giersch *et al.*, *op. cit.*, pp. 64-68.
30. Albert Goltz and Desmond Lachman, "Monetary Correction and Colombia's Savings and Loan System," *Finance and Development*, September 1974, pp. 24-26.
31. This paragraph comes very close (inadvertently!) to plagiarism of Ludwig von Mises, in his *The Theory of Money and Credit*, English edition, 1935, pp. 406-407. The criticism of indexing had appeared in the German edition of 1924.
32. William D. Nordhaus, "The Falling Share of Profits," *Brookings Papers on Economic Activity*, 1974, I, pp. 200, 212, 215.