

KEYNES ON INFLATION

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Not the least of inflation's consequences is the damage done to the reputations of certain prominent economists. A case in point is John Maynard Keynes (1883-1946). Once highly regarded for his brilliant pathbreaking analysis of the causes of mass unemployment in the Great Depression of the 1930s, he is now given low marks for his views on inflation. Popular folklore has it that he was largely unconcerned with inflation from the start, that his subsequent preoccupation with unemployment led him to ignore it altogether, and that, as a result, he favored expansionary measures to eliminate unemployment regardless of their inflationary consequences. Since his death in 1946 his name (or at least the label "Keynesian") has been linked to such inflationist slogans as "full employment at any cost" and "money doesn't matter." It has also found an association with the discredited concept of a stable enduring trade-off between inflation and unemployment as well as with the equally discredited notion that the authorities can peg interest rates and real economic activity at any desired level simply by manipulating the policy instruments they command. On the policy front his name is now popularly identified with excessive government spending, mounting budget deficits, inflationary money growth, and, in Britain at least, with the idea that inflation can be contained with incomes policies and wage-price controls. In the textbooks, his views are caricatured in the stylized "Keynes versus the monetarists" manner as the opposite of the anti-inflationary views of the monetarists. Small wonder that he has been widely perceived as an inflationist and that our present inflation is often described as the legacy of Keynes.¹

The purpose of this article, however, is to show that the foregoing perceptions are wrong: that far from being an inflationist, Keynes deplored inflation, warned repeatedly of its evils, and recommended

restrictive demand management policies to prevent it; that far from being an extreme nonmonetarist, he shared the monetarists' antipathy to inflation, endorsed their policy goal of price stability, and employed at least five monetarist concepts in his analysis of inflation; and, finally, that far from advocating full employment at any cost, he maintained that even at high unemployment rates expansionary aggregate demand policy must be curbed to prevent inflation. More precisely, this article demonstrates (1) that Keynes was always concerned with inflation, (2) that this concern motivated his advocacy of anti-inflationary aggregate demand management policy on at least two occasions (including once in the Great Depression of the 1930s), and (3) that there are enough monetarist elements in his analysis to qualify him as at least a partial monetarist as far as inflation theory is concerned.

These points are documented in the following paragraphs, which summarize Keynes' own views on inflation. As pertinent now as they were when he first presented them, his views are contained chiefly in the following works: (1) *Indian Currency and Finance* (1913), (2) *The Economic Consequences of the Peace* (1919), (3) policy advice given to the Chancellor of the Exchequer in February 1920, (4) *A Tract on Monetary Reform* (1923), (5) the two-volume *A Treatise on Money* (1930), and (6) a series of four newspaper articles published in *The Times* in early 1937, one year after the publication of his famous *The General Theory of Employment Interest and Money* (1936). Except for the *General Theory*, which deals mainly with unemployment and will not be examined here, these works are largely concerned with the problem of inflation. They are examined in the order listed above to show the consistency of Keynes' anti-inflation attitudes over time.

Early Writings

Keynes' strong aversion to inflation is evident in even his earliest work. It appears, for example, in his *Indian Currency and Finance* (1913). There he emphatically rejects the argument that "a depreciating currency is advantageous . . . to trade," contending that any advantages derived from inflation are "only temporary" and that they "occur largely at

¹ For a recent expression of this view see Buchanan and Wagner [1] who assert that "Lord Keynes himself" must "bear substantial responsibility" for our "apparently permanent and perhaps increasing inflation" [1; p. 4]. "Without Keynes," they write, "inflation would not be the clear and present danger to the free society that it has surely now become. The legacy or heritage of Lord Keynes is the . . . intellectual legitimacy provided to . . . deficit spending, inflation, and the growth of government" [1; p. 24].

the expense of other members of the community” and therefore do “not profit the country as a whole” [5; p. 2]. He takes an even tougher attitude in his *Economic Consequences of the Peace* (1919), condemning inflation in the harshest possible terms. He says:

Lenin is said to have declared that the best way to destroy the capitalist system was to debauch the currency. By a continuing process of inflation, governments can confiscate, secretly and unobserved, an important part of the wealth of their citizens. By this method they not only confiscate, but they confiscate arbitrarily; and, while the process impoverishes many, it actually enriches some [6; pp. 148-9].

He agrees with Lenin that inflation has the potentiality of destroying the basis of capitalist society.

Lenin was certainly right. There is no subtler, no surer means of overturning the existing basis of society than to debauch the currency. The process engages all the hidden forces of economic law on the side of destruction, and does it in a manner which not one man in a million is able to diagnose [6; p. 149].

He then proceeds to specify at least four ways that rapid inflation works to weaken the social fabric and to undermine the foundations of the capitalist free-market system. First, unforeseen inflation, he says, results in a capricious and totally “arbitrary rearrangement of riches” that violates the principles of distributive justice. Besides its inequities, inflation also renders business undertakings riskier and thereby turns “the process of wealth-getting . . . into a gamble and a lottery.” In generating risk and injustice, inflation “strikes not only at security, but at confidence in the equity of the existing distribution of wealth” [6; p. 149]. Second, inflation violates long-term arrangements based on the assumed stability of the value of money. In so doing, inflation disturbs contracts and upsets “all permanent relations between debtors and creditors, which form the ultimate foundation of capitalism” [6; p. 149]. Third, inflation generates social discontent and directs it against businessmen whose windfall profits are wrongly perceived to be the cause rather than the consequence of inflation. This discontent is exploited by governments which “being many of them . . . reckless . . . as well as weak, seek to direct on to a class known as ‘profiteers’ the popular indignation against the more obvious consequences of their vicious methods” [6; p. 149]. In other words, governments actually responsible for causing inflation seek to shift the blame onto businessmen who consequently lose “confidence in their place in society” and become “the easy victims of intimidation” by “governments of their own making,

and a Press of which they are the proprietors” [6; p. 150]. By making business a scapegoat and target of vilification and control, inflation reinforces anti-business attitudes and weakens support for what Keynes called “the active and constructive element in the whole capitalist society”² [6; p. 149].

Finally, inflation tends to breed such misguided remedies as “price regulation” and “profiteer-hunting” that may do more damage than the inflation itself. Keynes was especially critical of the tendency of governments to resort to price controls, which in his view lead to resource misallocation and a reduced supply of goods, thereby compounding inflationary pressures.³ Regarding the disincentives to real output occasioned by controls, he said that “the preservation of a spurious value for the currency, by the force of law expressed in the regulation of prices, contains in itself, however, the seeds of final economic decay, and soon dries up the source of ultimate supply.” For, by freezing prices at what are likely to be disequilibrium levels, controls constitute “a system of compelling the exchange of commodities at what is not their real relative value,” and this “not only relaxes production but leads finally to the waste and inefficiency of barter” [6; pp. 149-50].

Summarizing the foregoing harmful consequences of inflation, he concludes that governments that allow inflation to get out of control do irreparable damage to the established social and economic order. In so doing they are “carrying a step further the fatal process which the subtle mind of Lenin had consciously conceived.” For,

By combining a popular hatred of the class of entrepreneurs with the blow already given to social security by the violent and arbitrary disturbance of contract and of the established equilibrium of wealth which is the inevitable result of inflation, these governments are fast rendering impossible a continuance of the social and economic order. . . . But they have no plan for replacing it [6; p. 150].

It would be difficult indeed to find a more damning indictment of inflation and inflationist policies than that presented by Keynes in *The Economic Consequences of the Peace*. Anyone seeking evidence that he was an inflationist will not find it there; on the contrary, not only does he display a marked aversion to inflation, but he also sees no compensating benefits to offset its evils.

² Note that the very inflationary evils denounced by Keynes are likewise stressed by Buchanan and Wagner [1; pp. 61-5]. This in a book, ironically enough, purporting to show that Keynes was an inflationist.

³ Buchanan and Wagner [1; p. 54] echo Keynes' contention that the harm wrought by controls must be counted among the major costs of inflation.

Policy Advice in Early 1920

Keynes' concern with the dangers of inflation influenced his policy advice in the post-war boom of 1920 when an outburst of inflation threatened the British economy.⁴ Then as now a crucial policy question was: What is the least costly way to remove inflation? Should it be done gradually or swiftly in one stroke? Keynes' answer was clear enough: reject gradualism and use the monetary shock approach. Accordingly, when consulted by Austen Chamberlain, the Chancellor of the Exchequer, in early February 1920, he unhesitatingly recommended "a stiff dose of dear money" to halt the inflation [3; p. 458]. He urged a severely restrictive monetary policy, entailing a steep jump in interest rates, to break the inflationary boom. Asked to specify the degree of monetary restriction he would be willing to tolerate in order to end inflation, Keynes, according to Chamberlain, indicated that "[he] would go for a financial crisis Would go to whatever rate is necessary . . . and keep it at that for three years" [3; p. 458]. In this connection Keynes argued that given the high inflationary expectations then prevailing, sharp increases in nominal interest rates were essential in order to raise the real interest rate sufficiently to discourage borrowing and spending [3; p. 463]. This, he argued, would not cause serious unemployment because there was a wide margin of safety before business would be operating below full capacity.

Keynes' advocacy of tight money in this episode clearly rested on his fear of the damage that continuing rapid inflation could inflict on society and the capitalist system. He stated as much in a memorandum written shortly after his meeting with the Chancellor of the Exchequer. He feared, he noted, that persistent inflation would generate "social unrest" and "strike at the whole basis of contract, of security, and of the capitalist system generally," eventually leading to "socialistic control" over industry. The choice, he thought, was between "dear money or . . . socialization of the supply of capital" [3; p. 458-9]. Given these alternatives, Keynes was clearly in favor of dear money, a position he maintained for the rest of his career. He acknowledged this in January 1942 when, looking back at his earlier policy advice, he declared that he would "give today exactly the same advice that I gave then, namely a

swift and severe dose of dear money, sufficient to break the market, and quick enough to prevent at least some of the disastrous consequences that would otherwise ensue" [3; p. 462]. Keynes' 1942 statement suggests that even the intervening years of the Great Depression of the 1930s had not lessened his concern about the dangers of inflation, dangers that he had described earlier in his 1923 *A Tract on Monetary Reform*.

A Tract on Monetary Reform (1923)

Nowhere does Keynes express his concern for inflation more strongly than in the *Tract*. There his chief fear is that inflation may retard capital formation and inhibit long-term economic growth. He specifies at least three ways that this can happen. He notes first the inflationary disincentive to saving. By eroding the real value of past savings, inflation diminishes "the capacity of the investing class to save" and destroys "the atmosphere of confidence which is a condition of the willingness to save" [7; p. 29]. With a smaller portion of national income flowing into saving and investment, the rate of capital accumulation falls. And since, according to Keynes, "the national capital must grow as fast as the national labor supply" for "the maintenance of the same standard of life," it follows that a fall in capital growth below the required proportional rate will lower living standards [7; p. 29]. In short, by discouraging saving and capital formation, inflation may cause a fall in the aggregate capital/labor ratio (i.e., the amount of capital each laborer has to work with) and a corresponding drop in labor productivity and output per capita.

A second factor retarding capital accumulation is the undercharging of depreciation during inflation and the consequent inadequate provision for the replacement of worn-out capital. This occurs because depreciation charges on capital equipment are computed on the basis of original (historical) cost rather than replacement costs. These replacement costs rise with inflation. Thus when prices rise the depreciation charges calculated on the basis of original cost are too small to replace the worn-out capital. The result may be an unintended depletion of the capital stock. "In such conditions," said Keynes, a country "can even trench on existing capital or fail to make good its current depreciation." For it "is one of the evils of a depreciating currency that it enables a community to live on its capital unawares. The increasing *money* value of the community's capital goods obscures temporarily a diminution in the real quantity of the stock" [7; pp. 27-8].

⁴ For the details of Keynes' advice in this episode see Howson [3]. All references in this section are to Howson, who reproduces the relevant passages from Keynes' papers.

Yet a third adverse effect on capital formation, he noted, is the increased business risk resulting from inflation. For inflation adds to ordinary business risk the extra "risk directly arising out of instability in the value of money" [7; p. 33]. To compensate for this extra risk, businessmen add a risk premium to the rate at which they discount the future, and the higher discount rate discourages investment.

The discouraging effects of inflation on saving, investment, and growth were not the only inflationary evils described by Keynes in the *Tract*. Others included (1) the injustice and inequity resulting from inflationary redistributions of income and wealth, (2) the resort to spurious inflation remedies—e.g., price controls, excess profits taxes, profiteer-hunting and the like—remedies that constitute "not the least part of the evils," often doing more harm than the inflation they are designed to cure, and (3) the social resentment and discontent produced by inflation. This resentment, when directed against the business class whose windfall profits are wrongly perceived as the cause rather than the consequence of inflation, works to discredit enterprise and to weaken support for the productive element of society—"the prop of society and the builder of the future" [7; p. 24].

Having discussed the adverse effects of inflation on capital formation, economic growth, distributive justice, and social stability, respectively, Keynes next considers the alleged beneficial output effects of inflation. He notes that unanticipated inflation may temporarily stimulate economic activity by raising profits and profit expectations. Profits rise, he said, because wages and other costs lag behind rising prices during inflation. And with nominal wages lagging behind prices, real wages fall, thus inducing producers to step up their employment of labor. Likewise, the lagged adjustment of market interest rates to inflation and the consequent fall in the real cost of borrowing leads producers to expand their operations. Finally, inflation reduces the real burden of fixed charges, thereby giving a temporary fillip to profits and to economic activity. But Keynes insisted that any such stimulus would most likely be small and short-lived. Moreover it would constitute an undesirable "overstimulation of industrial activity" requiring undue strain on capacity and a corresponding "over-exertion" of labor [7; p. 36]. For these reasons he judged the overall benefits to be minimal.

Consequently, when Keynes weighed the benefits of inflation against the evils, he found the latter to far outweigh the former and accordingly came down heavily in favor of price stability. He summarized his case for price stability best when he declared that, be-

cause "inflation is unjust and deflation is inexpedient . . . , both are evils to be shunned. The individualistic capitalism of today, precisely because it entrusts saving to the individual investor and production to the individual employer, *presumes* a stable measuring-rod of value, and cannot be efficient—perhaps cannot survive—without one" [7; p. 36]. It follows, he said, that the government should make price stability its primary policy goal. For, "if we are to continue to draw the voluntary savings of the community into 'investments,' we must make it a prime object of deliberate State policy that the standard of value, in terms of which they are expressed, should be kept stable" [7; p. 16]. These are hardly the sentiments of an inflationist. On the contrary, they are an indication of Keynes' hard-line antipathy to inflation and his belief in the absolute necessity of price level stability.

Monetarist Aspects of the *Tract*

The analysis of inflation contained in the *Tract* has much in common with the position taken by today's monetarists. Specifically, inflation is discussed within the context of an analytical model that is remarkably monetarist in spirit, embodying such standard monetarist ingredients as (1) the quantity theory of money, (2) the concept of inflation as a tax on real money balances, (3) the monetary approach to exchange rate determination, and (4) the Fisherian distinction between real and nominal interest rates. The paragraphs below summarize Keynes' views on these elements in order to demonstrate that he was not the stereotype nonmonetarist caricature of the textbooks.

Quantity Theory of Money

The Keynes of the *Tract* was an unequivocal adherent of the quantity theory. "This theory," he said, "is fundamental. Its correspondence with fact is not open to question" [7; p. 61]. His own version of the theory as elucidated in the *Tract* is essentially the same as the modern monetarist version and embodies the following monetarist elements:

- (1) a money supply and demand theory of price level determination,
- (2) the notion of money stock exogeneity, implying money-to-price causality,
- (3) the concept of the demand for money as a stable function of a few key variables, and
- (4) a focus on the special role of price expectations in the money demand function.

Regarding the money supply and demand theory of the price level, he said that "two elements" determine

general prices and the value of money. "First, the quantity, present and prospective, of [money] in circulation. Second, the amount of purchasing power which it suits the public to hold in that shape" [7; p. xviii]. Elsewhere in the *Tract* he says that the price level "depends on the currency policy of the government and the currency habits of the people, in accordance with the quantity theory of money" [7; p. 71].

Having declared that general prices depend on money supply and demand, he next presented the quantity theory in the form of the equation $P = M/D$ or $M/P = D$, which says that the price level, P , adjusts to equate the real (price-deflated) value of the given nominal money stock, M , with the public's real demand for it, D .⁵ He then proceeded to analyze the variables of the foregoing equation. Regarding the nominal money stock, M , he said that it is an exogenous variable controllable by the central bank such that causation runs from money to prices rather than vice-versa as claimed by some believers in a passive, demand-determined money stock. The money supply, Keynes declared, is "under the control (or ought to be) of the central banking authorities" who thus possess the means to stabilize prices [7; p. 68]. With respect to the equation's money demand component, D , Keynes stated that it is determined by several underlying factors including (1) "wealth," (2) "habits," (3) interest rates ("the estimated advantages of keeping more cash on hand compared with those of . . . investing it"), and (4) expected inflation ("the trust or distrust which the public feel in the prospect of the future value" of the currency) [7; pp. 62, 64, xviii]. Here is the monetarist notion of the demand for money as a stable function of a few key variables.

Of these four variables Keynes paid particular attention to the expected rate of inflation, pointing out that its inclusion in the money demand function means that money demand is not completely independent of money supply. For, according to him, rapid increases in money supply may generate expectations of future inflation (expectations that constitute the anticipated depreciation cost of holding money) and thereby lower real money demand. This, he noted, implies that money growth affects prices

⁵ Keynes [7; p. 63] employed a slightly different notation, writing the equation as $n=pk$, where n denotes the nominal money stock, p the price level, and k the quantity of real cash balances people desire to hold. He also presents a more elaborate version of the equation, namely $n=p(k+rk')$, where k and k' denote real cash balances held by the public in the form of currency and checking deposits, respectively, and r is the ratio of cash reserves that banks hold behind their deposit liabilities.

both directly and also indirectly through the price expectations variable in the money demand function. The indirect effect magnifies the initial impact of money growth on inflation, causing prices to rise faster than the money stock itself. In his own words, "a change in [the money stock] due to causes which set up a general expectation of a further [inflationary] change in the same direction, may produce a *more* than proportionate effect on [prices]" [7; p. 66]. Prices outstrip money, he said, because inflationary money growth, by generating expectations of future inflation and thereby raising the anticipated depreciation cost of holding money, reduces the demand for real cash balances and stimulates a corresponding rise in money turnover. This expectations-induced rise in the circulation velocity of money puts additional upward pressure on prices, thus magnifying the impact of money growth on inflation.

Keynes pointed out that this sequence of events had actually occurred in the German hyperinflation of 1922-1923 when prices rose faster than the nominal money stock. He also noted that the same sequence of events explained the perplexing fall in the real or price-deflated money stock that had puzzled German observers at the time. That is, he said that the expectations-induced flight from cash and the corresponding rise in velocity had caused prices in Germany to rise faster than the nominal money stock thereby producing the observed shrinkage of the real or price-deflated money stock. Conversely, he noted that expectations of slower money growth that reduce the public's "degree of . . . distrust of the future value of the money" will "lead to some increases in their use of it" resulting in a rise in the real money stock [7; p. 47].

Finally, Keynes employed the quantity theory in his policy analysis, arguing (1) that inflation is caused by an excess supply of money, (2) that such monetary excess could stem from falls in money demand as well as from rises in money supply, (3) that the central bank possesses the power to prevent the latter and counteract the former, and (4) that it should employ this power to stabilize prices. For price stability he recommended deliberate countercyclical movements in the money supply to offset or nullify the procyclical impact of changes in money demand on prices. He thought that real money demand fluctuated with the state of business confidence, falling in booms, rising in slumps, and thereby amplifying cyclical movements of prices. "The characteristic of the 'credit cycle,'" he said, "consists in a tendency of [real cash balances] to diminish during the boom and increase during the depression" [7; p. 67]. To

counteract these he advocated deliberate monetary contraction in booms and monetary expansion in slumps. "The time to deflate the supply of cash," he said, "is when real balances are falling . . . and . . . the time to inflate the supply of cash is when real balances are rising, and not, as seems to be our present practice, the other way round" [7; p. 149]. In so stating, he rejected the monetarist case for a fixed monetary growth rate rule (which he argued "is bound to lead to unsteadiness of the price level" when money demand fluctuates) in favor of discretionary monetary management [7; p. 69]. "In the modern world of paper currency and bank credit," he declared, "there is no escape from a 'managed' currency" [7; p. 136]. Note, however, that while he rejected the monetarist case for rules instead of discretion in the conduct of monetary policy, he did voice the modern monetarist complaint that discretionary monetary movements frequently tend to be procyclical rather than countercyclical. That is, he complained that the British monetary authorities had perversely engineered monetary expansions in booms when money demand was falling and monetary contraction in slumps when money demand was rising thereby aggravating rather than mitigating inflation and deflation. These policy errors notwithstanding, however, he remained a strong advocate of discretionary monetary intervention in the pursuit of price stability.

Inflation as a Tax on Real Money Balances

The second monetarist ingredient that Keynes enunciates in the *Tract* is the concept of inflation as a tax on real money balances. As noted by the late Harry Johnson, this inflation tax analysis constitutes an essential part of the quantity theory approach to inflation. Consistent with that approach, Keynes argues that inflation is "a method of taxation" which the government uses to "secure the command over real resources, resources just as real as those obtained by [ordinary] taxation" [7; p. 37]. "What is raised by printing notes," he writes, "is just as much taken from the public as is a beer duty or an income tax" [7; p. 52]. Regarding the inflation tax he says that "a government can live by this means when it can live by no other. It is the form of taxation which the public find hardest to evade and even the weakest government can enforce, when it can enforce nothing else" [7; p. 37].

In discussing the inflation tax, Keynes stresses that it is a tax on cash balances. The burden of the tax, he says, falls on cashholders, i.e.,

on the holders of the original . . . notes, whose notes [after inflation] are worth . . . less than they were before. The inflation has amounted to a tax . . . on all holders of notes in proportion to their holdings. The burden of the tax is well spread, cannot be evaded, costs nothing to collect, and falls, in a rough sort of way, in proportion to the wealth of the victim. No wonder its superficial advantages have attracted Ministers of Finance [7; p. 39].

He next explains how inflationary money creation transfers real resources from cashholders to the government. He notes that a given, say, 25 percent inflation rate requires an equivalent rate of rise of cash holdings just to maintain real money balances at desired levels. To accomplish this, cashholders cut expenditures on goods and services and add the unspent proceeds to money balances. The reduced private outlay for goods and services releases resources which the government acquires with newly issued money that is then added to private cash balances. In this way inflation enables the government to appropriate real resources from cashholders just as surely as if it had taken part of their earlier money balances and spent the proceeds on goods and services. How much the government gets depends upon the quantity of real balances the public wishes to hold when the inflation rate is 25 percent. Assuming the public desires real balances totaling \$36 million, the government's tax take is 25 percent of that sum or \$9 million. Or, as Keynes himself put it in discussing the effects of the hypothetical 25 percent inflation tax on real balances of \$36 million, "by the process of printing the additional notes the government has transferred to itself an amount equal to \$9 million, just as successfully as if it had raised this sum in taxation" [7; p. 39].

Keynes' discussion of the inflation tax includes a sophisticated analysis of the optimal rate of inflation from the point of view of maximizing tax revenue. In this connection he makes four points. First, from the formula that tax yield equals tax rate times tax base, it follows that the yield of the inflation tax is the multiplicative product of the inflation rate (tax rate) and real cash balances (tax base), respectively. Second, the tax base is not invariant to the tax rate but falls when the latter rises. That is, when the government raises the tax rate the tax base tends to shrink as people seek to avoid the inflation tax by changing their habits and economizing on real money holdings. Were this not so, said Keynes, "there would be no limit to the sums which the government could extract from the public by means of inflation" [7; p. 42]. Third, because the tax base shrinks with rises in the tax rate, the government will realize

more revenue from a tax rate rise only if it causes a less-than-proportionate fall in the base. "A government has to remember," he said, "that even if a tax is not prohibitive it may be unprofitable, and that a medium, rather than an extreme, imposition will yield the greatest gain" [7; p. 43]. Fourth, it follows that there is one inflation rate that maximizes tax revenue and that occurs where the percentage increase in the tax rate equals the percentage shrinkage in the tax base, i.e., where the elasticity of real money demand with respect to the inflation rate is unity. Here is the concept of the tax-maximizing rate of inflation that plays such a key role in the modern monetarist analysis of inflationary finance.

Monetary Approach to Exchange Rates

A third monetarist concept used by Keynes in the *Tract* was the monetary approach to exchange rate analysis. This approach rests on the view that the exchange rate between two national currencies is determined by the respective national money supplies and demands in the two countries and the resulting effects on their respective general price levels. Regarding the monetary approach, Keynes said that the foreign exchanges "depend . . . on the relative price levels established here and abroad by the respective credit [i.e., monetary] policies adopted here and abroad" [7; p. 146]. He reached this conclusion by combining the quantity theory of money with the purchasing power parity theory of exchange rates. The quantity theory of course says that the general price level is determined by the demand-adjusted money stock, i.e., by the nominal stock of money per unit of real money demand. And the purchasing power parity doctrine, he explained, holds that the exchange rate tends to equal the ratio of the price levels in the two countries concerned. Taken together, the quantity theory and the purchasing power parity doctrine imply that the exchange rate is determined by relative demand-adjusted money stocks operating through relative national price levels.⁶

From the foregoing Keynes concluded that if both countries inflate their currencies at the same rate the

⁶ Note that this version of the monetary approach ignores certain nonmonetary determinants of exchange rates, namely (1) the real terms of trade and (2) the relative prices of traded and nontraded goods, respectively. As pointed out by Keynes, these factors may be safely disregarded only when the source of exchange rate disturbance is of a predominantly monetary origin. Regarding such monetary shocks, he argues that they have in fact "been so dominant in their influence that the theory has been actually applicable with remarkable accuracy" [7; p. 82].

exchange rate will stabilize, whereas if they inflate at different rates the exchange rate will appreciate in favor of the country with the lower inflation rate and depreciate against the country with the higher inflation rate.⁷ He also concluded that floating exchange rates insulate a country from inflationary movements developing abroad. That is, he contended that, under floating exchange rates an inflationary rise in foreign prices would be offset by an equal and opposite fall in the exchange rate leaving the domestic currency price of foreign goods unchanged. For this reason he believed that floating exchange rates were an absolute necessity for any country trying to achieve domestic price stability via the operation of domestic monetary policy. With respect to his analysis of exchange rates, the Keynes of the *Tract* belongs in today's monetarist camp.

Nominal versus Real Interest Rates

Finally, Keynes employed in the *Tract* the monetarist or Fisherian distinction between nominal and real interest rates, i.e., between the interest rate actually charged on loans and the inflation-corrected level of that rate. With respect to the two rates he stated the following points. First, for any given nominal rate, inflation reduces the real rate below the nominal rate. The real rate falls relative to the nominal rate because borrowers can repay their loans in depreciated dollars, i.e., in money whose real purchasing power is less than the amount originally borrowed. Second, the nominal rate embodies expected inflation which may temporarily lag behind actual inflation resulting in incomplete adjustment of the nominal rate.

Third, if the nominal rate does not fully reflect rising prices, then even high market rates may translate into low or negative real rates after correction for inflation. As Keynes himself expressed it,

in a period of rapidly changing prices, the money rate of interest seldom adjusts itself adequately or fast enough to prevent the real rate from becoming abnormal [7; p. 20]. Thus, when prices are rising, the businessman who borrows money is able to repay the lender with what, in terms of real value, not only represents no interest, but is even less than the capital originally advanced; that is, the real rate of interest falls to a negative value, and the borrower reaps a corresponding benefit [7; pp. 19-20].

⁷ In his words, "the rate of exchange can be improved in favour of one of the countries by a financial policy directed towards a lowering of its internal price level relatively to the internal price level of the other country" [7; p. 88].

In such cases, high nominal rates are neither onerous to borrowers nor a deterrent to borrowing and spending. On the contrary, they are a bargain to borrowers and, at least temporarily, a stimulus to economic activity. The contention that high nominal interest rates may correspond to low or negative real rates during periods of rapid inflation and, therefore, may fail to discourage borrowing and spending, underlies the modern monetarist argument that nominal rates themselves are an unreliable indicator of the degree of monetary ease or tightness.

Fourth, nominal rates tend to be bid up by eager borrowers during periods of inflation, implying that high market interest rates are a result not a cause of rising prices. "It is for this reason," said Keynes, "that a high bank rate should be associated with a period of rising prices, and a low bank rate with a period of falling prices" [7; p. 20]. Fifth, in the long run nominal rates tend to fully adjust for inflation and the real rate returns to its preexisting equilibrium level. "The apparent abnormality of the money [nominal] rate of interest at such times [i.e., in periods of rapid inflation]," said Keynes, "is merely the other side of the attempt of the real rate to steady itself" [7; p. 20].

In stating these points, Keynes closely followed Irving Fisher, perhaps the leading monetarist of the time. In fact, considering all the monetarist elements in the *Tract*, it is hard to escape the conclusion that, in the 1920s at least, Keynes was largely a monetarist in his analysis of inflation. It is hard to reconcile the Keynes of the *Tract* with the stereotype nonmonetarist Keynes of the modern textbooks. It is even harder to square the Keynes of the *Tract* with the caricature of him as an out-and-out inflationist. For as shown above, throughout the *Tract* he was extremely hostile toward inflation, deploring its evils, minimizing its benefits, and calling for its quick removal.

Nor did he change his mind in his *A Treatise on Money* (1930). To be sure, there he tentatively advances a theory of inflation-induced growth and even conjectures that mild gentle inflation may have contributed to the industrialization of the West. But his basic stance is unmistakably that of an anti-inflationist and he still comes down strongly in favor of absolute price stability as the ideal policy goal.

A Treatise on Money (1930)

If the *Tract* is famous for its quantity theory-inflation tax analysis, the *Treatise* is equally famous for its celebrated "fundamental equations of prices" and the corresponding distinction between income in-

flation and profit inflation.⁸ Constituting the central analytical core of the *Treatise*, the fundamental equations express price level increases as the sum of two components, namely (1) increases in profit per unit of output, and (2) increases in unit costs of production (chiefly labor costs). Of these two components of price change—namely changes in profit and changes in costs, respectively—Keynes labels the former "profit inflation" and the latter "income inflation." Profit inflation occurs when prices are outrunning costs, leaving a large and growing margin for profit. By contrast, income inflation occurs when wages are rising as fast as prices thereby preventing profit growth.

It should be noted that Keynes' income inflation does not correspond to what today is called cost-push inflation, i.e., an exogenous rise in wages and hence prices caused, for example, by the exercise of trade union monopoly power. Rather it is the induced endogenous result of an increased demand for labor and other resources generated by prior profit inflation.⁹ For, according to Keynes, most income inflations do not stem from autonomous ("spontaneous") increases in wages caused by "the powers and activities of trade unions" [8, p. 151]. Instead they stem from profit-induced rises in the demand for (and hence prices of) labor and other factor resources. That is, a profit inflation stimulates firms to expand output and hence their demand for factors of production. This leads to a bidding up of factor prices that raises production costs and generates income inflation. This process continues until wages and other factor prices rise sufficiently to eliminate excess profits.¹⁰ Seen this way, income inflations possess three distinctive features. They occur at the expense of profit inflations, eventually annihilating the latter. They need not cause a rise in prices since they are largely offset by compensating falls in profit inflation. Finally, they are a crucial part of the process that transforms inflation-engendered profits into costs and thereby terminates the temporary stimulus to economic activity.

Having developed the distinction between profit and income inflation, Keynes used it to analyze the effect of inflation on output and economic growth. Regarding these effects he reached two main conclusions.

⁸ For a recent exposition of the "fundamental equations" and the corresponding concepts of income and profit inflation, see Patinkin [11; pp. 33-8]. What follows draws heavily from Patinkin.

⁹ This point is stressed by Patinkin [11; p. 37].

¹⁰ See Keynes [8; pp. 241-2] and Patinkin [11; pp. 37, 45].

First, only profit inflation has the power to stimulate output and growth. "It is the teaching of this treatise," he said, "that the wealth of nations is enriched, not during income inflations, but during profit inflations . . . at times, that is to say, when prices are running away from costs" [9; p. 137]. More precisely, profit inflation stimulates both current and long-term real output. It stimulates current output by raising prices relative to wages thus lowering real wages and increasing employment. And it stimulates long-term real output by shifting income from wages to profit thereby permitting faster capital accumulation and a higher rate of economic growth. In short, the effects of profit inflation include "the spirit of buoyancy and enterprise and the good employment which are engendered; but mainly the rapid growth of capital wealth and the benefits obtained from this in succeeding years" [9; p. 144]. These benefits, however, are possible only when prices are outrunning costs, leaving a substantial margin of profit to finance investment and growth. They cannot occur in income inflations where wages rise as fast as prices and thus annihilate the very profits that constitute both the means and the inducement to economic growth. It follows that income inflation, unlike profit inflation, is incapable of enhancing growth.

Second, what matters for investment and growth is how long it takes for profit inflation to give way to income inflation, and this depends on the speed of adjustment of wages to prices. If the interval is short and wages adjust rapidly to prices, then inflation will have little or no impact on capital formation and growth. But if the interval is long and wages adjust slowly to prices, then the stimulus may be considerable and profit inflation, in Keynes' own words, becomes "a most potent instrument for the increase of accumulated wealth" [8; p. 267]. Regarding the interval, Keynes apparently felt that it had indeed been long in particular historical episodes—"quite long enough," he said, "to include (and, perhaps to contrive) the rise . . . of the greatness of a nation" [9; p. 141]. In this connection he advanced the hypothesis that the early industrialization of England and France had been powered by profit inflation. "It is unthinkable," he declared, "that the difference between the amount of wealth in France and England in 1700 and the amount in 1500 could ever have been built up by thrift alone. The intervening profit inflation which created the modern world was surely worth while if we take the long view" [9; p. 145].

Lest one wrongly conclude from the foregoing that Keynes of the *Treatise* was an out-and-out inflation-

ist, three cautionary observations should be made. First, he was referring to gently rising prices and not to the rapid double-digit inflation that is unfortunately so common today. More precisely, he was referring to slow creeping secular inflation of no more than 1 to 2 percent per year. Today such mild inflation would be viewed as constituting virtual price stability. Second, his analysis of beneficial inflation refers chiefly to capital-poor preindustrial societies and not to wealthy modern capitalist economies.¹¹ Most of his historical examples are taken from the pre-capitalist or early-capitalist era when western Europe was "very poor in accumulated wealth" and "greatly in need of a rapid accumulation of capital" [9; p. 145 and 8; p. 268]. Under these conditions it is conceivable that slowly-creeping profit inflation might indeed have spurred industrialization not only by diverting resources from consumption to capital formation, but also by breaking feudal bonds, stimulating enterprise, encouraging market-oriented activity, and widening the scope of the market. These latter benefits, however, are no longer available to wealthy, market-oriented modern capitalist economies that are more likely to find secular inflation a curse rather than a blessing. For this reason Keynes refrained from recommending even slightly inflationary policies for modern economies.

Finally, it should be remembered that Keynes was referring to profit inflation characterized by prices persistently rising faster than wages and not to modern inflations in which wages sometimes rise ahead of prices or at least follow them without delay thereby wiping out the profits generated by the price increases.¹² As previously mentioned, Keynes held that inflation stimulates growth only if wages lag substantially behind prices leaving a large and persistent margin of profit to finance capital formation. This wage lag, however, is hardly characteristic of modern inflations in which wages rise swiftly not only to restore real earnings eroded by past inflation but also to protect real earnings from expected future inflation. The clear implication is that Keynes would have opposed these modern inflations, which according to his analysis are income rather than profit inflations.

Accordingly, it is not surprising that Keynes, at the end of a long passage extolling the historical accomplishments of profit inflation, nevertheless declared, "I am not yet converted, taking everything into ac-

¹¹ On this point see Haberler [2; pp. 98-100].

¹² See Haberler [2; p. 99].

count, from a preference for a policy today which, whilst avoiding deflation at all costs, aims at the stability of purchasing power as its ideal objective" [9; p. 145]. There is no reason to believe that he ever changed that position. On the contrary, there is strong evidence that he remained a determined foe of inflation and an adamant proponent of price stability even to the extent of warning of the potential danger of inflation in 1937 when the unemployment rate was in excess of 10 percent of the labor force.

Articles in *The Times* (1937)

The most convincing evidence of his continuing strong opposition to inflation in the 1930s, even after the publication of his celebrated *General Theory*, appears in four articles he wrote for *The Times* in early 1937.¹³ There, in discussing policies for dealing with unemployment at the business cycle peak of 1937, he made it abundantly clear that his primary concern was preventing inflation. In particular, he argued that the 1937 unemployment rate, although very high ("indeed, as high as 12½ percent"), was nevertheless at its minimum noninflationary level at which demand pressure must be curtailed to prevent inflation. Accordingly, he recommended a sharp cutback in government expenditure on the grounds that the economy was rapidly approaching the point where further increases in aggregate demand would be purely inflationary. "I believe," he said, "that we are approaching, or have reached, the point where there is not much advantage in applying a further general stimulus at the centre" [4; pp. 11, 44, 65]. In so stating, he identified the noninflationary full employment rate of unemployment (NIFERU) below which industrial bottlenecks frustrate the intended output and employment effects of aggregate demand expansion policy so that mainly prices rise.¹⁴ Beyond that point, he said, noninflationary reductions in joblessness could only be achieved by specific structural policies designed to lower the full employment rate of unemployment itself.

As for the existing high level of that unemployment rate, he attributed it to structural rigidities in the

British economy, in particular to a substantial mismatch between the location and skill mix of the labor force and the location and composition of demand. As he put it, "the economic structure is unfortunately rigid" and this rigidity prevented output and employment from responding to increases in aggregate demand so that only prices rise [4; pp. 11, 65-6]. It follows, he said, that to achieve noninflationary reductions in unemployment "we are more in need today of a rightly distributed demand than of a greater aggregate demand" [4; pp. 11, 66]. In other words, noninflationary reductions in unemployment cannot be obtained by expansionary aggregate demand-management policies but rather "require a different technique" [4; pp. 11, 14, 44, 66]. To this end he advocated specific structural policies to reduce unemployment on the grounds that noninflationary reductions in unemployment could only be achieved via measures that eradicate structural rigidities and lower the equilibrium unemployment rate itself. In so arguing, he foreshadowed by 30 years the modern monetarist concept of the natural rate of unemployment.¹⁵ He also refuted the popular contention that he was an inflationist who advocated full employment at any cost. That is, his 1937 articles amply demonstrate that, far from being an inflationist, his main consideration was preventing inflation—even at a time when the unemployment rate exceeded 12 percent. The same articles show that, far from advocating full employment at any cost, he clearly thought that there was a fairly high level of unemployment at which expansionary aggregate demand policy should be curbed to prevent inflation. From that level downward he insisted that unemployment must be dealt with not by the general expansion of aggregate demand but rather by specific structural policies that reduce the noninflationary unemployment rate itself. In short, there is nothing in the articles to suggest that Keynes had ever changed his mind about inflation. On the contrary, he shows the same concern for inflation in his 1937 articles that he earlier displayed in the *Tract*.

¹³ These articles are reprinted and discussed in Hutchison [4]. Unless otherwise noted, all references in this section are to Hutchison.

¹⁴ The NIFERU concept also appears in the *General Theory* where Keynes asserts that, beyond a certain point, structural impediments ("a series of bottle-necks") would prevent the noninflationary expansion of output and employment long before full capacity is reached. At the bottleneck point any further increase in aggregate demand would, in his words, largely "spend itself in raising prices, as distinct from employment" [10; pp. 300-1].

¹⁵ Hutchison stresses this point, arguing that Keynes "suggested a similar concept to that now called—following Professor Milton Friedman—a 'natural rate' of unemployment in that he stressed 'the unfortunately rigid' elements in the British economy which made it undesirable to try to reduce unemployment further by the expansion of central government demand" [4; pp. 14-15]. Moreover, "Keynes's 'different technique' . . . corresponded, in some important respects, with what today, following Professor Friedman, is described as reducing the natural rate of unemployment" [4; p. 46]. Similarly, Samuel Brittan writes that "Keynes's idea of the level of unemployment which would exist without demand deficiency seems astonishingly similar to Milton Friedman's 'natural' rate of unemployment" [4; p. 63, n. 21].

Concluding Comments

The main conclusion of this essay is that Keynes was neither the subtle inflationist nor the extreme nonmonetarist that he is sometimes depicted as being. On the contrary, his writings reveal that he consistently deplored inflation, that he warned unceasingly of its dangers, and that he urged that its avoidance be made a primary objective of public policy. In these respects he shared much with modern monetarists, even to the point of using similar analytical tools.

In that perspective, a key question is how the misconception that he was an inflationist could have arisen. Whether it stemmed from his *General Theory* (where he prescribed deficit-spending easy money policies to eliminate excessive unemployment), or from the tendency of some self-styled modern Keynesians to invoke his magic name in behalf of their own inflationary full-employment schemes, or even from his own advocacy of discretion over rules in the conduct of monetary policy, his reputation as an inflationist is highly undeserved. For, with respect to the *General Theory*, he did not intend for his expansionist policy prescriptions to apply to inflationary situations. On the contrary, as documented above, he abandoned these prescriptions in

early 1937 upon the first signs of a possible inflation. Nor would he have had anything but scorn for modern Keynesian policies designed to trade off higher inflation for lower unemployment. His insistence on the primacy of the goal of absolute price stability would have been in direct conflict with such inflationary policies. Finally, his support of discretion over rules did not reveal an inflationary bias on his part but rather a belief that discretionary policy was necessary to compensate changes in the demand for money and hence to achieve price level stability. That is, he differed from the proponents of monetary rules not over the objective of price stability per se, but rather over the means to achieve that objective. There is nothing in his writings to indicate that he equated proper discretionary policy with the use of price inflation to expand output and employment. On the contrary, he thought that discretionary policy offered the best means of avoiding inflation and achieving price stability. In short, given his beliefs about the efficacy of discretionary policy, his advocacy of such policy was perfectly consistent with his antipathy to inflation. That antipathy amply justifies F. A. Hayek's judgment that if Keynes were alive today he would be "one of the most determined fighters against inflation" [4; p. 40, n. 1].

References

1. Buchanan, James M., and Wagner, Richard E. *Democracy In Deficit: The Political Legacy of Lord Keynes*. New York: Academic Press, 1977.
2. Haberler, Gottfried. *Inflation, Its Causes and Cures*. Revised and enlarged edition. Washington, D. C.: American Enterprise Institute for Public Policy Research, 1966.
3. Howson, Susan. "'A Dear Money Man?': Keynes On Monetary Policy, 1920." *Economic Journal* (June 1973), pp. 456-64.
4. Hutchison, T. W. *Keynes Versus The 'Keynesians' . . . ?* London: The Institute of Economic Affairs, 1977.
5. Keynes, John M. *Indian Currency and Finance*. 1913. As reprinted in *Keynes' Collected Writings*, Vol. I. London: Macmillan, 1971.
6. ———. *The Economic Consequences of the Peace*. 1919. As reprinted in *Keynes' Collected Writings*, Vol. II. London: Macmillan, 1971.
7. ———. *A Tract on Monetary Reform*. 1923. As reprinted in *Keynes' Collected Writings*, Vol. IV. London: Macmillan, 1971.
8. ———. *A Treatise on Money, Vol. I: The Pure Theory of Money*. 1930. As reprinted in *Keynes' Collected Writings*, Vol. V. London: Macmillan, 1971.
9. ———. *A Treatise on Money, Vol. II: The Applied Theory of Money*. 1930. As reprinted in *Keynes' Collected Writings*, Vol. VI. London: Macmillan, 1971.
10. ———. *The General Theory of Employment Interest and Money*. 1936. As reprinted in *Keynes' Collected Writings*, Vol. VII. London: Macmillan, 1973.
11. Patinkin, Don. *Keynes' Monetary Thought: A Study of Its Development*. Durham: Duke University Press, 1976.

FORECASTS 1981

HOPE SPRINGS ETERNAL

William E. Cullison

The views and opinions set forth in this article are those of the various forecasters. No agreement or endorsement by this Bank is implied.

Forecasts for 1981 generally call for slow real growth, continued inflation, high interest rates, and continued high unemployment. Yet the tone and feel of this year's forecasts are not pure gloom and doom, but rather gloom tempered with a cautious expectation that better days may be coming. The hint of optimism generally stems from assumptions that economic policy for 1981 will: (1) promote a resurgence of business investment spending in late 1981 and 1982; (2) foster more moderate and stable rates of money growth in 1981; (3) reduce the rate of growth of government spending; (4) and reverse a fraction of the substantial, previously legislated, tax increases for 1981 and beyond.

The forecasters expect domestic fuel prices to rise further in 1981, partially as a result of the continuing Iran-Iraq conflict and partially as a result of continuing decontrol of domestic crude oil, gasoline, and natural gas. They also expect food prices to rise, primarily because of last year's drought in parts of the United States and poor grain harvests internationally.

Additional uncertainties cloud the 1981 outlook, including the prospects for domestic automobile production and the possible ripple effects of a failure of a major automobile company. The forecasters, however, seem to think that home financing costs will decline to some extent in the second half of the year and that the depressed construction and real estate industry will begin to recover. The second half optimism, however, is dependent upon the assumption that taxes will be reduced from the very high levels of early 1981, although few forecasters expect a tax cut substantial enough to lower taxes to 1980 levels. Most forecasters also note that increasing and/or wildly fluctuating rates of growth of the money supply in 1981 would do serious damage to the prospects for the economy in the second half of 1981

and in 1982. Many, (somewhat surprisingly, given recent experience) think that policymakers will stabilize money growth and hold it to moderate levels.

Last year, the median forecast for real GNP growth, -1.3 percent, was close to the actual growth rate, -0.1 percent. The quarter-by-quarter path was somewhat different from that forecast because the forecasters expected two quarters of negative real GNP growth in the first half, followed by a modest recovery in the second half. None of them forecast so sharp a drop in real GNP as that actually registered in the second quarter of 1980, 9.9 percent. However, given that the consensus forecast was for annual rates of -4.6 percent real growth in the first quarter and -2.8 percent in the second, they were predicting that real GNP would register a \$1,463.5 billion level (from the revised fourth quarter 1979 GNP) in the second quarter, 1.8 percent below the fourth quarter of 1979. The actual level reached was \$1,463.3 billion. Thus, even though none of last year's forecasters anticipated the credit control program imposed last March, their predictions turned out to be quite close to the mark.

The forecasters expected the rate of inflation to decline throughout the year, which it did not, but they underpredicted the rate of inflation by less than had been their norm in past years. All-in-all, last year's forecasters have to be given high marks for their prescience.

This article attempts to convey the general tone and pattern of some forty forecasts received by the Research Department of this Bank. Not all of these forecasts are comprehensive, and some incorporate estimates of future behavior of only a few key economic indicators. Some are made in terms of annual averages while others are made on a quarter-by-quarter basis, and a summary statistic drawn from one of these groups may differ from that of another. Moreover, the individual forecasts are based on varying assumptions and this should be taken into account in interpreting the summary statistics.

This Bank also publishes the booklet Business Forecasts 1981, which is a compilation of representative business forecasts with names and details of the various estimates. No summary article can ever be as informative as the actual forecasts themselves. Interested readers can examine the individual forecasts in more detail in Business Forecasts 1981.

1980 FORECASTS IN PERSPECTIVE

The Department of Commerce published a major revision of the National Income and Product Accounts in December 1980. The forecasts for 1980, of course, were based upon information that was available to the forecasters in late 1979 and early 1980, so they were based upon the old GNP series. As a result, it is difficult to evaluate the forecasts fairly. *This article uses the revised National Income and Product Accounts numbers. The reported 1980 forecasts are reconstructed by applying the forecast percentage changes to the revised 1979 National Income and Product statistics.*

The median forecast published in last year's January/February *Economic Review* predicted 1980 current dollar GNP to increase 7.3 percent over 1979. Individual forecasts of this growth rate ranged from 5.3 percent to 9.2 percent. Using the revised 1979 GNP total of \$2,413.9 billion, the median forecast for 1980 GNP would have been \$2,590.1 billion and the range from \$2,541.8 billion to \$2,636.0 billion. Increasing prices were expected to account for 8.7 percent of the gain in GNP, so GNP measured in constant dollars, or real GNP, was expected to fall 1.3 percent.

Current estimates by the U. S. Department of Commerce indicate that GNP in 1980 actually increased 8.9 percent. Prices, as measured by the implicit deflator for GNP, however, increased 9.0 percent. As a result, preliminary estimates call for a 0.1 percent decline in real GNP—close to the 1.3 percent decline predicted last year. The forecasters expected the unemployment rate to average 7.6 percent for the year. At present, estimates indicate an average of 7.2 percent.

As with the aggregate GNP figure, the forecasters also underpredicted the components of GNP. Most of the underprediction can probably be attributed to underestimating the rate of inflation.

Personal consumption spending was forecast to increase 9.1 percent, but it actually rose 10.6 percent. Consumer purchases of durable goods, predicted to increase 1.2 percent, actually fell 0.3 percent. Pur-

chases of nondurables were estimated to increase 9.0 percent, whereas the actual rate of increase was 12.0 percent. Consumption spending for services was forecast to increase 11.1 percent. The actual 13.6 percent increase was considerably higher than the estimate. Consumer spending for services was the most predictable component of consumption spending in past years. However, in the last two years forecasters have underestimated the rate of increase in services prices rather substantially.

The forecasters expected a rather sharp 2.3 percent decline in gross private domestic investment. Investment spending in fact declined substantially more, 4.6 percent. The largest source of error in the investment account was residential construction. The prediction for residential construction was for a fall of 7.0 percent, but the actual fall was considerably more, 11.4 percent. The median forecast for business fixed investment was an increase of 5.7 percent, close to the actual 5.4 percent rise.

The forecasts of the last major component of GNP, government purchases of goods and services, centered around a rate of increase of 10.7 percent. Actual government spending is now thought to have risen 12.9 percent. Thus, the major components of GNP were underestimated in last year's median forecast.

The forecasts for 1980 predicted industrial production fairly accurately. The index of industrial production fell 3.7 percent, slightly more than the predicted 3.6 percent fall.

Before-tax corporate profits were predicted to fall 7.6 percent, but the prediction was based upon the corporate profits as defined by the Commerce Department prior to the December 1980 revision. The revised corporate profits figures include retained earnings of foreign branches of domestic corporations, and are thus substantially different from previous estimates. As a result, it is unfair to evaluate the 1980 forecasts against the revised data.

Most forecasters underestimated the rise in the consumer price index by an even larger margin than the implicit price deflator. On average, consumer prices were expected to rise 10.8 percent, but current figures indicate a rise of 13.4 percent.

The median quarterly forecast for 1980 had current dollar GNP rising 4.9 percent in the first quarter, 5.4 percent in the second quarter, 8.6 percent in the third quarter, and 10.4 percent in the fourth, stated at annual rates. The realized quarterly increases, at annual rates, were 12.6 percent, -1.1 percent, 11.8 percent, and 16.7 percent. For real

GNP, the median forecast called for annual rates of increase of -4.6 percent, -2.8 percent, 1.4 percent, and 3.1 percent for the four quarters, respectively. The realized increases for the first three quarters, were 3.1 percent, -9.9 percent, and 2.4 percent, while the preliminary number for the fourth quarter is now placed at 5.0 percent.

The forecasters, then, exhibited considerably less prescience about the quarterly path of the economy than they did about real GNP for the year as a whole. They expected a two quarter decline in GNP

growth followed by a recovery, with the sharpest decline coming in the first quarter of the year. Instead, the economy experienced negative GNP growth only in the second quarter of the year. The decline in the second quarter, however, was very large.

The unemployment rate was expected to average 6.8 percent in the first quarter and to rise to an average of 7.8 percent by the fourth quarter. Instead, the unemployment rate was 7.5 percent in the fourth quarter. The path of unemployment rate movements

RESULTS FOR 1980 AND TYPICAL FORECASTS FOR 1981

	Unit or Base	Preliminary 1980*	Forecast 1981**	Percentage Change	
				1980/ 1979	1981/ 1980
Gross national product	\$ billions	2,628.8	2,910.1	8.9	10.7
Personal consumption expenditures	\$ billions	1,671.1	1,856.6	10.6	11.1
Durables	\$ billions	211.6	234.7	-0.3	10.9
Nondurables	\$ billions	674.3	739.0	12.0	9.6
Services	\$ billions	785.3	882.7	12.8	12.4
Gross private domestic investment	\$ billions	396.8	436.1	-4.6	9.9
Business fixed	\$ billions	294.7	309.7	5.4	5.1
Residential structures	\$ billions	105.1	117.8	-11.4	12.1
Change in business inventories	\$ billions	-3.0	9.0	—	—
Government purchases	\$ billions	534.8	588.8	12.9	10.1
Net exports	\$ billions	26.1	†	—	†
Gross national product (1972 dollars)	\$ billions	1,481.8	1,498.1	-0.1	1.1
Plant and equipment expenditures	\$ billions	294.3e	318.4e	8.8	8.2
Corporate profits before taxes	\$ billions	NA	†	NA	†
Private housing starts	millions	1.29	1.46	-26.0	13.5
Automobile sales (domestic)	millions	6.55	6.90	-20.3	5.3
Rate of unemployment	percent	7.1	7.9	—	—
Industrial production index	1967=100	147.0	149.2	-3.4	1.5
Consumer price index	1967=100	246.8	273.9	13.5	11.0
Implicit price deflator	1972=100	177.40	194.25	9.0	9.5

* Data available as of January 1981.

** Figures are constructed from the median percentage change forecast, based upon the revised 1980 preliminary GNP estimates.

e Estimated

NA Not available.

† Net exports and corporate profits before taxes were revised so radically in the December 1980 benchmark revision that the median forecasts, \$5.0 billion and \$239.5 billion, respectively, are not comparable.

was somewhat different from the gradual upward path forecast, because the unemployment rate rose to 7.5 percent in the second quarter and remained there for the remainder of the year.

1981 FORECASTS IN BRIEF

Gross National Product The forecasts received by this Bank were all prepared before the release on December 23, 1980, of the National Income and Product Account revisions. In most cases, forecasts for the 1981 levels of the GNP accounts were reconstructed by applying the median percentage change forecast to the revised 1980 aggregates. For some series like corporate profits and net exports, where definitional changes made such reconstructions inappropriate, the forecasts were not changed and should be compared to unrevised 1980 data.

Forecasts for 1981 current dollar GNP center around \$2,910 billion. This median forecast indicates an approximate 10.7 percent yearly gain, more than the 8.9 percent increase apparently registered in 1980. Estimates for increases in 1981 current dollar GNP range from 7.9 percent to 11.5 percent. Prices, as measured by the implicit deflator for GNP, are expected to increase 9.5 percent, slightly more than the 9.0 percent rate of increase registered last year. Real GNP is projected to rise 1.1 percent, compared to a 0.1 percent decline in 1980.

The median quarterly estimate indicates a slow improvement in real GNP growth throughout the year, following a stagnant first quarter. It calls for real GNP, measured at seasonally adjusted annual rates, to remain constant in the first quarter of 1980, to increase 2.4 percent in the second, 3.2 percent in the third quarter, and 4.0 percent in the fourth.

Personal consumption expenditures are expected to total \$1,857 billion for 1981, up 11.1 percent from 1980. The predictions for rates of growth of consumption spending range from 7.5 percent to 12.0 percent. Forecasters estimate that expenditures for durable goods will rise 10.9 percent for the year, while expenditures for nondurables and services are projected to advance 9.6 percent and 12.4 percent, respectively. Much of the improvement in durable goods expenditures is expected to stem from an improvement in domestic automobile sales from the depressed 1980 level.

Government purchases of goods and services are projected to total \$589 billion. This estimate repre-

sents a 10.1 percent increase over 1980, somewhat less than the 12.9 percent gain of the previous year. The 1980 forecasts for increases in government purchases range from 8.9 percent to 11.7 percent.

Gross private domestic investment is expected to rise by 9.9 percent in 1981, reversing the 4.6 percent fall in 1980. Inventory investment is expected to improve over 1980. Residential construction is also expected to improve in 1981, rising 12.1 percent above 1980's depressed level. Even so, it will not be much improved over 1979. Business fixed investment spending will be sluggish (particularly in the first half of the year) if the median forecast is correct. That component is expected to register a 5.1 percent gain compared to 5.4 percent last year. The array of forecasts for business fixed investment, however, is quite broad this year, from -5.3 percent to +14.4 percent. Expectations for residential construction range from increases of 0.8 percent to 25.7 percent. Forecasts for change in business inventories range from -\$6.0 billion to +\$15.0 billion, with a \$9 billion median.

Industrial Production The typical forecast for the Federal Reserve index of industrial production (1967=100) in 1981 is 149.2, an increase of 1.5 percent over the 1980 average. This prediction again reflects the slow growth expected in 1981.

Housing The construction industry is expected to recover only moderately from the effects of high mortgage rates and rising construction materials costs. Activity in this sector is expected to improve only 13.5 percent from the slow 1980 pace. Private housing starts, which totaled almost 2 million units in 1978, totaled only 1.3 million units in 1980 and are expected to total only 1.5 million units in 1981. Forecasters expect little recovery in construction until the second half of the year when credit is expected to be somewhat more available and mortgage rates are expected to be somewhat lower.

Corporate Profits The forecasters, predicting corporate profits on an unrevised basis, expect pretax corporate profits to improve this year. The most pessimistic forecaster expects corporate profits to rise only 0.9 percent. The most optimistic predicts an 11.9 percent rise. The median forecast calls for a modest increase in pretax profits of 4.6 percent. Hence, corporate profits are expected to reflect the slowly improving economy, but they are expected to rise substantially less than they normally do in years of recovery.

**TYPICAL* QUARTERLY FORECASTS
FOR 1981****

Percentage Quarter-to-Quarter Annual Rates
Unless Otherwise Indicated

	Forecast 1981			
	I	II	III	IV
Gross national product	8.9	11.4	13.0	14.0
Personal consumption expenditures	10.4	12.2	12.7	12.3
Durables	5.7	14.1	10.7	13.7
Nondurables	8.7	11.9	11.9	11.6
Services	12.1	13.9	13.8	14.2
Gross private domestic investment	1.6	15.6	15.8	30.4
Business fixed investment	6.1	9.6	14.0	15.6
Residential construction	8.9	19.3	29.1	35.4
Change of business inventories†	3.0	6.1	9.0	12.0
Government purchases	9.1	8.9	11.1	11.3
Net exports†	8.8	4.3	-2.8	-7.0
Gross national product (1972 dollars)	0.0	2.4	3.2	4.0
Corporate profits before taxes	-5.7	8.8	10.3	18.2
Private housing starts	-49.1	0.0	31.6	33.9
Industrial production index	0.0	3.2	4.8	6.8
Rate of unemployment‡	7.9	8.0	7.9	7.6
Consumer price index	12.6	11.7	9.4	9.2
GNP implicit deflator	9.5	8.5	8.7	9.7

* The "typical" forecast was derived by figuring the cumulative percentage change for each quarter forecast over each forecaster's fourth quarter 1980 estimate. The "typical" forecast for each quarter was drawn from the median of these cumulative estimates. Only then was the quarter-by-quarter growth path derived.

** All forecasts were prepared prior to release of the benchmark revisions of the National Income and Product Accounts.

† Levels, billions of dollars.

‡ Levels, percent.

Unemployment Most forecasters are predicting an increase in the rate of unemployment during 1981. The typical forecast for the year's average is around 7.9 percent. Considering that the unemployment rate at year-end 1980 stood at 7.4 percent, the 7.9 percent prediction for 1981 indicates that the unemployment

rate is expected to move up relatively little during the course of the year. The quarterly median forecast puts the unemployment rate at 7.9 percent and 7.6 percent in the third and fourth quarters, respectively.

Prices This year's forecast indicates that the rate of price increase will remain at about last year's rate. The implicit GNP deflator, which rose 9.0 percent in 1980, is expected to increase 9.5 percent in 1981. The consumer price index is expected to rise 11.0 percent. Forecasts for increases in the implicit deflator range from 8.0 percent to 10.1 percent, while forecasted increases in the consumer price index range between 8.2 percent and 12.1 percent. Much of the variance in the price forecasts depends on the forecasters' expectations about oil and food prices.

Net Exports The nation's trade position, measured on a National Income Accounts basis, was predicted to remain at the \$5 billion level in 1981, showing little change from an estimated *unrevised* net exports total for 1980. There is little consensus in the forecasts, however. They varied widely, between -\$13.0 billion and +\$16.0 billion.

Quarter-by-Quarter Forecasts Twelve forecasters who made quarter-by-quarter forecasts for 1980 were surveyed. As shown in the accompanying table, the forecasters (on average) expect real GNP in the second quarter of 1981 to be only 0.6 percent higher than it was in the fourth quarter of 1980. By the fourth quarter of 1981, however, real GNP should be 2.4 percent higher than it was in the fourth quarter of 1980, if the median forecast is correct. Translated into quarter-by-quarter compounded annual rates, the median expectation is for 0.0 percent real growth in the first quarter, 2.4 percent real growth in the second quarter, 3.2 percent growth in the third, and 4.0 percent growth in the fourth quarter.

There is considerable variation among the forecasters, however. The forecasts for fourth quarter 1981 over fourth quarter 1980 ranged from a low of 1.1 percent to a high of 3.0 percent. While almost half of the quarterly forecasts predict negative growth in real GNP in the first quarter of 1981, only one forecaster expects more than one quarter of negative growth. (That forecaster expects real GNP to fall in the first two quarters of the year, by annual rates of 0.8 percent in the first quarter and 2.4 percent in the second.) Excluding that one forecaster, all of the others who made quarter-by-quarter

predictions expect the first quarter of 1981 to show the slowest growth with continued improvement registered in each of the following quarters.

If the median forecasts are realized, the unemployment rate will rise to 7.9 percent in the first quarter of 1981 and fall to 7.6 percent by the fourth quarter. The unemployment rate forecasts for the fourth quarter of 1981 ranged from 7.2 percent to 8.1 percent.

On average, the forecasters expect the quarterly rate of increase in the price of items included in GNP to fluctuate between 8.5 percent and 9.7 percent in 1981. The median forecasts were for increases of 9.5 percent, 8.5 percent, 8.7 percent, and 9.7 percent for the four quarters, measured at seasonally adjusted annual rates. Forecasts ranged from 7.4 per-

cent to 10.4 percent in the first quarter, 7.3 percent to 10.1 percent in the second, 7.1 percent to 9.5 percent in the third, and 7.3 percent to 9.8 percent in the last quarter of 1981.

Regarding components of GNP, consumer spending for durables is expected to show considerable improvement in the last three quarters of 1981, after a slow first quarter. Business fixed investment spending is expected to pick up considerably in the second half of the year. Residential construction spending, after a poor first quarter, is expected to recover appreciably. The number of private housing starts follows this same pattern but with sharper swings. The recovery in housing starts is expected to get underway in the second half of the year, following a miserable first half.

More Promising . . .

THE OUTLOOK FOR AGRICULTURE IN '81

Sada L. Clarke

The U. S. Department of Agriculture's leading economists analyzed this year's prospects for the nation's agriculture, and the implications for retail food prices, at the 1981 Agricultural Outlook Conference last November. The outlook as they viewed it then, along with their more recent analyses of economic developments, is summarized below.

The outlook for the nation's farmers in 1981 is much more promising than the situation last year. While supplies are tight, the export market is strong and some slight improvement in domestic demand seems likely. Higher prices are in prospect for both crops and livestock.¹ Gross farm income is expected to rise substantially. And farm production expenses, especially for feed and feeder cattle, promise to continue upward. But with gross income increasing more than production costs, net farm income will likely rebound considerably from last year's depressed level, possibly recouping all of 1980's decline.

The improved prosperity for the nation's farmers will cause consumers to be faced with higher retail prices for most major food products, however. Prices for pork and sugar are expected to lead the parade of food price increases in 1981. Food shoppers will also encounter reduced supplies of many products, particularly red meats.

When appraising the agricultural and food outlook for 1981, economists of the U. S. Department of Agriculture examined a number of critical variables: economic growth rates, both here and abroad, and their implications for inflation and consumer demand; the size of adjustments by livestock producers to tighter and higher priced supplies of feed; possible policy changes by the new Administration; and the

weather—perhaps the most important factor of all. The continued strength in foreign demand for U. S. farm products also figured prominently in the appraisal.

Farm Income Picture Brighter The nation's farmers generally fared poorly last year, but they can take heart from the outlook for 1981. With net farm income dropping to an estimated \$23 to \$25 billion in 1980—down 20 to 25 percent from 1979's \$31 billion—it is encouraging to note that net farm income is expected to improve significantly in 1981, possibly recouping all the loss of 1980. Moreover, the outlook for 1981 points to substantial increases in cash income from both farm and nonfarm sources.

The shortfall in 1980 crop production, together with continued strong export demand for grains and oilseeds, suggests that crop prices will average well above 1980 levels. Under the assumption that there will be no major weather-related shortfalls in 1981 crop output, and with current prospects for larger export demand, it seems likely that crop prices overall may average from 12 to 16 percent higher than in 1980. But while crop marketings may be down from last year, the higher prices will be partially offsetting and cash receipts from crops could rise 6 to 10 percent.

Receipts from the sale of livestock and livestock products are also expected to increase substantially in 1981. This expectation is based on prospects that total red meat and poultry production will decline and that prices will move sharply higher. The anticipated reduction in total red meat and poultry output, along with an expected stronger consumer demand, presently points to a 16 to 20 percent boost in overall livestock prices as well as a similar increase in total livestock receipts.

¹ The recent downturn in livestock and poultry prices will apparently have little effect on the longer term outlook for 1981, for it seems that USDA's analysts anticipated these price developments in preparing their outlook statement. Writing in **Agricultural Outlook**, November 1980, these analysts stated: "Prices for livestock and poultry products will remain under downward pressure because of seasonally large marketings through mid-to-late December. However, the market supply of hogs is expected to decline sharply toward the end of the year and in the first quarter of 1981, lending some support to livestock and poultry prices."

Farm production expenses in 1981 may rise 10 to 13 percent, compared with last year's 10 to 12 percent upturn. But unlike 1980, inputs of farm origin—particularly feeder cattle and feed—will rise more than inputs of nonfarm origin. While prices of the petroleum-based inputs, such as fuel, fertilizer, and chemicals, are also likely to record significant gains in 1981, the lower inflation rate anticipated in the general economy should moderate increases in the prices of manufactured inputs and hold down interest charges. Feed expenses in the year ahead could rise 15 percent or more from 1980. Expenses for purchased livestock, on the other hand, may increase more than a tenth.

Should these expectations for 1981 crop and livestock prices and sales materialize, gross farm income could rise much more than total production expenses and net farm income could range from \$27 to \$32 billion, more than enough to offset the decline of 1980. The point should be stressed that this forecast assumes that weather conditions this coming summer will be more nearly normal, leading to higher crop yields and larger overall crop production than in 1980.

Foreign Trade to Expand Further Exports of U. S. farm products rose to new heights in fiscal 1980, surpassing the \$40-billion mark for the first time. Expectations point to a further expansion in agricultural exports in fiscal 1981, rising perhaps as much as 20 percent above last year's level. With a gain of this magnitude, the nation's exports of farm products are expected to rise to around \$48.5 billion, resulting in record export values for the 12th consecutive year. U. S. agricultural imports are also projected to set a new record at \$18.5 billion, leaving the agricultural trade surplus at \$30 billion, some \$7 billion above fiscal 1980.

Export volume of U. S. farm products in fiscal 1981 is also forecast at a record 170 million tons, up from 164 million last year. Shipments of feed grains are expected to total around 74 million tons, about 3 million above a year ago, while shipments of wheat may rise to more than 41 million tons, an increase of some 4 million over fiscal 1980. Rice exports are likely to register only small gains. On the other hand, the volume of soybean, cotton, tobacco, and vegetable oil exports may decline.

Most of the increase in the value of U. S. farm exports this year will probably be due to higher prices. Indications point to 5 to 10 percent higher wheat prices. And corn, sorghum, and soybean prices are expected to be up about one-third.

The longer term prospects for U. S. agricultural trade are strong. Population and incomes are rising throughout the world. Moreover, there is a desire in many countries to upgrade diets with more meat, milk, and eggs. These factors assure U. S. farmers of growing demand for their agricultural products, particularly feedstuffs.

The grain accord recently signed with China for the period January 1981 to December 1984 will establish China as our largest market for wheat. Yearly exports of 6 to 8 million tons were agreed upon, with wheat comprising 80 to 85 percent of the total. The agreement also permits China to import up to 9 million tons of U. S. grains without prior notification.

Agricultural Finance Outlook Many of the nation's farmers were faced with major financial problems last year and will enter 1981 heavily burdened with debt. Farmers in areas not affected by last summer's drought should be in a stronger financial position, however. As noted earlier, net farm income dropped sharply in 1980, but a significant improvement in net farm income is indicated for 1981. There was a slight rise in cash income from both farm and nonfarm sources last year, and a substantial increase is expected this year.

The improved net farm income projected for 1981 is based on the assumption that farm prices will be higher, interest rates lower, weather conditions more nearly normal, and the rate of increase in production expenses slower. On the whole, farmers will likely be in an improved financial position by the end of 1981. Hog and poultry farmers' incomes will probably show only marginal improvement, however, while vegetable, fruit, and nut producers are expected to have lower incomes.

Farmers' gross investment last year was estimated at \$12 billion, little more than half that in 1979 and considerably under the nearly \$41 billion expected for 1981. This reduction resulted from farmers' postponement of purchases of capital items because of high interest rates and low income prospects. These delayed purchases, together with the refinancing of short-term debt, caused a slowdown in the growth of non-real-estate farm debt. While higher farm incomes in 1981 may slow the rate of increase in farm real estate debt, non-real-estate lending will probably accelerate as farmers finance delayed purchases of machinery and equipment.

Total farm debt rose almost 15 percent in 1980, and another 15 percent increase is anticipated for 1981. Expectations are that interest rates will re-

main high in 1981, but, on average, they are expected to be lower than in 1980.

Reduced activity in the farm real estate market last year reflected low net farm income, high interest rates, and tight credit conditions. Farm real estate values rose between 7 and 12 percent during the year, and an increase of from 11 to 16 percent is expected in 1981. By comparison, farmland values advanced 15 percent in 1979.

Food Prices to Rise Again Grocery shoppers in 1981 will again find little comfort in the outlook for food prices. Retail food prices at grocery stores are expected to continue upward, most likely averaging between 10 and 15 percent higher than in 1980. Current expectations suggest an increase of around 12.2 percent. But should weather conditions damage the citrus crop, reduce livestock marketings, cut the 1981 grain harvest, and decrease worldwide sugar production, and if there is another surge in the general rate of inflation, the food price increase would tend to be nearer the upper end of the range. On the other hand, if reverse conditions are realized, the rise in retail food prices this year would be nearer the lower end of the range.

Much of the increase in 1981 food prices will come from rising prices for red meats, poultry, and eggs, since total supplies of these commodities will be down from last year. Smaller pork output will be only partially offset by slight gains in beef and poultry production. With total meat supplies lower and with some strengthening of the economy, retail meat prices are likely to increase throughout the year. And, with egg production declining slightly and demand increasing as consumers substitute eggs for meats and poultry, sharply higher egg prices are also indicated.

The farm value of domestically produced foods will contribute much more to the rising retail prices of food at home this year than in 1980. Moreover, the gain in farm value is expected to contribute more to rising retail food prices in 1981 than increases in marketing costs. Unlike last year when the farm value of food rose moderately, current indications for 1981 point to a 12 to 20 percent advance in the farm value component. Marketing costs, on balance, are expected to rise some 9 to 11 percent, about the same as in 1980. It is anticipated that rising marketing costs in 1981 will probably be moderated by a slow recovery from 1980's sharp but short recession and by a more moderate increase in prices of crude oil.

Fish and imported foods, principally coffee, sugar, and bananas, comprise the third major component of

food prices. While these foods make up less than one-fifth of the retail food dollar, they can be extremely important in determining retail food prices. Indications are that the overall increase in these foods in 1981 will average 10 to 17 percent higher than last year. Sugar prices, especially, seem likely to show a substantial increase. World supplies of sugar are low following two years of poor crops. In addition, Brazil says it will cut sugar exports to enable it to build a reserve of sugar for potential gasohol production in case further disruptions in oil supplies are caused by the Iran-Iraq War. Not only will the price of refined sugar be higher, but prices of soft drinks, some cereals and bakery products, and canned fruits will also be affected.

Outlook Highlights for Commodities What's ahead in 1981 for the major commodities produced by Fifth District farmers? The brief summaries of the Department of Agriculture's forecasts presented below provide some likely answers.

Tobacco: Supplies of tobacco for the 1980-81 marketing year vary from ample to tight, depending upon the various types. While total production in 1980 recovered from the 36-year low in 1979, it still fell short of prospective use and will have to be supplemented from current stocks. But even with the larger 1980 crop, the smaller carryover means total supplies for the 1980-81 marketing season are about 1 percent below a year earlier.

Quality of the 1980 tobacco crop, especially flue-cured, was reduced by the extremely hot, dry growing season. Because of this less desirable quality, the crop was not as usable for export and some foreign buyers had to dip into dealer and loan stocks to maintain their takings. Foreign buying of leaf this season will be held down by price and tax increases, a slowdown in consumption, and adequate stock levels in major manufacturing countries. Exports of U. S. tobacco to the European Community—our major market—are up, Japan's purchases may remain reduced, but buying by other Asian markets is on the upswing.

Domestic purchases of the 1980 crop were maintained, however, because of the steady sales of cigarettes here at home. Cigarettes continue to be the key to how much tobacco is used in the U. S. and in most other countries. U. S. cigarette output reached a record level last year. And rising sales of low-tar cigarettes are offsetting declines of other types. Total consumption of cigarettes by U. S. smokers may increase slightly as the smoking age population continues to grow.

The 1981 flue-cured acreage allotments and poundage quotas for individual farms will be about 7½ percent under the 1980 level, except for undermarketings and overmarketings. Estimated marketings from the national marketing quota for 1981 are expected to total around 1,040 million pounds, some 55 million below the level in 1980.

Peanuts and Soybeans: Because of last summer's hot, dry weather, the nation's 1980 peanut crop declined sharply from that in 1979. With this reduction, total peanut supplies are also down substantially—around 3.1 billion pounds, versus 4.5 billion in 1979-80. Compounding the situation, the quality of a large quantity of peanuts was poor, hence they did not make edible grade. Thus, because of short supplies and high prices, food use in 1980-81 will probably decrease. With the short crop, supplies of peanuts available for crushing will be greatly reduced, and peanut exports are expected to fall sharply below shipments in 1979-80. Also, U. S. peanuts this season will not be priced as competitively as they were last year.

The national poundage quota for 1981-crop peanuts has been set at the minimum required by law. Undermarketings of 1980-crop peanuts are expected to increase the effective poundage quota in 1981 by about 5 percent, however.

Sharply reduced supplies and higher prices will also curtail the usage of soybeans in 1980-81. Despite the much larger beginning carryover, the drought-reduced 1980 crop cut the total soybean supply for 1980-81 about 13 percent below last year's record level of 2,442 million bushels.

But soybean demand is expected to remain strong in spite of smaller supplies and high prices. Total disappearance (domestic use plus exports) will probably fall some 6 percent below last season, but it will likely total around 11 percent above 1980 production. Expectations are that both domestic crushings and exports will decline from the record levels last season. If these prospects materialize, it will be the first cutback in domestic use in four years and the first decline in exports in six years.

Harvest prices for soybeans last fall were relatively favorable to farmers. Soybean prices to producers in 1980-81 are expected to average around \$8.60 per bushel, 35 to 40 percent above last year's farm price of \$6.25 per bushel. Prices during the

second half of the season will be influenced largely by the size of the 1981 South American soybean crop and the extent to which China and the USSR enter the world market for soybeans. U. S. farmers' willingness to withhold soybeans from the market will also influence prices significantly.

Cotton: Indications are that the supply-demand balance for U. S. cotton will remain tight during the latter half of this season and probably well into the 1981-82 season. Because of lower beginning stocks and the smaller crop, this season's supply is down sharply. Expected disappearance (domestic mill use plus exports) this season will likely total around 11.6 million bales, well below the level last year but still above production. The resulting carryover at the end of the 1980-81 season is likely to be down slightly from the 3-million-bale level at the beginning of the year.

Domestic textile mills will probably use around 5.9 million bales of cotton this season, some 9 percent below the 6.5 million in 1979-80. Because of the tight supplies, relatively high prices, and rising inventories of cotton products, cotton use may well slip further this winter.

Exports of U. S. cotton in 1980-81 are expected to total about 5.7 million bales, a sharp cutback from last season's unusually high 9.2 million. Rising foreign production, sluggish world textile activity, and reduced availability of cotton for export are factors behind the anticipated decline. Currently, U. S. cotton is priced 5 to 7 cents per pound higher than competing cottons in world markets.

Foreign use of cotton this season is expected to be near last season's level. Chinese consumption, however, is estimated to be at an all-time high—some 13.8 million bales. China, as a result, will likely be the world's leading importer again, probably taking around 3.2 million bales from all sources.

Current price relationships between cotton, soybeans, and grain sorghum suggest that the nation's cotton farmers may cut 1981 plantings around 5 percent below the 1980 level. Should this occur, and if yields are average, cotton supplies would probably remain tight throughout the 1981-82 season.

Disappearance of U. S. cotton in 1981-82 is expected to total around 13 million bales, up slightly from this season. Exports, which will likely account for 50 to 55 percent of the total, will be stimulated

by the relatively low stocks expected in foreign countries at the beginning of the 1981-82 marketing year. Since domestic mill use depends heavily on economic conditions and the relative prices of the various fibers, only a slight gain is anticipated for the 1981-82 season.

Poultry and Eggs: The outlook for poultry producers in 1981 is mixed. While the cost-price situation for the first half of the year could be near the break-even level, it could be more favorable in the second half.

With a smaller breeding flock and increased costs, broiler expansion in 1981 will probably be limited to only 3 percent above 1980, instead of 7 to 10 percent as in the last two years. Broiler producers can look for much higher prices in 1981 than a year ago. But higher costs of production, particularly for feed, may limit profits, especially in the first half. Gains in broiler prices in the first half will tend to be limited by increases in beef production. Broiler prices should strengthen in the second half, however, as pork and beef prices rise.

Returns to egg producers will probably be near the costs of production during most of 1981, provided they continue to increase culling when prices fall below costs. With an older laying flock and fewer young birds added to the flock, the rate of lay in 1981 may tend to level off. Total egg production for the year may be about 1 percent below that in 1980, with most of the reduction coming in the first quarter. Egg producers will also be faced with rising costs in 1981 because of higher feed grain prices. But a slowly expanding economy and reduced output of other high-protein foods should strengthen the demand for eggs, giving additional strength to egg prices.

Much higher turkey prices than a year earlier are expected in the first half of 1981. With the exception of the second quarter of 1977, the production of turkeys has been profitable. This has led to increased output, and indications are that turkey producers are planning another 6 percent expansion in production this year. The larger production is being encouraged by the current profitability in spite of much higher costs. But even with improved prices likely, returns to turkey producers during the first half of the year will probably be unfavorable because of offsetting higher costs. Producer returns should improve in the second half, however, as demand

strengthens, prices strengthen seasonally, and production of red meat declines.

Meat Animals: The outlook for cattle producers in 1981 is improved by prospects that total red meat and poultry supplies will be below year-earlier levels. Beef production may increase slightly in 1981. Supplies of beef will continue large through the first quarter as fed cattle marketings rise above year-ago levels and nonfed cattle slaughter continues large. Gains in prices of both fed and feeder cattle will be held down through the first quarter—fed cattle prices by the large beef supplies and feeder cattle prices by continued high feeding costs.

But beef production is expected to decrease next spring as both fed cattle marketings and nonfed cattle slaughter decline. Fed cattle prices will probably average above year-ago levels through midyear, while competition for feeder calves may keep feeder calf prices relatively high. Producers can expect feeding margins to improve on cattle marketed through the first half of the year. Feeding margins on cattle marketed in the second half are likely to be tighter, however, and reduce cattle feeders' profits. Prices for both fed and feeder cattle should remain strong in the second half. Given the higher feeding costs, however, the sharply higher beef prices needed for cattle producers to break even may reduce consumers' demand for beef. Such a development could be a significant factor in determining cattle producers' profitability during the second half of the year.

Hog producers suffered severe financial losses in the first half of 1980 because of low hog prices and the rapid rise in production costs. As a result, producers reduced their breeding inventories. By the first of September breeding inventories in the 14 major hog-producing states were 10 percent below a year earlier. Moreover, a decline in the number of sows farrowing paralleled the decline in breeding inventories, pointing to reduced pork output and higher hog prices in 1981. Pork production for the year could be down from 8 to 10 percent. Hog prices in the first half of 1981 may average around \$50 per hundredweight, about \$17 above the low levels at the same time last year. Should farrowings continue down this winter and next spring as expected, the price of hogs could average in the upper \$50's or low \$60's in the second half. The rising costs of feed and other production items may boost total cash costs of producing hogs to around \$50 in 1981, how-

ever. So, despite the outlook for higher hog prices in 1981, returns to producers during the first half of the year do not look bright because of the higher costs of production.

Dairy: Most dairy farmers are expected to remain in a strong financial condition in 1981. Production expenses will rise, primarily because of higher feed costs, but milk prices are expected to increase enough to keep net income levels on the positive side. The support price for manufacturing grade milk will be adjusted upward on April 1 to reflect the higher costs of production.

Total milk production in 1981 is expected to continue above year-ago levels, setting a new record for the second consecutive year. Gains in productivity per cow will likely be limited by the less favorable milk-feed price relationships. But milk cow numbers seem certain to be larger than those a year earlier during most of 1981.

Demand for dairy products may be slightly stronger in 1981, especially if increases in meat prices make cheese relatively more attractive to consumers. Gains in commercial use are not likely to be large, however, so government purchases under the price support program will be sizable once again.

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