

Research Department  
Federal Reserve  
Bank of  
San Francisco

September 22, 1978

## CPI Futures?

The previous *Weekly Letter* included a discussion of the social costs and benefits of a proposed futures market for the Dow-Jones industrial average. In that article, we described two conditions that generally would establish social gains from a futures market: (1) a spot market characterized by large price fluctuations; and (2) a large class of risk-averse investors desirous of covering their positions in a forward market.

The Dow Jones industrial average possesses neither of these two characteristics, yet it is impossible to develop a DJI futures market with social benefits. The essential elements would be (1) the presence of substantial price risk of some sort, and (2) a collection of investors willing to cover this risk in the futures market. It is not necessary that the price risk covered in the futures market emanate from a single spot market, nor is it necessary that the futures contract provide a hedge that is totally free of risk.

The present article extends this discussion by examining another possible type of contract—a futures market in the Consumer Price Index (CPI). A CPI futures market would have some of the properties of the proposed Dow-Jones futures contract and some of the characteristics of the older commodities futures market.

### How would CPI futures work?

Consider for example a one-year \$100 contract. This contract would be a promise to deliver one year from now the dollar value of a bundle of commodities currently valued at \$100. In this way it is similar to an ordinary commodity future. Where a wheat future, for example, is a promise to deliver a certificate equal in value to a fixed amount of wheat, a CPI future would be a promise to deliver the value of the CPI "market basket" of consumer goods and services. In other words, both parties to the contract would agree that, regardless of any price changes between the sale of the contract and its maturity, the seller would provide the buyer with the money necessary to buy the same bundle of goods and services.

Suppose that both buyer and seller expected the rate of inflation to be 10 percent. Then both buyer and seller would expect the contract to pay \$110 at maturity. The actual dollar return on the contract would be uncertain, however, because the inflation rate is always uncertain. For example, prices might only rise by 5 percent over the course of the year. This outcome would benefit the seller, because the buyer of the contract, expecting a high 10-percent inflation rate, would pay too much for the contract. But in the case of a 20-percent inflation rate, the

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F.R.B. S.F. Weekly Letter

# Research Department Federal Reserve Bank of San Francisco

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advantage would go to the buyer, who would receive \$120 at maturity — ten dollars more than he had anticipated.

At the time the futures contract is issued there is very little difference between the futures contract and, say, a one-year Treasury note. In both cases expected rates of return would take into account the expected rate of inflation. The difference is at maturity. With a one-year Treasury note the dollar rate of return would be locked in but the holder would be exposed to the risk that inflation would be higher than he thought. With the CPI future the holder would not be subject to this risk. The real return would be locked in because the CPI future is based on the actual rate of inflation.

In the case of the Treasury note the risk that actual inflation is greater than "expected" inflation is borne by the security buyer. In the case of the CPI future this risk is borne by the seller.

In understanding how this contract would work, it is useful to distinguish between unanticipated inflation and anticipated inflation. All fixed income assets, from Treasury securities to corporate bonds, include premiums reflecting the anticipated rate of inflation and therefore protect against inflation of this sort. But the CPI future would protect against the risk of unanticipated inflation as well.

## **Risk averters**

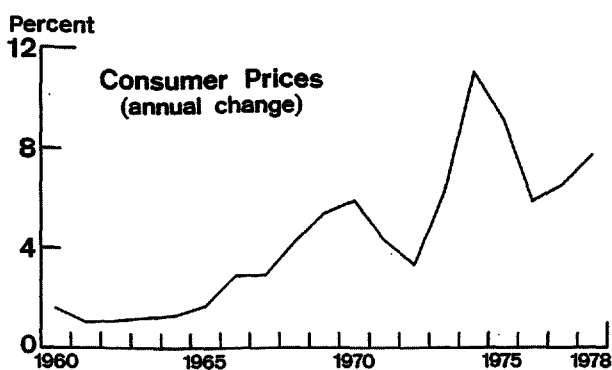
The CPI futures contract, in one sense, would be the opposite of a commodity contract. An ordinary commodity

futures contract allows individuals to hedge against the risk of an uncertain dollar return on a single commodity. A wheat future, for example, enables a grain-elevator owner to guarantee the dollar value of his inventory, regardless of fluctuations in the spot market for wheat. The CPI futures market, on the other hand, would enable the owner of a contract promising a fixed amount of future dollars to hedge against the risk of a declining value of those dollars. The salaried employee, for example, could ensure that he would receive the amount of goods and services his salary would buy at the time he negotiated his salary. There are, of course, large numbers of people interested in protecting themselves against the risk of inflation.

In fact, one class of investors would conceivably be required by law to take a position in CPI futures. Pension-fund managers, now subject to the prudent-investor standard of the Employee Retirement Income Security Act of 1974 (ERISA) might be required to include CPI futures in their portfolios.

## **Both sides of market**

There might well be risk averters on both sides of a CPI-futures market. Consider the case of a firm which has negotiated a three-year wage settlement for fixed percentage increases in wages each year, and which manufactures a product whose price rises in line with the rate of inflation. Since the costs of the firm are fixed in dollar terms and its revenues are tied to inflation, low inflation could mean losses for the firm. By taking a short position



in CPI futures, the firm could offset those losses by gains from its futures contracts.

A market in CPI futures also could provide a market solution to the problem of contract indexation. Economists who have proposed that wage contracts be written to provide for inflation-triggered automatic salary increases probably would support this concept, because employers would then have a way of offering inflation-insulated wage contracts without exposing their firms (and stockholders) to the risk of future inflation.

#### Similarities: DJI and CPI

The CPI futures market, like the Dow Jones futures market, would not have a single spot market behind it. Instead, both contracts would represent an average of several spot market prices. Yet in neither case would this be a de-

terrent to the creation of a futures market since the fluctuations in the average price are enough to involve substantial risk.

Both DJI futures and CPI futures represent new concepts. But why haven't they been considered up to now? One possible explanation is that investors only recently have become interested in the opportunity to hedge provided by these markets. The stock market's dismal performance over the past decade has finally led investors to demand protection against conditions that lead to weak stock prices — hence their interest in DJI futures. And the highly variable inflation of the 1970's has increased investors' perception of the desirability of protecting against unanticipated inflation — hence their interest in CPI futures. These futures markets thus provide a way of dealing with investors' legitimate concerns.

Kurt Dew

#### ACADEMIC CONFERENCE PROCEEDINGS

Copies are now available of the *Proceedings* of the West Coast Academic/Federal Reserve Economic Research Seminar. The *Proceedings* examine, first, the effects of expectations formation on some basic propositions of macroeconomics, and second, the behavior of financial institutions over the business cycle. Five research papers by West Coast academic economists (along with discussion notes) are included in the volume. The *Proceedings* are aimed primarily at an audience of financial analysts and academic economists... Free copies of the *Proceedings* can be obtained by calling or writing the Public Information Section, Federal Reserve Bank of San Francisco, P.O. Box 7702, San Francisco 94120. Phone (415) 544-2184.

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**BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT**  
(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 9/6/78	Change from 8/30/78	Change from year ago	
			Dollars	Percent
Loans (gross, adjusted) and investments*	117,374	+ 1,336	+ 16,317	+ 16.15
Loans (gross, adjusted) — total	94,370	+ 664	+ 15,930	+ 20.31
Security loans	2,158	+ 317	— 588	— 21.41
Commercial and industrial	27,682	— 108	+ 3,848	+ 16.14
Real estate	32,581	+ 131	+ 6,973	+ 27.23
Consumer instalment	17,475	+ 109	+ 4,020	+ 29.88
U.S. Treasury securities	8,900	+ 236	+ 554	+ 6.64
Other securities	14,104	+ 436	— 167	— 1.17
Deposits (less cash items) — total*	112,669	+ 949	+ 14,085	+ 14.29
Demand deposits (adjusted)	30,609	— 141	+ 2,447	+ 8.69
U.S. Government deposits	630	+ 398	+ 219	+ 53.28
Time deposits — total*	79,145	+ 179	+ 11,159	+ 16.41
States and political subdivisions	6,549	— 68	+ 1,280	+ 24.29
Savings deposits	31,628	+ 58	— 88	— 0.28
Other time deposits†	37,592	+ 10	+ 8,630	+ 29.80
Large negotiable CD's	18,418	+ 144	+ 7,036	+ 61.82
Weekly Averages of Daily Figures	Week ended 9/6/78	Week ended 8/30/78	Comparable year-ago period	
<b>Member Bank Reserve Position</b>				
Excess Reserves(+)/Deficiency (—)	+ 19	+ 83		91
Borrowings	50	61		35
Net free(+)/Net borrowed (—)	— 31	+ 22		56
<b>Federal Funds—Seven Large Banks</b>				
Interbank Federal fund transactions				
Net purchases (+)/Net sales(—)	+ 818	+ 491	—	52
Transactions with U.S. security dealers				
Net loans (+)/Net borrowings (—)	— 12	— 681	+ 359	

\*Includes items not shown separately. †Individuals, partnerships and corporations.

Editorial comments may be addressed to the editor (William Burke) or to the author. . . .

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