The Consumer Price Index as a Measure of Inflation and Target of Monetary Policy: Does the Fed know what it is fighting?

by

Dimitri B. Papadimitriou*
L. Randall Wray**

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*Executive Director, The Jerome Levy Economics Institute
**Associate Professor, University of Denver and Research Associate, The Jerome Levy Economics Institute

INTRODUCTION

In recent years, the Federal Reserve (Fed) has adopted a number of targets of monetary policy all of which are purported to be linked to the rate of inflation, Many commentators have criticized the Fed's choice of targets, or its apparent predilection to choose whichever target appears to be pointing in the "right" direction. We have carefully examined this issue in a previous Levy Institute Policy Brief (Flying Blind) and concluded that Fed policy is increasingly rudderless, driven as much by intuition as by solid evidence that inflation is on the verge of accelerating. In spite of concerns shared by many that the Fed's choice of targets may be problematic, most observers are willing to credit the Fed with success at achieving low and stable rates of inflation in recent years. Further, the proposition that the Fed should fight inflation is seemingly noncontroversial. The Fed has time and again stated its belief that the most important role it plays is one of inflation-fighting. Indeed, it has repeatedly asserted that its ultimate goal is and must be **price stability.** Many theorists and policy-makers have also adopted this view, with a few going so far as to assert that zero inflation should be the only goal of monetary policy.' Finally, given that none of the traditional targets of monetary policy seems to be closely correlated with inflation, some theorists and policy-makers have advocated the use of a price index as both the target and the goal of monetary policy.

In this paper, we examine the most frequently cited index used to measure inflation--the Consumer Price Index (CPI). We will argue that this measure deviates in several important respects from an ideal, theoretical measure of inflation that would accurately reflect market-caused price increases and that would potentially fall under control of monetary policy, We first attempt to determine which components have tended to pull up the overall rate of inflation as measured by the CPI. We next analyzc the avenues through which

monetary policy might attenuate the rate of price increases of these individual components of the CPI. We conclude that the CPI does not reflect market conditions, nor are those components that have bolstered inflation of the CPI likely to be directly affected by monetary policy. This leads us to question whether the rate of increase of the CPI is, indeed, an appropriate "ultimate goal" of monetary policy. That is, leaving aside the difficult question as to which economic data should be chosen as "operating targets" of the day-to-day operations of the Fed (such as monetary aggregates, interest rates, reserves), we question whether the Fed should be setting its sights on an aggregate price index such as the CPI. We also question whether Fed "success" or "failure" is appropriately measured by the rate of change of the CPI. Indeed, we doubt that monetary policy over the past decade and a half has been the primary cause of declining inflation rates as measured by thc CPI.

To some extent, our analysis is consistent with the recent concerns expressed over apparent biases of the CPI when used as a cost-of-living index; indeed, even the Bureau of Labor Statistics (BLS) has consistently denied that the CPI measures cost-of-living. Most economists now conclude that the CPI seriously overestimates the "actual" rate of inflation. Recently, an Advisory Commission was formed to study the CPI. An Interim Report to the Senate Finance Committee was issued by the Commission on September 15, 1995--known as the "Boskin Report"--in which estimates of the bias were provided. According to this Commission, five different kinds of bias combine to cause the CPI to overestimate actual inflation by 1 to 2.7 percentage points in recent years. This has led to proposals that would reduce cost-of-living adjustments to benefits from Social Security, Supplemental Security Income, Military Retirement, Civil Service Retirement, veterans' compensation and pensions,

Federal Employees, and so on; in addition, the adjustment to individual income tax brackets and to personal exemptions would be reduced. It should be emphasized that the purpose of the Boskin Report was to estimate the extent to which the CPI mismeasures changes of cost-of-living.

Our purposes here are different, however. Although we are concerned with the extent to which the CPI may mismeasure an inflation rate, our primary concern is that CPI may not be an appropriate target or goal of monetary policy. If the CPI does indeed overstate inflation, the Fed might inappropriately adopt tight policy. There are two types of problems involved. The first involves various biases as discussed in the Boskin Report and elsewhere. The second involves the distinction between an index that attempts to provide an empirical measure of inflation versus the use of an index as a target or goal of monetary policy. The first might be corrected by taking account of the biases discussed in the Boskin Report, but the second problem will not be easily resolved. Assume, for example, that the CPI rate of inflation is upwardly biased by 2 percentage points (which falls within the range of bias for cost-of-living purposes estimated by the Boskin Report) relative to the "true" rate of inflation. Further assume the Fed has as its medium range goal a rate of inflation of 2%, but inflation as measured by the CPI is 3%. Then the Fed might adopt tight policy even though the unbiased inflation rate were only 1%.

The Boskin Report suggests that much of the bias of the CPI will be eliminated or reduced as the BLS adopts new methodology. Presumably with all the discussion presently occurring, the Fed will adjust its inflation targets to account for the biases identified in the Report. If the Fed were to adopt the point estimate of the Boskin Report, it would adjust the

reported CPI downward by 1.5 percentage points. Thus, a reported rate of inflation of 3% would indicate to the Fed that the "true" rate of inflation was only 1.5%; policy would be formed on that basis. In what follows, we argue that even with the adiustmcnts recommended by the Boskin Report, the CPI is not an appropriate measurc of inflation for the conduct or evaluation of monetary policy.

We will show that the impact of monetary policy on important components of the CPI is tenuous at best, calling into question the use of CPI as a target or even goal of monetary policy. Further, we will argue that any measure of inflation that is used in the formation of monetary policy should substantially reflect domestic market forces. It would make little sense to adopt tight money policy to fight inflation that was due to transitory external "shocks", measurement errors (for example, quality improvements that were not captured by the BLS), or other quirks that do not reflect fundamental market interactions. We will argue that increases of the CPI in recent years have been driven to a great extent by such non-market influences. This is partially due to the fact that a large portion of the CPI is comprised of "imputed" values that are largely unconnected with fundamental market forces that are likely to be influenced by Fed policy. We suspect there are other important anomalies reflected in the CPI that make it a poor measure of inflation to be used in monetary policy formation.

Our analysis focuses on the housing sector because it is an important source of CPI-measured inflation and because prices are largely imputed and only very indirectly reflect market conditions of the housing sector. We also conclude that those components of the CPI that monetary policy is likely to impact have been declining in importance--this means that a

given reduction of the overall rate of inflation requires an increasing impact on an ever diminishing portion of the consumer basket. If price stability is defined as a constant CPI, it therefore can be achieved only if monetary policy is so tight as to cause falling, prices of a portion of the consumer basket--a portion that is continually falling. The problem is magnified if a large part of the basket consists of items whose prices (or imputed prices) are rising and where these prices are little affected by monetary policy. This situation can be avoided only if the acceleration of prices of those components that are largely unaffected by monetary policy fortuitously falls. We believe that such fortuitous circumstances largely explain the recent low and stable inflation rates achieved. In other words, this result had little to do with Fed inflation-fighting.

The dangers of adopting erroneous policy increase as the average rate of inflation falls. When inflation is, say, 15% or more, most observers would support tight monetary policy. Among the reasons that a consensus would be easy to obtain in the case of such high inflation, one might cite the following:

*the social and private costs of inflation are significant;

*the benefits from a given inflation reduction would exceed the costs of fighting inflation;

*problems of measurement error involved in calculating a CPI would be of secondary importance;

*it is likely that all, or nearly all, of the components of the consumer basket would be experiencing substantial inflation so that even if policy could impact only a portion of the

consumer basket, there would be little danger of causing deflation of prices of any portion of the basket.

However, in the case of a measured inflation rate of only 2.5 to 3.0 percent, it is clear that none of the conditions listed above would be met. At very low levels, it is not at all clear that the costs of inflation are high, nor is it clear that the benefits of reducing inflation would exceed the costs of fighting inflation. Second, at very low rates of inflation, small measurement errors become important. Finally, at low inflation rates, it is quite possible that many items in the consumer basket are not experiencing any inflation. If monetary policy works primarily on those items that are not contributing to inflation, then there is great danger that the policy will work only by causing deflation of the prices of some items.

Our results lead us to conclude that if inflationary pressures should be fought through the use of monetary policy, the CPI is not a good measure of inflation for this purpose. Most importantly, at low rates of inflation, the dangers of choosing an inappropriate measure increase.

While it is beyond the scope of this paper, we are convinced that use of any index of price changes will be fraught with difficulties similar to those outlined here. In our view, this warrants careful reconsideration of alternative ultimate targets--such as rates of economic growth or unemployment rates. Given the uncertainties involved in the choice of such ultimate targets, we think it would be premature to tie the Fed to any particular target, especially to “price stability”. The closer one gets to “price stability”, the greater are the problems associated with use of a price index as a target or goal of policy. Therefore, we believe that this is an inappropriate time to change the guidelines of the Employment Act of

1946 and the Humphrey Hawkins Act of 1978 so as to require the Fed to focus on price stability and to ignore other important economic indicators of our nation's well-being.

RECENT TARGETS OF MONETARY POLICY

Traditionally, economists have thought that monetary policy uses tools (open market operations, discount rates, required reserve ratios) to hit operating targets (fed funds rate, reserve aggregates) that are believed to be closely related to intermediate targets (short-term market interest rates, monetary aggregates) in order to achieve longer-run goals (low inflation, high employment, sufficient economic growth). A graphical representation of these is depicted in Figure 1. According to this view, only the goals are really important; the operating and intermediate targets are not by themselves of any consequence. If an operating or intermediate target does not prove to be reliably linked to the goals, it is dropped in favor of another target. On the other hand, if one or more of the goals proves to be outside the reach of the Fed because monetary policy appears to be unable to reliably influence performance of the economy in that respect, then the goal(s) should be dropped. Finally, it is possible that on some definition of the Fed's ultimate goals, monetary policy might indeed be effective. It would make little sense to define a goal in such a manner as to preclude monetary policy effectiveness.

This leads to another problem, the policy ineffectiveness problem. Many observers have called into question the ability of monetary policy to reliably impact ultimate goals like unemployment or economic growth. Even Chairman Greenspan of the Fed and President Tietmeyer of the Bundesbank have openly questioned whether monetary policy is effective in

Figure 1: Tools, Targets, and Goals of Monetary Policy

TOOLS	OPERATING TARGETS	INTERMEDTATE TARGETS	ULTIMATE GOALS
Open Market Operations	Borrowed Reserves	M1	Inflation Rate
Discount Rate	Nonborrowed Reserves	M2	Unemployment Rate
Required Reserve Ratio	Fed Funds Rate	Short-term Market Interest Rates	Rate of Economic Growth

influencing unemployment rates or rates of economic growth over anything, but a very short period. There appears to be a growing consensus that the central bank can only impact the rate of inflation.[2] However, as we will argue, there has been little discussion of the transmission mechanism through which monetary policy is supposed to affect the rate of inflation. It is not at all clear how monetary policy operates now that we no longer accept the traditional explanation that "too much money causes inflation". Indeed, we will argue that the empirical evidence is not consistent with the belief that central bank policy has been a primary determinant of inflation rates.

Finally, current monetary policy suffers from problems of measurement of the ultimate goals of the economy. Many economists now doubt that official unemployment rates are very useful in reflecting labor market conditions. Others are also calling into question the estimates of various indicators of economic growth--such as the rate of growth of real GDP, or productivity growth. Similarly, many--including Chairman Greenspan--agree that the CPI seriously overstates inflation of the cost-of-living." Even while we might agree with Chairman Greenspan, we cannot agree that the CPI is an appropriate measure of inflation for policy purposes--and we would maintain our position even if the CPI were a perfect measure of cost-of-living.

Ideally, the measure of inflation on which the Fed should set its sights would reflect market conditions that potentially can be affected by monetary policy. If for example, an index of inflation reflected conditions over which monetary policy had no control, this index would be a useless measure of the Fed's ultimate goal. Worse, if the Fed's attempts to lower inflation only caused the index to increase, it is easy to see how a vicious cycle of perverse

policy would be induced by the choice of an inappropriate measure. Suppose all the inflationary pressures arise from components over which the Fed has no control and the Fed is able to offset these inflationary pressures by causing deflation of prices of components over which it does have control. It is obvious that such a policy could cause substantial disruptions and even long-run harm to the economy. We think that in this case, many economists would agree that the Fed should ignore the inflationary pressures; this could be done by constructing an alternative index that would exclude the components over which the Fed has no control. Indeed, by excluding food and energy prices from the CPI in order to create an estimate of "core inflation" the BLS has been taking such a step. This seems to be done on the belief that food and energy prices are subject to "external shocks", or non-market forces. In the case of food, such shocks arise from poor weather in the US, or from abnormal foreign demand (which could also result from poor weather); in the case of energy, the problem is that a large part of petroleum is imported, and the price and quantity of imported oil can be affected by political matters. Since Fed policy is unlikely to affect either the weather or political factors in the Middle East, it makes sense to exclude these items from the CPI used to evaluate and form monetary policy. However, it should be noted that it is impossible to fully exclude these factors since the prices of energy and of food enter into the price determination of most other consumer items (very few consumer items are free of corn or petroleum derivatives). Thus, even if the only inflationary pressures initially came from politically-induced increases of the price of oil, a Fed policy focussed on "core inflation" would still force deflationary pressures on other components of the CPI in order to offset the secondary inflationary pressures imparted by oil prices.

In several recent Congressional testimonies, representatives of the Fed seem to have recognized many of the questions we have posed here. First, there has been a recognition that the links between traditional operating targets and intermediate targets have become imprecise, and second, that the links between monetary aggregates and inflation have broken down. Indeed, this was part of the reason for the Fed's proposal to use a real interest rate as the intermediate target of policy in summer of 1994. [We examined this proposal in a previous Policy Brief (1994); it seems to have been abandoned due to the negative response it received.] Moreover, in a number of reports the Fed has emphasized that no single economic variable, nor any combination of variables can reliably indicate when the economy has reached a rate of capacity where inflation is likely to accelerate (Greenspan 1995; 1993). Many economists, Chairman Greenspan included, note that modern economies can stretch capacity without inducing inflation much more than could economies a decade or so ago. Further, with greater volumes of international trade, the link between capacity utilization or employment and inflation is far less rigid.

We are then at a situation in which the Fed has no reliable targets, in which neither the Fed nor other observers is certain as to what market conditions are likely to generate inflation, and in which the Fed is uncertain of the transmission mechanism through which monetary policy is supposed to affect inflation. At the same time, because inflation--as measured by the CPI--has remained low, most observers credit the Fed with success. Further, they have come to doubt the Fed's ability to affect any important economic variable except inflation in any desirable manner. In the July 19, 1995 midyear review to Congress, Chairman Greenspan said: "The Federal Reserve believes that the main contribution it can make to

enhancing the long-run health of the American economy is to promote price stability over time. Our short-run policy adjustments...must be consistent with moving toward the long-run goal of price stability" (p. 7). The report goes on to argue that the current low inflation rates "should be regarded only as a milepost along the path toward the long-term goal of price stability" (p. 13). The recent low and stable inflation rates achieved are not, according to the Fed, evidence of price stability, While it is not clear what it is meant by "price stability", it has been argued that continued vigilance will be required to bring inflation down further so that "price stability" will be finally achieved.[4]

Since there appears to be a correlation between the Fed's increased focus on inflation and low and stable inflation rates, it is concluded that the Fed must have, indeed, been the cause of the low and stable inflation. In other words, it is presumed that the Fed has demonstrated its ability to hit inflation targets. Furthermore, the inflation experience of the last few years is contrasted with that of the late 1970s, "proving" that when the Fed switched to an inflation goal, inflation was reduced. On this basis, the Fed can claim at least partial victory in recent years as the inflation rate was brought down and has remained at a low level.

It has been argued that the ultimate goal of monetary policy must be to remove inflation from economic decision-making of individuals. The Fed has interpreted it as identifying and using some index like the CPI which must grow at a rate that is so slow that its growth would not lead to significant cost-of-living adjustments to contractual arrangements including wage increases that hedge against inflation.

In the following sections, we will argue that in at least some situations, monetary policy can perversely affect the index (that is, tight policy would increase the measured rate of inflation). This problem increases in seriousness secularly as well as over the course of each BLS cycle before the usual and periodic revisions are made to the CPI base. This problem will not be solved by making the adjustments advocated in the Boskin Report, nor by dropping a few items (as is currently done to obtain the "core inflation rate"), nor by elaborate "smoothing" of the index (as proposed by Bryan and Cecchetti 1993). If monetary policy is to be geared to fighting inflation, much greater revisions will be required before an index is obtained that could be useful in formation and evaluation of monetary policy. We are skeptical that an aggregate index can be devised to serve such purposes. Finally, and in concert with our analysis of the CPI, we doubt that monetary policy deserves much credit for the recent low inflation; nor do we believe that reduced Fed diligence would lead to higher inflation.

A DETAILED LOOK AT THE CPI

The CPI tracks prices of a market basket of consumer goods and services that is designed to reflect the spending habits of consumers; the most frequently used index is actually the CPI-U, which tracks the spending of urban consumers. Because baskets change over time, the Bureau of Labor Statistics' periodic Consumer Expenditure Survey establishes a "benchmark" basket to assign weights to various components that will be used to calculate a consumer price index for coming years. Survey data collected over a three-year period are used to calculate this benchmark; given the effort involved, the benchmark cannot be revised

frequently. The benchmark we use here was established based on surveys conducted during 1982-84; these surveys determine the weights used to construct the index. If the prices of all components of the consumer basket were to increase at the same rate, these weights established in 1982-84 could still be appropriate today. Because prices grow at different rates and because consumer buying habits change, component weights are periodically changed. New weights are currently being established through surveys (conducted in 1993-5), and will be used beginning with 1998. The BLS does not release data on the fixed component weights--apparently out of fear that CPI inflation data could be anticipated before they are officially released. In reality, the BLS does not use fixed component weights, in any case, because revisions are continually made to account for the changing consumer basket over time. The relative importance data released closest to the benchmark surveys (usually with a lag of a couple of years) give the best approximation to the bench year component weights. The component weights actually used in any given year cannot be obtained, but would be something between the most current relative importance weights and the relative importance weights from the year closest to the benchmark year.

Many recent studies, including the Boskin Report, have focused on various measurement errors involved in calculating the CPJ. For example, if consumers increase the percent of purchases at "discount" outlets, the CPI will overstate the actual rate of inflation experienced by the typical consumer--this could be called the "outlet substitution bias"--because the index does not adequately take into account such shifts. Additionally, consumers will change the composition of the basket of consumer goods purchased over time; since the composition of the basket used to calculate the price index is changed only once per decade, a

bias results." Economists identify three different kinds of bias associated with changing baskets: substitution bias, quality change bias, and new product bias. The first refers to the supposed impact that changing relative prices would have on baskets; if, for example, the price of tea rises relatively to that of coffee, economic theory suggests that consumers will substitute coffee for tea. However, as the CPI basket might be changed only once per decade, the index will be calculated as if no substitution occurred--leading to overstatement of inflation. Often when prices rise, this reflects increases of the quality of products (products might last longer or provide a higher level of services); in most cases, it is very difficult to calculate what portion of a price increase should be attributed to quality changes, and the BLS does not even attempt to calculate this for many products. Thus, inaccurate measures of quality change introduce a quality change bias. Finally, new products are introduced all the time; the BLS includes these in the basket only with long and variable lags, introducing a new product bias into the CPI. In the case of some goods, a considerable bias results. For example, many high-technology consumer goods follow a price cycle that begins with very high prices for goods sold to high income classes, then prices fall rapidly as the goods are introduced to lower income classes, and then prices gradually rise as the market matures. If the BLS introduces the goods into the basket only after prices have reached their minimum, the CPI will not capture the period during which prices fell rapidly, but will include the mature period in which prices rise. In recent years, this bias should be expected to be quite important.

The Boskin Report identifies another source of bias called the "formula bias". This bias results because price data are collected on a disaggregated basis and then aggregated in a

very complex manner that can introduce anomalies. For example, the calculation method used in recent years gives too much weight to items on sale; somewhat paradoxically, this generates formula-induced inflation as the items go off-sale. The degree of this bias can increase with the frequency of rotation (of outlets included in the sample) because the bias results from short-run price variability and a method that gives greater weight to lower-than-average prices. Researchers had noticed that surveys of average prices actually paid by consumers showed rates of inflation well below the rates of inflation reported by the CPI for relatively disaggregated components of the consumer basket; while part of this could be attributed to the outlet substitution bias, most of it could not. Estimates of the formula bias run as high as six-tenths of a percentage point for owner-occupied housing and one percentage point for apparel--an item often on sale (Moulton and Smedley 1995). The Boskin Report provides the following estimates of all sources of bias:

Table 1: BOSIUN REPORT ESTIMATES OF RECENT BIASES IN THE CPI (Percent per rear)

Source of Bias	Point Estimate	Range
Substitution Bias	0.3	0.2-0.4
Outlet Bias	0.2	0.1-0.3
Formula Bias	0.5	0.3-0.7
Quality Change Bias	0.2	0.2-0.6
New Products Bias	0.3	0.2-0.7
Total	1.5	1.0-2.7

Source: Boskm Report p. 27

It should be noted that the Boskin Report emphasizes that it has conservatively estimated biases; even the upper end of the range is meant to err on the side of underestimating potential bias.

Our concern here, however, is with a different issue, one which results from differential rates of price increase of the components of the basket. In other words, even if consumer behavior regarding outlets or composition of baskets did not change, the contribution of items in the basket to measured CPI inflation will change over time due to differential inflation rates of those items. We will develop a measure of the contribution of each item to the overall inflation rates. In what follows, component weights will refer to the benchmark or base year shares of components of the CPI which are the "real", inflation-adjusted quantities in the consumer basket and will not change until the next survey establishes a new benchmark basket. However, the relative importance of each item reflects the "nominal" portion of expenditure devoted to each component of the consumer basket--assuming the component weights do not change. The relative importance of any item that experiences an above-average rate of inflation will rise, while the relative importance of items with below-average inflation rates will fall. Finally, the weighted contribution of each item to the measured CPI inflation rate will provide an estimate of the contribution of the inflation of the price of each individual item in the basket to the inflation of the price of the overall index. We will examine the relative importance and weighted contributions to inflation of each item to the CPI below. However, it is probably instructive to first examine a simulation to show how these figures are constructed.

A SIMULATION: RELATIVE IMPORTANCE AND WEIGHTED CONTRIBUTION

We can first demonstrate the relative importance and weighted contribution concepts using a simple hypothetical example with a CPI constructed on the basis of a fixed weight basket that is changed only once per decade. Assume that the base period is 1985, with component weights calculated from 1983-4. We will divide the components into two categories: housing (weight is 41.5%) and other (weight is 58.5%). Further assume that all components experience a constant and uniform annual rate of inflation of 2.5% until 1987, when the inflation rate of the housing component rises to 10% per year. [The 10% inflation rate of the housing may be overstated, but illustrates the problem]. The component weights will not be adjusted until 1998. The CPI will be calculated by multiplying the index for each component by its weight, then summing the results (for example, take the index for "other" in the year 1990, multiply by 0.585, then find the product of the index for housing in 1990, multiplied by 0.415, then sum the results). The relative importance for each sector is calculated by multiplying the 1985 component weight by the index for the sector, then dividing by the CPI. This gives an idea of the relative importance of each sector to calculation of the CPI; relative importance increases for items which experience higher-than-average inflation rates. The weighted contribution of each component is found by taking the one-year change of the index for each component, multiplying by the appropriate component weight, and dividing by the change of the overall CPI. This provides a measure of the contribution inflation of the prices of individual components make to inflation of the overall index, weighted by the 1985 component weights. We will set the index for all components at 100 in 1985. The results are as follows:

TABLE 2: Simulation of Relative Importance and Weighted Contribution, with Differential Inflation Rates

Year	Other index	House Index	CPI	Other Inflation (%)	House Inflation (%)	CPI Inflation (%)	Other Relative Importance	House Relative Importance	Other Wtd. Contribution (%)	House Wtd. Contribution (%)
1985	100	100	100	2.5	2.5	2.5	58.5	41.5	58.5	41.5
1986	102.5	102.5	102.5	2.5	2.5	2.5	58.5	41.5	58.5	41.5
1987	105.1	105.1	105.1	2.5	2.5	2.5	58.5	41.5	58.5	41.5
1988	107.7	115.6	111.0	2.5	10.0	5.6	56.8	43.2	26.1	73.9
1989	110.4	127.2	117.4	2.5	10.0	5.9	55.0	45.0	24.7	75.3
1990	113.2	139.9	124.3	2.5	10.0	5.9	53.3	46.7	23.6	76.4
1991	116.0	153.9	131.7	2.5	10.0	6.0	51.5	48.5	22.0	78.0
1992	118.9	169.3	139.8	2.5	10.0	6.1	49.8	50.2	21.0	79.0
1993	121.9	186.2	148.6	2.5	10.0	6.3	48.0	52.0	20.0	80.0
1994	124.9	204.8	158.1	2.5	10.0	6.4	46.2	53.8	18.5	81.5
1995	128.1	225.3	16X.4	2.5	10.0	6.5	44.5	55.5	18.0	82.0
1996	131.3	247.8	179.6	2.5	10.0	6.1	42.8	57.3	16.7	83.4
1997	134.6	272.6	191.9	2.5	100	6.X	41.0	59.0	IS.7	x3.7

As Table 2 shows, the differential inflation rate quickly raises the relative importance and weighted contribution of the component that experiences a higher rate of inflation. At the limit, the housing component would account for a relative importance that would eventually approach lOO%--but this would take a long time, and by our assumptions, the component weights will be re-calculated in 1998. In the real world, substitution out of those components with relatively high inflation rates would reduce the actual component weights that should be used to calculate the CPI; this will be captured in the change of base weights. But if this is done only once per decade, substantial upward bias is imparted to the CPI to the extent that the true component weight of housing (in our example) is below the fixed component weight used in the calculation of the CPI. Thus, change of relative importance gives some idea of the

sort of bias introduced into the CPI because a fixed consumption basket is assumed over periods of ten years (and longer). As would be expected, the sector with the higher inflation rate very quickly dominates increases of the CPI; weighted contribution is a measure of the degree to which the inflation of individual components causes inflation of the CPI. In our example, growth of the housing sector index will very soon come to dominate growth of the CPI. Note that even if the housing sector is substantially smaller than the "other" sector, its weighted contribution very quickly approaches 100% simply due to its higher rate of inflation.

Data on relative importance are regularly published by the BLS, and it is widely accepted that these data provide some information regarding the bias introduced into the CPI because the component weights are not changed more frequently. To some extent, however, the relative importance concept understates the degree to which high inflation of some sectors is translated into high inflation of the CPI; even if relative importance grows fairly slowly over the course of a decade, the weighted contribution of those items with higher inflation rates than average will grow quickly. In our example, the CPI inflation rate has reached 6.8%; while the relative importance of the housing sector is still less than 60%, it is clear that the "contribution" of housing to the measured inflation rate is much larger than that--after all, prices of all items except housing are growing at a rate of only 2.5% per year. Thus, a weighted contribution of 83.7% for housing more accurately reflects the "true" impact that housing sector inflation has on CPI inflation. Note, also, that if component weights would be recalculated every year, there would be no difference between relative importance and component weights (this bias is eliminated); however, this would not eliminate growth of the

weighted contribution of those items experiencing higher-than-average rates of inflation (unless the component weights of these rapidly fell toward zero). In other words, the problem we are outlining in development of the concept of weighted contribution is not an artifact of the method used to calculate a CPI. Rather, it reflects the common sense reality that if some items tend to have inflation rates that are substantially above average, these items will come to dominate overall inflation as measured by the rate of growth of an aggregative index.

If the acceptable inflation rate were 2.5% as measured by the CPI, the central bank would begin intervention in 1988 in our hypothetical example to fight the inflation of the CPI that is observed to rise above 2.5%. If we assume for the moment that monetary policy has no effect on the housing component, but that it is effective in lowering the rate of increase of prices of the other component, it is easy to see that the central bank will not be able to achieve its inflation targets over the long run. That is, even if the rate of price increase of the other component were reduced to zero--or even below--the CPI will grow at a rate above 2.5% because the contribution of the housing component rises toward 100%. (This would be true except in the unlikely case that the deflation of prices of the other component could approach a large number.) Ironically, this result would be sustained even if consumers bought no housing services after 1988. Thus, in this extreme case in which housing is eliminated from the basket actually purchased, the measured excess rate of inflation (above 2.5%) could be entirely the result of measurement error due to the use of fixed component weights (this is sometimes called the substitution bias). This will be corrected only when the next base year component weights are established. When this is done, we might find that the CPI inflation rate drops --that is, as soon as the new component weights are used-- which is entirely due to

a change of component weights. This cannot be attributed to monetary policy since (by our assumption) it has no impact on housing sector price increases.

RECENT EXPERIENCE: RELATIVE IMPORTANCE AND WEIGHTED CONTRIBUTIONS TO INFLATION

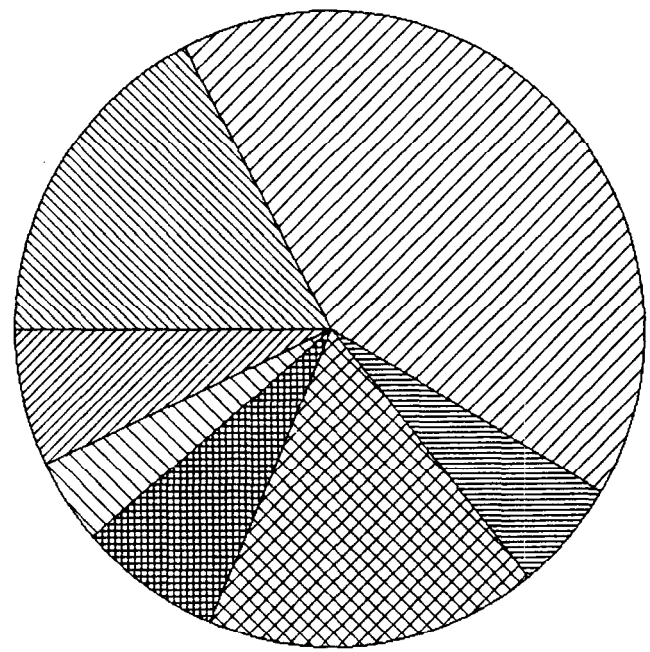
We can use the concepts developed in the previous section to examine recent US inflation experience. Identification of those items of high relative importance will allow us to say something regarding the potential impact that monetary policy might have on items that have tended to experience higher-than-average inflation rates. Finally, examination of the weighted contribution of various components to the CPI will help to determine which items can be blamed for the high inflation of the 1970s and early 1980s, as well as to identify those items responsible for recent inflation.

Table 3 shows the inflation rates of components of the CPI, while Figures 2a and 2b show the relative importance of various items. Note that during the high inflation of the mid 1970s, the inflation rate of commodities was typically near to that of services; however, in the high inflation of the late 1970s and early 1980s, inflation in the service sector was typically above that of the CPI. Further, both high inflation periods can be characterized as periods that experienced high inflation of food, housing, and transportation components. Finally, medical care has typically experienced inflation much above average, although the differential has diminished somewhat in the most recent years. Differential inflation rates alone cannot provide much indication of the contribution each component makes to the overall rate of inflation, however, because the share of the basket devoted to each component must also be

TABLE 3 Inflation Rates of Major Components of CPI

Year	CPI	All Comd	All Service	Food	Housing	Fuel & Utilities	Apparel	Transp-ortation	Medical	Other	Shelter	Renter costs	Homeowner costs
1968	4.7	3.7	6.1	4.2	5.5	2.2	6.4	1.8	6.2	5.0	6.5	NA	NA
1969	5.9	5.2	7.4	6.8	6.4	2.	5.1	4.9	5.8	5.6	8.6	NA	NA
1970	5.6	4.2	8.1	2.5	6.9	6.0	4.0	7.5	7.7	5.3	8.9	NA	NA
1971	3.3	3.1	4.1	4.4	3.5	6.0	2.2	1.3	4.6	4.3	2.7	NA	NA
1972	3.4	3.2	3.5	4.3	3.6	3.5	2.6	2.5	3.3	3.7	4.0	NA	NA
1973	8.9	10.4	6.4	18.6	6.7	11.2	4.4	4.5	5.3	4.9	7.1	NA	NA
1974	12.1	12.8	11.3	12.1	13.6	16.6	8.6	13.5	12.3	10.1	11.4	NA	NA
1975	7.1	6.4	8.0	6.3	7.6	11.5	2.4	9.8	10.0	5.7	7.2	NA	NA
1976	5.0	3.5	7.6	1.0	5.4	9.6	4.6	8.9	9.9	5.8	4.2	NA	NA
1977	6.7	6.0	7.8	7.3	7.8	8.6	4.3	4.4	8.9	6.3	8.8	NA	NA
1978	9.0	9.0	9.3	11.4	9.8	5.6	3.1	7.9	8.6	6.4	11.4	NA	NA
1979	13.3	12.9	13.7	10.1	15.3	16.0	5.7	17.5	10.4	7.7	17.5	NA	NA
1980	12.4	11.0	14.2	10.1	13.7	13.8	6.9	14.5	10.2	10.2	15.0	NA	NA
1981	8 . 9	6.0	13.	4.1	10.1	14.14	3.6	11.1	12.5	9.8	9.9	NA	NA
1982	3.8	3.4	4.2	3.0	3.6	9.4	1.6	1.3	11.1	12.1	2.3	NA	NA
1983	3.8	3.0	4.9	2.5	3.6	2.3	3.0	3.9	6.4	8.0	4.8	5.2	NA
1984	4.0	2.7	5.4	3.8	4.3	4.2	2.0	3.2	6.2	6.1	5.2	5.8	5.1
1985	3.8	2.6	5.0	2.8	4.3	2.2	2.9	2.7	6.6	6.3	5.9	6.5	5.9
1986	1.2	-2.0	4.4	3.7	1.9	-5.5	1.0	-6.0	7.8	5.5	4.8	5.1	4.6
1987	4.4	4.6	4.3	3.5	3.7	1.6	5.1	6.1	5.9	6.7	4.9	4.4	5.2
1988	4.4	3.	4.8	5.0	3.9	2.7	4.8	2.9	7.0	6.8	4.4	3.8	4.7
1989	4.6	4.2	5.0	5.5	4.0	3.0	1.4	4.0	8.5	8.3	4.9	4.5	5.2
1990	6.3	6.8	5.9	5.2	4.5	3.8	5.3	10.5	9.6	7.6	5.4	6.8	4.8
1991	3.0	1.2	4.5	2.5	3.5	2.9	3.6	-1.6	7.9	7.9	3.8	4.3	3.7
1992	3.0	2.0	3.7	1.6	2.6	2.2	1.5	3.0	6.7	6.5	3.0	2.9	3.1
1993	2.7	1.5	3.7	2.8	2.7	2.5	1.0	2.4	5.4	2.7	3.0	2.7	3.2

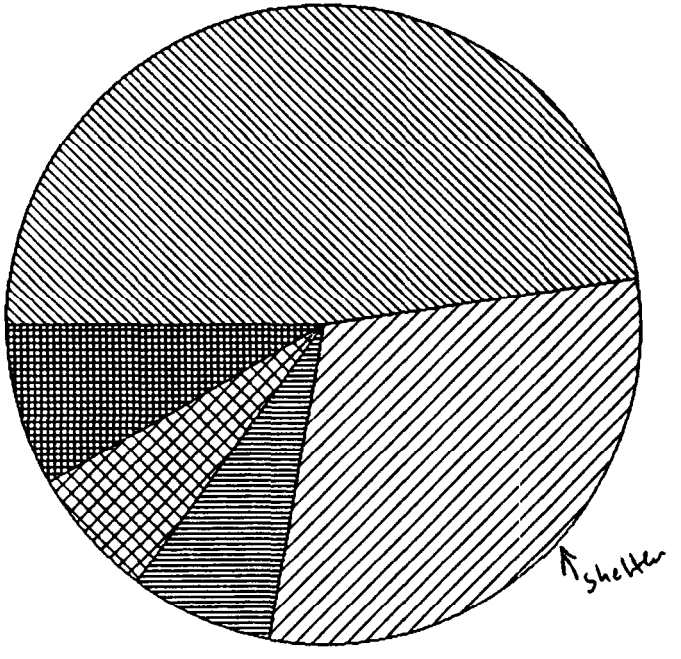
Figure 2a Relative Importance, Major Categories, 1994



1994

FOOD
APPAREL
MEDICAL
OTHER
HOUSING
TRANSPORTATION
ENTERTAINMENT

Figure% Relative Importance, Commodities and Services, 1994



1994

Commodities
Rent of shelter
Other household services
Medical services
Other services

taken into account. As the figures show, the service sector's relative importance is now more than half; as we will show, most recent inflation of the overall basket is caused by the service sector.

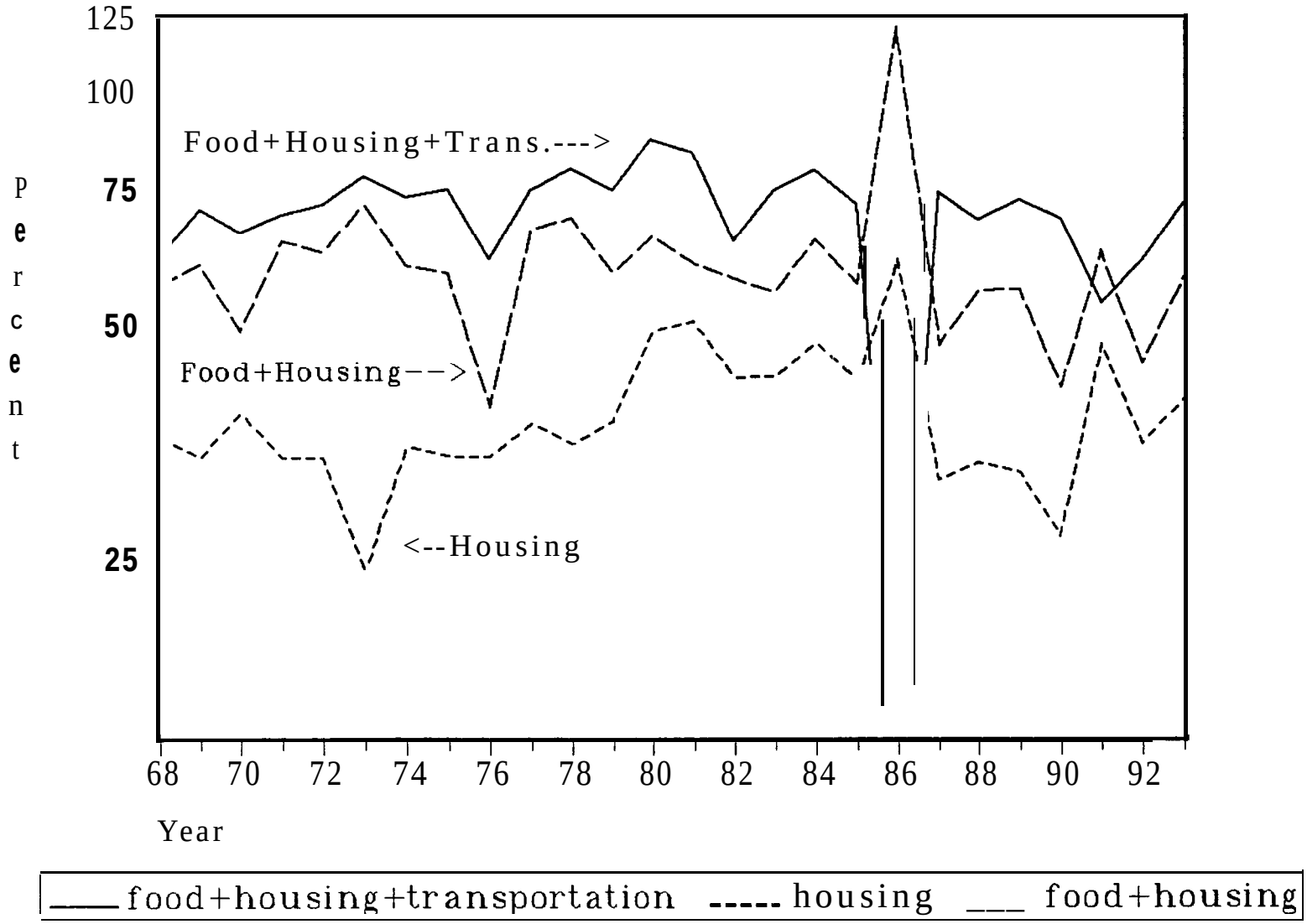
Table 4 provides an estimate of the weighted contribution of major components to the overall CPI inflation rate. We have calculated weighted contribution as described in the previous section. However, as noted above, the BLS does not release data on component weights. Thus, we used data on relative importance to calculate weighted contribution. We chose to use "fixed weights" based on relative importance over five year periods. This is something of a compromise--use of (unavailable) fixed weight components would lead to lower weighted contributions for items experiencing above average inflation rates; use of annual relative importance data would lead to higher weighted contribution; thus, use of relative importance data that is updated each five years provides an estimate between the two extremes. For the component weight, we used a constant relative importance weight for each five year period, updated for the subsequent five year period. Thus, the periods and year from which relative importance was obtained (in brackets) are as follows: 1968-74 [1971]; 1975-79 [1975]; 1980-84 [1980]; 1985-89 [1985]; and 1990-94 [1990].

We found that three components accounted for most of our inflationary pressures during the 1970s and early 1980s; reduction of inflation in these three sectors accounts for most of the disinflation since the mid 1980s. These are food, energy, and housing--during peak inflationary periods, these have a combined weighted contribution that approaches 90%; housing alone accounts for half. Figure 3 shows the weighted contribution of food, housing, and transportation over the entire examined period, while Figures 4 and 5 examine weighted

TABLE 4: Weighted Contribution to CPI Inflation, Major Components (%)

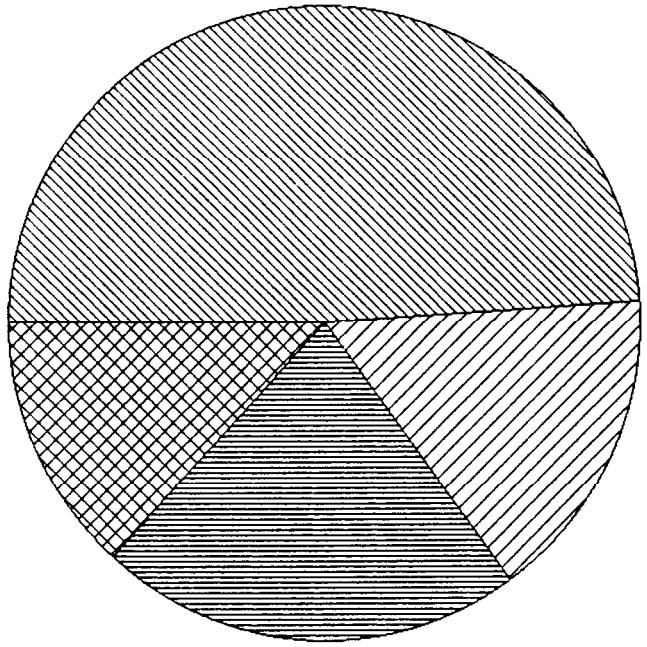
Year	All Commod	All Service	Food	Housing	Fuel & Utilities	Apparel	Transp-ortation	Medical	Shelter	Renter's Costs	Homeowner's Costs
1968	55	42	21	36	1	2.2	5	7	26	NA	NA
1969	60	41	2.6	34	1	14	11	6	2.8	NA	NA
1970	51	48	11	39	2	11	11	8	1.4	NA	NA
1971	63	43	31	34	4	10	5	8	11	NA	
1972	63	37	29	34	2	12	10	6	23	NA	NA
1973	77	25	48	24	3	8	6	3	16	NA	NA
1974	72	31	2.5	35	3	11	1d	6	19	NA	NA
1975	62	37	2.5	34	7	4	11	8	20	NA	NA
1976	48	50	5	34	9	11	2.2	11	16	NA	NA
1977	60	39	29	38	6	8	8	8	25	NA	NA
1978	67	35	34	35	3	4	11	6	2.5	NA	NA
1979	6.5	35	21	38	6	5	16	5	2.6	NA	NA
1980	5.3	45	16	49	7	3	2.2	4	37	NA	NA
1981	41	58	10	51	10	2	24	6	35	NA	NA
1982	2.5	45	15	43	16	2	7	13	19	NA	NA
1983	46	5.3	12	43	4	4	20	8	39	8	NA
1984	39	6.5	11	48	7	2	15	7	41	9	29
1985	35	67	1d	43	5	4	15	12	5.3	13	23
1986	-83	192	60	61	-37	4	-105	45	92	0d	59
1987	50	2.5	16	32	3	6	27	10	2.6	8	61
1988	43	58	22	33	4	6	13	12	24	7	17
1989	44	57	24	33	5	1	11	1d	2.5	8	18
1990	46	5.5	15	27	4	5	27	12	26	10	11
1991	11	88	15	48	6	7	-9	21	38	13	26
1992	29	73	10	35	5	3	16	19	0f	9	22
1993	22	18	18	40	6	2	1d	17	33	9	2.5

Figure3 : Weighted Contributions to Inflation: Food, Housing, And Transportation

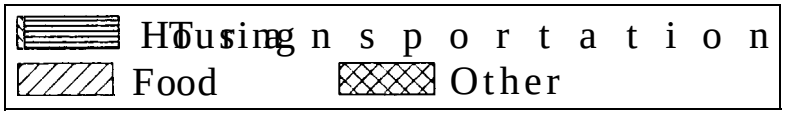


contribution for the peak inflation periods of 1980 and 1974, respectively. Excluding food and petroleum "price shocks", most recent inflation comes from the service sector (commodities typically have inflation rates well below-average) whose relative importance increases over each decade. This general picture is not consistent with the conventional wisdom, according to which tight policy raises finance costs, reducing demand. One would expect that tight money policy would have its biggest impact on commodities prices, rather than services, due to greater impact of interest rates on this sector. For example, high interest rates would depress consumer demand for financed commodities; on the supply side, it would raise costs of financing inventory (which should have a smaller impact on services). In reality, inflation rose then fell primarily because the rate of price increase of services rose then fell; since commodities declined in importance, it takes an increasingly large impact on them to reduce inflation caused by the service sector. By far the most important component of the service sector is housing--its relative importance in the CPI is currently above 40% and its weighted contribution was 50% when inflation was high. Thus, this sector warrants closer examination as it is possible the Fed's inflation fighting worked primarily through housing; indeed, many would list the interest rate-housing sector relation as among the most important transmission mechanisms of monetary policy. However, this misunderstands the way in which the housing sector index is calculated. Given the very large relative importance of the housing sector, and given that it has been the primary contributor to high inflation experienced in the past, it is important to determine whether monetary policy indeed can operate through this sector to lower inflation.

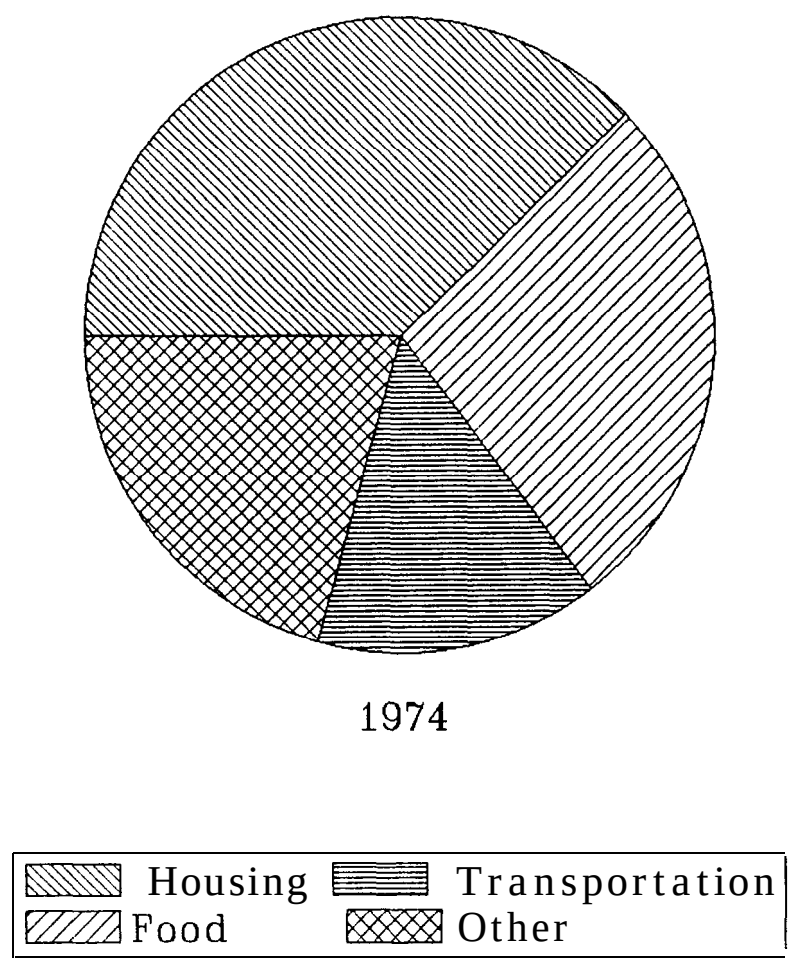
Figure 4 Weighted Contribution to CPI Inflation: Housing, Food Transportation, And All Other, 1980



1980



Figures. Weighted Contribution to CPI Inflation: Housing, Food, Transportation, and All Other, 197'4



DETAILED ANALYSIS OF THE HOUSING SECTOR

It can be seen that the housing component is a major contributor to the construction of the CPI and, thus, it merits a detailed analysis, to which we now turn. There are two alternative ways to calculate the contributions of the housing sector to a price index: the flow of services approach versus the homeowner or "user" cost approach. The method currently used--imputed rental cost--has been in place since 1983. Previously, the BLS tried to calculate user cost of housing, but it was believed that the older method mixed investment and consumption features of home ownership (Gillingham 1980). To some extent the older method resulted in a measure of inflation that was more appropriate for the purposes of monetary policy formation. However, it should be noted that since rising interest rates raise mortgage service costs, tight money policy would perversely impact housing sector inflation even in the pre-1983 period. We will argue that the imputed rental, or consumption-flow, approach gives incorrect signals and can lead the Fed to adopt perverse policy.

Two recent papers (Pollin and Stone 1991; Gillingham 1980) have analyzed the two alternative methods of incorporating the housing sector within a CPI, coming to opposite conclusions regarding the preferred approach. Our purpose here is not to advocate one method over the other, but rather to acknowledge that each method faces measurement problems and that they can lead to wide differences in measured CPI inflation rates. Pollin and Stone present the following table which compares the inflation rate of home ownership as measured by the "old" (pre-1983, user cost approach) CPI and the "new" (post 1983, consumption flow approach) CPI:

TABLE 5: Alternative measures of inflation of home ownership cost[6]

Year	Old CPI	New CPI
1968	5.7	2.6
1969	9.7	3.2
1970	10.8	4.0
1971	4.0	4.7
1972	4.8	3.5
1973	4.7	4.2
1974	11.2	5.1
1975	11.3	5.1
1976	5.5	5.3
1977	6.9	6.1
1978	10.9	6.9
1979	15.5	7.2
1980	19.7	8.9
1981	12.3	8.7
1982	6.8	7.6

As Pollin and Stone argue "[i]t is remarkable, in short, how much hinges on a technical argument as to the relative merits of rental equivalence rather than current purchase prices for deriving the costs of home ownership" (p. 55). Given that home ownership costs play a major role in the calculation of the CPI, it is not surprising that the two methods can generate very different estimates of inflation of the CPI; for example, as reported in Pollin and Stone, the overall CPI inflation rate reached 7.7% in 1973 using the old method of calculation, while it would have been only 4.9% under the method used since 1983 (much--but not all--of the difference can be attributed to the differing methods of calculating home ownership costs). Since the old method was used in 1973, the rate of inflation appeared at the time to be

unbearably high, leading to attempts by workers and others to obtain cost of living increases related to perceived inflation rates and eventually to tight money policy that resulted in a very deep recession. In retrospect, using the new method of calculation, we might say that the inflation rate was not nearly so high as it was believed to be at the time--and a lower official inflation rate might have actually reduced inflation pressures at the time (by reducing the pressures that eventually led to the so-called “wage-price spiral”).

While such matters surely warrant greater attention, our concerns are more fundamental. We recognize that any index will carry some advantages and disadvantages and that no index can be perfect. The CPI attempts to measure the costs faced by consumers and is used in cost-of-living adjustments and by the federal government to adjust Social Security benefits, income tax brackets, and standard income tax deductions. It is not our purpose to criticize either the appropriateness of the old or new CPI when used for such purposes. We question, however, the usefulness of the CPI as a target of monetary policy or as a measure of the success of monetary policy. We have singled out the housing sector because we believe it is one of the components of the CPI that is very problematic with regard to monetary policy. Detailed analysis of other components might also cause one to question inclusion of them in any index of inflation that is to be used as a basis of monetary policy.

Let us first look in detail at the relative importance of various housing sector items. Table 6 shows relative importance of housing sector components for December 1994.

TABLE 6: Expenditure Groups and Relative Importance, Housing Sector

December 1994

Expenditure Group	Relative Importance
CPI, Total	100%
Housing	41.2%
Shelter	28.0%
Renter's Costs	8.0
Residential Rent	5.8%
Other Renters' costs	2.2%
Homeowners' costs	19.9
Owners' equivalent rent	19.5
Household insurance	0.4
Maintenance and repairs	0.2
Fuel and other utilities	7.1
Household furnishings and operations	6.1

From: Relative Importance of Components in the Consumer Price Indexes, 1994, U.S Department of Labor, Bureau of Labor Statistics.

We are focusing on the housing sector for several reasons. First, it accounts for more than 40% of the CPI; because the housing sector has generally experienced inflation rates above the average, its relative importance tends to rise over the course of each decade and its weighted contribution to inflation is typically near 50% whenever overall inflation is high. Second, many observers argue that the transmission mechanism of monetary policy operates to a great extent through the housing sector: higher interest rates raise construction finance costs, reducing supply, and higher mortgage rates discourage demand; as the housing sector slows, this exerts downward pressure on the economy as a whole. It is then logical to assume that because monetary policy operates through the housing sector, inflation in the housing

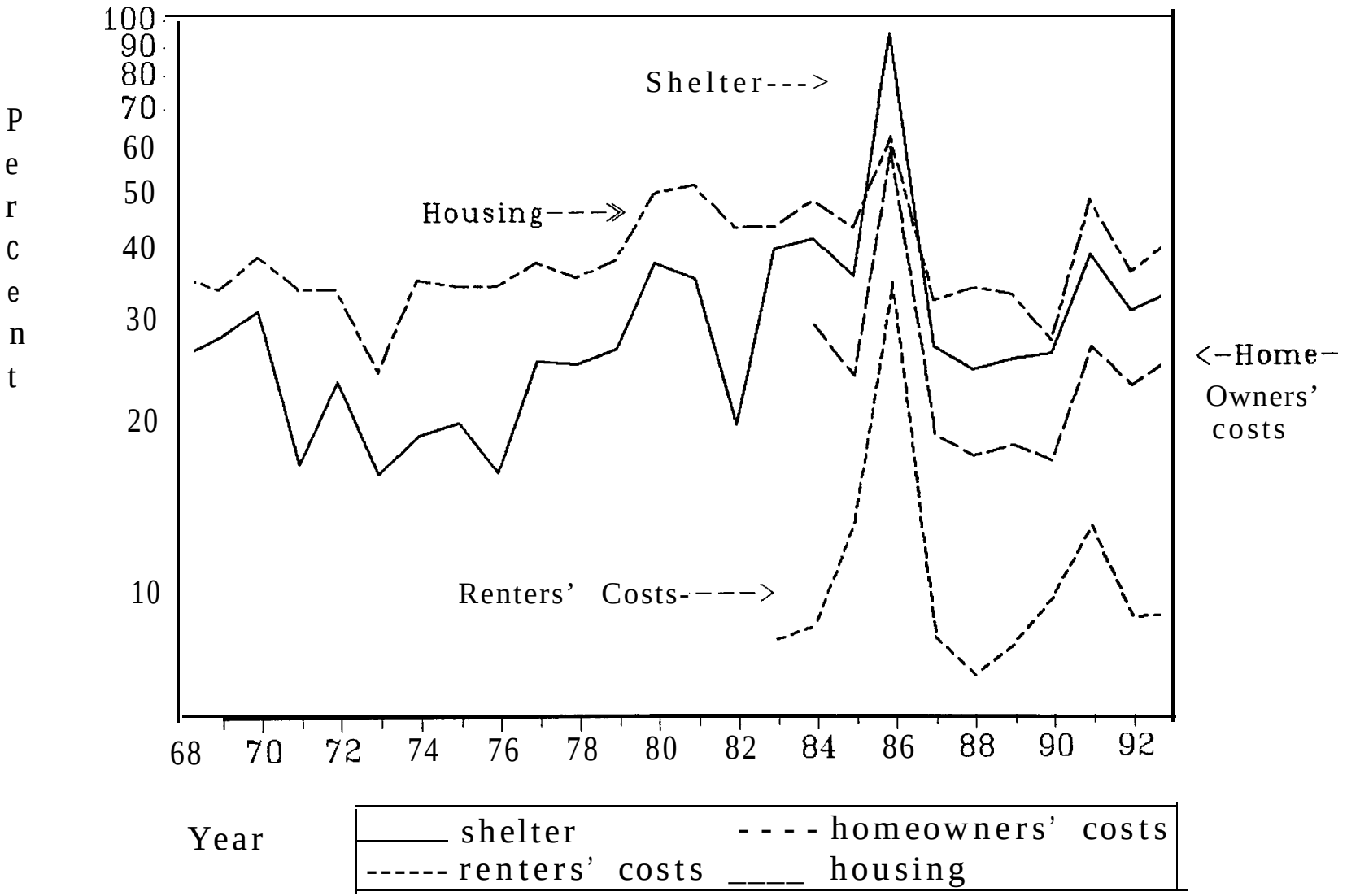
sector should certainly be incorporated into any overall inflation index that is adopted as a target of monetary policy. We will call into question such an argument: the housing sector component of the CPI does not capture inflation in the housing sector, nor is monetary policy able to exert direct pressure on the rate of price change of the housing component.

A brief examination of the method used to calculate the contribution of the housing component to the new CPI is required. We are primarily concerned with the shelter component, which accounted for 28% of the 1994 CPI (or, more than two-thirds of the housing sector relative importance); of this, renters' costs account for 8% and homeowners' costs account for nearly 20%. The majority of renters' costs is the residential rent component (5.8%) while the majority of homeowners' costs is the owners' equivalent rent (19.5%). The BLS uses a survey of rental units to obtain data regarding changes of rental price; the results are adjusted through a weighted average process, and quality adjustments are made to deal with aging and improvements. The method used for owners' equivalent rent (OER) is more complicated, Field agents ask owners for the rental price the homeowner believes the house could rent; agents may enter their own estimate if they believe the owner's estimate is unreasonable. These survey data are used to establish the base year imputed rent; "subsequent values of implicit rent for a given unit are derived by using changes in rent that occur in a specific subsample of the residential rent units used for the residential rent unit" (Rogers et al p. 34). In other words, the rate of increase of OER is obtained by applying the rate of increase of prices of rental units that are thought to be similar in certain respects (location, structure type, quality).

Some observers have criticized this practice, noting that rental units are generally not comparable to owner occupied houses even in the same neighborhoods (for example, rental units initially used for comparison tended to be smaller), and the BLS has reacted to such complaints by attempting to obtain better matching. More fundamentally, other critics have argued that rentals and owner-occupied units are not comparable for a variety of other reasons (see Pollin and Stone 1991 for a summary). Perhaps the most important observation is that the rental market for single family detached housing is small and distinct from that for owner-occupied single family detached housing. In particular, 85% of single family detached houses are owner-occupied. The BLS method relies on the rate of increase of the rental portion of the market--a portion that is small (only 15% of the market) and that may not represent a good substitute for the large part of the market--to obtain estimates of the rate of increase of the owner-occupied portion of the market. Again, this would not be important if OER were a small part of the CPI--but its relative importance is one-fifth and its weighted contribution to inflation reaches as high as fifty percent. As Figure 6 shows, the shelter component drives the weighted contribution of the housing sector.

Several questions about the use of the CPI as a target of monetary policy can be raised. For instance, assume that due to a limited supply of rentals on the market relative to demand, the rental price of single family detached houses rises rapidly. This leads to a high rate of inflation of residential rent and imputed OER. This can occur independently of the course of prices of owner-occupied single family detached housing (whether new or used), as well as independently of the quantity or cost of current construction of such housing. Given the 1994 relative importance of shelter (28 %)in calculation of the CPI, inflation of rentals is

Figure& : Housing Sector Weighted Contribution (%)



transmitted to the CPI. The Fed observes the high inflation rate of the CPI and adopts tight money policy. Those who might have been considering the purchase of detached single family housing decide to postpone purchase given the high interest rate, and choose to rent such a dwelling in the meantime. This increases the excess demand for such rentals, raising the rate of inflation of rentals and of the imputed OER, further increasing the rate of inflation as measured by the CPI. The tight policy raises inflation rates and could lead to a vicious cycle of interest rate hikes, depressed real estate markets for detached single family homes, but rising rents and imputed rents (OER). Furthermore, the higher interest rates could be passed along by landlords to renters in the form of higher rents--further exacerbating the measured inflation problem. Certainly this is not a sustainable situation, but the point is that the transmission mechanism of monetary policy fails to resolve the balance in a very small part of the market for detached single family homes that transmits imputed price increases to the large market for such dwellings that becomes destabilized by the monetary policy. Further, the central bank obtains incorrect signals regarding the problem by focusing on the CPI, and monetary policy provides inappropriate incentives (since one solution would be to lower interest rates to encourage home purchases and thereby relieve congestion in the rental market).

This is just one example, and it is possible to conceive of other situations in which the housing component of the CPI sends the wrong signal to the central bank. For example, suppose the rental market is not congested, but a speculative boom has caused rapid increase of the price of owner-occupied housing (new and used). This would apparently warrant tighter monetary policy to reduce demand by raising mortgage rates, however, the inflationary

pressures may not be captured at all in the CPI until the normal rate of transition of detached housing from owner-occupancy to rentals plus the normal rate of turnover in the rental market (due to construction of new units and razing of old units) leads to higher rental prices, or until bottlenecks force prospective homeowners into the rental market. There is ample reason to suppose this would not necessarily be a timely process, given lags and the methodology used in constructing the CPI. While it is true that the higher prices for detached owner-occupied housing will be reflected in higher base prices obtained through the subsequent survey, it will take some time for the rate of turnover of the sample to proceed to such an extent that the base will fully reflect the new higher prices (housing units can remain in the base for as long as 10 years).

Conventional analysis of the "transmission mechanism" of monetary policy would emphasize the link between interest rates and the housing and investment sectors, in addition to that between interest rates and consumer durables. A recent study by Steven Fazzari (1995) has cast doubt on the relation between interest rates and investment in plant and equipment. Our analysis has cast doubt on the relation between monetary policy and inflation of the housing component of the CPI. While there may still remain a link between monetary policy and the housing sector (for example, due to the impact on new construction, or due to impacts on mortgage rates that affect demand), we have shown that this will be transmitted to measured inflation rates in a very indirect manner. Indeed, as we argued, the impact could easily be perverse. Finally, there is no reason to suppose that inflation as measured by the CPI accurately reflects market conditions for owner-occupied housing. Thus, housing inflation as measured for the CPI is both a poor indicator to be used in policy formation and is

unlikely to be affected in the desired direction by monetary policy. To reemphasize, housing represents more than 40% of the CPI, and two-thirds of this is rental or imputed rental costs wherein lie the problems we have been discussing.

IS INFLATION AROUND THE CORNER?

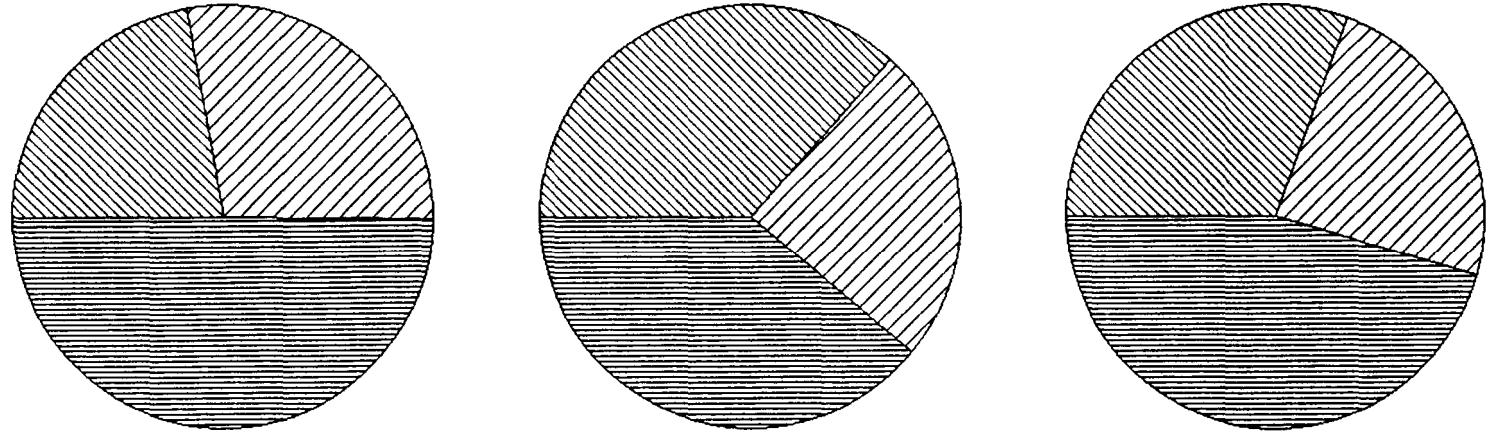
The period 1973-79, during which inflation accelerated and led to the current preoccupation with inflation, can be characterized as follows. First, there was a rather rapid growth of housing services prices and an increase in the share of housing services contribution to the total inflation rate over the decade of the 1970s; by 1980-1, housing accounted for 50% of the--much above average--inflation rate. Second, gasoline prices increased by 41% between July 1973 and July 1974, raising the transportation share of inflation over the next few years to about a fifth during 1975-6; another "oil price shock" in 1979-80 again raised the gasoline inflation rate above 40% and raised transportation's share of CPI inflation to nearly a quarter. In 1981, transportation and housing accounted for 75% of total inflation. Finally, rapid inflation of food prices in 1973-4 and 1978-9 compounded the problem as the contribution of food to inflation rose to around 25% in the first peak inflation period, and to 20% in the second. The attribution of both "great inflations" (1973-5, 1979-81) to "food and energy shocks" will come as no surprise; it may be a little more surprising to find that housing services played a much larger role, accounting for as much as 50% of the measured CPI inflation rate. Few would argue that monetary policy should be credited for the eventual reduction of inflation of energy and food prices; we have also argued that tight money policy could have had perverse impacts on housing inflation, but in any case would

not generally have a direct and predictable impact on housing price inflation as measured for the CPI. Thus, those components that accounted for up to 90% of the "Great Inflations" are substantially outside the control of the Fed.

The institutional environment of the late 1980s and 1990s is much different from that of the 1970s and early 1980s. Recent inflation has been driven by measurement problems and by fairly unique and presumably short-lived rapid price increases in certain items in the consumer basket--particularly services, and more specifically, housing and medical costs (and to a lesser extent, to education costs).[7] Figure 7 shows the relative shares of shelter, medical services, and commodities for 1991-3. It is readily apparent that most inflation in the early 1990s comes not from commodities, but from services--in particular, from shelter and medical services. In the case of commodities, there is little evidence that re-inflation is imminent--food and apparel prices are nearly stagnant, gasoline prices have fallen nearly as often as they have risen, and transportation prices are just keeping pace with the CPI growth. In the case of services, housing prices are now actually rising at a rate below that of the CPI as the real estate boom is finished in most of the country; while medical care prices had been increasing twice as fast as the CPI, in late 1994 and early 1995 price increases were just above the overall inflation rate.[8] Moreover, these price movements, we are convinced, are not substantially affected by the Fed's "tine-tuning" of interest rates.

In sum, it can be seen that the facts do not justify the Fed's concern with inflationary pressures at present. There is no danger of rapid inflation of manufactured goods prices because of world-wide excess capacity and capital movement to low wage economies. Nominal wages and labor costs in the US have not kept pace with inflation--and unions have

Figure7 . Weighted Contributions, Relative Shares: All Commodities, Shelter Services, and Medical Services



been a less significant force in the American economy. Indeed, unit labor costs are falling. The only danger of inflationary pressures comes from rising interest costs and possibly from tax increases if Congress really tries to balance the budget by raising taxes. In particular, concern about Social Security could lead to rising payroll taxes, which would be inflationary.

It is hard to see how monetary policy can be used to fight inflation that results from medical care, oil price shocks, rising rents and imputed rents, education, interest costs, or tax hikes. It is unlikely to diminish pressures from any of these areas that are so significant in terms of their contribution to the CPI measure of inflation. Monetary policy then must perversely punish other sectors that do not contribute much to measured CPI inflation.

CONCLUSIONS

We have argued elsewhere (1995) that current Fed intervention should be reduced in light of its new-found realization that central banking is an art, not a science. In this paper, we have extended this argument, showing that the CPI is not a good guide for monetary policy, nor is a constant CPI a reasonable goal of monetary policy as there is no reason to believe this could be obtained through the use of monetary policy. Further, the Fed should not be focused on a single goal--price stability--in any case. First, we are not sure what "price stability" means because of measurement problems discussed above: the Bundesbank argues that the CPI overstates inflation by 2 percentage points and the Fed has admitted the bias could be up to 1.8 percentage points, while the Boskin report sets a conservative estimate of the upper-end of the bias at 2.7 percentage points (Tietmeyer 1994; Schulkin 1993; Boskin et al 1995). Particularly in the case of the service sector--from which most of our inflation comes--even

these estimates may substantially understate the bias. With rapid technological change in the medical sector, and perhaps in other parts of the service sector (secretarial services, education, computing, financial services), it is difficult to account for quality improvements. With a small margin for error above that admitted by central bankers (say, one percentage point), the US was already at zero inflation--and perhaps even experiencing deflation--even before monetary policy was tightened in spring of 1994.

Second, no one knows whether the benefit-cost ratio of say 4% inflation versus 2% inflation is positive or negative. We don't know the costs of 4% inflation nor do we know the costs of lowering inflation. All will agree that when inflation hits double digits, costs are very high. But what about inflation of 3%? Assuming no further losses from the recent tightening, was the loss of $1.5 trillion of financial wealth (that occurred during fall of 1994 due to the Fed's tightening (Muehring 1995) justified to fight imaginary inflation pressures when the actual inflation rate less measurement bias may have been just above zero?

Third, as we have emphasized here, we do not know how central banks might fight inflation nor do we know if they can reduce it. This is probably more controversial than the previous two statements as almost everyone is willing to credit central banks for falling inflation nearly world-wide over the past decade. We hope this paper has cast some doubt on credit given to central bankers for recent low inflation. Of greater importance has been the opening of US markets (particularly to low wage imports), decline of US trade unions, stabilization of energy prices, rapid technological advance of (and falling price of) high tech output, and collapse of real estate markets.'

Fourth, there is simply no credible evidence that a moderate rise of interest rates causes a smooth curtailment of spending plans. Indeed, the current market wisdom is that at least a 450 basis point increase of interest rates is required to slow the economy (Muehring 1995). Fazzari (1993) has cast doubt on the supposed negative relation between interest rates and investment spending, while we have shown that there is no reason to expect a smooth inverse relation between interest rates and housing services prices. Nor is there any evidence that monetary policy can slow inflation merely by reducing money growth rates. It appears that tight money policy only works when it causes massive and widespread insolvency of financial institutions--reducing credit supply--and greatly increases the portion of income flows devoted to paying interest--reducing credit demand.

At a time when economists are questioning the reliability of data purported to measure inflation, when economists are unsure of the appropriate targets to be used by the Fed to achieve the goal of price stability, and, indeed, when it is not at all clear that the Fed has much impact on the performance of a given aggregative index such as the CPJ, it is myopic to narrowly focus monetary policy on price stability.

NOTES

1. Jordan (1993) has explicitly advocated use of a CPI target; after a brief implementation period, the Fed would announce a specific target for the level of the CPI and then hold it there forever. Thornton (1988) was among the first to urge the Fed to abandon traditional policy formation and to adopt inflation as both the target and ultimate goal of policy. There is an effort afoot led by Senator Connie Mack (current chairman of the JEC) to repeal the Humphrey-Hawkins legislation of 1978 and to charge the Fed with the single goal of price stability. A notable

dissenter from such proposals is Alan Blinder (1996) who supports the dual mandate provided in the Federal Reserve Act, which directs the Fed to pursue stable prices and maximum employment.

2. As noted above, Alan Blinder rejects the notion that the Fed should abandon all goals but price stability; in addition, he examines and rejects the claim that the Fed can only impact nominal values. (Blinder 1996)

3. However, in a detailed examination of the literature on possible biases of the CPI, Wynne and Sigalla (1996) find that "there is very little scientific basis for the commonly accepted notion that measured inflation at 2 to 3 percent a year is consistent with price stability". (p. 55) They conclude that previous studies had not been able to make a strong case as to the likely direction of bias - it is about as likely that the CPI understates inflation.

4. Most economists would define price stability as a situation in which the overall price level is not rising; if the CPI were a good measure of the rate of inflation, then price stability would be associated with a constant CPI. However, if the CPI is biased, then price stability is achieved with a rising (or falling) CPI. If, as many observers believe, the CPI overstates inflation by as much as two percentage points, then stable prices arc associated with a measured CPI inflation rate of two percent. Chairman Greenspan has not explicitly endorsed such a definition, but "price stability" appears to indicate a situation in which the CPI would be increasing only due to measurement error.

5. Actually, adjustments are made during the intervening period as the BLS obtains new data on products and consumer spending habits, however, long lags can occur.

6. Adapted from Pollin and Stone 1991, p. 55.

7. It is often claimed that the early concern of President and Hilary Clinton with the US health care system helped to dampen medical cost increases due to focus on what was perceived to be excessive inflation in this sector.

8. The lack of inflationary pressure is also apparent in the producer price indices from the early 1990s: finished goods prices were increasing at less than one-half of one percent; finished consumer foods prices actually fell in 1994; and the inflation rate of finished goods less energy and food reached only 0.30% and 0.50% in 1993 and 1994, respectively. In short, the producer price indices show no evidence of acceleration of inflation and give a much different picture than they did just before the great inflations of the 1970s.

9. Especially that of homes - partly attributed to collapse of thrifts and to loss of some tax shelters; this is the one area we would give the Fed some credit/blame for inflation fighting - by crippling thrifts it was able to cause a temporary credit crunch in housing finance. As depressed real estate markets can eventually affect base year imputed rents, they can reduce imputed inflation of the OER, but only with a very long lag (since units remain in the base for up to ten years).

REFERENCES

Boskin, Michael J., Ellen R. Dulberger, Robert J. Gordon, Zvi Griliches, and Dale Jorgenson. 1995. Advisory Commission to Study the Consumer Price Index, Interim Report to the Senate Finance Committee, Toward a More Accurate Measure of the Cost of Living, September 15, 1995.

Alexander, Lewis, "Formula Bias in the CPI", draft, October 4, 1995.

Armknecht, Paul A., Brent R. Moulton, and Kenneth J. Stewart. 1995. "Improvements to the Food at Home, Shelter, and Prescription Drug Indexes in the U.S. Consumer Price Index", Working Paper 263, U.S. Department of Labor, Bureau of Labor Statistics, February 1995.

Blinder, Alan S. 1996. "On the Conceptual Basis of Monetary Policy", Remarks before the Senior Executives Conference of the Mortgage Bankers Association, NY, NY, January 10, 1996.

Bradsher, K. 1994: Bigger role for intuition seen at Fed. New York Times, February 28, D3.

Bryan, M.F., and S. Cecchetti 1993: Measuring core inflation. NBER Working Paper Series Working paper no. 4303, l-24.

Fazzari, Steven. 1993. "The Investment-Finance Link: Investment and U.S. Fiscal Policy in the 1990s", Public Policy Brief, The Jerome Levy Economics Institute, No. 9.

Gillingham, Robert. "Estimating the user cost of owner-occupied housing", **Monthly Labor Review,** February 1980, vol. 103, no. 2, pp. 3 l-35.

Gillingham, Robert, and Walter Lane. 1992. "Changing the Treatment of Shelter Costs for Homeowners in the CPI", Monthly Labor Review, June 1992, pp. 9-14.

Greenspan, A. 1993: Testimony of Alan Greenspan, Chairman, Federal Reserve Board. Monetary objectives: midyear review of the Federal Reserve Board, July 20, 3-13.

-----. 1995: Prepared testimony by Alan Greenspan, Chairman, Board of Governors of the Federal Reserve System before the Senate Committee on Banking Housing, and Urban Affairs. January 5, 27 pages.

Jordan, Jerry L. (1993) "Credibility Begins with a Clear Commitment to Price Stability", Economic Commentary, Federal Reserve Bank of Cleveland, October.

Muehring, K. 1995. "How the Clinton Bond Strategy Backfired", Institutional Investor, January, pp. 84-92.

Papadimitriou, D. and L.R. Wray 1994: Monetary policy uncovered: flying blind: the Federal Reserve's experiment with unobservables. Public Policy Brief, The Jerome Levy Economics Institute, 15.

-----. 1995: The Fed: wrong turn in risky traffic. Challenge, January-February, 15-2 1.

Pollin, Robert, and Michael Stone, "The Illusion of an Improved CPI", Challenge, January-February, 1991, pp. 53-57.

Rogers, R. Mark, Steven W. Henderson, and Daniel H. Ginsburg, "Consumer Prices: Examining Housing Rental Components", Economic Review, May/June 1993, pp. 32-46.

Schulkin, P.A. 1993: Upward bias in the CPI. Challenge, September-October, 59-60.

Thornton, Daniel. 1988. “The Borrowed Reserves Operating Procedure: Theory and Evidence”, Federal Reserve Bank of St. Louis Review, January/February 1988, 70(1), p. 30.

Tietmeyer, H. 1994: The role and instruments of monetary policy, lecture given by Hans Tietmeyer, President of the Deutsche Bundesbank, September 26, 13 pages.

Wynne, Mark A. and Fiona D. Sigalla. 1996. “A Survey of Measurement Biases in Price Indexes”, Journal of Economic Surveys, 10(1), pp. 55-89.