Inflation and Personal Saving: An Update

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FROM 1965 to 1974, a decade of rapid inflation, households saved relatively more of their current income than they had in the previous decade of generally stable prices. Following the 1974 recession, however, the saving response of U.S. households to inflation appeared to undergo a major change. Despite the higher average rates of inflation from 1975-78, the proportion of current income saved fell below that of the previous decade (Table 1).

Earlier studies of inflation and household saving generally concluded that U.S. households respond to price level increases by cutting back on borrowing and spending, thereby increasing their saving.[1] Most of these studies encompass the period prior to 1975, before saving rates plunged to post-World War II lows. If the positive relationship between saving and inflation no longer holds, a rising rate of inflation in the future is no guarantee of higher average rates of household saving. This development could have an adverse effect on future economic growth since lower average rates of household saving tend to restrict the future supply of funds used for investment in plant and equipment.

This paper updates earlier investigations of the relationship between inflation and saving to include the years, 1975 through 1978. In particular, it examines the long-run saving response to inflation in order to determine whether the observed impact of inflation on saving is merely a temporary phenomenon.

The long-run effect of inflation on household saving was estimated previously in a 1977 study by Paul Wachtel. Wachtel found that the uncertainty generated by inflation helped to explain the persistent rise in saving with price level increases in the I/1955 to III/1974 period. Using Wachtel's model with a different measure of inflation uncertainty yields a long-run response of saving to inflation uncertainty that is positive but statistically insignificant over the I/1955-IV/1978 sample period. However, the composition of household assets — the forms of saving — is altered

Table 1

Personal Saving and Inflation

Year	Personal Saving Rate[1]	Inflation Rate[2]
1955-64	5.8%	1.4%
1965-74	6.9	4.7
1975-78	5.9	7.2

[1]Personal saving/disposable personal income, average of annual rates.
[2]Annual rate of change in Consumer Price Index.

SOURCE: *Survey of Current Business.*

by changes in the rate of inflation. These results are consistent with traditional economic theory which indicates that inflation has no significant impact on saving in the long run except, under certain circumstances, to produce readjustment in the components of household wealth.

WACHTEL'S SAVING EQUATION

Wachtel assumed that the long-run effect of inflation on saving resulted from uncertainty created by higher and more variable inflation rates.[2] Because households are unable to forecast prices accurately,

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[1]Recent work on this subject indicates that the positive response of saving to inflation is partially the result of uncertainty created by high and variable rates of inflation. See Paul Wachtel, "Inflation, Uncertainty and Saving Behavior Since the Mid-1950's," *Explorations in Economic Research* (Fall 1977), pp. 558-78. Coupled with uncertainty, household saving has been affected by the failure of corporate stocks to provide an adequate hedge against inflation. This is discussed in Philip Cagan and Robert Lipsey, *The Financial Effects of Inflation*, (Cambridge, Mass.: Ballinger Publishing Company, 1978). Another study suggests that households downgrade the quality of their purchases in response to a rise in the rate of price increases, producing the observed positive saving response to inflation. See Susan Burch and Diane Werneke, "The Stock of Consumer Durables, Inflation and Personal Saving Decisions," *The Review of Economics and Statistics* (May 1975), pp. 141-54.

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[2]Some recent studies suggest that countries with higher average inflation rates experience more variation in the rate of inflation and that the variability of inflation contributes to the welfare costs of inflation. See A. Okun, "The Mirage of Steady Inflation," *Brookings Papers on Economic Activity* (2:1971), pp. 485-98, D. E. Logue, and T. D. Willet, "A Note on the Relation between the Rate and Variability of Inflation," *Economica* (May 1976), pp. 151-58, and E. Foster, "The Variability of Inflation," *Review of Economics and Statistics*, (August 1978), pp. 346-50.

Table 2

Derivation of National Income and Product Accounts Saving

	1978 (Billions of Dollars)	
(1) PERSONAL INCOME		$1,717.4
less Personal Tax and Nontax Payments (includes net payments to social security)	$259.0	
(2) DISPOSABLE PERSONAL INCOME (includes imputed rental income from owner-occupied housing)		1,458.4
less PERSONAL OUTLAYS		
(3) Personal Consumption Expenditures (includes consumer durables and mobile homes and imputed rental payments on owner-occupied housing)	1,350.8	
(4) Interest Paid by Consumers to Business	34.8	
(5) Personal Net Transfer Payments to Foreigners	0.8	
PERSONAL SAVING (2−(3+4+5)) (includes net investment in housing)		72.0

SOURCE: *Survey of Current Business.*

they become uncertain about future prices and real income and, as a result, save more. Wachtel asserted that other effects of inflation on saving, such as money illusion, intertemporal substitutions, and indirect wealth and interest rate effects, have no lasting influence on saving behavior.

In order to test this hypothesis, Wachtel used the stock adjustment demand function developed earlier by Houthakker and Taylor.[3] According to the specifications of this model, real saving per household (q) is a linear function of the stock of accumulated real saving (s), real income per household (y), and inflation uncertainty (X):

$$(1) \qquad q = \alpha + \beta s + \gamma y + n_x X$$

In addition, the stock of past real saving (s) is assumed to depreciate at a constant rate, δ, per year.

Thus, the change in the stock of real saving $(\dot{s})$ over a given time (t) can be represented by:

$$(2) \qquad \dot{s}(t) = q(t) - \delta s(t)$$

and used to transform the structural equation into one containing only flow variables. In its reduced form, Wachtel's estimated equation was:

$$(3) \quad q_t = A_0 + A_1 q_{t-1} + A_2 \Delta y + A_3 y_{t-1} + A_4 \Delta X + A_5 X_{t-1}$$

Because the structural parameters β and δ are overidentified, n_x (the inflation uncertainty coeffi-

cient) is not readily obtainable from the reduced-form equation.[4] Nevertheless, the long-run effect of inflation uncertainty can be calculated from the coefficient on the lagged variable X_{t-1}, where the long-run effect of uncertainty (ϕ_x) equals $A_5/(1-A_1)$.

Wachtel estimated equation (3) using both National Income and Product Accounts (NIA) and flow of funds (FOF) accounts saving per household, deflated by the personal consumption expenditures deflator. Disposable personal income, similarly deflated, was used as the income variable. Inflation uncertainty was measured by the average variance in households' assessment of future price increases as obtained from Survey Research Center surveys.

The Saving Data

NIA saving is basically the residual after deducting current outlays for goods, services, and interest payments from current disposable personal income (Table 2). Disposable personal income consists of the after-tax receipts of households from wages and salaries, interest income, rent, dividends, and net transfer payments. Capital gains are not included. The rental value of owner-occupied housing is imputed and added to both personal disposable income and personal consumption expenditures. Since purchases of new housing are excluded from personal consumption expenditures, net investment in housing by households is included as a component of personal saving. Nonconsumed income, held in the form of currency, demand deposits, bonds, stocks, or pension funds, is incorporated into net financial investment. Thus, the major assets into which NIA saving flows are net housing investment and net financial investment.

The measure of household saving in the FOF accounts is also a residual, in this case, from the measured transactions among all other sectors of the economy (Table 3). In addition to net financial investment and net housing investment, FOF household saving includes capital gains dividends, additions to government pension funds, and net durable goods investment.

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[3]H. S. Houthakker and Lester D. Taylor, *Consumer Demand in the United States, 1929-1970: Analysis and Projections,* (Cambridge, Mass., Harvard University Press, 1966).

[4]Two distinct values for β and δ are generated from the reduced-form coefficients. For a technique to deal with this problem, see Ibid., pp. 21-25.

FOF saving during the post-war period has been consistently higher than NIA saving even after adjustments for these compositional differences. Measurement errors in both series account for some portion of the discrepancy. In addition, capital gains from the sale of real estate and other durable assets (art and antiques, for example) to the business sector may add to the observed difference in the two measures. These transactions would amplify the discrepancy during periods of rising inflation.

Wachtel's Results

Wachtel obtained a significant positive response to inflation uncertainty for real NIA saving per household over the sample period, I/1955-III/1974. He found that a 1 percent rise (fall) in inflation uncertainty resulted in a $69 increase (decrease) per household in real NIA saving. The inflation uncertainty coefficients in the reduced-form equation, however, were statistically insignificant using the similarly-deflated FOF saving data.

When FOF saving was disaggregated into its components — net increases in financial assets, net increases in liabilities, and net increases in tangible assets (mainly housing and durable goods) — Wachtel discovered that increased uncertainty about inflation reduced net increases in liabilities and tangible assets. The reduced-form coefficients on inflation uncertainty for net increases in financial assets were negative, but statistically insignificant. Inflation uncertainty had a positive and significant effect, however, on net financial investment (net increases in financial assets less net increases in liabilities).

When Wachtel used actual price changes as the inflation variable, he found that inflation exerted a positive and statistically significant influence on both NIA and FOF saving. He concluded that inflation and the uncertainty it creates made households reluctant to acquire additional debt in order to purchase tangible assets. As a result, real saving per household rose.

Table 3

Derivation of Flow of Funds Accounts Saving
(Year end, total flows)

		1978 (Billions of Dollars)
(1) INCREASE IN FINANCIAL ASSETS		$245.9
Demand Deposits & Currency	$ 18.2	
Time and Savings Accounts	105.3	
Credit Market Instruments	64.9	
(Government Securities, Corporate & Foreign Bonds, Mortgages, Commercial Paper, Money Market Funds)		
Investment Company Shares	−1.0	
Other Corporate Equities	−5.2	
Life Insurance and Pension Fund Reserves	77.8	
Net Investment in Noncorporate Business	−23.1	
Security Credit & Miscellaneous Assets	9.0	
GROSS INVESTMENT IN TANGIBLE ASSETS		$298.2
Nonfarm Homes (includes mobile homes)	92.0	
Consumer Durables	200.3	
Nonprofit Plant & Equipment	5.9	
less CAPITAL CONSUMPTION ALLOWANCES		181.0
Nonfarm Homes (includes mobile homes)	32.8	
Consumer Durables	142.8	
Nonprofit Plant & Equipment	5.4	
(2) NET INVESTMENT IN TANGIBLE ASSETS		117.2
(3) NET INCREASE IN LIABILITIES		166.4
Mortgages	104.7	
Consumer Credit	50.6	
Bank Loans & Other Loans	7.2	
Security Credit, Trade Debt, & Miscellaneous	3.9	
NET SAVING (1+2−3)		196.7

SOURCE: Board of Governors of the Federal Reserve System.

INFLATION AND SAVING: 1955-1978

In an inflationary economy, uncertainty about future prices and real income results from the unexpected variation of prices around the generally anticipated rate of inflation. Thus, in this analysis, the uncertainty variable is approximated by using an estimate of unanticipated changes in the rate of inflation. Wachtel's equation was respecified to include measures of unanticipated (X) and anticipated (Z) inflation. The reduced-form equation in this analysis is:

$$(4) \qquad q_t = A_0 + A_1 q_{t-1} + A_2 \Delta y + A_3 y_{t-1} + A_4 \Delta X + A_5 X_{t-1} + A_6 \Delta Z + A_7 Z_{t-1}$$

The coefficients on anticipated inflation (Z) and on the estimated long-run effect (ϕ_z) are not expected to be statistically different from zero. This result is

Table 4

Regression Results for NIA Saving*
I/1955 - III/1974

$$q_t = -107.18 + .85q_{-1} + .55\Delta y + .02y_{-1} + 23.88\Delta X + 11.23X_{-1} - 54.80\Delta Z + .41Z_{-1}$$
$$(.88) \quad (12.60) \quad (7.02) \quad (1.19) \quad (1.76) \quad (2.30) \quad (1.12) \quad (.04)$$

$$\bar{R}^2 = .91 \quad D.W. = 2.28 \quad \phi_x = 75.17 \quad \phi_z = 2.76$$
$$(1.45) \quad (.04)$$

I/1955 - IV/1978

$$q_t = 76.45 + .93q_{-1} + .65\Delta y - .01y_{-1} + 40.09\Delta X + 13.76X_{-1} + .82\Delta Z + 4.39Z_{-1}$$
$$(.63) \quad (15.50) \quad (9.84) \quad (.44) \quad (3.36) \quad (3.48) \quad (.02) \quad (.43)$$

$$\bar{R}^2 = .87 \quad D.W. = 2.24 \quad \phi_x = 190.58 \quad \phi_z = 60.80$$
$$(1.10) \quad (.39)$$

*t-statistics are reported in parentheses.

consistent with the explanation that only unantici-
pated inflation produces the uncertainty effect ob-
tained by Wachtel. Furthermore, economic theory
suggests that fully anticipated inflation has no lasting
effect on saving behavior.[5] Thus, unanticipated infla-
tion (X) is expected to be the only source of a
positive long-run relationship between household sav-
ing and inflation.[6]

Since empirical evidence has shown that there is a
direct relationship between lagged money growth and
the fundamental rate of inflation, a 20-quarter rate
of change in the narrowly-defined money supply, M1,
was initially used as a proxy for anticipated infla-
tion.[7] The difference between a four-quarter rate of
change in the Consumer Price Index (CPI), a well-
publicized indicator of price change, and the money
supply variable above was used to measure unantici-
pated inflation. All other data used to estimate equa-
tion (4) are the same as those previously used in
Wachtel's study.

The equation was estimated over two sample
periods: I/1955-III/1974 (the period used by Wach-

[5] A wealth loss could result even with fully anticipated infla-
tion because of the increased costs of using money as a me-
dium of exchange and a store of value. This effect on real
wealth could have an impact on saving and consumption.
For a discussion of the costs of anticipated inflation, see John
A. Tatom, "The Welfare Costs of Inflation," this *Review*
(November 1976), pp. 9-22.

[6] The positive relationship between unanticipated inflation and
saving is supported by the results of several studies. See, for
example, F. Thomas Juster and Paul Wachtel, "Inflation and
the Consumer," *Brookings Papers on Economic Activity*
(1:1972), pp. 71-121 and Joseph Bisignano, "The Effect of
Inflation on Savings Behavior," Federal Reserve Bank of San
Francisco *Economic Review* (December 1975), pp. 22-26.

[7] See Denis S. Karnosky, "The Link Between Money and Prices
— 1971-76," this *Review* (June 1978), pp. 17-23.

tel) and I/1955-IV/1978. A significantly different ef-
fect of unanticipated inflation on saving behavior
before and after III/1974 would suggest that the
household saving response to inflation had, in fact,
changed.

Inflation and NIA Saving

Consistent with the analysis above, anticipated in-
flation (Z) and its long-run effect (ϕ_z) were found
to have no significant impact on saving as measured
in the NIA in either sample period (Table 4). Fur-
thermore, the lagged variable of unanticipated infla-
tion had significant positive effects on NIA saving in
both periods.

When the long-run effect of unanticipated inflation
(ϕ_x) is examined for the 1955-74 period, a 1 per-
cent rise (fall) in the rate of unanticipated inflation
produced a $75 rise (fall) in real saving per house-
hold. Over the longer sample period, this effect
becomes more than twice as great: A 1 percent rise
(fall) in the rate of unanticipated inflation resulted
in about a $192 rise (fall) in real saving per house-
hold. *In neither sample period, however, was the
long-run effect significantly different from zero at the
95 percent level of confidence.*

To determine whether these findings depend upon
the disaggregation of inflation into anticipated and
unanticipated price changes, the saving relationship
was reestimated using lagged and first differences of
the actual rate of inflation, measured by a four-quar-
ter rate of change in the CPI. The initial results pre-
vailed: The reduced-form coefficients showed a sig-

Table 5

Regression Results for FOF Saving*

I/1955 - III/1974

$$q_t = -548.24 + .41q_{-1} + .68\Delta y + .12y_{-1} + 22.76\Delta X - 15.95X_{-1} - 16.08\Delta Z + 5.46Z_{-1}$$
$$(1.77) \quad (3.99) \quad (3.90) \quad (2.82) \quad (.71) \quad (1.38) \quad (.14) \quad (.23)$$

$$R^2 = .85 \quad D.W. = 2.41 \quad \phi_x = -27.06 \quad \phi_z = 9.26$$
$$(1.26) \quad (.23)$$

I/1955 - IV/1978

$$q_t = -286.62 + .38q_{-1} + .62\Delta y + .09y_{-1} + 21.70\Delta X - 8.42X_{-1} + 74.51\Delta Z + 23.86Z_{-1}$$
$$(.98) \quad (4.00) \quad (4.44) \quad (2.38) \quad (.82) \quad (.91) \quad (.70) \quad (1.06)$$

$$R^2 = .81 \quad D.W. = 2.36 \quad \phi_x = -13.53 \quad \phi_z = 38.44$$
$$(.94) \quad (1.05)$$

*t-statistics are reported in parentheses.

nificant positive relationship between saving and inflation, but this relationship was statistically insignificant in the long run. In summary, the existence of a significant long-run positive effect of inflation on NIA saving is not supported by the results whether a measure of inflation uncertainty or the actual inflation rate is used.

Inflation and FOF Saving

When using FOF saving, Wachtel obtained a positive effect of inflation on saving only when the actual inflation rate was substituted for his measure of inflation uncertainty. The analysis of FOF data in this study, however, reveals no such relationship. Furthermore, neither unanticipated inflation nor anticipated inflation have a significant impact on FOF saving in either sample period (Table 5). Wachtel's results showing a positive effect of actual inflation on FOF saving may be due to the estimates of depreciation of tangible assets used in his study. When Wachtel published his results, the revised estimates that are incorporated in the FOF data used in this update were not available.

Although FOF saving is not significantly affected by either inflation or inflation uncertainty, its components could be altered by adjustments across various household asset categories. Adjustments that reduce purchases of durable goods relative to other assets would appear as increased NIA saving with rising inflation. This occurs because durable goods purchases are classified as consumption expenditures in the NIA.

To investigate this aspect of the impact of inflation, the saving model was estimated using, as dependent

variables, the three components of FOF saving: net acquisitions of financial assets, net increases in financial liabilities, and net investment in tangible assets. Tangible asset acquisitions were disaggregated into net housing and net durable goods investment.

As indicated in Table 6, the reduced-form coefficient on the lagged variable for unanticipated inflation is statistically significant and negative in the net durable goods investment equation over both sample periods. The long-run effect, which is not statistically significant from 1955-74, is significant in the longer sample period. The estimate of the long-run effect suggests that an increase (decrease) of 1 percent in the rate of unanticipated inflation induced a reduction (expansion) in real net durable goods investment of $45 per household in the 1955-78 sample period. This result is consistent with a rise in NIA saving in response to a rise in unanticipated inflation.

Net housing investment appears to be strongly affected by both anticipated and unanticipated inflation in the reduced-form equation. The long-run effects of anticipated and unanticipated inflation on housing investment, however, are not statistically significant in either sample period.

When net durable goods and housing investment are aggregated into net increases in tangible assets, a significant long-run relationship with both anticipated and unanticipated inflation is obtained for the 1955-74 sample period. A 1 percent increase (decrease) in the rate of unanticipated inflation produces a $63 per household decrease (increase) in real tangible asset acquisitions. At the same time, the effect of anticipated inflation on saving is almost twice as strong, but positive: A 1 percent rise (decline) in the

Page 7

rate of anticipated inflation produces a $107 per household rise (decline) in real net tangible asset investments.

Over the longer sample period, the positive effect of anticipated inflation on household investment in tangible assets dissipates.[8] Only unanticipated inflation continues to exert an influence on net tangible asset investment that is statistically significant in the long run. In the period, I/1955 to IV/1978, a decline (increase) in the rate of unanticipated inflation by 1 percent induced a rise (decrease) in net purchases of tangible assets of $102 per household, nearly double the impact of the I/1955 to III/1974 period.

As separate components, net increases in financial assets and liabilities generally are not affected by anticipated or unanticipated inflation (Table 7). Neither the reduced-form results nor the long-run relationship between the inflation variables and the financial asset and liability components of FOF saving is statistically significant in either sample period. When net increases in financial assets and liabilities are combined (called net financial investment), however, a statistically significant positive long-run response to unanticipated inflation results, but only over the 1955-78 sample period.

Assuming an anticipated rate of inflation of about 6 percent from 1974 to 1976, these findings suggest that the decline in the rate of inflation from 11 percent in 1974 to 5.6 percent in 1976 resulted in a reduction in real net financial investment of approximately $280 per household, or $20 billion, and a net increase in real durable goods investment of about $243 per household, or $17 billion from 1975 to 1977. Therefore, the effects of this reduction in unanticipated inflation would have contributed to the observed decline in NIA saving in that period.

Table 6

Tangible Asset Component of FOF Saving*

	Net Increase in Housing Investment		Net Increase in Durable Goods		Net Increase in Tangible Assets	
	1955-74	1955-78	1955-74	1955-78	1955-74	1955-78
Constant	224.51	−8.67	−52.07	−205.71	349.58	57.29
	(3.04)	(.16)	(.52)	(2.27)	(2.97)	(.49)
Lagged Dependent Variable	.87	1.01	.69	.61	.73	.81
	(17.54)	(31.17)	(8.80)	(7.86)	(10.57)	(12.74)
Δy	−.002	.01	.19	.12	.17	.12
	(.07)	(.48)	(3.30)	(2.84)	(2.43)	(2.06)
y_{t-1}	−.02	−.002	.01	.03	−.03	.002
	(3.13)	(.31)	(.81)	(2.60)	(1.92)	(.16)
Δx	−7.05	−15.41	0.56	−1.68	−4.99	−18.43
	(1.25)	(3.30)	(.05)	(.18)	(.35)	(1.37)
x_{t-1}	−4.56	−4.36	−10.90	−17.72	−17.10	−19.12
	(2.32)	(2.93)	(2.56)	(5.20)	(3.17)	(4.27)
Δz	40.01	21.53	55.41	20.17	83.50	25.95
	(2.10)	(1.22)	(1.53)	(.64)	(1.85)	(.58)
z_{t-1}	15.17	5.86	10.65	3.18	29.15	13.11
	(3.37)	(1.50)	(1.41)	(.47)	(3.03)	(1.36)
$\bar{R}^2$	.95	.95	.91	.90	.89	.88
D.W.	1.33	1.36	1.98	2.02	1.53	1.63
ϕ_x	35.08	322.96	−34.60	−44.89	−63.33	−102.36
	(1.50)	(1.03)	(1.77)	(2.86)	(1.98)	(1.96)
ϕ_z	118.52	434.07	33.81	8.06	107.96	70.18
	(1.72)	(.15)	(1.34)	(.48)	(2.17)	(1.16)

*t-statistics are reported in parentheses.

ALTERNATIVE SPECIFICATIONS

Several alternative measures of anticipated and unanticipated inflation were used in reestimating equation (4). First, an anticipated inflation series was generated using forecasts of future price changes from the Livingston survey.[9] These semiannual forecasts were interpolated to create a quarterly data series and the difference between the expected rate of price change generated by these forecasts and the actual inflation rate was used as the measure of unanticipated inflation. Under this specification, both unanticipated and anticipated inflation showed a positive long-run effect on NIA saving in the 1955-74 sample period, which contradicts the hypothesis that anticipated inflation has no long-run effect on saving.

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[8]The trend growth of money — anticipated inflation — tended to stabilize around a 6 percent annual rate after 1972, providing no further positive impetus to tangible asset acquisition. This is consistent with a one-time shift from money to goods resulting from the transition to a higher expected rate of inflation.

[9]J. A. Livingston, "Business Outlook," *The Philadelphia Record,* June 1954-December 1978.

Table 7

Financial Asset and Liability Components of FOF Saving*

	Net Increase in Financial Assets		Net Increase in Liabilities		Net Financial Investment	
	1955-74	1955-78	1955-74	1955-78	1955-74	1955-78
Constant	-964.49	-929.06	137.57	-55.51	-1296.01	-338.36
	(2.30)	(2.27)	(.63)	(.26)	(3.67)	(1.02)
Lagged Dependent Variable	.47	.46	.77	.93	.29	.50
	(4.01)	(4.93)	(9.47)	(17.35)	(2.63)	(5.21)
Δy	.60	.68	.11	.07	.51	.49
	(2.73)	(3.95)	(.77)	(.65)	(2.87)	(3.14)
y_{t-1}	.16	.15	-.01	.01	.18	.06
	(2.81)	(2.76)	(.27)	(.24)	(3.95)	(1.41)
Δx	-9.49	-20.40	-41.88	-73.98	-2.77	.98
	(.23)	(.63)	(1.62)	(3.50)	(.09)	(.03)
x_{t-1}	-20.43	-8.02	-16.14	-13.80	16.34	26.06
	(1.38)	(.71)	(1.64)	(1.93)	(1.46)	(2.67)
Δz	64.41	61.43	128.95	39.89	-76.00	66.24
	(.46)	(.47)	(1.47)	(.50)	(.67)	(.57)
z_{t-1}	-7.48	10.92	21.32	10.49	-42.51	3.91
	(.25)	(.39)	(1.17)	(.61)	(1.7)	(.16)
$\bar{R}^2$	.84	.86	.80	.86	.78	.71
D.W.	2.28	2.30	2.60	2.49	2.17	2.26
ϕ_x	-36.29	-14.89	-69.33	-206.59	23.15	51.81
	(1.48)	(.69)	(1.84)	(1.03)	(1.41)	(2.27)
ϕ_z	-13.28	20.28	91.58	157.03	-60.22	7.76
	(.25)	(.39)	(1.05)	(.55)	(1.54)	(.16)

*t-statistics are reported in parentheses.

A second measure of anticipated inflation was obtained using a series developed in a recent study by Scadding.[10] His series takes into account the way in which people revise their estimates of the underlying inflation rate when actual prices turn out differently from expected. The Scadding data produced a positive and significant relationship between NIA saving and unanticipated inflation in the reduced-form equation. In addition, the positive long-run effect of

[10]John L. Scadding, "Estimating the Underlying Inflation Rate," Federal Reserve Bank of San Francisco *Economic Review* (Spring 1979), pp. 7-18.

unanticipated inflation on NIA saving was statistically significant at the 90 percent level over both sample periods.

Although these alternative measures of inflation anticipations yield positive long-run relationships between inflation and NIA saving, they show no effect of inflation on FOF saving. Wachtel encountered this same dichotomy in his analysis — the results are sensitive to the saving measure used.

Conclusions

As an update to previous work on the relationship between inflation and saving, this study finds no conclusive evidence that inflation has a positive long-run effect on saving. FOF saving, which represents net additions to household wealth, is not affected by any measure of inflation or inflationary anticipations used in the analysis. NIA saving, a narrower measure, is not affected by actual inflation nor by unanticipated inflation derived from the difference between actual prices and lagged money growth. The use of Livingston survey and Scadding data, however, produce a positive relationship between unanticipated inflation and NIA saving. Both Livingston and Scadding data are sensitive to the saving measure used.

Unanticipated inflation had a significant long-run effect on the components of saving over the 1955-78 sample period. Rising rates of unanticipated inflation reduced durable goods investment and increased net financial investment. The observed positive relationship between inflation and NIA saving is due, in large part, to the negative effect of unanticipated inflation on durable goods purchases, which are classified as consumption expenditures in the NIA.