JANUARY/FEBRUARY 1990

ECONOMIC PERSPECTIVES

A review from the
Federal Reserve Bank
of Chicago

Inflation and the growth rate of money

Still toe-to-toe: Banks and nonbanks at the end of the '80s

FEDERAL RESERVE BANK
OF CHICAGO

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

Contents

Inflation and the growth rate of money 2
Kenneth N. Kuttner

P* relates M2 to the CPI, and over the long run, it may be a useful indicator of inflation trends, but it is not the full answer for short-term and medium-term policymaking

Still toe-to-toe: Banks and nonbanks at the end of the '80s 12
Linda Aguilar

After nearly ten years of deregulation and economic turmoil, banks are holding their own against their nonbank competitors—new and old

ECONOMIC PERSPECTIVES JANUARY/FEBRUARY 1990 Volume XIV, Issue 1

Karl A. Scheld, *Senior Vice President and Director of Research*

Editorial direction
Edward G. Nash, *editor*, David R. Allardice, *regional studies*, Herbert Baer, *financial structure and regulation*, Steven Strongin, *monetary policy*, Anne Weaver, *administration*

Production
Nancy Ahlstrom, *typesetting coordinator*, Rita Molloy, Yvonne Peeples, *typesetters*, Kathleen Solotroff, *graphics coordinator* Roger Thryselius, Thomas O'Connell, Lynn Busby, *graphics* Chris Cacci, *design consultant*, Kathryn Moran, *assistant editor*

ECONOMIC PERSPECTIVES is published by the Research Department of the Federal Reserve Bank of Chicago. The views expressed are the authors' and do not necessarily reflect the views of the management of the Federal Reserve Bank.

Single-copy subscriptions are available free of charge. Please send requests for single- and multiple-copy subscriptions, back issues, and address changes to Public Information Center, Federal Reserve Bank of Chicago, P.O. Box 834, Chicago, Illinois 60690-0834, or telephone (312) 322-5111.

Articles may be reprinted provided source is credited and The Public Information Center is provided with a copy of the published material.

ISSN 0164-0682

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

Inflation and the growth rate of money

The P* model asserts that inflation results from changes in the money supply—specifically, M2—and ignores the effects of demand and supply shocks on prices

Kenneth N. Kuttner

There is little doubt that, in the long run, some appropriately measured monetary aggregate is closely linked to the price level and the rate of inflation. Less clear are the details of this linkage: Which of the existing monetary aggregates is tied most closely to the price level; to what extent money can be considered exogenous; how prices dynamically adjust to a monetary shock; and the importance of non-monetary factors, such as demand pressure and supply-price shocks.

Traditional monetarist thought, however, is unequivocal on these details, emphasizing a relatively rapid adjustment of prices to changes in M1 or the monetary base, and allowing little scope for demand-pull and cost-push inflation. But recent U.S. experience has undermined the empirical support for the strict monetarist view that non-monetary factors are unimportant. Since the inflationary oil shocks of the 1970s and the disinflationary recession of the early 1980s, most monetary aggregates' stable relationships with the value of the Gross National Product (GNP) have deteriorated, thus weakening the linkage between money and prices.[1]

Against this recent experience, the recently proposed P* (or "P-Star") model of Federal Reserve Board economists Jeffrey Hallman, Richard Porter, and David Small is particularly provocative. Using modern econometric techniques to analyze the sources of inflation, the authors find a single variable, which they label P*, to be the only relevant determinant of future inflation. As P* depends only on money (specifically M2) and potential GNP, this says that the gap between actual and potential output (or between actual unemployment and the natural rate of unemployment) is irrelevant to inflation, once the level of M2 is taken into account. In other words, they conclude that once money is controlled for, the demand-side effects disappear. In this sense, the P* hypothesis resurrects the monetarist monocausal explanation of inflation, using M2 in place of the narrower aggregates favored previously.

Behind the P* model lies the assumption that the inflationary effects of an increase in GNP, working through increased aggregate demand for goods, exactly offset its deflationary effects, which stem from the increased demand for money implied by the Quantity Theory of money. This article questions that assumption; not only does it lack any theoretical motivation, but it also fails a number of important empirical tests. These results indicate that demand conditions have a substantial inflationary impact in the short and medium term. Modifying the P* specification to incorporate these factors improves its performance, and reasserts the importance of policy indicators based on the state of the real economy.

Kenneth N. Kuttner is an economist at the Federal Reserve Bank of Chicago. The author thanks John Carlson, Robert Laurent, Larry Mote, and Steven Strongin for their comments.

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

The first section of this article discusses the P* model within a broader class of dynamic econometric equations, known as ''error–correction'' models, focusing on the assumptions embodied in the P* specification. The second section covers the estimation and testing of the P* specification within this larger set of models. These tests suggest an alternative equation, presented in the third section, which includes the output gap (the difference between actual and potential GNP) as a distinct exogenous variable. The final section concludes with a comparison of the two models' long-run properties, and their monetary policy implications.

Error–correction models

The best way to understand the P* model is through its relation to a broader class of econometric models, referred to as "error–correction'' models. Introduced by Davidson, Hendry, Srba, and Yeo (1978) in an article on aggregate consumption behavior, this technique has caught on as an attractive means of imposing long-run equilibrium conditions on the flexible short-run adjustment dynamics captured by autoregressive moving-average (ARMA) models.

The error–correction framework is applicable if a steady-state relationship exists between two variables, and one (or both) of those variables adjust, over time, to restore that equilibrium. More concretely, any equation that expresses the change in a variable in terms of the difference between that variable and its ''target'' level is an error–correction specification—so called because the *error* (the gap between the endogenous variable and its target) induces a subsequent *correction* in the endogenous variable.[2]

The money stock and the price level are obvious candidates for a long-run equilibrium relationship; the notion that prices converge to proportionality with some monetary aggregate over a sufficiently long horizon seems inherently plausible. Most of the recent debate centers instead on the direction of causality between money and nominal income, the observability of the appropriate money stock, and stability of the money-price relationship in the face of payments system innovations.

If such a relationship holds, then an error–correction mechanism may be operating either between money and nominal income, or between money and the price level, or both. The structure of this relationship is suggested by the logarithmic form of the familiar Quantity Equation, $MV=PQ$, where lower case letters denote logarithms:

$$m_t + v_t = p_t + q_t.$$

Here, M is the money stock, V is the velocity of circulation, P is the price level, and Q is real GNP. Although it has varied widely over time, since 1955 the M2 velocity has tended to return to its sample mean of approximately 1.65, labelled $\bar{v}$ in the following equations. This mean-reversion property suggests that the relationship between M2 and nominal income is sufficiently stable to anchor the price level, given a long-run equilibrium level of output.[3]

In a sense, this single piece of evidence would be sufficient to assert that M2 anchors the price level; inspecting the Quantity Equation, it is apparent that so long as v returns to $\bar{v}$, a given money stock will yield a determinate p, for any given q. Alternatively, one could use M2 to define a target price level, $\bar{p}$, as the price level which would prevail with velocity equal to its mean $\bar{v}$:

$$\bar{p}_t \equiv m_t - q_t + \bar{v}.$$

The fact that v does not always equal $\bar{v}$ gives $\bar{p}$ its interpretation as an ''equilibrium'' price level—the level towards which p reverts as v returns to $\bar{v}$. This suggests an error–correction mechanism which expresses the current change in p as a function of lagged gaps between $\bar{p}$ and p:

$$\Delta^k p_t = \sum_{i=1}^{N} a_i \, (\bar{p}_{t-i} - p_{t-i});$$

or, using lag operator notation,[4]

$$\Delta^k p_t = A(L) \, (\bar{p}_{t-1} - p_{t-1}),$$

where Δ denotes the difference operator ($\Delta p_t \equiv p_t - p_{t-1}$).

The degree of differencing, k, is one of the keys to the dynamic behavior of the model. For example, a first-differenced specification (k=1) says that inflation (Δp_t) responds to the gap between p and $\bar{p}$; a zero gap implies zero inflation. By contrast, a second-differenced specification (k=2) expresses the *change* in inflation as a function of the price gap. In this case, a zero gap between p and $\bar{p}$ implies a constant rate of inflation; $\bar{p}$ in excess of p

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

suggests an increasing rate of inflation. In general, increasing k increases the strength of the error–correction mechanism, forcing p to track $\bar{p}$ more closely. As discussed later in this article, the drawback to second-differenced (and higher) specifications is that they can imply overshooting and oscillatory behavior.

While this addresses the monetary side of the story, one might want to add to the equation additional variables capturing other sources of inflation. One candidate is a direct measure of demand pressure, as embodied in the widely-used Phillips Curve. According to this approach, excess demand for the economy's output causes the overall price level to rise as firms and consumers try to out-bid one another for its limited supply of goods and services. A common specification for the Phillips Curve is in terms of the gap between the unemployment rate and the ''natural'' rate of unemployment. Alternatively, because of the close link between employment and output, one can recast the unemployment gap in terms of the difference between (the log of) actual output, q, and potential output, $\bar{q}$.

As the employment or output gap is not a function of the price level, it would be thought of as something exogenous to the error–correction mechanism. With its inclusion, the error–correction specification becomes:

$$1) \quad \Delta^k p_t = A(L)\,(\bar{p}_{t-1} - p_{t-1}) + B(L)\,(q_{t-1} - \bar{q}_{t-1})$$

where $B(L)$ is another polynomial in the lag operator, representing a distributed lag on the exogenous output gap term.

With the general form of an error–correction equation in hand, one part of the search for an appropriate inflation model requires finding the right k, or degree of differencing. The second part of the search involves specifying the distributed lags on $(\bar{p}_{t-1} - p_{t-1})$ and $(q_{t-1} - \bar{q}_{t-1})$ as represented by the lag polynomials $A(L)$ and $B(L)$. The next subsection identifies the restrictions on k, $A(L)$, and $B(L)$ embodied in the P* model.

The P* restrictions

The general error–correction specification in Equation 1 includes an exogenous term in the ''output gap,'' $(q_{t-1} - \bar{q}_{t-1})$, while the P* version excludes this term. This section shows how certain assumptions allow the $(\bar{p}_{t-1} - p_{t-1})$ term to absorb the output gap, leaving only an error–correction component driven by a new variable, p^*.

One starts by observing that real output actually appears *twice* on the right side of Equation 1; because $\bar{p}$ depends on q, it appears both in the error–correction term, $(\bar{p}_{t-1} - p_{t-1})$, and in the output gap term $(q_{t-1} - \bar{q}_{t-1})$. Writing out the $\bar{p}$ term explicitly, Equation 1 is:

$$\Delta^k p_t = A(L)\,(m_{t-1} - q_{t-1} + \bar{v} - p_{t-1}) + B(L)\,(q_{t-1} - \bar{q}_{t-1}).$$

With $A(L)$ different from $B(L)$, there is no way to eliminate the exogenous output gap term. However, if $B(L)$ happened to equal $A(L)$, the two terms could be combined into one:

$$\Delta^k p_t = A(L)(m_{t-1} - q_{t-1} + \bar{v} - p_{t-1} + q_{t-1} - \bar{q}_{t-1}).$$

The q_{t-1} terms then cancel, leaving only:

$$\Delta^k p_t = A(L)\,(m_{t-1} + \bar{v} - \bar{q}_{t-1} - p_{t-1}).$$

This cancellation suggests defining a new target price level, p^*_t, equal to $m_t + \bar{v} - \bar{q}_t$, or (the logarithm of) M2 per unit of *potential* GNP. In terms of this new variable, the error–correction mechanism is now simply:

$$\Delta^k p_t = A(L)\,(p^*_{t-1} - p_{t-1}).$$

With this cancellation, the ''P* gap'' becomes the sole determinant of inflation; and, as p^* varies only with M2 and potential GNP, actual GNP (or its divergence from potential) is irrelevant to future inflation.

What does it mean to assume that $A(L)$ equals $B(L)$? To do so implies that inflation responds in exactly the same way to monetary and non-monetary factors. On one hand, the Phillips Curve relation implies that an increase in q above $\bar{q}$ is inflationary. On the other hand, an increase in real output, *ceteris paribus*, is deflationary from a monetary perspective; the Quantity Equation says that with M and V fixed, an increase in Q implies a smaller P. Thus, to assume that $A(L)$ equals $B(L)$ is to say that the former inflationary impact exactly offsets the latter deflationary impact, leaving no net effect. This is the central assumption underlying the P* specification, and it will be put to test in the following section.

Imposing $A(L) = B(L)$ is only the first step towards the P* specification; the second is to choose k=2,

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

$$\Delta^2 p_t = A(L) (p^*_{t-1} - p_{t-1}),$$

so that the *change* in inflation is a function of the gap between p and p^*. The motivation for choosing k=2 comes from adding inflationary expectations to the Phillips Curve mechanism described earlier. According to this story, firms (for instance) try to effect real price increases by raising their prices to reflect demand pressure *plus* the expected change in the overall price level:

$$\Delta p_t = \theta(q_{t-1} - \bar{q}_{t-1}) + (\Delta p_t)^e ,$$

where $(\Delta p_t)^e$ is the expected rate of inflation, and θ is a positive constant reflecting the speed with which prices respond to demand pressure. A simple version of this equation can be obtained by assuming $(\Delta p_t)^e = \Delta p_{t-1}$; that is, setting tomorrow's expected inflation equal to today's rate of inflation. Consistent with elementary textbooks' discussion of the "Non-Accelerating Inflation Rate of Unemployment," this yields the change in the rate of inflation as a function of the output gap.

In the Phillips Curve contribution to the error–correction equation, therefore, the expectations mechanism motivates the specification in second differences. However, it is not clear that a similar specification is appropriate for the monetary part of the equation; its *a priori* specification in second differences is arbitrary. Because economic theory is silent on the proper degree of differencing associated with the monetary term, it must be determined empirically. In doing so, however, it is essential to allow for the different degrees of differencing between the monetary and the output gap terms.

Evaluating alternative inflation models

The task of this section is to determine an appropriate error–correction description of the price adjustment mechanism, and in doing so, test the restrictions implicit in the P* specification. As shown above, these restrictions amount to imposing $A(L) = B(L)$ and k=2 on Equation 1, implying identical adjustment dynamics for the monetary and non-monetary components, and expressing the change in inflation as a function of the price gap.

To test these models, one must be more specific about the distributed lags represented by the $A(L)$ and $B(L)$ lag polynomials. To this end, we rewrite Equation 1, adding a stochastic disturbance term, ε:[5]

$$2) \quad C(L) \Delta^2 p_t = \alpha_1 (\bar{p}_{t-1} - p_{t-1}) + \alpha_2 (\bar{p}_{t-2} - p_{t-2}) + \beta_1 (q_{t-1} - \bar{q}_{t-1}) + \beta_2 (q_{t-2} - \bar{q}_{t-2}) + \varepsilon_t ,$$

which now includes two lags of the output and price gaps. The $C(L)$ lag polynomial applied to the dependent variable is equivalent to including lagged values of $\Delta^2 p_t$ as additional regressors.

By contrast, the P* model,

$$3) \quad C(L) \Delta^2 p_t = \alpha (p^*_{t-1} - p_{t-1}) + \varepsilon_t ,$$

includes only one lag of its explanatory variable, $(p^*_{t-1} - p_{t-1})$; and, as described earlier, it forces the two components of $(p^*_{t-1} - p_{t-1})$ to enter as a single unit. The extra lags included in Equation 2 will prove to be useful in conducting tests of the P* restrictions. Specifically, in the expanded model, the P* specification requires that:

$$\alpha_2 = \beta_2 = 0 \text{ and } \alpha_1 = \beta_1 ,$$

which reduces Equation 2 to the P* model in Equation 3. These restrictions are quite strong, as they imply that *only* the period t–1 exogenous variables matter (once lagged $\Delta^2 p_t$ is controlled for), and that the inflationary excess-demand effects disappear.

Before turning to the results, one additional issue requires attention. While the introduction spoke of the inflationary effects of supply shocks, the analysis thus far has focused exclusively on the demand and monetary sources of inflation. The main source of supply shocks in the 1955–88 sample period has been the supply price of crude petroleum, which had a particularly large impact in 1973–74 and 1979–80. It should be noted that these were not the only two episodes during which oil prices exerted a major influence on the overall price level; for example, the steady decline in crude oil prices undoubtedly had a strong deflationary effect during the late '80s.

The HPS approach to modelling the impact of oil prices is to include a (differenced) dummy variable for the large positive oil price shock of 1973:4. As noted in Kuttner (1989), this method suffers from overfitting, and produces parameter estimates with problematic economic interpretations.[6] Furthermore, this approach ignores other important oil price changes. The results in this article replace the

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

HPS dummy variable with a direct measure of the change in petroleum price inflation, $\Delta^2 p^o$, based on the crude petroleum component of the Producer Price Index.

Test results

Writing out the $C(L)$ polynomial as a fourth-order distributed lag, and including as additional regressors two lags of the change in crude petroleum, yields the final form of the equation that is to be estimated:

$$4) \quad \Delta^2 p_t = \alpha_1 (\bar{p}_{t-1} - p_{t-1}) + \alpha_2 (\bar{p}_{t-2} - p_{t-2}) + \beta_1 (q_{t-1} - \bar{q}_{t-1}) + \beta_2 (q_{t-2} - \bar{q}_{t-2}) + \delta_1 \Delta^2 p^o_{t-1} + \delta_2 \Delta^2 p^o_{t-2} + c_1 \Delta^2 p_{t-1} + c_2 \Delta^2 p_{t-2} + c_3 \Delta^2 p_{t-3} + c_4 \Delta^2 p_{t-4} + \varepsilon_t.$$

Under the usual assumptions about the disturbance term ε, estimating this equation poses no special econometric problems, and can be performed efficiently using ordinary least squares. As in HPS, the potential GNP series is from the Federal Reserve Board staff,[7] and all variables are expressed as natural logarithms. Except in the case of the fixed-weight GNP deflator, the regressions use quarterly data from 1955:1 through 1988:1. Because the fixed-weight deflator series only starts in 1959:1, this regression begins in 1960:3 to allow for the required lags.

Test statistics from Equation 4 appear in Table 1, which includes four sets of results, using each of four alternative price measures. The first uses the implicit price deflator used in deflating nominal GNP (labelled IPD), which is the index used in HPS; the second is the fixed-weight GNP deflator (FWD); the third is the Consumer Price Index (CPI); and the fourth is the Producer Price Index (PPI).

The main result is that the P* restrictions fail using every index except the implicit price deflator. Lines 1 and 2 of Table 1 show the results from successively imposing the P* restrictions. The first test encompasses a subset of the P* restrictions; by excluding both $(\bar{p}_{t-2} - p_{t-2})$ and $(q_{t-2} - \bar{q}_{t-2})$, it restricts the independent variables' lag lengths to one. These restrictions fail at the five percent level using the PPI and CPI. The second test combines the joint exclusion restriction with the imposition of equality between the $(\bar{p}_{t-1} - p_{t-1})$ and $(q_{t-1} - \bar{q}_{t-1})$ coefficients—the restrictions embodied in P*. The strongest rejection comes from the fixed-weight deflator, which delivers a p-value of 0.0012. The CPI and PPI tests also reject the P* model at the one percent level.

TABLE 1

F-tests of alternative inflation models

Restriction	DF	Price index IPD	FWD	CPI	PPI
1 Excluding $(\bar{p}_{t-2} - p_{t-2})$ and $(q_{t-2} - \bar{q}_{t-2})$	2	0.57 (0.57)	2.96 (0.06)	3.84 (0.02)	3.58 (0.03)
2 P* model	3	0.49 (0.68)	5.56 (0.00)	3.68 (0.01)	4.31 (0.01)
3 Alternative model	1	1.27 (0.26)	3.30 (0.07)	0.61 (0.44)	0.92 (0.34)

Note: p-values are in parentheses.

Which set of results is to be believed? None of the four price indices is perfect. However, in its statistical releases, the Department of Commerce warns of the pitfalls inherent in using the implicit price deflator, stating: "[Because] the prices are weighted by the composition of GNP in each period, ...the implicit price deflator reflects not only changes in prices but also changes in the composition of GNP, and its use as a measure of price change should be avoided."[8] This contamination of price movements with quantity changes may well account for the HPS finding of similar dynamics on the price and output gap terms. By contrast, because changes in the fixed-weight deflator, CPI, and PPI reflect pure price movements, they are more appropriate for use with models of inflation, and can be expected to give more sensible results.

An alternative model

The third row of Table 1 presents a test of an alternative to the P* restrictions,

$$5) \quad \Delta^2 p_t = \alpha \Delta (\bar{p}_{t-1} - p_{t-1}) + \beta_1 (q_{t-1} - \bar{q}_{t-1}) + \beta_2 (q_{t-2} - \bar{q}_{t-2}) + \delta_1 \Delta^2 p^o_{t-1} + \delta_2 \Delta^2 p^o_{t-2} + c_1 \Delta^2 p_{t-1} + c_2 \Delta^2 p_{t-2} + c_3 \Delta^2 p_{t-3} + c_4 \Delta^2 p_{t-4} + \varepsilon_t$$

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

which, by constraining $\alpha_2 = -\alpha_1$, excludes the $(\bar{p}_{t-1} - p_{t-1})$ term in levels, while allowing it to enter only as a first difference. The α parameter (without a subscript) is the coefficient on the difference term. This version is based on the observation that the estimates of α_1 and α_2 obtained from Equation 4 are very nearly equal and opposite in sign. In fact, the third row of Table 1 shows that the $\alpha_2 = -\alpha_1$ constraint cannot be rejected at the five percent level using any of the four price indices, although it fails at the ten percent level using the fixed-weight deflator. Table 2 shows the parameter estimates of this model, for each of the price indices. Again, two lags of the change in crude petroleum inflation are included to capture oil price movements.

The point estimates of interest depend somewhat on the price index. Each index yields an estimate of the coefficient on $\Delta(\bar{p}_{t-1} - p_{t-1})$ close to 0.1 (with a somewhat weaker effect found using the FWD), which implies that 10 percent of the gap between current and target inflation (determined by M2 growth) is closed each quarter.

The magnitude of the demand effects is typically large, with a one-time-only one percent increase of GNP above its potential delivering a 0.11 to 0.27 percent increase in the rate of inflation. Nearly three-fourths of the increase is reversed in the subsequent quarter, but some inflationary effect persists. Consistent with the "accelerationist" hypothesis, holding GNP permanently in excess of potential implies an ever-increasing rate of inflation.

The real significance of this modification is that it embodies a first-differenced (k=1) error–correction mechanism not between the price level and the money stock, but between their growth rates, *i.e.*, between inflation and M2 growth. This mechanism does not imply that the price level converges to that determined by a given money stock. Because it takes some time for inflation to catch up to a change in the rate of money growth, a non-zero discrepancy between the levels of p and $\bar{p}$ may persist over time. In the Quantity Equation, this divergence would appear as a shift in the velocity of circulation, like the shifts evidenced by other aggregates' velocities.

A model characterized by this looser link between money and prices might be termed "weak-form" monetarist. Here, inflation is indeed a monetary phenomenon in the long run, as it converges to the rate of money growth. However, even in the long run, it implies that some slack exists between the monetary aggregate and the price level. In

TABLE 2

Estimates of the alternative specification

Regressor	Price index IPD	FWD	CPI	PPI
1 $\Delta(\bar{p}_{t-1} - p_t)$	0.0953	0.0665	0.1034	0.1087
	(2.1)	(1.9)	(2.7)	(1.9)
2 $(q_{t-1} - \bar{q}_{t-1})$	0.1374	0.1138	0.1699	0.2711
	(2.9)	(3.1)	(4.3)	(3.9)
3 $(q_{t-2} - \bar{q}_{t-2})$	−0.0969	−0.0828	−0.1287	−0.2077
	(2.1)	(2.3)	(3.2)	(3.1)
4 $\Delta^2 p_{t-1}$	−0.5200	−0.3951	−0.2838	−0.5264
	(5.3)	(3.9)	(3.0)	(5.0)
5 $\Delta^2 p_{t-2}$	−0.3171	−0.2532	−0.3416	−0.3138
	(2.9)	(2.2)	(3.3)	(2.8)
6 $\Delta^2 p_{t-3}$	−0.2816	−0.1688	−0.1542	−0.0544
	(2.7)	(1.6)	(1.7)	(0.5)
7 $\Delta^2 p_{t-4}$	−0.0624	0.0406	−0.0231	−0.0632
	(0.8)	(0.4)	(0.3)	(0.7)
8 $\Delta^2 p^o_{t-1}$	−0.0101	−0.0027	0.0081	0.0184
	(2.1)	(0.2)	(1.8)	(2.0)
9 $\Delta^2 p^o_{t-2}$	0.0073	0.3939	0.0151	0.0073
	(1.5)	(1.1)	(3.2)	(0.8)
$\bar{R}^2$	0.3357	0.2307	0.3336	0.2744

Note: t-statistics are in parentheses.

LM tests for serial correlation

	IPD	FWD	CPI	PPI
AR(1) errors	1.08	0.20	0.01	0.52
	(0.30)	(0.65)	(0.90)	(0.47)
AR(4) errors	2.97	2.95	0.83	2.48
	(0.56)	(0.57)	(0.93)	(0.65)

Note: p-values are in parentheses.

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

fact, the precise value of the price level in the steady state will exhibit path dependence, and vary with the growth path followed by the money stock on the way to the steady state.

By contrast, the second-differenced P* specification forces long-run convergence in levels, relying on the stationarity of the M2 velocity. An undesirable side effect of the second-differencing is to build some rather implausible dynamics into the P* model. These dynamics are illustrated in Figure 1, which displays its predicted inflation rate in response to a reduction in the M2 growth rate to 2.5 percent annually, equal to the growth rate of potential GNP. The salient features of this simulation are its large medium-run oscillations. In response to the decrease in the rate of money growth, inflation plunges to nearly – 4 percent by 1997; but by 2004, it rises again to 3 percent. Although the inflation rate eventually converges to zero, sizeable fifteen-year oscillations continue for over a century.

The source of the cyclical behavior can be traced directly to the second-differenced specification. Assuming that the change in the rate of inflation depends on $(p^*_{t-1} - p_{t-1})$ builds in an ''accelerationist'' dynamic—inflation does not abate when a balance is reached between p and p^*. Instead, it continues even after p reaches p^*, causing the price level to overshoot its target. As demonstrated by an analogous simulation of the alternative model plotted in Figure 2, sacrificing long-run convergence and going to a first-differenced specification eliminates this overshooting, and assures a smooth convergence to a new long-run inflation rate.

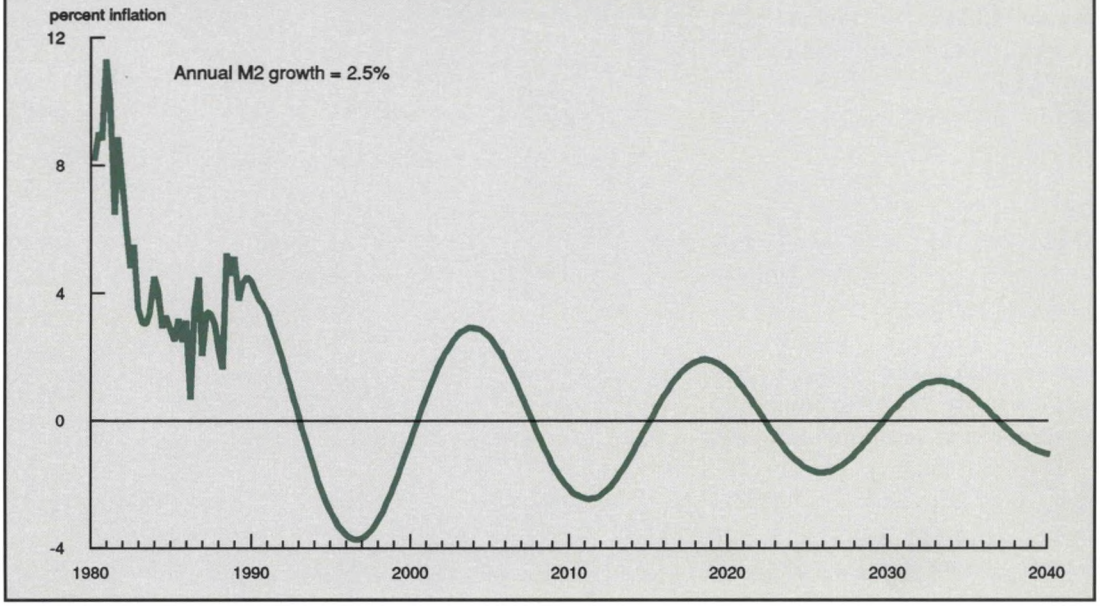
While the alternative model represents one avenue for improving the P* specification, it is only a first step towards a satisfactory inflation model. In particular, it retains certain unsatisfactory *ad hoc* aspects of the P* equation which deserve more rigorous scrutiny. One of these is the naive modelling of inflationary expectations in the Phillips Curve portion of the model. Another is the unsophisticated approach to incorporating supply shocks. Through an aggregate cost or price function, it may be possible to motivate an additional error–correction term incorporating the oil supply price as one of the inputs. Furthermore, by re-introducing real GNP as a determinant of inflation, the alternative model is not closed, but requires an additional equation relating real output to a set of exogenous variables, including money.

Conclusions and policy implications

While one might plausibly assert that the general price level will, in the long run, be

FIGURE 1

P* looks to the future
(Simulated inflation path)



Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

proportional to some measure of money, it does not follow that *only* money determines inflation over all horizons. Aside from the important practical considerations of *which* monetary aggregate ties down the price level, and whether that relationship will survive continuing financial innovation, the first assertion is a straightforward implication of the well-known Quantity Theory of money.

The P* model of Hallman, Porter, and Small errs in going from the first proposition to the second, and concluding that only money matters. In technical terms, theirs is an error–correction inflation model whose sole exogenous variables are M2 and potential GNP. In practical terms, this means that demand measures, such as the level of actual output, unemployment, or capacity utilization have no inflationary implications, once the level of M2 is accounted for.

This article questions that finding, arguing that while some measure of money (possibly M2) may be the main determinant of inflation in the long run, the HPS conclusion that nothing else matters is unwarranted. In rejecting the P* model in favor of a less restrictive alternative, we find that demand-side effects *do* exert an influence over relevant policy horizons. Therefore, while P* may be a useful forecasting tool in certain situations, it ignores one of the principal medium-run sources of inflationary pressure..

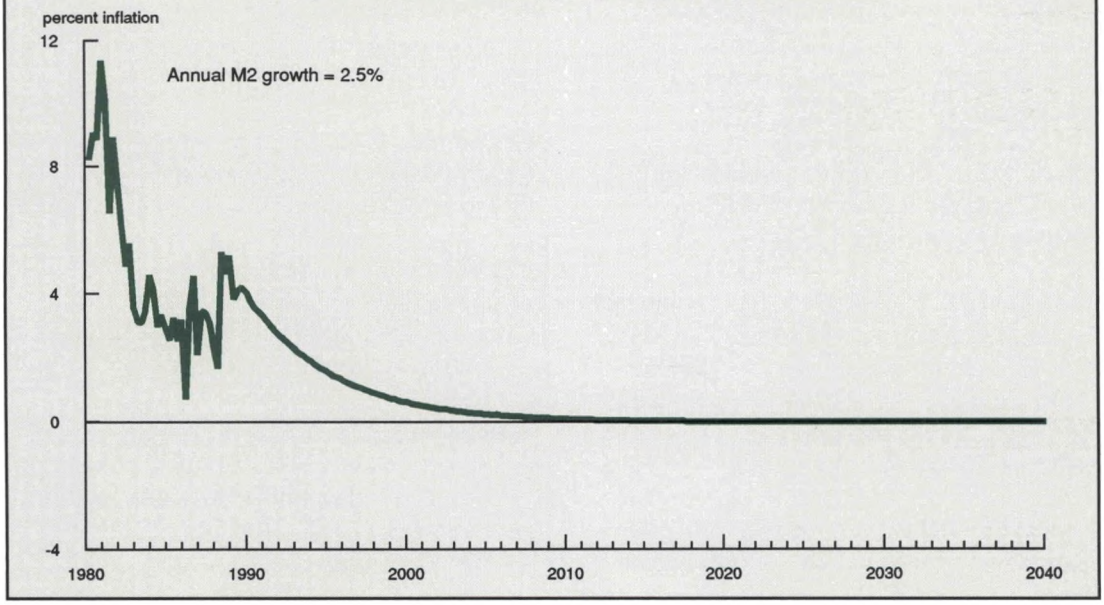
Price level convergence is another area in which the alternative inflation model parts company with P*. While the alternative model acknowledges the contribution of demand factors to inflation, it also sacrifices the property, embodied in the P* specification, that prices converge to the level determined by M2. In other words, the alternative does not build in mean reversion in the M2 velocity. If we somehow knew with certainty that the M2 velocity would continue to revert to its post-1954 mean, this fact could be exploited to improve long-run price level forecasts. However, given the rapid and unexpected disintegration of other aggregates' velocities and the continuing brisk pace of payments system innovation, it may be a serious mistake to base policy on a model which depends critically on the continuing stationarity of the M2 velocity.

In implementing monetary policy designed to maintain a stable rate of inflation, one key issue is whether the state of the real economy has a role as an indicator of inflation, or as a valid intermediate policy target. The empirical results presented here indicate that it does, contrary to the implications of the P* model. A more subtle question is whether any forecast refinements derived from imposing

FIGURE 2

Another look

(Simulated inflation path – alternative model)



Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

price level convergence outweigh the risk of future deterioration of the M2 velocity. However, to the extent that the focus of Federal Reserve policy is on inflation rather than the long-run price level *per se*, the value of relying on M2 as a price level anchor appears small.

In concluding, it is important to emphasize that while the alternative model conflicts with P* in these two important areas, they share one important policy implication. Assuming a stable relationship between M2 and prices endures, both establish a link between inflation and the growth rate of M2 in the long run; both suggest that over long horizons, one can expect the inflation rate to equal the growth rate of M2, less the growth rate of potential GNP. Therefore, although M2 is not the only indicator worthy of attention, its growth rate may serve as a useful guidepost for long-run inflation trends.

FOOTNOTES

[1]For an overview of this argument, see Benjamin Friedman's (1988) survey.

[2]Engle and Granger (1987) show that an error–correction mechanism exists in cases where two variables each contain unit roots, while some linear combination of the two is stationary.

[3]The fact that most statistical tests fail to reveal a unit root in the M2 velocity indicates mean-reverting behavior. Friedman and Kuttner (1989) examine the properties of the monetary aggregates, finding that the recent deterioration of the M2 velocity has been mild compared with that of the other aggregates.

[4]For notational simplicity, lag operators are used throughout this article. The lag operator, L, when applied to a period t variable, y_t, shifts the time subscript back one period: $L^N y_t = y_{t-N}$. A polynomial in the lag operator, $A(L)$, is a polynomial in powers of L: $a_0L^0 + a_1L^1 + a_2L^2 + ... + a_NL^N$. A polynomial in the lag operator applied to a variable produces a distributed lag: $A(L)y_t = a_0y_t + a_1y_{t-1} + a_2y_{t-2} + ... + a_Ny_{t-N}$. See Sargent (1979), pp. 171-176.

[5]This equation is equivalent to the original error–correction model in Equation 1, where rational transfer functions $(\alpha_1 + \alpha_2 L)\, C^{-1}(L)$ and $(\beta_1 + \beta_2 L)\, C^{-1}(L)$, replace the lag polynomials $A(L)$ and $B(L)$.

[6]A similar problem appears with the use of dummy variables to model the effects of the Nixon Administration's Phase I and Phase II price controls. These dummies are therefore omitted from the regressions in this article.

[7]The potential GNP series used is the one constructed by Federal Reserve Board staff members, based on the methodology in Clark (1983).

[8]Bureau of Economic Analysis, "GNP Report and Tables," p. 6. For an overview of the issues involved in price level measurement, see Webb and Willemse's (1989) survey of macroeconomic price indices.

REFERENCES

Bureau of Economic Analysis, Commerce Department, "GNP Report and Tables," June 22, 1989.

Clark, P.K., "Okun's Law and Potential GNP," Board of Governors of the Federal Reserve System, 1983.

Davidson, J.E.H., D.F. Hendry, F. Srba, and S. Yeo, "Econometric Modelling of the Aggregate Time-Series Relationship Between Consumers' Expenditure and Income in the United Kingdom," *Economic Journal*, Vol. 88, December 1978, pp. 661-692.

Engle, R.F. and C.W. J. Granger, "Co-Integration and Error Correction: Representation, Estimation, and Testing," *Econometrica*, Vol. 55, March 1987, pp. 251-276.

Friedman, B.M., "Lessons on Monetary Policy from the 1980s," *Journal of Economic Perspectives*, Vol. 2, Summer 1988, pp. 51-72.

Friedman, B.M. and K.N. Kuttner, "Money, Income and Prices After the 1980s," NBER Working Paper #2852, Cambridge: National Bureau of Economic Research, 1989.

Hallman, J.J., R.D. Porter, and D.H. Small, "M2 per Unit of GNP as an Anchor for the Price Level," Board of Governors of the Federal Reserve System, Staff Study #157, 1989.

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

Kuttner, K.N., "Monetary and Non-Monetary Sources of Inflation: An Error-Correction Analysis," Federal Reserve Bank of Chicago, Working Paper No. WP-89-15, 1989.

Sargent, T.J., *Macroeconomic Theory*, New York, Academic Press, 1979.

Webb, R.H. and R. Willemse, "Macroeconomic Price Indexes," Federal Reserve Bank of Richmond, *Economic Review*, Vol. 75, July-August 1989, pp. 22-32.

GAME PLANS FOR THE '90s

THE 26TH ANNUAL CONFERENCE ON BANK STRUCTURE AND COMPETITION, CHICAGO, ILLINOIS, MAY 9-11, 1990

The Federal Reserve Bank of Chicago's annual Conference on Bank Structure and Competition has become a nationally recognized forum for the exchange of views on the evolution of and public policy toward the financial services industry. The 1990 conference will focus on the increasing competitiveness in the financial services industry. On the domestic side, topics will include the growing importance of superregional banks, the thrift-restructuring FIRREA law, the future role of commercial banks in commercial lending, and an analysis of the successes and failures of the financial supermarket strategy. On the international side, topics will include foreign bank competition in the United States, trends toward globalization of financial markets, and the implications of globalization for regulation of the financial services industry.

The first day of the conference will be devoted to technical papers of primary interest to an academic audience, while the final two days are designed to appeal to a more general audience.

Invitations for the 26th Bank Structure Conference will be mailed at the end of March. If you are not currently on our mailing list, or have changed your address, and would like to receive an invitation to the May 9-11 conference, please send us, as soon as possible, your name, and new affiliation, address and zip code to:

Public Information Center - 3rd floor
Federal Reserve Bank of Chicago
P.O. Box 834
Chicago, Illinois 60690-0834

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

Still toe-to-toe: Banks and nonbanks at the end of the '80s

Market shares, loan volumes, and ROIs suggest that banks are competing skillfully and successfully with the competition—and not just in traditional banking services

Linda Aguilar

The 1980s have been a decade of change for the financial services industry. The industry has been deregulated geographically and on a product-line basis following the passage of the Depository Institutions Deregulation and Monetary Control Act of 1980, the Garn-St Germain Act of 1982, and the Competitive Equality Banking Act of 1987. Several important decisions by the Federal Reserve Board expanded the nonbank powers of bank holding companies to include underwriting municipal revenue bonds, asset-backed securities, and corporate bonds. Following the lowering of geographic barriers by most states, the banking industry has undergone considerable consolidation.

One segment of the financial services industry—savings and loan associations—has been "bailed out," following the passage of the Financial Institutions Reform, Recovery, and Enforcement Act in 1989. Indeed, several crises, including that in the thrift industry and several large bank failures, were resolved.

Also, during the 1980s, the distinction between investment banks and commercial banks became blurred as commercial banks responded to competition from the capital markets by increasing loans sales, providing financial guarantees, and directly placing securities for customers.[1] The distinction between commercial banking and other lines of commerce also became very fuzzy as nonbank providers of financial services, including nondepository-based providers, increasingly offered products and services that compete with those of commercial banks. Many predicted disaster for banks as the barriers between banking and "nonbanking" fell.

By 1985, the Federal Reserve Bank of Chicago had published three studies on nonbank competition. The last (1985) examined the period 1981–83.[2] This study found that "the banking industry has shown an amazing degree of resiliency in the face of [nonbank competition]."[3] Results showed the auto- and industrial-based firms making inroads into financial services and the industrial-based firms being "formidable competitors;" the traditional financial services industry was in a state of flux; but the insurance sector was not seen as a threat. Retailers appeared to be meeting with success in their "experiments" in offering financial services.

Given the changes in the financial services industry that have occurred throughout the 1980s, the changing macroeconomic environment, and the fact that many nonbanks were still novices in providing financial services when the last study was completed, a re-examination of the activities of the major nonbank providers of financial services is useful. This latest analysis of nonbanks does not differ dramatically from the 1985 study. Banks continue to show great adaptability and resourcefulness in the face of their new and less trammeled competition. The predicted horrors from nonbank competition have not developed. How-

Linda Aguilar is an analyst at the Federal Reserve Bank of Chicago. The author thanks Christine Pavel and Herbert Baer for comments, and Carl Quinn for invaluable assistance in collecting data.

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

ever, the study does differ from its predecessors in three respects.

First, there has been a change in the firms used as the basis for the study. Some former nonbank competitors (Dana and Montgomery Ward) were excluded because they did not meet this study's size criterion of finance receivables greater than $3 billion. Armco, formerly included as an industrial-based firm, is no longer in the financial services business. Over the 1984–85 period, Armco was forced to divest most of its insurance operations in order to avoid financial ruin. Also, some firms, such as Weyerhaeuser, Metropolitan Life, and four other insurance companies, were added.

Second, the ''diversified financial services firms'' are no longer as diversified. They have, therefore, been reclassified as either consumer finance or commercial finance companies. For example, Borg Warner Acceptance Corporation was purchased by Transamerica and renamed Transamerica Commercial Finance, moving Transamerica from a diversified financial services firm to a commercial finance company.

Third, two banking ''peer groups'' were developed for comparison purposes (see Table 1). In previous studies, comparisons were made among the nonbanks, the top 15 bank holding companies (BHCs), and all domestic, insured commercial banks. In this study, the large BHCs are broken out by the ratio of their commercial or consumer loans to total loans and lease finance receivables. By doing this, a primarily commercial-oriented BHC such as Bankers Trust, with 57 percent of its total loan portfolio devoted to commercial loans, is not grouped together with a primarily consumer-oriented BHC such as Barnett Banks, with 84 percent of its total loans and lease finance receivables devoted to consumer lending. The top ten BHCs whose commercial loans are greater than 40 percent of total loans compose one BHC peer group. The other peer group includes the top ten BHCs with consumer loans greater than 50 percent of total loans. The commercial-oriented BHC peer group holds 21 percent of the total loans and lease finance receivables of all commercial, insured banks

TABLE 1

List of 28 nonbank firms and 20 large bank holding companies

Nonbanks

Auto companies:
General Motors Acceptance Corp.
Ford Motor Credit Co.
Chrysler Financial Corp.

Consumer finance companies:
American Express Co.
Sears, Roebuck & Co.
J.C. Penney Co.
Associates
Household International
Beneficial Corp.
Avco Financial Services
Commercial Credit

Commercial finance companies:
General Electric Financial Services
ITT Financial Corp.
IBM Credit
Westinghouse Credit
Weyerhauser Financial Services
Heller International
Transamerica Corp.

Insurance companies:
The Prudential
Aetna
The Travelers
Metropolitan Life
Teachers Insurance and Annuity Association
The Equitable
Cigna
John Hancock
CNA Financial Corp.
American General

Bank holding companies

Consumer:
Citicorp
Security Pacific Corp.
Wells Fargo & Co.
First Interstate Bancorp.
Bank of New England Corp.
NCNB Corp.
Barnett Banks, Inc.
Banc One Corp.
First Union Corp.
Citizens and Southern Corp.

Commercial:
Chase Manhattan Corp.
Manufacturers Hanover Corp.
Chemical New York Corp.
J.P. Morgan & Co.
First Chicago Corp.
Bankers Trust New York Corp.
Bank of Boston Corp.
Marine Midland Banks, Inc
Mellon Bank Corp.
Bank of New York Co..

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

(domestic and foreign offices). The consumer-oriented BHC peer group holds 10 percent.

Methodology and data

The nonbank groups include a total of 28 firms (see Table 1): auto makers (GM, Ford, and Chrysler), consumer finance companies, commercial finance companies, and insurance companies. As mentioned earlier, the nonbank criterion for inclusion in this study was finance receivables outstanding greater than $3 billion.

The data used throughout the study are from the Federal Reserve Board's databases, annual reports, income statements, and other publicly available data. Data for 1987 are used as the most current period and performance and growth comparisons are over the 1982–1987 period.

As in previous studies, each nonbank group's loan composition and growth, profitability, and market presence are analyzed and compared. As shown in Table 2, the largest consumer- and commercial-oriented BHCs have increased their combined share of total private sector finance receivables from 48 percent to 54 percent due mainly to the growth of consumer loans among the 10 largest consumer-oriented BHCs. These BHCs increased their total loans outstanding by over 20 percent per year, largely through mergers and acquisitions. At the same time, slow growth in consumer as well as in commercial loans among the ten insurance companies contributed greatly to the 6 percentage point loss for the 28 nonbanks in this study.

Most nonbanks groups offer financial services to both consumers and businesses, and in this study, the split between *total* nonbank commercial and consumer lending is fairly even. However, each nonbank group does have its primary niche. Consumer loans are a larger part of the portfolio for the auto and consumer finance companies, and commercial loans dominate the holdings of the insurance and commercial finance companies.

Consumer lending

In providing financial services to individuals, commercial banks compete among themselves and with thrift institutions. They also compete with manufacturers, retailers, consumer finance companies, and insurance companies. Commercial banks compete with these firms in offering transactions and savings accounts, investments, and loans. Nonbanks have proven to be formidable competitors in lending areas, but in a deregulated environment, commercial banks as well as other depository institutions have successfully competed with nonbank providers of deposit substitutes.

Deposit accounts are offered through depository institutions—commercial banks, S&Ls, and credit unions. Nondepository-based firms offer money market mutual funds (MMMFs) and non-term life insurance premiums, which are close substitutes for deposit accounts. MMMFs were introduced in 1972 and grew rapidly in the high-interest rate environment of the late 1970s. By 1982, MMMFs stood at $242 billion.

In late 1982, Money Market Deposit Accounts (MMDA) were authorized. The MMDA is a federally insured savings account offered by banks and thrifts. It is directly equivalent to and competitive with money market mutual funds.

Seven weeks after their introduction, balances in MMDAs surpassed $242 billion, largely due to high introductory rates offered by many institutions. By mid-1983, balances in MMMFs declined to $180 billion. During 1984 and 1985, MMMFs grew, albeit at a slower rate than MMDAs (see Figure 1), and in the spring of 1986, the MMMF growth rate began to surpass that of MMDAs. As of October 1989, balances in MMDAs were $473 billion, and balances in money market funds were $400 billion.[4]

Although MMMFs are primarily offered through brokerage firms, some insurance companies offer them as well. In addition, insurance companies offer another deposit-like product, the non-term life insurance policy, which contains an insurance component as well as an investment component. The advantage of insurance premiums over most bank deposits is that they are long-term and ongoing in nature. People use insurance as financial protection, rather than as a savings instrument *per se* and, thus, are more reluctant to withdraw or cash in policies. Therefore, they provide insurance companies a steady stream of income.[5]

Many nonbank firms also offer deposit accounts through their nonbank banks, i.e., banks that either accept all types of deposits and make only consumer loans or accept only nontransactions deposits and make all types of loans. As of year-end 1987, 10 of the 28 nondepository-based firms in this study owned a

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

TABLE 2

Financial services at a glance: 1987
(Billions of dollars)

	No.	Total finance receivables	Market share	Change from 1982	Commercial loans	Market share	Change from 1982	Consumer loans	Market share	Change from 1982	Financial services earnings	
											NI	ROI
Auto	3	$162.8	14.8	2.1	$53.4	10.1	2.6	$109.4	19.0	--	2.4	7.6
Consumer finance	9	115.2	10.5	(1.2)	20.7	3.9	(2.0)	94.5	16.5	(2.0)	2.9	5.6
Comm. finance	6	63.3	5.7	1.0	58.2	11.1	4.5	5.2	.9	(1.5)	1.7	6.1
Insurance	10	163.9	14.9	(8.3)	119.3	22.6	(7.9)	44.6	7.8	(6.8)	7.4	2.0
Total nonbanks	28	$505.2	45.9	(6.4)	$251.5	47.7	(2.8)	$253.7	44.2	(10.3)	14.4	3.9
Consumer BHCs	10	$329.2	29.9	5.3	$114.4	21.7	1.4	$214.8	37.4	7.6	(.5)	5.7
Commercial BHCs	10	266.5	24.2	1.1	161.2	30.6	1.4	105.4	18.4	2.7	(4.5)	4.7
Total BHCs	20	$595.8	54.1	6.4	$275.6	52.3	2.8	$320.2	55.8	10.3	(5.0)	5.1
TOTAL		$1,101.0			$527.1			$573.9				

nonbank bank and another four owned savings and loans.

While nondepository-based firms do offer deposit-like products, commercial banks and thrift institutions remain the primary suppliers of these products. In lending, however, depository institutions no longer dominate. Table 3 shows the breakdown of various consumer loans by holder. At year-end 1987, over 40 percent of all residential mortgage loans were held by federal mortgage agencies or by various investors in the form of mortgage-backed securities. Also, over one-third of all auto loans were held by finance companies, and nearly one-quarter of all revolving credit was held by retailers.

Table 4 illustrates that only four of the ten largest non-real estate consumer lenders are commercial banking firms. GMAC heads the list with over $55 billion of consumer loans, followed by Citicorp, Ford Credit, and American Express. In fact, three of the four top providers of consumer finance are nonbank firms. Furthermore, the four largest nonbank providers hold almost twice the consumer receivables of the four commercial banks. Two of the commercial banking firms are not consumer-oriented BHCs and one of the largest nonbank providers of consumer loans is not primarily consumer focused.

The following two sections examine, in more detail, the role of selected nonbank providers of financial services to consumers relative to that of consumer-oriented BHCs.

Auto companies

The three leading U.S. auto makers, through their captive finance companies, are among the largest nonbank providers of consumer credit. In 1987, they held over $100 billion in consumer installment loans, which is equal to 18 percent of total consumer installment loans outstanding in the United States and greater than the $82 billion held by the consumer-oriented BHC group. Over 90 percent of consumer loans held by the auto financing arms are made to support the parents' primary line of business.

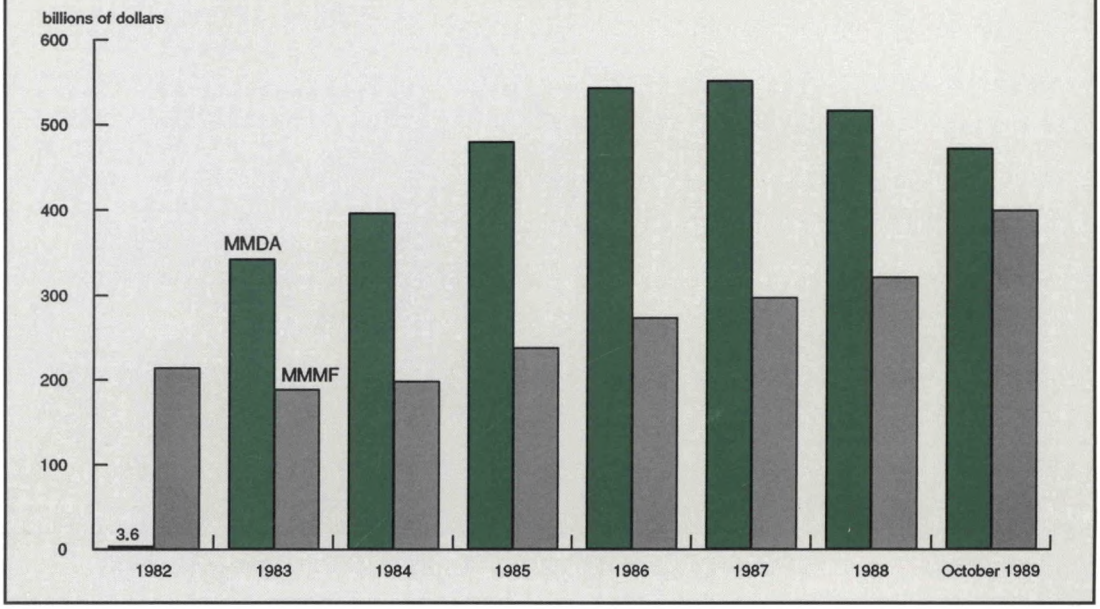
Each of the three auto financing arms were initially formed to facilitate the sale of the parent's products. In addition to auto loans, which account for 75 percent of their loan portfolios, they provide lease financing to dealers, wholesale financing of inventories, and term loans to dealers for capital improvements and other big ticket items. However, in recent years, each of the three has diversified into non-auto-related financial services as well.

General Motors began its consumer finance operations in 1919 when it formed General Motors Acceptance Corporation (GMAC). In 1925, it diversified into auto-related insurance, and in 1981 it entered the leasing business. GMAC Mortgage Corporation, formed in 1985, purchased the $11 billion loan-servicing portfo-

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

FIGURE 1

MMDA vs. MMMF growth



lio of Minneapolis-based Norwest Corporation and the $7.4 billion mortgage business of CoreStates to become one of the nation's largest mortgage servicers. By year-end 1988, GMAC Mortgage serviced a nearly $26 billion mortgage portfolio and ranked as the second largest mortgage servicer in the nation.[6]

Ford Credit was originally formed in 1959 to provide wholesale financing and to purchase retail installment sales contracts from Ford dealers. In 1960, the Ford Leasing Development Company was formed to provide lease financing to car and truck leasing companies. It entered direct consumer lending in 1966. Through its insurance subsidiaries, Ford provides group credit life and credit disability insurance as well as its extended service plan. Its Diversified Finance division negotiates large, private investments in preferred stocks, leases of and loans secured by transportation equipment, and real estate loans secured by first and junior mortgages.

In 1985, Ford Motor Co. acquired First Nationwide Financial Corporation, whose subsidiary, First Nationwide Savings, was the 8th largest savings and loan association with 177

TABLE 3

Market share of various consumer loans by sector: 1982–1987

	1–4 family mortgage loans		Auto loans		Revolving credit		Other consumer loans	
	1982	1987	1982	1987	1982	1987	1982	1987
Commercial banks	15.9	27.0	45.2	40.6	54.6	62.0	38.4	39.9
Finance companies	n.a.	1.8	37.5	36.7	n.a.	n.a.	30.9	22.5
Savings institutions	41.7	27.3	n.a.	6.4	n.a.	8.3	9.4	17.9
Credit unions	n.a.	n.a.	17.3	16.3	n.a.	4.2	18.8	16.6
Retailers	n.a.	n.a.	n.a.	n.a.	39.3	23.2	2.5	3.1
Life insurance cos.	1.5	0.6	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Other	40.9	43.3	n.a.	n.a.	6.1	2.3	n.a.	n.a.

Source: Board of Governors of the Federal Reserve System.

n.a.—not available.

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

offices in 4 states.[7] In 1989, Ford acquired Associates Corp.[8] Through Associates' bank subsidiary, Ford will gain a major presence in the credit card industry. If First Nationwide and Associates were consolidated with Ford Motor Credit, only 42 percent of Ford Motor Credit's finance receivables would be auto-related.

In 1964, Chrysler Credit Corp. and an insurance subsidiary were formed to provide auto financing and physical damage and comprehensive insurance. In 1985, Chrysler began acquiring more diversified financial businesses with the purchase of Finance America (renamed Chrysler First) and E.F. Hutton Credit Corporation (renamed Chrysler Capital Corporation).

Chrysler First provides consumer loans, small business loans, and inventory financing for national manufacturers' dealers. In 1987, Chrysler Capital acquired NFC Leasing which sells, leases, and refurbishes computers and computer peripherals, adding not only another financial service to its credit but a nonautomotive one as well. In 1987, 32 percent of Chrysler's total assets were nonautomotive.

Despite the fact that auto-related financing still accounts for most of the auto captives' business, commercial banks as a group have a larger share of the auto loan market.[9] However, since as early as 1978, the captives have been stealing market share from the commercial banks. In 1978, commercial banks held 60 percent of all auto loans outstanding; by 1982 their share dropped to 45 percent; and by 1987, the commercial banks held only 41 percent. The auto makers had picked up most of this decrease with a 6 percentage point increase in their auto loan portfolios over the 1982–87 period. Chrysler's performance over the 1982–1987 period was the best of the big three with total finance receivables increasing from a mere 5 percent of the combined auto makers auto loans outstanding to 16 percent in 1987.

During the 1982–87 period, the auto financing arms periodically offered special-rate financing to boost sales and credit financing.[10] At one point during the early 1980s, commercial banks were in effect forced out of the market because of a shift in interest-rate relationships. High funding costs and state-mandated ceilings on consumer loans reduced banks' auto loan portfolios by 12.5 percent and their market share fell from 58 to 45 percent during the 1980–82 period.

TABLE 4

Consumer lenders study group: 1987*
(Millions of dollars)

GMAC	$55,050
Citicorp	44,399
Ford Credit	38,147
American Express	28,884
Sears	26,068
Chase Manhattan	16,752
Prudential	14,795
Chrysler	12,236
Manufacturers Hanover	11,652
Security Pacific	10,798

*Includes credit card and all consumer installment loans except mortgages.

The auto makers initially responded to commercial banks' retrenchment by standing ready to provide credit as needed. In 1981, they began to offer low-rate financing on certain slow-selling models. By November of 1982, about 50 percent of their normal sales mix was eligible and by first quarter of 1983, almost all cars were eligible. However, this tactic was not without a downside. The increase in liabilities that allowed them to offer the incentives began to put pressure on their balance sheets.

In 1983 when the economy began to improve, commercial banks rejoined the market, and the auto makers stopped the special-rate programs and began to concentrate on getting their balance sheets in order. Throughout 1985, special-rate financing was offered sporadically, mostly when sales needed a boost.

By 1986, consumers began to realize that special-rate financing and dealer rebates no longer had to be grabbed up at first offer and that if no incentive was currently being offered, they just had to wait a bit and one would be. Also, many consumers had made car purchases and would not be buying another car for a while. In essence, the timing of sales rather than an increase in sales was being affected. The effectiveness of the program as a means of increasing sales began to slack off.

Despite the strain that incentive-rate financing may have had on their financial statements, the auto finance companies were more profitable in 1987 than their commercial banking rivals. Average return on investment (ROI) for the three auto financing arms was 7.6 per-

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

cent in 1987.[11] ROI for the consumer-oriented BHC group was 5.7 percent and included negative net income of $450 million.[12]

Overall, it appears that the auto finance companies still do well at what they were originally formed to do—finance the products of their parents. Commercial banks and credit unions combined still finance a greater proportion of auto loans than the auto makers, but the growth of the auto financing arms has far exceeded the growth of auto finance receivables of commercial banks and credit unions. In addition, through diversification into mortgage loans, insurance, equipment leasing, and credit card lending, they are making inroads into other industries' financial services as well.

Consumer finance companies

Along with the auto companies, some consumer finance companies rank among the largest providers of financial services to individuals. The consumer financial services sector in this study comprises nine firms, and includes five traditional consumer finance companies, such as Household International and Commercial Credit; two retailers, Sears and J.C. Penney; a travel-related services firm, American Express; and a commercial-turned-consumer finance company, ITT Financial Corp. Firms in this category provide financial services to businesses as well as consumers, but over 80 percent of their loans held are consumer loans, totaling $94 billion in 1987, approximately 45 percent of the total consumer loans of the consumer-oriented BHC group.

Many of the traditional financial services firms have been in operation for most of this century. What started as primarily personal and real-estate-based lending now includes sales finance contracts (such as private label retail revolving charges) and asset-based financing. For example, Household International has a consumer segment that offers banking services and credit insurance products; a commercial segment that consists of investments in leveraged leases, term preferred stocks, and equipment loans and leases; and an insurance segment that provides ordinary life, annuity, and specialty insurance products.

Commercial Credit offers personal unsecured loans, real estate or home equity loans, commercial insurance, and specialty insurance products such as director's and officer's liability, special events coverage, and fidelity insurance for financial institutions. In 1983, Commercial Credit bought 99.5 percent of the First National Bank of Wilmington, Delaware (recently renamed Primerica) which offers credit card services as well as loans by mail.

Sears is the largest issuer of retail credit cards and J.C. Penney is the second largest.[13] Sears is engaged in retail credit, insurance, real estate brokerage, and investment services through its four primary business units. Sears has in most cases been the first nonbank to enter a particular financial services market. Sears began its consumer sales financing in 1911, eight years before General Motors began financing car sales. It was also first in expanding into insurance by establishing Allstate Insurance Co. in 1931. In 1985, Sears purchased both Coldwell Banker and Dean Witter, solidifying its place as a giant in the financial services industry.

Each of Sears' four primary businesses offers some form of financial services. In its merchandising operations, the standard Sears credit card provides both revolving and installment-type credit to consumers. In addition to providing consumer credit through the Discover Card, its Dean Witter subsidiary offers auto, home equity, and other consumer loans. Coldwell Banker has an advantage in the mortgage loan arena by being able to offer mortgage loans along with real estate sales.

Yet all recent accounts indicate that Sears is having its share of growth and expansion problems. ''Financial supermarkets'' are beginning to trim operations.[14] In particular, Sears is eliminating its entire in-store Coldwell Banker operations and cutting in half the number of Dean Witter in-store units. In 1989, Sears announced the sale of Coldwell Banker's Commercial Group.

On the other hand, the Discover card is doing quite well. In a recent study of over 4,000 consumers, the number of households with Discover cards increased by 2.1 million, or 14 percent, in 1989. According to a MasterCard International spokesperson, the big advantage of the Discover card is that there is no annual fee.[15] The 1 percent cash rebate is also attractive.

The bulk of J.C. Penney's finance receivables comes from its retail credit card and major purchase plans. J.C. Penney Financial Corp, a wholly owned, consolidated subsidiary, provides the financing of operations for its parent.

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

In addition, J.C. Penney National Bank offers Visa and MasterCard credit programs.

American Express, with $655 million in net income in 1987 from its travel-related services and total net income of $533 million, ranks second only to Sears in the financial services industry. American Express is the largest issuer of travel and entertainment cards. American Express Travelers Cheques have been in existence since 1890. The American Express Green Card was created in 1958.

American Express also engages in investment banking and brokerage, private banking, life and health insurance, and financial planning and asset management through Shearson Loeb Rhoades, acquired in 1981, and Investors Diversified Services, acquired in 1984. In both the January 1988 and 1989 issues of *Fortune*, American Express was voted the most admired firm in the diversified financial services industry, with all four business segments offering financial services.

ITT Financial Corp. is just one of ITT's nine business segments. ITT Financial Corp. was incorporated in 1974 as the result of a merger of two previously acquired finance companies, Aetna Finance and Thorp Finance. ITT Financial Corp. offers both consumer and commercial financing, but until 1985 the commercial finance segment was always the larger of the two. In both 1987 and 1988, consumer finance receivables were approximately 56 percent of total receivables. Financial services offered include personal loans and home equity loans; commercial financing for manufacturers, retail dealers, and distributors of consumer and commercial durable goods; capital equipment financing and residential real estate financing; and credit-related insurance.

The majority of the consumer finance companies' loans are real estate loans, which include first and second mortgages and home equity loans, and consumer installment credit, which includes bank card receivables. The nine consumer finance companies in this study also provide some commercial financial services although commercial loans account for only 18 percent of their combined portfolio. Furthermore, consumer loans for these firms have increased 134 percent over the 1982–87 period, almost four times as fast as their commercial loans. Total finance receivables more than doubled.

Despite this growth, the consumer finance group lost one percentage point market share when compared to the entire study group. The consumer-oriented BHC group increased consumer finance receivables 230 percent and total finance receivables 179 percent. Consequently, market share for the consumer-oriented BHC peer group increased 5 percentage points from 25 to 30 percent.

The nine consumer finance companies combined had ROI of 5.6 percent in 1987, which is comparable to the consumer-oriented BHC peer group's 5.7 percent. However, even though their profitability ratios are comparable, the consumer finance companies are not posing much of a threat to the banking industry. This is confirmed by their loss of market share. This loss is due, at least in part, to the fact that most consumers maintain a transactions account at a commercial bank, savings and loan, or credit union and, therefore, have an existing relationship with a depository institution. Therefore, even though consumer finance companies are equally profitable, the particular niche they once enjoyed in terms of consumer loans appears to be eroding.

Commercial lending

As in providing financial services to individuals, U.S. commercial banking firms also compete with many other firms than just domestic commercial banks in the commercial finance arena. They compete with foreign banking firms, the capital markets, and nonbank firms. U.S. branches of foreign banks now hold over 15 percent of all U.S. commercial loans outstanding, almost double their share in 1984. Between 1975 and 1986, banks' share of short-term debt of large corporations fell from nearly 50 percent to 27 percent due to competition from the capital markets.[16]

In addition, the importance of nonbank suppliers of financial services to businesses has increased. The third and fifth largest commercial lenders are nonbank firms, and the largest commercial real estate lenders are insurance companies, not banks. Also, five of the largest leasing firms, among those firms in this study, are nonbanks. General Electric Financial Services, GMAC, and IBM rank first, second, and third, respectively.

The following sections examine in more detail the role of selected large nonbank firms in providing financial services to business.

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

Several of the firms, including General Electric Financial Services and Westinghouse Credit, gained experience in financial services as captive finance companies, but have ceased providing support for the sale of their parents' products and have become independent financiers.

Commercial finance companies

The commercial finance companies included in this study are subsidiaries of some of the largest corporations in America—General Electric, Westinghouse, IBM, and Weyerhaeuser. Heller and Transamerica are also included because they are primarily commercial lenders.[17]

The six firms in the commercial finance segment had $58 billion in commercial lending in 1987, equalling nearly one-fourth of the total commercial lending of the 28 nonbanks and 36 percent of the commercial lending of the commercial-oriented BHC peer group.

GE is by far the largest provider of financial services to business among the commercial finance companies. General Electric Financial Services (GEFS) is GE's financial services unit, and consists of GE Capital Corporation (GECC), Employers Reinsurance Corporation, and an 80-percent interest in Kidder, Peabody Group, Inc. Despite its origin as a captive finance company, almost all of the products GECC provides financing for are non-GE.

More than half of GEFS's finance receivables are time sales and loans for retail merchants, commercial and industrial loans, commercial and residential real estate financing, and manufactured housing time sales and inventory financing. In its commercial and industrial financing, GEFS is one of the leading financiers of leveraged buyouts. Also, GEFS provides commercial real estate financing in the form of first and second mortgages, construction loans and equity investments. The remainder of GEFS's finance receivables are primarily from its leasing activities for vehicles, containers and aircraft. In vehicle fleet leasing, GEFS owns and manages more than 400,000 vehicles.

Westinghouse Credit was founded in 1954 as a financing source for Westinghouse appliance dealers. It now focuses exclusively on the commercial finance market. Over one-third of Westinghouse's finance receivables are from commercial real estate. Its second largest line of business is lease financing for major capital equipment such as commercial and corporate aircraft.

IBM Credit was founded in 1981 to finance the sales and leasing of IBM equipment. By year-end 1982, finance receivables exceeded $1 billion, primarily from installment payment receivables. By 1987, finance receivables were nearly $6 billion, with lease financing comprising nearly two-thirds of the total.

Weyerhaeuser, primarily a lumber company, is engaged in financial services through its two unconsolidated subsidiaries, Weyerhaeuser Real Estate (WRECO) and Weyerhaeuser Financial Services. The financial services subsidiary was formed in December of 1987 as a holding company for Weyerhaeuser Mortgage Company, Republic Federal Savings and Loan, and GNA Corporation, an annuity, insurance, and securities firm.

Commercial leasing accounts for a large part of the financial services offered by the six commercial finance companies studied. Weyerhaeuser, through its S&L and mortgage company subsidiaries, is the only lender in this segment that engages in consumer lending. Over the 1982–87 period, commercial lending for the six firms increased 237 percent, nearly twice as fast as that of the commercial-oriented BHC group.

GEFS's growth accounts for much of the sector's gain in market share. Since 1982, GEFS has increased commercial lending over fourfold. Total commercial finance receivables outstanding for GEFS in 1987 were $33.3 billion, making it the largest commercial lender of the 28 nonbanks. Its commercial loan portfolio is larger than any individual BHC's portfolio with the exception of Citicorp.

While profitability ratios are not strictly comparable across groups, the commercial finance companies, on average, appear to be have been more profitable than their banking counterparts. The commercial finance companies had ROI of 6.1 percent in 1987, compared to the commercial-oriented BHC peer group's ROI of 4.7 percent. The profitability of the largest BHCs has been adversely affected by the poor performance of their loans to less developed countries (LDCs).

As mentioned earlier, the commercial finance companies include some of America's largest corporations and represent a unique grouping of highly competitive, highly concentrated firms. While their market shares are

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

relatively small, the six commercial finance companies in this study are quite profitable and have been growing very rapidly for years. Therefore, in and of themselves, they represent a threat to the banking industry.

Insurance companies

The ten insurance companies in this study are among the largest providers of commercial financial services. In total, these ten firms held $119 billion in commercial loans in 1987, approximately 75 percent of the commercial loans held by the commercial-oriented BHC group. The commercial loans on the books of the insurance companies are primarily real estate-based. Indeed, six of the largest providers of funding for real estate are insurance companies.

Many of the insurance companies surveyed have diversified into noninsurance activities. For example, Prudential's 1987 annual report lists residential mortgages, credit card services, retail securities and commodities brokerage, and investment and merchant banking as services offered. Metropolitan's menu reads similarly—Century 21 Real Estate Corp., MetFirst Financial Company, MetLife Capital Credit Corp., and MetLife Securities, Inc. John Hancock discusses four lines of business in its 1987 annual report—consumer insurance products, consumer financial services, employee benefits services, and investment and pension services. Aetna's breaks down similarly.

Insurance is still the core business of Equitable, Travelers, Cigna, and CNA Financial. Each of these firms, with the exception of CNA, offers mutual funds. Equitable also offers discount brokerage services and in a joint venture with Merrill Lynch, distributes life and annuity products through Merrill Lynch's marketing organization. Travelers, primarily through subsidiaries, offers investment banking, mortgage origination, and other services.

American General delineates six business units—four insurance, one consumer credit, and one mortgage and real estate. Consumer credit is offered through three consumer credit subsidiaries and mortgage and real estate services are offered through another three subsidiaries.

Teacher's Insurance and Annuity Association (TIAA) offers insurance and investment services to the educational community through a variety of investment funds, annuities, and other income options.

Insurance companies compete with financial institutions in three major ways. First, through non-term premiums, they take in quasi-deposits; second, most offer investment options such as mutual funds, and, through subsidiaries, credit cards; third, they invest premiums and other deposits in the capital markets.

On the investment side, insurance companies compete in the financial services arena primarily in commercial lending through their investment portfolios, with commercial mortgage loans being the overwhelming component. Of the nonbank segments, insurance companies are the largest commercial lenders with nearly half of the total 1987 commercial loans of the 28 nonbanks.

While the insurance companies are some of the largest providers of financial services, they are also some of the slowest growing. For example, Equitable's finance receivables grew by 1 percent, and Metropolitan's fell 4 percent over the 1982–87 period. In both cases the companies were slowed by little or no growth in commercial mortgage or real estate loans. Also, of the study group, the insurance sector realized the only significant *decrease* in market share.

On a company-by-company basis, performance was stable with most companies' net income in the $250 million to $400 million range. Two notable exceptions were Equitable with losses of $57 million and John Hancock with net income of only $6 million. ROI for the insurance sector, at 2.0 percent in 1987, is the lowest of the nonbank sectors.[18]

As far as making inroads into the banking industry, the insurance companies for the most part are not a threat. Their insurance operations continue to provide them with plentiful resources, but their diversification into more profitable financial services has been slow. As stated in the Chicago Fed's 1985 study, the insurance companies have more to fear from financial institutions entering the insurance market than vice versa.

Summary

Commercial banking firms continue to show resiliency in competing with nonbanks. The commercial-oriented BHC group as well as the consumer-oriented BHC group increased their market shares of total finance receivables at the expense of the 28 nonbanks surveyed.

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

The banking firms' increase in market share, however, may have come at the expense of profitability. The commercial-oriented BHCs averaged 4.7 percent ROI in 1987 and the consumer-oriented BHCs averaged 5.7 percent. Of the 28 nonbanks surveyed, the consumer finance companies ROI was 5.6 percent; the auto financing arms 7.6 percent; the commercial finance companies 6.1 percent; and the insurance firms 2.0 percent.

The money center banks have been hit hard by their involvement in LDC debt. A major reason financial institutions have reported negative income is due to their efforts to reduce LDC debt exposure. Were it not for provisions for LDC debt taken in 1987, ROI would have been 1.7 percentage points greater. Apparently, the money centers are not through making provisions for their LDC debt. In late 1989, the money center banks began another round of reserving for this burdensome debt.

Banks still have an edge over nonbanks in several areas. First, they have the advantage of experience, which carries considerable weight with many consumers. Also, banks have deposit insurance, another attractive difference in the eyes of consumers. As banks and other financial services industries become more deregulated and more intertwined, banks will be able to use these strengths to their advantage.

On the other hand, nonbanks have an edge as well. Several industries, such as insurance and financial services, have extensive distribution networks which make their products more readily available to the masses. A new product or service from either of these industries can often reach a much larger group than can a similar product or service of a regional banking entity.

Nonbanks also are beginning to realize the benefits of time. Financial services offerings by nonbanks are much more commonplace than they were 30 years ago. Generations are growing up with financial services readily available from a variety of sources. Mass media marketing, consumer education, and other marketing techniques have helped both banks and nonbanks grow.

The bottom line is still that banks are, at the very least, holding their own against the competition. Since 1983, banks have operated in a much less regulated environment and proven that, when allowed to compete on equal footing, they can be quite successful. Past mistakes—namely, LDC lending and some real estate lending—may hamper them somewhat in the future. However, as banks gain broader powers, especially in insurance brokerage and underwriting, we may see the banking industry running well ahead of the nonbanks.

FOOTNOTES

[1]See Herbert L. Baer and Christine A. Pavel, "Does regulation drive innovation?," *Economic Perspectives*, Federal Reserve Bank of Chicago, March/April 1988; and Betsy Dale, "The grass may not be greener: Commercial banks and investment banking," *Economic Perspectives*, Federal Reserve Bank of Chicago, November/December 1988.

[2]Christine Pavel and Harvey Rosenblum, "Banks and nonbanks: The horse race continues," *Economic Perspectives*, Federal Reserve Bank of Chicago, May/June 1985.

[3]Pavel and Rosenblum, p. 15.

[4]Board of Governors of the Federal Reserve System.

[5]*Life Insurance Companies as Financial Institutions*, Life Insurance Association of America, Prentice-Hall, p. 2.

[6]*American Bank Top Numbers, 1989 Update*, American Bank-Bond Buyer.

[7]First Nationwide is not consolidated with Ford Credit in this study. If it were, Ford's 1987 finance receivables would increase to $63.5 billion.

[8]Associates is a consumer finance company and is examined separately in the consumer finance section of this article because Associates was not owned by Ford when this study was initiated.

[9]This may seem an unreasonable comparison since there are only three auto finance companies and over 14,000 banks, but the three auto finance companies are able to offer their services through their network of 37,000 dealerships (see *Automotive News*, February 16, 1987, p. 56.).

[10]Most of the following section dealing with special rate financing is from Charles A. Luckett, "Recent trends in automobile finance," *Federal Reserve Bulletin*, June 1986.

[11]Return on investment is defined as after-tax net income plus interest expense divided by total assets.

[12]Because commercial banking firms and the captive finance companies do not engage in all of the same activities, their profitability is not strictly comparable.

[13]Based on receivables outstanding. See *The Nilson Report*, September 1989.

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

[14]Lisabeth Werner, "Financial Supermarkets Suffer Setback," *American Banker*, April 4, 1989, p. 1+.

[15]Rebecca Cox, "Discover Seen Making Inroads in Banking Cards," *American Banker*, September 29, 1989, p. 1.

[16]Baer and Pavel, p. 4.

[17]Heller is owned by Fuji Bank, Ltd., a Japanese banking organization.

[18]For the insurance group, dividends paid by mutual companies to policyholders are also added to net income as an expense.

REFERENCES

Baer, Herbert L. and Christine A. Pavel, "Does regulation drive innovation?" *Economic Perspectives*, Vol. XII, No. 2, Federal Reserve Bank of Chicago, March/April, 1988, pp. 3-15.

Board of Governors of the Federal Reserve System, *Federal Reserve statistical release*, No H.6(508) Washington, DC, November 9, 1989.

Cox, Rebecca, "Discover Seen Making Inroads on Bank Cards," *American Banker*, September 29, 1989, p.1.

Dale, Betsy, "The grass may not be greener: Commercial banks and investment banking," *Economic Perspectives*, Vol. XII, No. 6, Federal Reserve Bank of Chicago, November/December 1988, pp. 3-13.

H.S.N. Consultants, Inc., *The Nilson Report*, No. 460, Los Angeles, CA, September 1989.

Life Insurance Association of America, *Life Insurance Companies as Financial Institutions*, New Jersey: Prentice-Hall, 1962.

Luckett, Charles A., "Recent trends in automobile finance," *Federal Reserve Bulletin*, June 1986, pp. 355-365.

Pavel, Christine and Harvey Rosenblum, "Banks and nonbanks: The horse race continues," *Economic Perspectives*, Vol. IX, No. 3, Federal Reserve Bank of Chicago, May/June 1985, pp. 3-17.

Rose, Peter S., *The Changing Structure of American Banking*, New York: Columbia University Press, 1987.

Werner, Lisabeth, "Financial Supermarkets Suffer Setback," *American Banker*, April 4, 1989, pp. 1+.

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis

ECONOMIC PERSPECTIVES

Public Information Center
Federal Reserve Bank of Chicago
P.O. Box 834
Chicago, Illinois 60690-0834

Do Not Forward
Address Correction Requested
Return Postage Guaranteed

BULK RATE
U.S. POSTAGE
PAID
CHICAGO, ILLINOIS
PERMIT NO. 1942

FEDERAL RESERVE BANK
OF CHICAGO

Digitized for FRASER
http://fraser.stlouisfed.org/
Federal Reserve Bank of St. Louis