REPLY
by MICHAEL W. KERAN

His reply is divided into three parts: first, a review of the empirical work by Patric Hendershott, which Melichar relies upon in the preceding "Comment" to justify his analysis and conclusions; second, a critique of the relevance of this empirical work; and third, an evaluation of the theoretical underpinnings of Melichar's analysis. Following this approach makes it unnecessary to deal point by point with some of the more narrowly conceived issues raised by Melichar.

A Summary of Hendershott's Analysis

The issue raised by Hendershott is how to construct an unbiased measure of Federal Reserve policy actions. The importance of this issue is obvious. Without such a measure it is not possible to evaluate the appropriateness of Federal Reserve behavior.

The criterion Hendershott uses for determining whether a monetary variable is an unbiased measure is that its value be dominated by Federal Reserve actions, and therefore not directly influenced by actions of the private sector of the economy. Hendershott asserts that any monetary variable would be an unbiased measure of monetary policy if it satisfied this "dominance" criterion.

Unfortunately, movements in most monetary variables, such as interest rates, the money stock, or bank credit, are determined by a mixture of both Federal Reserve and private actions. One of the major criticisms leveled against interest rates as a measure of Federal Reserve actions by those who favor the money stock "measure" is that changes in the observed level of interest rates are dominated by private rather than Federal Reserve actions. However, Hendershott considers that the money stock also suffers from this problem, being simultaneously determined by public and monetary authority behavior. According to Hendershott, if the influence of the public can be removed, any monetary variable will give the same unbiased interpretation of Federal Reserve actions. Because of the complexity of the process of removing public influences, Hendershott performs a "neutralization" procedure on only one variable—the money stock.

To make the money stock an unbiased measure of Federal Reserve actions over the business cycle, he proposes to remove the influence of the public from the cyclical movements in the money stock. To accomplish this he derives a money stock identity which has fourteen terms. Each term is constructed from components of the sources and uses of member bank reserves, and a multiplier based on average reserve requirements on demand deposits. He found that six of these components (float, excess reserves, time deposits, currency held by the public, member bank borrowings from the Federal Reserve, and the gold stock) were substantially influenced by the behavior of the public. That is, their value could be


2Ibid., p. 3. "Which indicator is neutralized is probably un consequential because after the impact of the business cycle has been removed, the indicators should have similar cyclical patterns; the only systematic cyclical influence remaining in any of them is due to Federal Reserve actions."
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A Critique of Hendershott’s Analysis

An evaluation of the neutralized money stock can
be conducted on both a theoretical and an empirical
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and the following section considers some theo-

Hendershott contends that the way to eliminate
the influence of public actions on the money stock is
to develop measures of their influence and then sub-
tract them from those components of the money stock
which the public has been observed to influence. This

procedure is not easy or straightforward. Hendershott
devotes two-thirds of his book to this task and shows
considerable ingenuity in measuring the influence of
the public on certain components of the money stock
identity. He considers that this process is sufficient to
neutralize the money stock and make it an unbiased
measure of Federal Reserve actions.

This conclusion is valid, however, only if vari-
tions in those components which the public influ-
ences are independent of variations in the values of
the other components of the money identity. If it is
desirable to eliminate the influence of the public from
some components, then it is also desirable to con-
sider whether other components in the money iden-
tity behave in a way which offsets or reinforces these
public influences. If such behavior exists, then the
neutralization process used by Hendershott will no
longer lead to an unbiased measure of Federal Re-
serve actions.

The possibility of a systematic interdependence
between the components of member bank reserves,
and thus between the terms of the money stock iden-
tity, is strong because a large share of changes in Fed-
eral Reserve holdings of Government securities (open
market operations) are designed to “stabilize money
market conditions.” Operationally, this means that
some Federal Reserve purchases and sales of gov-
ernment securities are designed to offset irregular
seasonal and cyclical movements in member bank re-
erves. Hendershott acknowledges that the Federal
Reserve most likely does offset such flows when they
are the result of international transactions, and there-
fore constructs a “modified-neutralized” money stock
which explicitly treats gold flows as if they are offset
by Federal Reserve actions.6

There is no reason why Hendershott should have
stopped with allowing only for offsetting actions with
respect to gold. There are a wide range of other finan-
cial flows which also influence money markets, and
which the Federal Reserve could offset if it chose to
do so.7 We tested the possibility that some Federal

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6Hendershott gives two reasons for constructing a “modified-
neutralized” money stock: (1) to make it comparable with
“policy statements” (which refer to actions net of offsetting
gold movements); and (2) “neutralization of gold stock
is the most tenuous ... due to the complexities of the bal-
ance of payments and the somewhat heroic assumptions
made regarding foreign central bank behavior.”

7Hendershott argues (page 94) that such offsetting be-
behavior is, for whatever reason, still Federal Reserve actions
which should be measured in terms of their independent
effect on the money stock. This is not a valid position to
hold if (as is pointed out in the text) these actions are induced by movements in other components of the money
identity.

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3Treasury currency, vault cash of nonmember banks, Treas-
ury cash holdings, U.S. Government deposits at member
banks, foreign deposits at Federal Reserve Banks, Federal
Reserve Accounts not elsewhere classified, and nonmember
bank demand deposits.

4Hendershott, p. 13. “The money stock is considered as re-
sponding to a change in the Federal Reserve’s portfolio
of government securities and some minor member-bank
reserve components rather than to a change in the ad-
justed monetary base, which is equivalent to the sum of
the Federal Reserve’s portfolio, Federal Reserve float, the
U.S. gold stock, and the same minor reserve components.”

5Ibid., p. 117.
Reserve actions, measured by changes in its government securities holdings (adjusted for changes in reserve requirements), were designed to offset movements in other items in the money identity. We were particularly interested to see if the Federal Reserve acted to offset these components which Hendershott found were influenced by actions of the public. To make the test as comparable as possible with Hendershott's, the coefficients were estimated by ordinary least squares regressions using first differences of monthly data (not seasonally adjusted) from January 1952 to December 1964 (the same period used in Hendershott's study). The regression test shows this is exactly what happened. Federal Reserve holdings of government securities tended on the average to offset $1.18 of every $1.00 of member bank borrowings and $0.35 of every $1.00 of gold flows in the same month in which they occurred.

On the basis of the criteria which Hendershott himself established, and which Melichar accepts, the actual money stock is superior to the neutralized money stock as a measure of Federal Reserve Actions. Thus, any analysis or conclusions drawn with respect to Federal Reserve actions on the basis of the neutralized money stock are misleading.

Federal Reserve Actions and Monetary Influences

The preceding empirical investigation established that the observed money stock is a better measure of Federal Reserve actions than the neutralized money stock. However, what if open market operations had not been conducted in a way to offset the influence of borrowings and gold on the money stock? In that case, Hendershott's neutralized money stock would have been a less-biased measure of Federal Reserve actions than the neutralized money stock. Our regression test shows this is exactly what happened. Federal Reserve holdings of Government securities tended on the average to offset $1.18 of every $1.00 of member bank borrowing and $0.88 of every $1.00 of gold flows in the same month in which they occurred.

72 per cent of the variation in adjusted Federal Reserve holdings of Government securities is directly related to offsetting these specific sources of potential change in the money stock. Considering the important role which "defensive" operations have traditionally played in Federal Reserve actions, these results are not surprising.

Hendershott found that, of the six items in the money stock identity which were influenced by the public, only member bank borrowings and gold were important in causing the discrepancy between the actual and neutralized money stock. Thus, as a practical matter, if the influence of borrowings and gold on the money stock are offset by variations in Federal Reserve Government security holdings, then the actual money stock will be a less-biased measure of Federal Reserve actions than the neutralized money stock. Our regression test shows this is exactly what happened. Federal Reserve holdings of Government securities tended on the average to offset $1.18 of every $1.00 of member bank borrowing and $0.88 of every $1.00 of gold flows in the same month in which they occurred.

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nores an important theoretical consideration. He im-
plexly assumes that the least-biased measure of Fed-
eral Reserve actions is also the best indicator of mo-
etary influences on the economy. This assumption
is not necessarily true.

Consider the period before 1914 when the Fed-
eral Reserve did not exist. Does the absence of a
central bank mean that there were no monetary in-
fluences on the economy? No, obviously such influ-
ences did exist. The absence of a central bank only
means that the discretionary powers which the Fed-
eral Reserve now exercises could not be utilized to
control the money stock.

In the pre-Federal Reserve era the dominant in-
fluence on the money stock was the balance of pay-
ments, because of the consequences this had on the
domestic stock of gold which supplied the base for
the money stock. Because the balance of payments,
and therefore the supply of gold, depended to a large
extent upon conditions in the United States over the
business cycle, movements in the money stock were
strongly influenced by domestic economic conditions.
This mechanism in no way precluded changes in the
money stock from influencing domestic economic
activity. Indeed, to the extent that the gold standard
was successful in the pre-World War I era, it was due
to this essential double link from income to money
and from money to income.

The monetary influence on the economy can oper-
ate quite independently of the source of the mon-
eyary change, irrespective of whether or not the change
is the result of discretionary central bank actions or
induced movements in the gold stock. A statistical
problem related to interpretation of the regression
coefficients may arise in a single equation model,
however, where income may be influencing the money
stock. A statistically significant coefficient relating
differences in money to changes in income will not pro-
vide statistical proof that the direction of causality
goes from money to income, unless the factors de-
termining the movement in the money stock can be
shown to be statistically independent of income in
the contemporaneous period (see the companion ar-
ticle by Leonall C. Andersen for a more thorough
consideration of this issue.)

Even if the neutralized money stock were an un-
biased measure of Federal Reserve actions, it would
not necessarily be an accurate measure of monetary
influences on the economy. Such a measure can only
be derived within the context of a validated economic
theory, which specifies the mechanics of the monetary
influence. A statistical evaluation of the theoretical
link between the monetary variable and the economy
is an integral part of the evaluation procedure.

There are two well-specified theories relating mon-
eyary influences to the rest of the economy: A neo-
Keynesian theory which measures the influence of
monetary variables through variations in interest
rates, and a modern quantity theory which measures
monetary influences through variations in the money
stock and related monetary aggregates. No economic
theory has been presented either by Hendershott or
Melichar which links a neutralized money stock to
economic activity. At the very least, such a model
would have to show how those changes in the money
stock, which were induced by public action, had a
different effect on economic activity than those
changes in the money stock induced by Federal Re-
serve actions.

Melichar’s use of the neutralized money stock in
his analysis of monetary influences on economic activ-
ity is inadequate on two counts: first, the neutralized
money stock is not an unbiased measure of Federal
Reserve actions, and second, no evidence has been
presented which supports the position that the neu-
tralized money stock is a good indicator of monetary
influences on the economy.

This should not be taken as a comment on Hendershott’s
book because his interest is in measuring Federal Reserve
actions, not monetary influences on the economy. How-
ever, when one uses the neutralized money stock in an
analysis of economic activity (as Melichar does), some
model linking it to economic activity is called for.

See the companion article beginning on the
next page for statistical evidence relating
to other aspects of the reverse-causation argument.