A Reply to Craig Swan

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by

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A Reply to Craig Swan

By Francisco Arcelus and Allan H. Meltzer*  

Craig Swan [11] finds so little merit in our study of housing [1] that he is reduced to praising our “courage” and “vigor” in attacking “widely held views about the relation between the availability of mortgage credit and housing starts.” He expresses considerable doubt, however, that the views we attack are, in fact, widely held, or held at all. They are, he believes, a straw man, and our analysis is not only wrong but misdirected.

Swan makes several useful comments. His criticism of our treatment of productivity change is one example. However, he also engages in lengthy discussions of potential problems that he correctly resolves, takes opposite sides of the same issue, corrects “errors” that we did not make and disregards our discussion of relevant points. If we were to answer each of the criticisms in his lengthy and detailed comment, the main points of our paper would be lost; we, no less than

*We are indebted to the National Science Foundation for continued support.

1 An example is the discussion of our use of $h$ (housing services) rather than $R$ (rent) as a dependent variable. In a footnote, Swan recognizes that our procedure is appropriate if there is an error in the $h$ variable. The variable $h$ was constructed by interpolation and extrapolation, a point discussed at some length in a letter to Swan and in our appendix.

2 Examples are the discussions of “credit rationing” and homogeneity. Swan argues that the demand equation is misspecified because our empirical work does not show the demand for housing starts to be homogeneous of first degree in prices and the value of financial assets. He also argues that “credit rationing” is a (relevant) feature of housing markets. If there is any meaning to “credit rationing” the meaning is that recorded market prices do not fully measure the prices relevant to consumer or producer decisions. Hence homogeneity with respect to these prices would not be found in empirical work. (This is not the reason for lack of homogeneity in our findings, however. See footnote 4).

3 An example is the discussion of stocks and flows near the start of Swan’s comment. Also, compare his discussion of mortgage rates and his statement that we “deny the possibility” of differences between mortgage rates and market rates with our statement [1, p. 85] that “we are forced (by the absence of reliable data) to assume that the stock of mortgages and open market interest rates adequately summarize the position of the mortgage market” (italics added). We then discuss, briefly, evidence supporting our procedure.

4 The most blatant example is the discussion of housing prices. (1) We noted [1, p. 85] that we tried two series to measure housing prices ($p_h$), that neither was “an adequate index” but both gave similar results. (2) We discussed at considerable length (pp. 89–91) the difficulty of interpreting the coefficient of $p_h$ as a measure of the independent effect of housing prices on housing starts. (3) We made two separate efforts to disentangle price effects from other factors in measured $p_h$ (pp. 90 and 96) and concluded: “There is no reliable way of separating the quality and price components of $p_h$” (p. 90). Swan refers to our discussion, agrees with parts of it but then interprets $p_h$ as a “pure” money price and argues that if the price level increases by 1%, $p_h$ increases by approximately 1%, so relative prices are unchanged. He then concludes that our findings imply non-homogeneity of real magnitudes and are, therefore, of no interest.

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Swan, would lose the forest for the trees. The principal issues would appear in much greater doubt than they are.

The thrust of Swan's criticism is directed at two main points. He believes our model is inappropriate and our estimation procedure is incorrect, so that the evidence we present is of little value or no value at all. Further, he alleges that our statement of the relation between the availability of mortgage credit and housing is a straw man of our own fabrication, not a widely held view that has had considerable influence on policymakers and their policies.

To resolve the questions raised about our model, our procedures and our results, we have retested the propositions in a way that avoids most of the criticisms that Swan directs against us. The following section presents the test and the evidence. We then discuss the existing literature on housing and mortgages and offer a small sample from the large amount of literature supporting our interpretation.

MORTGAGE CREDIT AND HOUSING STARTS

The main proposition tested in our paper is a particular example of a more general proposition relating the type of "credit" extended to the composition of output. For more than a century, some have argued that there is a close relationship between the two. A century ago the main proponents of this view were known as the Banking School. More recently, the chief defenders have been neo-Keynesians. Nowhere has their argument been more frequently made than in discussions of housing markets.

We attempted to test the proposition that, with market rates unchanged, an increase in the stock of mortgage credit increases the rate at which housing is produced, purchased, or produced and purchased. Although we tried a number of different tests, none showed evidence of a significant, positive relation between the stock of mortgage credit, or changes in the stock of mortgage credit and the rate of purchase or rate of production of housing. Our examination of the evidence produced by others turned up very limited support for the proposition and very little effect of mortgage credit availability or terms and conditions on housing. We concluded that the most likely effect on housing of an exchange of government (or agency) debt for mortgage debt is zero. We noted that this result is expected from general economic reasoning on grounds that substitution of one debt instrument for another in the portfolio of private lenders should have very little effect, or no effect at all, on real wealth, interest rates, and other relevant variables, including the demand for new housing units.

Our examination of the evidence convinces us that the conclusion we reached does not depend on a particular set of equations or a particular estimation procedure. Although many of the points Swan makes are either incorrect or overstated, our main reaction to his comments is that they have no bearing on the central issue. They are irrelevant.

To show that the conclusion we reached is unaffected by Swan's criticisms we estimated the reduced form for housing starts implied by our model and by other
TABLE 1

Reduced Form Elasticities for Housing Starts, 1915-40 and 1948-68

(t statistics in parenthesis)

<table>
<thead>
<tr>
<th></th>
<th>( y )</th>
<th>( B/p )</th>
<th>( S/p )</th>
<th>( i )</th>
<th>( L )</th>
<th>( R )</th>
<th>( SMD/p )</th>
<th>( p )</th>
<th>( R^2 )</th>
<th>( DW )</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>3.26</td>
<td>0.15</td>
<td>-0.14</td>
<td>-1.56</td>
<td>-0.75</td>
<td>3.48</td>
<td>-1.01</td>
<td>-1.52</td>
<td>0.95</td>
<td>1.58</td>
</tr>
<tr>
<td></td>
<td>(4.73)</td>
<td>(0.48)</td>
<td>(1.57)</td>
<td>(6.43)</td>
<td>(0.88)</td>
<td>(5.45)</td>
<td>(3.95)</td>
<td>(2.35)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Symbols:
- \( y \) = expected real income
- \( R \) = rental price
- \( B/p \) = real base money
- \( SMD/p \) = real stock of mortgage debt outstanding
- \( S/p \) = real government debt
- \( p \) = general price level
- \( i \) = market rate of interest
- \( L \) = real wage rate
- \( DW \) = Durbin-Watson statistic

Sources of data are described in the appendix to [1].

models that relate housing starts to relative prices, income, wealth and the availability of mortgage credit. The results are shown in Table 1.6

The effects of financial variables correspond reasonably well to the estimates implied by our three equation model. The implied elasticity of the base is somewhat larger (0.30), and the implied coefficient of \( S/p \) (-.06) and \( SMD/p \) (-.30) are somewhat smaller when computed by substituting numerical values of the parameters estimated from our three equation model into the rational expressions. Only the general price level appears in the reduced form estimates with a sign opposite to the sign implied by our three equation model.

Our finding on the role of mortgage debt seems well supported by the evidence from the reduced form estimates. Using the reduced form elasticities in Table 1 in place of the elasticities in our paper [1, p. 94] to compute the effect of a purchase of mortgages financed by issuing government securities, and allowing for the effect of the sale of securities on market rates (0.5% as before), implies that the effect on housing starts is very close to zero, the number we chose as the most likely value based on the results obtained from our three equation model.7

REAL OR STRAW MEN

We do not "deny the possibility" that the government can change the mortgage rate relative to the market rate. Nor, do we "feel that data on the quantity of

6One of the procedures that we continue to use here was questioned by Swan. He could not follow our verbal argument to justify using the reciprocal of the real stock of mortgages, \( SMD/p \), as a measure of owners' equity, \( E \). We assumed, explicitly, that the flow of housing services, \( h \), is proportional to the existing stock, \( H \), so that \( h = kH \). Since assets equal liabilities plus equity, \( E = H - (SMD/p) \), and \( E = kh - (SMD/p) \). Given \( h \) and \( k \), any increase in \( SMD/p \) reduces \( E \) and any increase raises \( E \). Note that for this purpose, the relevant measure of \( SMD/p \) is the liability of mortgage borrowers, the variable we used.

6As in our previous paper, we estimated four equations to assure ourselves that similar results are obtained for total housing starts and for the components (single family, two-family, and multi-family) despite very different time paths for each of the components. We will supply these data on request.

7The calculation is exactly the same as in our paper. The stock of mortgages is 1.4 times the stock of securities in the calculation. For other details see [1, p. 94]. One point of clarification may avoid a problem that troubled Swan. We do not assume that mortgage debt is eliminated in this transaction, only that it is transferred from private to public (or quasi-public) owners. The point of our calculation is to demonstrate exactly the point he accuses us of missing.
mortgages and the interest rate fully describe the position of the mortgage market." We believe both of Swan's statements can be rewritten as refutable propositions and, if this is done, the "availability" argument has limited explanatory power.\(^8\)

We reject the charge that we have created two straw men, one by overlooking important qualifications in statements about the relation of mortgage credit to housing starts, the other by misinterpreting the effects that policy makers expected to follow the use of Regulation Q. In this section, we support our claim that the propositions we reject are widely held views, not straw men of our own building.

The literature on mortgage credit and housing is so extensive that we cannot claim to have read more than a small fraction. Space permits us to quote from only a few, but we believe that these are representative of the dominant view.

In 1963, Leo Grebler and Sherman Maisel [8, p. 491] summarized much of the available literature on housing cycles as follows:

While these [roughly 10 studies summarized] analyses differ on matters of emphasis and detail, they agree in the conclusion that short-run fluctuations in residential building have resulted mainly from changes in financial conditions labeled as ease of borrowing, availability of mortgage funds, or supply of mortgage credit.

A decade later, Irwin Friend wrote [7, p. 113]:

The greater impact of monetary stringency on housing than on the rest of the economy apparently is due mainly to a capital rationing effect, resulting from deficiencies in current institutional arrangements for providing mortgage credit; and probably also to an interest rate effect, reflecting a greater interest elasticity of housing demand than of demand generally.

It is too early for the Home Loan Bank to rewrite history. To defend our interpretation of the effects expected to follow from Regulation Q, we cite James Tobin [12, p. 4]: "The objective [of lower rates] was to help the savings and loan associations"; and Milton Friedman [6, p. 16]:

Nonetheless, mutual savings banks and saving and loan associations have attributed their difficulties and the associated slump in housing construction to the 'unfair' competition of commercial banks. Under pressure, the Fed in July 1966, lowered the maximum rate on time deposits most closely competitive with the deposits of the other savings institutions.

And on p. 29, he adds:

Insofar as they [distortions of the capital market] have been recognized at all by defenders of the controls, my impression is that they have been regarded as costs incurred for other benefits—either favoring housing or stemming inflation.

Thomas Mayer [9, p. 16]:

But portfolio regulations and Regulation Q exist only in part to protect financial institutions; in part they exist to channel funds to preferred borrowers, primarily residential construction.

\(^8\)The sources cited by Swan, and other studies are discussed in detail in Meltzer [10]. It is true, as Swan states, that Dhrymes and Taubman [4] reach the conclusion that credit rationing was practiced in 1966, but the data in their paper did not support their conclusion.
Henry Wallich [13, p. 29]:

Regulation Q therefore is not sufficient to achieve its objectives of inflation proofing the thrift institutions and supporting the social priority of housing.

Many economists, including several we have quoted, argued against the use of Regulation Q. They reasoned, correctly, that the effect on aggregates is small and close to zero and that the allocative effects are difficult to predict but not likely to benefit the mortgage market. Of course, this did not prevent the use of Regulation Q, nor has the experience with Regulation Q eliminated the desire of the Home Loan Bank and many of its members to maintain the regulation.

FINAL COMMENT

A central point of our paper was the comparison of two alternative theories of the housing market. One view is that increases in the availability of mortgage credit, at a given market rate of interest, increase the production or demand for housing. The evidence supporting this interpretation comes mainly from a comparison of time series showing the volume of mortgages and the number of housing starts. An alternative explanation of fluctuations in housing starts is that fluctuations are mainly the result of decisions to defer or accelerate purchases of housing in response to interest rate and other relative price changes. "Availability" of mortgages has little or no effect on the decision.

Demonstrating that the three-equation model of our paper yields poor results when the number of degrees of freedom has been reduced by more than half or highly collinear instrument variables are added, like many of Swan's other comments, conveys little information about the central issue. The issue turns on evidence, not arguments about potential or actual bias. We believe that the procedure we use here circumvents many of Swan's criticisms. The evidence we present supports the conclusion drawn from the evidence in our previous paper.

We are pleased to find that conclusions similar to ours have been reached in other recent studies, using different techniques and data for the U.S. and other countries [2; 5, p. 144; 3]. There now appears to be growing evidence supporting the conclusion we reached and denying the central role given to credit terms and availability as determinants of housing starts, the position emphasized in the literature of the past twenty years and in public policy decisions.

LITERATURE CITED


12. Tobin, J. "Deposit Interest Ceilings as a Monetary Control," Journal of Money, Credit, and Banking, 2 (February, 1970), 4-14.

537. Some Effects of Trainers on Their T-Groups, by Lee Bolman.
538. Relationship Between Age and Risk Taking Among Managers, by Victor Vroom and Bernd Pahl.
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