## Reply to Bruce Brittain's Comment

By Sven W. Arndt

A further word may be in order on the division of the economy into "auction" and "contract" markets. When excess demand shifts in a contract market, posted prices do not respond immediately so that participants on one side of the market become quantity takers whose realized and planned transactions do not match. Such "false trading" generates spillover effects elsewhere in the system: a household, for example, whose realized purchases of commodities fall short of *ex ante* magnitudes, is one whose holdings of liquid assets must exceed *ex ante* holdings. Spillover effects may be modeled in several ways and will depend on the extent to which quantity constraints become anticipated. In the aggregate, they may affect velocity as well as excess demand in certain markets. The important point, however, is that even where an auction market itself clears at all times, spillover terms appear in the relevant equilibrium conditions, implying that posterior rather than prior excess demand must be eliminated by price movements in that market. In the long run, of course, all markets clear, spillover terms vanish and the distinction between posterior and prior excess demand disappears.

This brings me to *Bruce Brittain*'s claim that consumers "are fooled and don't stockpile" and that their forecasting abilities are assumed to be different from those of producers. Nothing of the sort is implied by the model whose crucial characteristic is rather that commodity prices are not instantly adjustable; this means that the allocative function of prices is temporarily suspended when an initial equilibrium is disturbed. As trading takes place at a price which does not clear the commodity market, non-price rationing occurs and in our examples the rationing power is, not implausibly, assumed to rest in the hands of sellers. Analogous results, however, would obtain if instead households were assumed to do the stockpiling while firms permitted inventories to adjust passively to shifts in excess demand. Sellers' inventories would then be smaller *ex post* than *ex ante* and their liquid assets larger. While the outcome thus depends on which side of the market is assumed to be the quantity taker and not on differential abilities to forecast, I would nevertheless disagree with *Bruce*'s contention that all market participants face the "same information". Although this is undoubtedly true in the long run,

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I suspect that over shorter time intervals market participants may be usefully differentiated according to their access to (costly) information as well as their ability to act on that information. For similar reasons, I take issue with *Bruce*'s assertion that short-term price rigidities are inevitably the result of irrationalities.

As for the argument that market participants should predict the future path of the own rate of interest and act rationally on that prediction, the proposed framework unlike much recent work in this area does address the problem. First, by giving one side of the market (producers) the stockpiling option, it forces the current bond price (rate of interest) to adjust relative to the expected bond price. Until it does, individuals will prefer to hold commodities rather than bonds because the difference between initial and expected prices protects them in the commodity but not in the bond market. Rationality in $n$-1 of the markets implies rationality in the $n$th.

Second, by constraining household portfolios to money and time deposits carrying fixed nominal rates of return (Regulation Q) and by making households quantity takers in the commodity market, it tries to reflect rigidities which may be observed in the real world. Within these constraints, however, households are assumed to act rationally and to hold unanticipated accumulations of liquidity predominantly as time deposits.

There is, finally, one other question involving specification. The great convenience of point-in-time models is that they eliminate complications arising from changes in wealth and that they reduce the number of relevant equilibrium conditions to be satisfied. This convenience, however, comes not without its cost, which is that the role of flows over a sequence of points in time cannot be properly investigated. In the proposed framework, the short run is a *period* defined by pricing patterns in the commodity market. It is divided in turn into a finite number of shorter intervals — call them *frames* — determined by pricing patterns in asset markets. Output for the period accrues as a stock in equal installments at the start of each frame. In response to an unanticipated shock at the start of a frame, sellers revise the desired composition of their portfolios, increasing desired stocks of commodities and foreign assets and reducing desired stocks of domestic assets. In managing their commodity/asset portfolios, producers are influenced not only by all currrent prices, but by the price of commodities expected in the next period and by asset and currency prices expected in the next frame. With the current commodity price fixed, the nominal rate of interest must rise in order to eliminate incentives to substitute commodities for domestic bonds.

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