

## Monetary equilibrium and price stickiness reconsidered: A reply to Bagus and Howden

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**Abstract** Bagus and Howden (*Review of Austrian Economics* 24(4): 383–402, 2011) argue that price stickiness is a poor justification for advocating a flexible money supply through the issuing of fiduciary media under central or free banking. They view the contraction in output following an exogenous increase in money demand as an optimal response, worry about redistribution effects from the issuance of fiduciary media, and claim a changing money supply complicates economic calculation. Accepting their view that the contraction in output is an optimal response to an exogenous change in money demand, we still find a potentially beneficial role for monetary policy (under central banking) or fractional reserve note issue (under free banking). We show that even if all prices were perfectly flexible, changes in the money supply to offset changes in money demand might still be desirable. We point out several errors and mischaracterizations in their article, justify our decision to disregard wealth transfers, and discuss how a flexible money supply might facilitate economic calculation.

**Keywords** Austrian economics · Central banking · Commodity standard · Fiat money · Free banking · Macroeconomics · Money · Monetary equilibrium theory · Monetary standard · Sticky information · Sticky prices

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Bagus and Howden (2011) argue that price stickiness is a poor justification for advocating a flexible money supply through the issuing of fiduciary media under central or free banking. They view the contraction in output following an exogenous increase in money demand as an optimal response, worry about redistribution effects from the issuance of fiduciary media, and claim a changing money supply complicates economic calculation. Seemingly at odds with much of their argument, they conclude by advocating flexibility in “money proper.”<sup>1</sup>

Accepting their view that the contraction in output is an optimal response to an exogenous change in money demand, we still find a potentially beneficial role for monetary policy (under central banking) or fractional reserve note issue (under free banking). Indeed, we show that sticky prices are not a necessary condition; even if all prices were perfectly flexible, changes in the money supply to offset changes in money demand might still be desirable. We point out several errors and mischaracterizations in their article, justify our decision to disregard wealth transfers, and discuss how a flexible money supply might facilitate economic calculation. It is not our intention to close the debate. Rather, we present a neutral theoretical framework and recognize that, in the absence of empirical evidence, reasonable people might disagree.

## 1 Sticky prices

Bagus and Howden (2011: 384–386) offer a confused account of the role sticky prices play in macroeconomic theory. They suppose sticky prices result in a “sluggish” response to exogenous shocks. They believe others find a potentially beneficial role for altering the supply of money because “the price level cannot adjust *instantaneously* (emphasis added)” —that is, because the market for “money is hampered from *instantaneously* clearing (emphasis added).” Their error, we believe, stems from focusing on the *speed* of adjustment rather than the *cost* of adjustment. Although the speed of adjustment may affect the cost of adjustment, it is the latter which ultimately provides a potentially beneficial role for altering the supply of money. As a result of misunderstanding this fundamental point, they pay undue attention to sticky prices.

Most macroeconomists typically hold that exchange frictions (e.g., Mankiw 1985) or epistemic frictions (e.g., Lucas 1972; Mankiw and Reis 2002) cause some prices to adjust with a significant lag. Sticky prices (or sticky information) give rise to an upward sloping short run aggregate supply curve. As a result, negative (positive) monetary shocks produce short run decreases (increases) in output. In the long run, when prices adjust completely, output is restored to its natural level.

Despite their confused account, Bagus and Howden (2011, p. 394) correctly note that changes in output following monetary shocks need not imply a welfare-enhancing role for a flexible money supply. If it is significantly costly to change

<sup>1</sup> The authors define “money proper” as high-powered money. Given their opposition to fiduciary media, we suppose they have 100%-backed commodity monies in mind. They claim that, in a free market, the supply of money proper would be governed by the “general profit rate prevailing in the economy” (Bagus and Howden 2011, p. 398). Unfortunately, they give no further indication as to how they believe the supply of money would expand and contract in response to various shocks. In our view, White (1999, pp. 28–37) offers an excellent explanation of the mechanism governing the supply of commodity monies.

prices immediately, for example, allowing quantity adjustments in the short run might be the preferred alternative. “Value-free economics,” Bagus and Howden (2011, p. 395) contend, “cannot deem preferred idleness as suboptimal because output falls.” They claim preferred idleness of resources is analogous to a worker who decides to increase his leisure: output falls, but welfare increases.

According to Bagus and Howden (2011, pp. 393–395), the observed fluctuation in output is merely the optimal response path to an exogenous shock. “As long as this adjustment lag is not caused by interventions to the pricing process,” Bagus and Howden (2011, p. 395) maintain, “there is no significant issue at stake.” It is worth clarifying that their view does not necessarily imply individuals, on average, are no better or worse (1) following the shock or (2) under an alternative set of institutions.<sup>2</sup> The response is optimal, *given the shock and the institutional framework within which the individuals are operating*. Although it is outside of their control, individuals, on average, may prefer that the shock had never occurred. Similarly, acknowledging that individuals respond appropriately within a given institutional framework does not imply that one set of institutions is just as good as another. In what follows, we engage in comparative institutional analysis to consider the conditions that would make a flexible money supply desirable.

Consider two regimes that are similar in all respects except one. Under the first regime, prices adjust in response to changes in the demand to hold money. Under the second regime, changes in the demand to hold money are offset by changes in the supply of money. At this point, we do not specify the mechanism by which the supply of money is governed in either regime (e.g., profit maximizing mints under a 100% reserve commodity standard, monetary policy by a central bank, profit maximizing note issuers under free banking, etc.) As should soon be clear, this is not intended to suggest that all regimes of the same type are equally desirable. We do not believe this is the case. Some mechanisms may respond more quickly (or at a lower cost) than others of the same type. We make the general case to facilitate discussion of particular systems later in the text.

In order to show that the case for a flexible money supply does not depend on sticky prices and to keep the analysis as simple as possible, we first consider the case where all prices are perfectly flexible. Under the first regime, an exogenous increase in the demand to hold money causes prices to fall from  $P_1$  to  $P_2$ . As Bagus and Howden (2011, p. 394) acknowledge, there is some cost  $c_p$  associated with changing prices. Whether these costs arise from physically changing the prices listed on menus, the time spent devising daily specials, or some other source is irrelevant. We need only acknowledge that the adjustment is costly.

Under the second regime, an exogenous increase in the demand to hold money is immediately offset by an increase in the supply of money. Hence, prices persist at  $P_1$ . It is worth noting that the increase in the money supply does not remedy the situation by “making the ‘stuck’ prices ‘unstuck,’” as Bagus and Howden (2011, p. 397) erroneously claim.<sup>3</sup> Rather, it restores aggregate demand to its original state (before

<sup>2</sup> Although it is not a necessary implication of viewing the observed fluctuation in output as the optimal response path to an exogenous shock, the authors make the stronger claim that there is no better alternative to the sluggish correction of monetary disequilibrium (Bagus and Howden 2011, p. 399). In other words, the sluggish adjustment of prices and output is not only narrowly optimal, but also optimal in a broader sense that takes into account alternative sets of institutions.

<sup>3</sup> The authors repeat this mischaracterization elsewhere in the text (pp. 395, 396).

the increase in money demand) such that the original constellation of prices continues to reflect relative scarcities.<sup>4</sup> Of course, we do not assume adjusting the money supply is a costless solution. There is, at a minimum, the cost of printing notes or making entries into electronic accounts. We should also include any costs of deliberation as to the size and timing of the increase in money. We denote the sum of all of these costs as  $c_m$ .

Bagus and Howden (2011, p. 386) see no reason to prefer one constellation of prices to another.<sup>5</sup> While we agree that two price levels (i.e., two arrays of relative prices which differ only in their nominal magnitude) are equally capable of conveying the relative scarcity of goods in the real economy, it does not follow that there is no reason to prefer one price level to another. In the above example, one should prefer maintaining  $P_1$  by increasing the money supply whenever  $c_p > c_m$ . Similarly, one should prefer allowing the price level to adjust from  $P_1$  to  $P_2$  whenever  $c_m > c_p$ . In other words, if both price levels are equally desirable in terms of reflecting relative scarcities, one should maintain the original constellation of prices whenever it is less costly than allowing prices to adjust.<sup>6</sup> Recall that this view in no way depends on the existence of sticky prices.

Allowing for short run price stickiness and the corresponding fluctuation in output does little to alter the analysis. Under the first regime,  $c_p$  increases to  $c_p'$  when there are sticky prices in order to reflect the (potentially greater) cost of allowing prices to adjust downward and any social losses from idle resources.<sup>7</sup> We might also amend our original view to account for the lag in monetary supply changes. Accounting for the costs incurred adjusting (and readjusting) flexible prices and any social losses resulting from deviations in output during the process of restoring the original price level increases the cost of monetary expansion from  $c_m$  to  $c_m'$ .<sup>8</sup> Although *accounting* for these complexities may disproportionately change the costs of adjustment under the two regimes and, hence, one's view on the relative desirability of a particular regime, their *inclusion* does not change the central question to be answered. Since both price levels are equally capable of conveying the relative scarcity of goods in the real economy, one should prefer the least costly alternative.

We will be the first to admit that the above analysis is simplified, as abstract considerations of a problem always are. Nonetheless, we maintain that it provides a useful framework for viewing the particular costs arising under various regimes. Having made a general case that a flexible money supply is potentially desirable,

<sup>4</sup> To put it somewhat differently, there are two ways to reach a long run equilibrium in response to an increase in money demand: allow prices to adjust downward (as Bagus and Howden propose) or maintain prices at their pre-shock level through monetary expansion (as monetary equilibrium theorists propose).

<sup>5</sup> Contrary to their claim (p. 386, footnote 5), "stating that one price level is more optimal [sic] than another" is not equivalent to deeming "stable output as preferable to stable prices." In the absence of productivity gains, monetary equilibrium theorist typically prefer stable output (at the natural level) and a stable price level (so as not to incur unnecessary adjustment costs), whereas Bagus and Howden would seem to prefer neither stable output (accepting short run deviations) *nor* a stable price level (allowing the price level to change in response to monetary shocks).

<sup>6</sup> Selgin (1997) makes a similar argument in the context of productivity growth.

<sup>7</sup> We say "potentially greater" since sticky prices might be indicative of significant adjustment costs (i.e., prices are sticky because it is more costly to change prices than under the flexible regime), but also might arise from some other source.

<sup>8</sup> If the money supply adjusted with a lag, flexible prices would adjust in the short run and then readjust back to reflect the changing money supply. Sticky prices, by definition, are not changed in this regime.

we now turn to specific criticisms the authors raise concerning the costs of flexibility from increases in fiduciary media.

## 2 Cantillon effects

One reason Bagus and Howden (2011, p. 400) oppose increases in fiduciary media is the “[i]nevitable wealth redistributions [that] will occur whenever the money supply is adjusted.” We do not deny that transfers occur, but cannot help but wonder why the authors are not equally troubled by wealth redistributions occurring when the price level is allowed to adjust downward, as they propose. One might contend that, contrary to those transfers that follow an *unnatural* monetary injection, those occurring in the *natural* course of a market process are *earned* by alert entrepreneurs and are therefore acceptable. However, this explanation is non-economic and Bagus and Howden (2011, p. 384, footnote 1) explicitly rule out justifications on “ethical, legal, or banking sector profitability grounds.” To our knowledge, the authors have not provided basis to conclude that transfers from monetary injections decrease welfare on net. As such, we follow the standard approach of disregarding mere wealth transfers.

Although we see no reason to worry about wealth transfers from an economic perspective, the authors raise two additional criticisms that might fall under the heading of Cantillon effects. First, Bagus and Howden (2011, p. 396) claim, “the new issuance of money will not necessarily be made to those who have increased their cash balances.” Second, they maintain that, “to offset fully any monetary disequilibrium, the money supply needs to be increased or decreased at the exact same time as at [sic] the source of the issue” (p. 396). We address each in turn.

We are not sure why the authors believe new money must be issued *directly* to those increasing their demand for money for monetary equilibrium to be restored. If a natural disaster destroyed the water source of those living in Arizona, and the technology existed to cheaply produce and bottle an equal quantity of water in Maine, one would not maintain that this bottled water must be issued directly to those in the disaster zone to offset the initial shock. Although the point and manner of injection might affect the time it takes for the new money to reach its highest valued use, and therefore the cost of restoring monetary equilibrium, it is erroneous to assume that the new money must be issued directly to those increasing their demand for monetary equilibrium to be restored.

The authors are correct in noting that monetary injections should be perfectly timed to offset monetary disequilibrium *entirely*. We do not suppose that this will happen in any system, though we have reason to believe some systems will more closely approximate the ideal than others. Under free banking, for example, an increase in the demand for cash balances shows up and is remedied quite quickly as individuals demanding more cash reduce their deposit balances and increase their holdings of banknotes. Compare this with the case of fractional reserve fiat money systems, where central bank notes serve as both the predominant circulating medium and the reserves held by banks. An increase in the demand for cash balances under this system requires banks to reduce their reserves. However, if banks expect the central bank to increase their reserves in response to the increase in money demand

and the central bank acts as expected, the system wide monetary contraction will be small and short-lived.

Since Bagus and Howden do not present a costless alternative, we need not let the perfect be the enemy of the good. As long as the costs of the monetary adjustment (including the social losses from imperfect implementation) are less than the cost of the price level adjustment, one should prefer the former.

### 3 Economic calculation

Another reason the authors oppose monetary expansion is their belief that the issuance of fiduciary media, “even one made in response to an increased demand for money and consistent with what free bankers recommend [...] will result in discoordinating activity. Interest rates are lowered artificially and more and longer investment projects are undertaken than can be completed with the real savings of society” (Bagus and Howden 2011, p. 386). Their claim almost certainly arises from a misunderstanding of the nature of savings in the form of stored money balances.

In an earlier critique of fractional reserve free banking theory, Bagus and Howden (2010, p. 43) asserted that “cash holdings do not represent savings.” In the work addressed herein, they seem to have backed away from their earlier claim, acknowledging that cash balances constitute savings (Bagus and Howden 2011, p. 400). Given this concession, we are confused as to why they continue thinking the issuance of additional fiduciary media is unwarranted in response to rising money demand. As Selgin (2012, p. 139) notes, if economic agents increase their cash balances by reducing consumption expenditure, this signals a change in time preference consistent with a more roundabout process of production. The issuance of additional fiduciary media by banks acting through the loanable funds market is necessary to bring about a market interest rate consistent with the Wicksellian natural rate. If, on the other hand, economic agents change the *composition* of their savings without changing the *amount* of their savings, such as by liquidating equity holdings and holding the proceeds as cash, the resulting issuance of additional fiduciary media is necessary to prevent signaling a change in time preference where one has not occurred. Again, this financial intermediation is the process by which the market rate and the Wicksellian rate are harmonized and the discoordination which Bagus and Howden rightly fear is avoided.

Equally confused are Bagus and Howden’s (2011, p. 399) worries that increasing additional fiduciary media in response to an increase in money demand will impede economic calculation: “Entrepreneurs must now calculate along additional margins. First, the overriding goal of correctly forecasting consumer demand for a product remains instrumental, taking into account changes in the demand for money. Now, however, there is an additional forecast required—changes in the quantity of fiduciary media.” If, as we have argued above, changes in the supply of money neutralize changes in the demand for money, economic calculation is facilitated. Under the system proposed by Bagus and Howden, entrepreneurs must forecast changes in consumer demand for their product *and* changes in the demand for money. Under our proposed alternative, entrepreneurs can largely ignore changes in the demand for money since, should they arise, they will quickly be squelched by an injection or

contraction of fiduciary media. Following the reasoning of the authors, economic calculation is facilitated because the scope of requisite forecasting is reduced.

#### 4 Conclusion

No doubt Bagus and Howden will decry our level of aggregation. For the most part, the view presented herein is consistent with the New Keynesian consensus in macroeconomics and, as such, the microfoundations are explored in great detail elsewhere. To put it bluntly, we would prefer to recognize the limitations of a consistent theory than to wander about aimlessly making ad hoc assumptions.

We hope to have clarified that the case for a flexible money supply does not rely on sticky prices. Moreover, we offer a critical assessment of the Cantillon effects critique offered by Bagus and Howden and show that, in contrast to their view, injections of fiduciary media might facilitate economic calculation.

Moving forward, we hope free banking and 100% reserve advocates take a comparative approach by evaluating the costs of adjustment in the two systems. Unfortunately, by focusing on sticky prices, Bagus and Howden obscure the central issue.

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