INDEX FUTURE CONVERTIBILITY: REPLY TO WOOLSEY

Scott Sumner

W. William Woolsey's critique of my survey of the history of economic aggregate targeting in the *Cato Journal* (Winter 1991) raises a number of interesting issues.[1] I argued that much of the intellectual history of monetary policy rules can be read as an attempt to grapple with the problems raised by information lags in the reporting of economic aggregates. I discussed previous policy proposals from this perspective and ended with a set of proposals by myself, and others,[2] that would overcome the information lag by targeting the price of futures contracts linked to the relevant economic aggregate.

Woolsey begins by correctly pointing out that I mistakenly described the "BFH" system as having an abstract unit of account and that I also described the system as being a hybrid of proposals by Fisher Black, Eugene Fama, and Robert Hall, whereas it is actually a creation of Robert Greenfield and Leland Yeager (1983).

In my original paper I was unsure as to whether Greenfield and Yeager intended to link their currency to a comprehensive bundle of goods and services, or to a narrower bundle of commodities with contemporaneously available prices. Woolsey argues that the comprehensive bundle was "clearly" what Greenfield and Yeager had in mind. I accept Woolsey's interpretation although I would note that Greenfield and Yeager could have eliminated any ambiguity by

---

[1]The title of my 1991 paper should have read "The Development of Economic Aggregate Targeting."
[2]This idea seems to have been independently developed by a number of authors. The proposal in my 1989 paper focuses on overcoming the information lag in the context of a nominal income rule. Glasner (1989) focused on a variant of Fisher's (1920) Compensated Dollar Plan. Glasner credits Earl Thompson for having suggested the idea. Hall's (1983) model stabilizes the price level by allowing expectations to affect money demand, rather than the supply of money. Barro (1979, pp. 30–31) also anticipated certain aspects of the futures targeting approach.

defining the bundle as "comprehensive" rather than "comprehensive enough" for the price level to be "practically steady" (1989, p. 409). Since they did not explicitly analyze the information lag it was easy to read into their proposal a desire to find a commodity bundle with an average price that closely mirrors the overall CPI.

Regarding Woolsey's criticism of my statement that in the BFH system "adjustments [to gold prices] based on incipient changes in the target price index should, by themselves, be sufficient to maintain price level stability" (1991, p. 752), I would point out that it was Greenfield and Yeager that suggested this mechanism. I merely pointed out that their advocacy of also using "changes in the price of gold itself" as an adjustment mechanism is redundant. It is not a different mechanism, it is the same mechanism viewed from a different perspective.

Woolsey raises a more serious criticism in his denial of my assertion that the BFH system is susceptible to the same sort of destabilizing speculation as would occur under a Fisherian Compensated Dollar Plan. I saw the speculation problem as arising from differences between the official price of gold (linked to the last reported price index) and the market price of gold (affected by expectations of the next price index). Woolsey suggests that this problem would not occur under the BFH system since there would be no official price of gold. He argues that

> The information lag could cause a disaster in the BFH system for a different reason. If the price of the bundle actually rose above $1, the banks would be obligated to sell gold for less than its market price. But for how long? It would be absurd for banks to suffer the consequent losses on all redemptions occurring between the announcement of a high price for the bundle and the subsequent announcement. In the context of monthly announcements, such a requirement would surely result in the collapse of the banking system [Woolsey 1992, 478].

I agree with Woolsey except in his assertion that this process is different from the one that I had described. I would suggest that the price at which "banks would be obligated to sell gold" *is* the official price of gold.

Woolsey's Proposal

The bulk of Woolsey's paper concentrates on combining the idea of an index futures-based monetary system with the BFH system. For readers unfamiliar with this literature it may be helpful to think of Woolsey's system as one where the medium of account involves a futures contract linked to future announcements of the CPI,

whereas the original BFH system used the basket of goods that comprise the CPI as the medium of account.

In my earlier papers on this subject I assumed the existence of a monetary authority in order to focus attention on the idea of index future targeting. I would agree that combining index future convertibility with a free banking system could well produce greater economic efficiency than would a occur under a central banking system. Nevertheless, Woolsey appears to have overstated the advantages of this approach in his concluding paragraphs.

Woolsey (1992, p. 483) argues that under my proposal if "the expected value of the CPI remained on target, speculators would have no reason to take positions on the futures contract." But surely investors would be expected to have heterogeneous expectations. He goes on to argue that since investors would not expect to profit from these contracts they would not be expected to invest sufficient resources into gathering information relevant to the CPI. The argument that information is a public good has been applied to financial markets in general and would seem equally applicable to Woolsey's proposal. Woolsey (p. 484) suggests that the fact that under his proposal "successful speculators would . . . earn capital gains" somehow differentiates the proposal from other index futures schemes. But successful speculators would also gain from my scheme. Woolsey needs to explicitly show how a specific profit opportunity, in a specific market, would be available under his proposal, but not under my proposal.

I have one other minor suggestion regarding the Woolsey paper. Woolsey briefly discusses the role of deposits in his system. All that is required to fix the price level, however, is that currency and coins are convertible into index futures.

Extensions of the Basic Model

In my *Cato Journal* paper, I mentioned almost as an aside that the Federal Reserve should conduct parallel operations in Treasury securities. Since Woolsey has shown the importance of this assumption I would like to discuss this issue further.

Assume that the Federal Reserve creates a CPI futures targeting system and that $300 billion in base money must be created to bring the price level up to its target value. In that case the public would sell $300 billion worth of CPI futures to the Fed in exchange for $300 billion worth of cash. Because this cash could be invested in assets earning a positive rate of return, the price of the CPI futures

would be less than the expected future value of the price level.[3] This problem could be minimized by simply charging the public a small margin requirement (perhaps T-bills) on CPI futures transactions.[4] No cash would be exchanged until the settlement date. This, however, would break the link between futures transactions on the money supply.

Combining parallel operations in treasury securities with the futures targeting system would minimize the discrepancy between the futures price and the future expected price level, but still allow futures transactions to have the desired impact on the money supply. In this system the Federal Reserve would passively buy and sell CPI futures at the target price. It would then simultaneously buy and sell treasury securities with the goal of preventing the public (and Federal Reserve) from having a substantial net long or short position in the CPI futures market. In the previous example, the purchase of $300 billion in treasury securities would accomplish that goal.

Both Woolsey and I missed the implication of index futures convertibility for the time inconsistency problem. In contrast to our current system, a system incorporating index futures would enable investors to profit from a (correct) prediction that the Federal Reserve would miss its announced policy target. This would clearly increase policy credibility *for the period being targeted.* It is not clear that it would eliminate the time inconsistency problem, however, since the expected price level several months into the future could still exceed the target value if the Federal Reserve was expected to abandon the index futures system at some time in the future.

Even the long-term time inconsistency problem could be eliminated if the Federal Reserve offered to buy and sell unlimited quantities of CPI futures for all future months, at the target price. This would not violate the dictum of one target per monetary policy instrument since the money supply would only be adjusted on the basis of purchases and sales of the next month's contract. The public's position on the long-term contracts would, however, constrain the Federal Reserve to adhere to its announced CPI target. For instance, suppose the public expected the Federal Reserve to adhere to the target for a few months and then later abandon CPI futures in order to inflate the currency. The public would then buy long-term CPI

---

[3]Kevin Dowd (1992) pointed out this problem. His paper provides an alternative solution.

[4]This sort of margin requirement would also be more consistent with the operation of actual futures markets.

futures. Although this would not directly affect the money supply, these purchases would impose a large potential capital loss on the government. The purchases would continue as long as the perceived gain to policymakers from inflating exceeded the capital losses that would result from abandoning the CPI target.[5]

Brian Hillier (1989) showed that the time-inconsistency problem can result from policymakers having too few policy instruments to achieve the first best solution. Because long-term forward CPI targeting can be separated from one period forward targeting that is utilized solely for money supply control purposes, this would provide the monetary authority with the additional policy instrument necessary to overcome the time inconsistency problem. It would be interesting to see how Woolsey's plan could be amended to deal with this issue.

Conclusion

One clear implication of the index future convertibility literature is that all forms of discretionary monetary policy, intermediate targeting, and monetary feedback rules are inefficient. Because of my previous work in this area I am obviously pleased that Woolsey has endorsed the viability, and efficiency, of index future convertibility. In another sense, however, I am disappointed. Despite the fact that (as far as I am aware) no one has challenged the optimality of this system, the profession continues to advocate a wide variety of policy proposals that would appear to be dominated by index future convertibility.[6] I would welcome the opportunity to respond to a cogent critique of this system.

Woolsey's paper represents a useful addition to the index futures convertibility literature. I appreciate his corrections of several errors in my earlier paper, although, as noted previously, I do not agree with all of his criticisms. In my view, monetary policy research should now concentrate on identifying the proper goals of monetary policy. This will necessarily require a resolution of the age-old dispute between proponents of new classical and sticky-price models.

References

Barro, Robert J. "Money and The Price Level under the Gold Standard." *Economic Journal* 89 (March 1979): 13–33.

Black, Fisher. "A Gold Standard with Double Feed-back and Near Zero Reserves." 1981. Reprinted in *Business Cycles and Equilibrium*. New York: Basil Blackwell Press, 1987.

[5]Sumner (1994) examines the time-inconsistency problem in more detail.

[6]McCulloch (1991) provides a good recent example of a monetary feedback rule.

Dowd, Kevin. "A Proposal to End Inflation." Unpublished Manuscript, University of Nottingham, 1992.

Fama, Eugene. "Financial Intermediation and Price Level Control." *Journal of Monetary Economics* 12 (July 1983): 7–28.

Fisher, Irving. *Stabilizing the Dollar: A Plan to Stabilize the General Price Level without Fixing Individual Prices.* New York: Macmillan, 1920.

Glasner, David. *Free Banking and Monetary Reform.* Cambridge: Cambridge University Press, 1989.

Greenfield, Robert L., and Yeager, Leland B. "A Laissez-Faire Approach to Monetary Stability." *Journal of Money, Credit and Banking* 15 (August 1983): 302–15.

Greenfield, Robert L., and Yeager, Leland B. "Can Monetary Disequilibrium Be Eliminated?" *Cato Journal* 9 (Fall 1989): 405–21.

Hall, Robert. "Optimal Fiduciary Monetary Systems." *Journal of Monetary Economics* 12 (1983): 33–50.

Hillier, Brian. "Time Inconsistency and the Theory of Second Best." *Scottish Journal of Political Economy* 36 (August 1989): 253–65.

McCulloch, J. Huston. "An Error Correction Mechanism for Long-Run Price Stability." *Journal of Money, Credit and Banking* 23 (August 1991): 619–24.

Sumner, Scott. "Using Futures Instrument Prices to Target Nominal Income." *Bulletin of Economic Research* 41 (1989): 157–62.

Sumner, Scott. "The Development of Aggregate Economic Targeting." *Cato Journal* 10 (Winter 1991): 747–59.

Sumner, Scott. "The Impact of Futures Instrument Price Targeting for the Precision and Credibility of Monetary Policy." *Journal of Money. Credit and Banking* (1994): forthcoming.

Woolsey, W. William. "The Search for Macroeconomic Stability: Comment on Sumner." *Cato Journal* 12 (Fall 1992): 475–85.