An analytical model of the Fisher equation with memory functions

Finance Editor's Comments

Caputo and Kolari examine the well-known problem of short-run negative and long-run positive return effects of inflation in this innovative paper. When they formally incorporate a function for memory of past inflation patterns into the analysis, they find that rational behaviour (in the traditional economic sense) can account for both effects.

I have three comments about this paper, only one of which is alternative. I am happy that someone has returned to the inflation problem, which seems to have lain fallow for some years in the finance research literature, presumably because inflation has been very low in the US, though not necessarily elsewhere. Once again, the dominance of US experience in finance research shows its effects. However, even 1 or 2% inflation will have a material cumulative effect over a few years, and inflation is something we should continue to investigate in finance because it is so pervasive. Caputo and Kolari have advanced our understanding of the effect on asset prices in a novel and useful way.

Once we have such an advance in theoretical models, we would like to see some empirical testing. The first pass would be to develop testable hypotheses about the general effects of the model and see if tests can refute its implications for share prices. I do not speak of proof, as is so carelessly claimed in most empirical literature, or even of consistency. The best we can hope for is that the theory stands up to rigorous empirical tests in the traditional format.

From an alternative perspective, I view the empirical implications of this theory very differently. I would like to cast aside the foolish reliance on Milton Friedman's abandonment of common sense to investigate the reality of the assumptions, which are really the most interesting part of the paper for new research. Let me quote:

> Each participant in the financial markets has the same memory of the past and the same understanding of how it affects future values of the variables. Each participant remembers or evaluates the most recent experience as being the most relevant, and so the memory functions place more weight on more recent events.

This is the assumption underlying the form of the memory function chosen for this paper, but it doesn't mean that it is true, nor that it need be true for the general idea that memory functions are useful for modelling the behaviour of investors buying and selling assets in the presence of uncertain inflation. I would like to see research that delves directly into the behaviour of investors with respect to inflation. How do they view inflation? How long does their memory of inflation last? How do they internally model its effects on asset prices? How accurate is their memory of inflation history? How do they form expectations of future inflation?

In general, after I read this paper several times and thought about it, I realized that our assumptions about inflation in the finance literature are unacceptably simplistic and taken-for-granted. We have a few simple ideas that can be modelled easily, and we have never tried to learn more about how investors recognize, model and remember inflation. Such factors are far more important than a large part of what is appearing in the most prestigious finance journals today, if we are to deepen our understanding of how financial markets function.

This is an obvious invitation for practitioners of experimental finance and economics, and behavioural finance, to pursue these sort of questions. Findings from such questions could then enlighten the development of work along the lines that Caputo and Kolari have done in this paper.

- Chris Robinson