

Should Inflation Measures Reflect Asset Prices?



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The debate on whether asset prices should receive some consideration in the construction of an aggregate price index that will track inflation over time can be traced back to the 1973 publication of "On a Correct Measure of Inflation"¹ by Armen Alchian and Benjamin Klein. In this paper, the authors argued that monetary policy should be concerned with broader measures of price inflation than those constructed from income and product deflators or standard expenditure-weighted indices, such as headline and core consumer price index (CPI). Monetary policy, they asserted, should focus on measuring the purchasing power of money more generally and not only in relation to the cost of current consumption. Instead of measuring the cost of particular basket of goods and services or the cost of current consumption — as is done by most consumer price indexes — the authors suggested measuring the current cost of expected lifetime consumption.

To simplify, the argument goes as follows. Imagine a world in which goods, services and financial assets are traded. A financial asset represents a commitment to deliver and purchase goods and services in the future. At time zero, trading establishes the current money price for the entire set of all possible goods and services to be delivered today and at all dates in the future.

Imagine now another world with all of the same characteristics described in the scenario above but in which more money has been introduced into the economy. Compare the two worlds. Nominal prices in the second world will be higher, as the same amount of money will purchase less of everything today and fewer claims to future goods and services. The comparison of all prices in these two worlds — not just prices of current goods and services, but also prices of claims on future consumption as represented in financial assets — would be a true measure of the impact of monetary inflation.

Managing policy to target asset price inflation along with a current basket of consumer goods would certainly complicate the jobs of monetary authorities around the world. Moreover, it may not be practical, as asset bubbles are notoriously difficult to predict and measure. However, it has a certain relevance to how an investor (both individuals and institutions) should think about inflation. If the price appreciation

of a certain financial asset — for example, a share of stock, which is a claim on a future stream of dividends and earnings — exceeds the growth prospects of both company and economy, the investor might be facing asset price inflation that impacts future consumption, as current money is buying fewer claims on future goods and services.

In economic parlance, investors are inter-temporal beings (i.e., individuals trying to spread consumption over time); thus, they should be more concerned about the impact of inflation on future consumption than on current consumption. In later works, Pollack² and Shibuya³ showed how an inter-temporal cost of living index (ICOLI) can be constructed using the current prices of existing assets. Both authors note that the construction of an ICOLI will necessarily put the bulk of the weight in the price index on the future consumption and, thus, on asset prices. Shibuya even suggests that assuming a discount rate of about 3%, current consumption will have only a 3% weighting in an ICOLI, while the weight of asset prices — claims on future consumption — will be a whopping 97%.

A Practical Application

There is an ongoing debate in academia and among policy makers about whether asset price inflation is measurable and predictable and should be included in general inflation measures and policy targets. Although the argument continues, a consensus is forming that inflation can certainly manifest itself not only in consumer prices but also in asset prices or asset price bubbles. However, the practical aspect of measuring this type of inflation has been elusive.

In an attempt to address this issue, we constructed an inflation index that incorporates three types of inflation, reflecting changes in consumer, equity and commodity prices. We use year-over-year changes in CPI, the S&P 500 Index and the CRB Index of commodities, and extract three principal components that span the same space as the three indexes but summarize the information contained therein in a different form. We then interpret each component based on its "loadings", or weights assigned to the underlying original data series through a special statistical technique. The first component, which has equally high positive loadings on CPI and the CRB and a smaller positive loading on the S&P 500, is used as a general inflation sub-index; the second

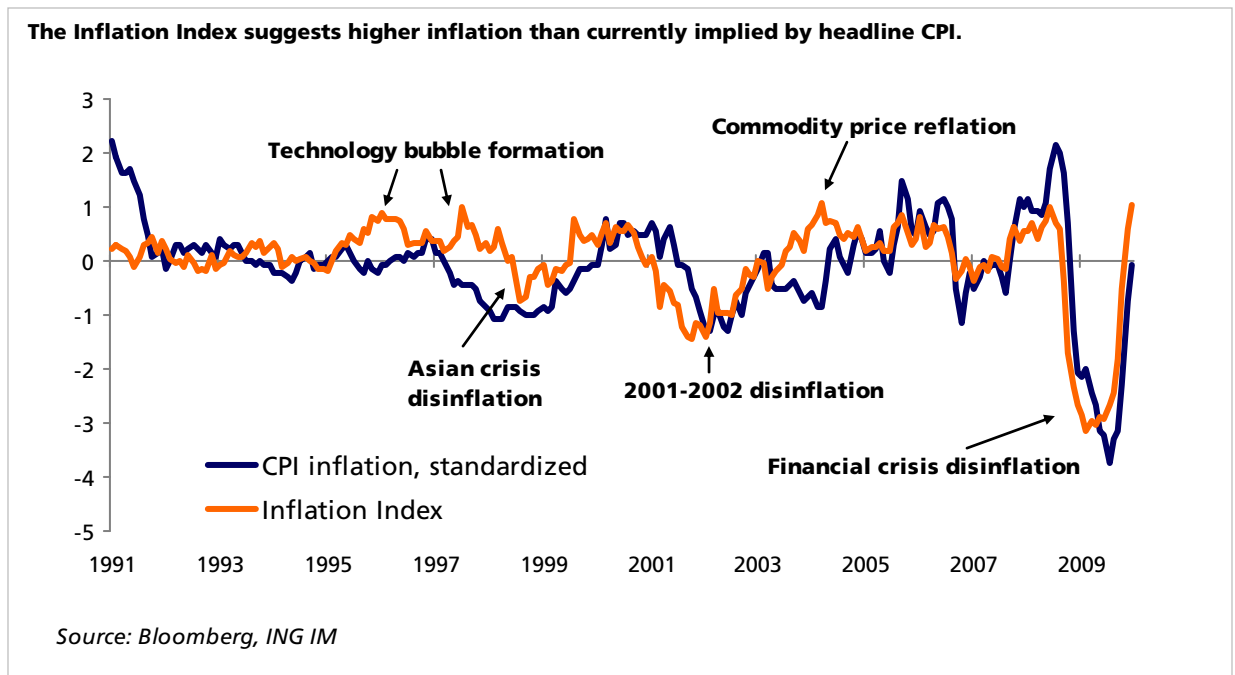
component is considered an equity reflation sub-index given its high positive loading on the S&P 500 and negative loadings on the two other sources of inflation; finally, the third component has a high positive loading on the CRB net of CPI inflation and is thus our commodity reflation sub-index.

We then create an Inflation Index as a weighted average of these three components, with the weightings reflective of the proportion of total variation explained by each component. The Inflation Index thus constructed has a mean of zero and is measured in units of standard deviation. It tracks general reflationary (level above zero) and disinflationary (level below zero) regimes better than CPI inflation. As you can see in the graph below, our Inflation Index peaks on the late 90s technology bubble, and shows reflationary pressure of rising commodity prices in 2003 — a year earlier than

inflation was transmitted into headline CPI, suggesting that monetary tightening should have started earlier than mid-2004.

In general, our index leads the CPI. Currently, it suggests that the inflation facing an investor might be higher than is implied by headline CPI numbers alone. ■

- 1 Alchian, A.A. and B. Klein (1973), "On a Correct Measure of Inflation," *Journal of Money, Credit, and Banking*, February, Part 1, pp.173-191.
- 2 Pollack, Robert A (1989), *The Theory of the Cost-of-Living Index*, New York; Oxford University Press.
- 3 Shibuya, Hiroshi (1992), "Dynamic Equilibrium Price Index: Asset Price and Inflation", *Bank of Japan Monetary and Economic Studies*, Bank of Japan, vol. 10 (1), pp.95-109.



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