

Measuring Asset Bubbles

“Prediction is very difficult, especially if it is about the future”. Neils Bohr
(1885-1962), 1927.

(popularized by Yogi Berra in later years as
“The Future Ain’t What It Used to Be”)

Successful prediction of asset bubbles has eluded some of the best minds in science. Much of this turns on the question of timing: when does an asset bubble begin, when does it become significant (and how does one define “significant”), and what, if anything should be done about it? The latter question becomes even more difficult to answer because it depends on an agent’s time and scope perspective.

To the ostensibly astute individual observer, a rising asset price suggests the possibility of economic gain. To others, it may also produce herd behavior that becomes detached from any rational time-specific framework. Then the question becomes, what is a relevant time perspective – today (as in intra-day trading), this week, this month, this year, five or ten years from now. In any given asset market, traders (buyers and seller) bring varying time perspectives to the choice of a contract.

In the short term (we still are not putting this to a specific time frame), an investor may simply seek to make economic gains and then to exit before some presumably inevitable correction sets in. For still others, the idea of exiting becomes secondary as long as the price trajectory of an asset points upward. Does this add up to rational or irrational behavior?

Finally, if our perspective is on public agency, the difficulty of identifying asset bubbles makes it even more difficult to intervene until a bubble has burst. In what follows, we take a look at how one might analyze the presence of asset bubbles, leaving open the perspective of how to act on their emergence.

A Naïve Approach to Asset Investing:

(An example from Todd Granthem's *3 Telltale Signs a Stock's Price is About to Go up* - <http://www.profitsrun.com/featured/3-telltale-signs-a-stocks-price-is-about-to-go-up/>):

1. The stock price must be going up – “price action”
2. Moving averages – they must be going higher
3. “Envelope channels” – the stock price must move within an upward bound envelope

Why is this naïve decision-making? The short answer is that the charting approach ignores valuation fundamentals. Valuation fundamentals include how a stock/asset price behaves relative to a broader average such as the Dow-Jones, S&P, or some other more broadly based index. But even if one takes a comparative metric into consideration, it still is naïve in that it has virtually no denominator, that is, a benchmark against which a comparative valuation can be undertaken.

What key denominators should one look at in making an investment decision? For one, if one is looking at stocks, other things equal, a useful starting point is the P/E, or price-earnings ratio of the stock over a given period of time. If it applies to other assets, a comparable denominator can be generated.

Consider, for example, an investment in housing versus an investment in stocks or bonds. Today, we now have a housing affordability indices that compare disposable income with the rental equivalent of a housing unit (Robert Shiller has done pioneering work in this area). When the affordability index is falling, either housing prices are overvalued, or incomes have not grown sufficiently to support those housing levels. Using comparative data, one can then estimate an underlying rate of return to an investment in housing (commercial or residential), and then compare this to an investment in stocks or bonds. For the record, the historical rate of return to investing in housing has been less than the historical rate of return to stocks. Why would this be

so? In part, it is that stocks are more volatile, more flexible, and thus carry a premium over housing returns.

Against an investment in housing, one can then look at stocks (and bonds). Some stocks with relatively high P/E ratios may still perform relatively well if their historical norms are backed by comparably higher relative rates of return – on assets, invested capital, or a comparable metric. Usually, a relatively high P/E ratio also correlates with greater volatility of an asset, in which case the historical rate of return should provide a risk premium that is incorporated in the price. And relatively high P/E ratios generally do not perform as well over the longer term as those with lower ratios.

Is this sufficient to make an intelligent decision? Absolutely not. No one should consider an investment without linking some underlying expected rate of return with the larger macroeconomic environment, and whether changes in public policy or external events are likely to change the outlook for the asset. As an example, right now in the U.S., the recent “correction” in the stock market can be seen in terms of weakening global economic growth, in part with a slowdown in China that produced a devaluation in the rmb currency, and against the likelihood that the Fed will reverse a near decade-long pattern of low interest rates with a decision to increase some configuration of the discount rate and Federal Funds Rate, both of which are set or changed in a monthly meeting. Rising interest rates deter investment, and thus put a damper on spending from which firms could realize higher earnings that produce higher stock valuations.

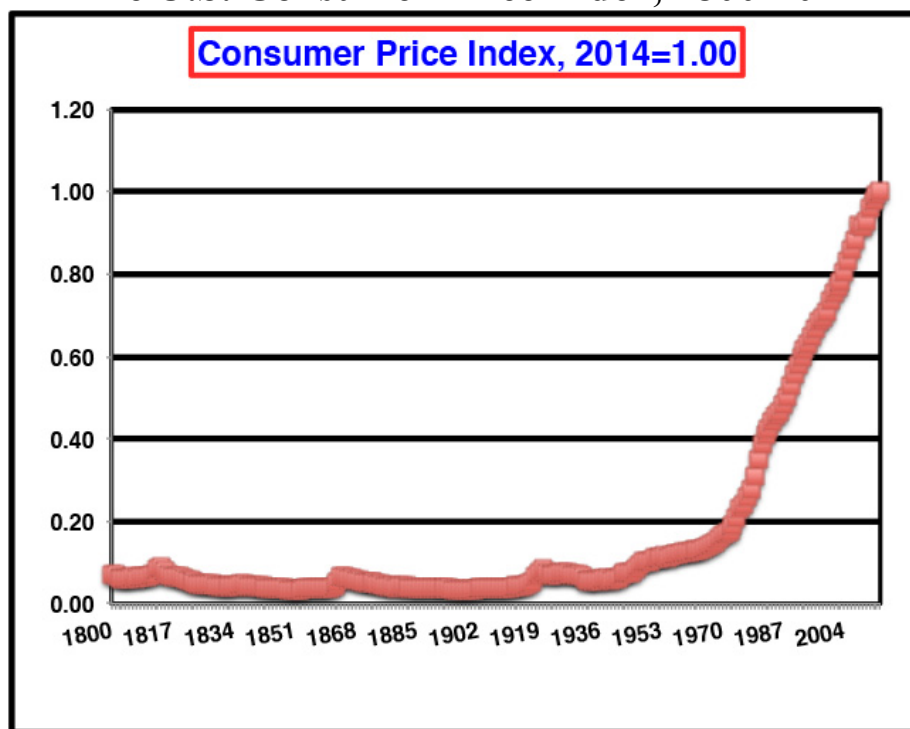
Similarly, it always is possible that Congress will adopt a measure of rationality in the setting of fiscal policy. That would include a predictable annual budget in which both spending and tax rates are clearly known in advance. Uncertainty in fiscal policy as well as

in monetary policy contributes to valuations that tend to the downside.

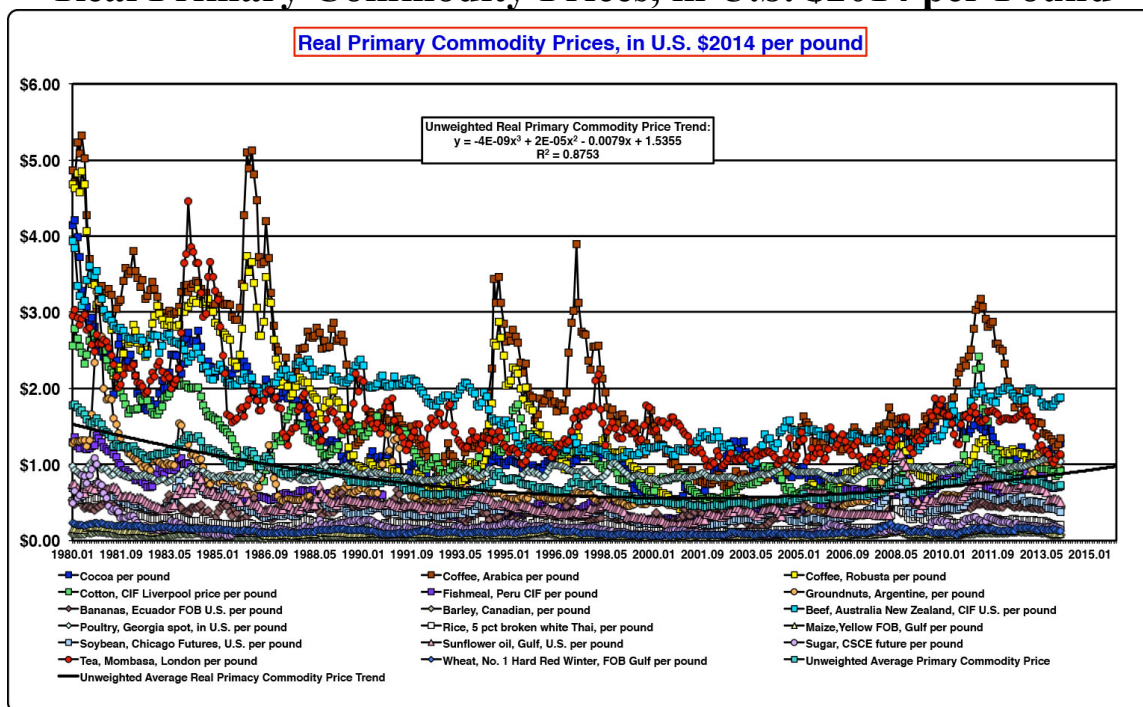
So what can we see from a more closely calibrated view of asset valuations? In *Irrational Exuberance* (2000), Robert Shiller suggested that one should look to changing stock prices in relation to company earnings, or the P/E ratio, to gain an insight as to whether stocks are over or under-valued. Using data going back to 1871, one can derive a long-term average of the P/E ratio, and then not episodes when stock prices displayed a bubble, namely, when the P/E average of a bundle of stocks exceeded a long-term average. Useful though these data are, they do not give one a clear notion of when a bubble is beginning, or how and when it will end. The major conclusion Shiller offers is a simple one: stocks that outperform the market in one period tend to underperform the market in the following period. If stocks are outperforming in one period, it may be due to a recent innovation, an industry restructuring, public policy, or some other external event. Failing to take these explanatory factors into consideration may simply lead to a mis-specification of the likely performance path in the period ahead.

Tracking Asset Prices

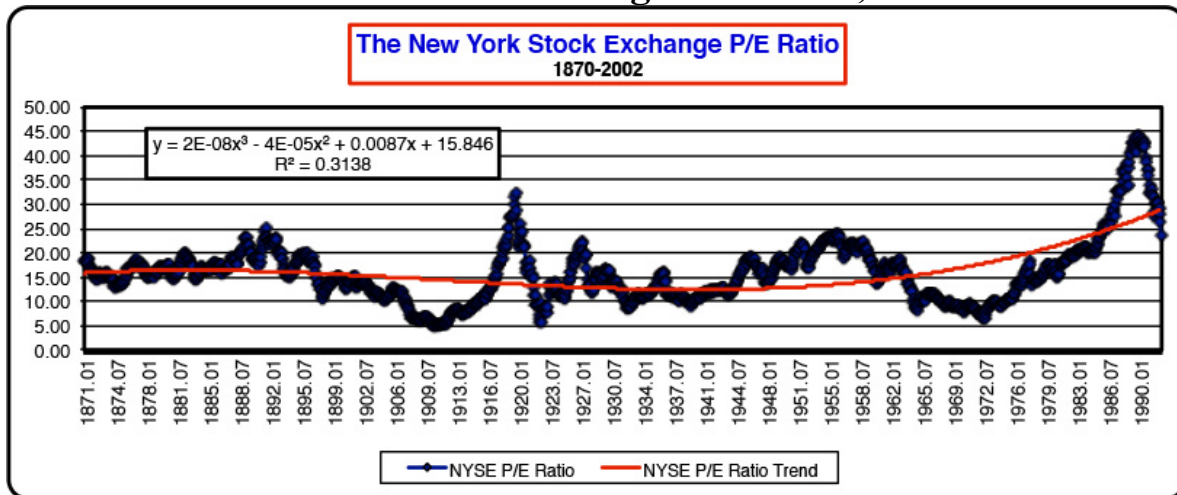
The U.S. Consumer Price Index, 1800-2014



Real Primary Commodity Prices, in U.S. \$2014 per Pound



The New York Stock Exchange P/E Ratio, 1870-2002



The ISEE Put/Call Ratio Index

