

Comment on AEA Speech of Fed Chairman Bernanke on January 3, 2010 on “Monetary Policy and the Housing Bubble”

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Abstract

Post-Science Institute believes that the “pre-scientific” Taylor rule for setting the interest rate should be replaced by the logical economic condition:

Rate of Return > Interest Rate > Inflation Rate

which is understandable to most people and says simply that investors would only borrow money at low interest rate to invest in investments with high rates of return, and that lenders would only lend at interest rate above the inflation rate. For example, the “Housing Bubble” was created when the rise in the fed fund rate caused the rate of return of housing investments to drop below the mortgage interest rate, which was rising. Furthermore, the vague concept of “Bubble” should be replaced by the quantitative concept of “over-valuation,” which is defined as an economic condition where the market price is over the price calculated based on the expected future cash flows. As admitted by Chairman Bernanke “...**interest rate increases in 2003 or 2004 sufficient to constrain the bubble could have seriously weakened the economy..**,” where “2003 or 2004” could be a typo error and should be replaced by “2005 and 2006”, it was the raising of the fed fund rate during 2005 and 2006, not the period of low fed fund rate during 2003 and 2004, that caused the over-valuation, as calculated by Post-Science Institute with its solution of value disclosed in the patent “**Quantitative Supply and Demand Model Based on Infinite Spreadsheet**” (Pat. No. 6,078,901). The low interest rate in 2003 and 2004 was needed, as it is needed now in 2009, 2010, and beyond, to stimulate the low-tech housing and auto industries, in the absence of major high-tech innovations, in the aftermath of the crashing of the explosive Internet innovation in 2000 by the former Fed Chairman Alan Greenspan, who followed the Taylor rule, not Chairman Bernanke. Future financial crises and over-valuations can be and should be preventable by the correct solution of value.

Comment on AEA Speech of Fed Chairman Bernanke on January 3, 2010 on “Monetary Policy and the Housing Bubble”

Introduction

The open policy of Federal Reserve Chairman Ben S. Bernanke in disclosing the theoretical basis for setting the fed rate with regard to the recent “Housing Bubble” could be one of the most significant developments for knowledge in general and economics in particular. If this open policy continues, the Federal Reserve will certainly become the world leader in economic knowledge, as it should be. Chairman Bernanke uses future expected data instead of the current data in the Taylor rule to set the fed rate. On the current financial crisis and the Housing Bubble, he admits “...**interest rate increases in 2003 or 2004 sufficient to constrain the bubble could have seriously weakened the economy....**”; otherwise, the Federal Reserve policies caused neither the Housing Bubble and the financial crisis. Post-Science Institute calculated and correctly predicted with its comment to the Federal Reserve in June of 2006 with its deterministic solution of value (<http://www.infinitespreadsheet.com>) that the rapid rise in interest rate prior to 2006 caused the over-valuation of the housing market and precipitated the Subprime Woe which, eventually, triggered the entire financial crisis. The rise in the rate from 1% to 5.25% and the corresponding mortgage interest rate caused the rate of return to drop to a level around 7-8% close to the mortgage rate, which was rising. Post-Science Institute would like to recommend that the vague, qualitative, pre-science notion of “Housing Bubble” be replaced by the quantitative, post-science concept of “over-valuation” where the market price is above the price calculated by the solution of value, and that the Taylor rule for setting interest rate be replaced by the logically derived, but flexible, Post-Science rule for setting interest: Rate of Return > Interest Rate > Inflation Rate. The difficulty of the Post-Science rule is that the average rate of return on investment can only be surveyed with the availability of the solution of value, which is disclosed in the patent “**Quantitative Supply and Demand Model Based on Infinite Spreadsheet**” (Pat. No. 6,078,901 <http://www.post-science.com/ispatent.pdf>).

The original Speech By Chairman Ben S. Bernanke “Monetary Policy and the Housing Bubble”:

<http://www.federalreserve.gov/newsevents/speech/bernanke20100103a.pdf>

Part I Comment on AEA Speech of Fed Chairman Bernanke on January 3, 2010 on “Monetary Policy and the Housing Bubble”: Replacing Taylor Rule with Post-Science Interest Rule, Rate of Return > Interest Rate > Inflation Rate, and “Bubble” with “Over-valuation” Determined by the Post-Science Solution of Valuation

In his AEA speech, Federal Reserve Chairman Bernanke has clearly explained the basis of Federal Reserve policies and his view on the “Housing Bubble” with how the Bubble is affected by Federal Reserve monetary policies. “Alternative Taylor rule” using expected future inputs to set interest rate improves upon “Taylor rule” based on the current inputs. Chairman Bernanke concludes that there is only small correlation between the Housing Bubble and monetary policies.

This important and relevant speech could set the stage for all the future analyses on the financial crisis of 2000s. However, from a post-science point of view, the Taylor rule and the concept of a bubble, which is not well-defined in the speech, belongs to pre-science, in view of the fact that science deals with non-violable laws of nature, and neither the Taylor rule nor the concept of a bubble are derived from non-violable laws of nature.

The pre-science concept of a bubble should be replaced by the post-science quantitative calculation of over-valuation, which is defined quantitatively by the economic condition that the market price is higher than the price calculated by the post-science solution of value, which, being mathematically rigorous, is a non-violable law of nature. The post-science solution of value simply satisfies rigorously the equation of forward accounting of cash flow, Cash Return = Sum of Cash Flow + Cash From Resale, for the price and all the resale prices to infinity in time in a deterministic valuation system. It is described fully in the patent “Quantitative Supply And Demand Model Based on Infinite Spreadsheet” (Pat. No. 6,078,901 <http://www.post-science.com/ispatent.pdf>).

The Taylor rule should be replaced by the Post-Science rule for setting the interest rate:

Rate of Return > Interest Rate > Inflation Rate

which is applicable to each and every type of investment. Additionally, the inflation should be greater than zero in order to discourage idle money and to prevent economic contraction.

The Post-Science rule is based on simple logic, except the post-science determination of the Rate of Return, which is a problem beyond science and in the domain of post-science, for science cannot solve the problem of value, which is one of the main topics in post-science. The investor borrows money at low interest rate to invest in investments with rates of return greater than the interest rate. The interest rate should be greater than the inflation rate for the lender to make positive rate of return on the loan. The main difficulty in applying the Post-Science rule for setting the interest rate is that the rate of return can only be surveyed with the availability of a solution of value. Being consistent with simple logic, the Post-Science rule is a non-violable law of nature.

The following post-science web pages demonstrate, respectively, the determination of the real estate price and the calculation of the rate of return for stocks, for which the price is given:

<http://www.infinitespreadsheet.com/verify.htm>

<http://www.infinitespreadsheet.com/stockfed.htm>

Part II Comment on AEA Speech “Monetary Policy and the Housing Bubble”: Practical Applications of the concept of “Over-valuation” and the Post-Science Solution of Valuation

From the post-science experience, the complexity of the problems from physical science to social science and finally to life science grows by one order of magnitude each time. Roughly, there are 5 variables in scientific problems, 50 in the solution of value, and 500 in the solution of complete automation, which characterizes life science. And the rigor of the methods for each science, when the complexity grows, needs to increase, not decrease, contradicting the current pre-science practice, which relaxes the rigor, as is illustrated in the speech. Specifically, science subscribes to the rigor of empirical verification, social science, of mathematics, and life or computer science, of logic. But, on the other hand, it is the accuracy of inputs that relaxes as problem complexity grows.

Particularly, post-science solution of value requires that a rational decision, plan or valuation must, as a mathematical necessity for a deterministic solution, take into consideration all the expected future consequences to infinity in time. Since infinity, by definition, never arrives, the correctness of a decision, plan or valuation cannot be empirically verified as in science, where deterministic set of data, corresponding to a system with an equal number of unknowns and equations, can be collected within a finite time. Thus, being empirically non-verifiable, the solution of value belongs to knowledge beyond science, or it belongs to post-science.

As a practical example of the above fundamental post-science views, the interest rate set by the Post-Science rule, which is rigorously derived, needs not to be precise. As in the correct prediction of the Savings and Loan Crisis and the Subprime Woe by the Post-Science Institute, the real estate market generally has to be over-valued by over 50% before the market feels the pressure to crash.

The Taylor rule and the alternative Taylor rule are not rigorously derived. Post-science believes that the Quantity Theory of Money or the Fisher Identity, $Price \times Quantity = Velocity \text{ of Circulation of Money} \times Money \text{ Supply}$ or $PQ=VM$, which is very possibly, pending further rigorous derivation, a non-violable law of nature, especially used as a definition, directly controls the inflation rate. The interest rate indirectly affects the inflation through its effect on the Velocity of Circulation of Money V and/or money supply. Also, the mortgage rate affects the price directly in the solution of value, but the change in the interest rate has to be very large in order to produce a significant effect, as demonstrated in the Savings and Loan Crisis and the current financial crisis.

For example, in the oil crisis of the early 1980s, inflation was caused by the rise of the oil price, independent of the interest rate. An even more important example is the way Chairman Bernanke

boldly increases M to compensate for the decrease in V to keep PQ stable in the current financial crisis. The drastic increase in M has saved the US economy from another Great Depression. The large decrease in the interest rate has helped again, as former Fed Chairman Greenspan, stimulate the low-tech, low-rate-of-return housing and auto industries. Thus, from the success of both Fed Chairmen in stimulating the economy with low interest rate, interest rate can be considered to be an effective tool for stimulating the economy according to the relationship, Rate of Return > Interest Rate, while $PQ=VM$ is the main relationship for controlling inflation through the price P. To be sure, the interest rate is a factor, but not the most important factor, which is the growth, in the determination of the price or the rate of return in the post-science solution of value.

Furthermore, decisions should depend on the future consequences, not the past or the present condition. The Taylor rule depends on the current condition, the alternative Taylor rule, the future condition, but only for a finite time, and the Post-Science rule has taken the consideration of future consequences to infinity in time in the calculation of the rate of return.

Post-science strongly objects to the use of the word “bubble” to describe over-valuation. Over-valuation is quantitatively defined by the solution of value, where value can be either the price or the average rate of return on investment, both being expressed in numbers. It is still questionable if the “Internet Bubble” does correspond to an over-valued Internet market, as Chairman Greenspan has claimed. It is possible that the explosive Internet industry is still building its infrastructure during its infancy, which is fragile and easily terminated. The truth about this and any bubble can only be discovered and should be determined by a calculation of the rate of the return. An example of over-valuation and the Post-Science rule for the Savings and Loan Crisis is presented in Slide 5 of the patent (Pat. No. 6,078,901) on the solution of value, enclosed as the last page.

Post-science would like to comment on the statement of Chairman Bernanke: ***“Monetary policy is also a blunt tool, and interest rate increases in 2003 or 2004 sufficient to constrain the bubble could have seriously weakened the economy at just the time when the recovery from the previous recession was becoming established.”*** Even though interest rate is not the main factor in price determination, it can affect the price when its change is sufficiently large. The cause of the Subprime Woe can be traced to the rise of the fed rate from 1% to 5.25%, directly through valuation and indirectly through lending practices. The solution of value shows that each increase in mortgage interest rate, which is directly or indirectly proportional to the fed rate, the real estate price decreases around 10%. The change of the interest rate by 4.25% should be sufficiently to, directly or indirectly through mortgage terms, trigger a crash in the real estate market, which may already be under the pressure of over-valuation. The word “blunt” could be referring to pre-science, for scientific, and post-scientific, predictions are, at least, expected to be infallible.

Post-science valuation has shown that it is the raising, not the lowering, of the interest rate which has caused the over-valuation, and Post-Science Institute, therefore, has repeatedly supported the lowering of the interest rate in its numerous comments to the US Treasury and the Federal Reserve

to stimulate the economy in the current recovery stage. There would be no justification to accuse the Federal Reserve that the low interest rate has caused the "Housing Bubble," if the low interest rate this current second time does not create a "Housing Bubble." Thus, the Fed policy in lowering the interest rate to stimulate the economy is consistent and correct.

Slide 4 of speech, The Target Rate and the Taylor rule Prescriptions Using Real-Time Inflation Forecasts, shows clearly that the Taylor rule or the alternative Taylor rule causes the Subprime Woe. Had the Post-Science rule been used, to keep the mortgage rate around 6%, midway between the 3% inflation and the 9% rate of return, the fed rate would be kept around 3%, instead of raised to 5.25%. The 6%, instead of 8%, mortgage rate would have slowed down the real estate price appreciation and would not have caused the massive simultaneous foreclosures, when the real estate price falls below the loan amount. Also, if there is a need to stimulate the low-tech housing industry, the fed rate can still be gradually lowered by the amount proportional to the needed economic stimulation. Even at 0% fed rate, the mortgage rate would still be around 4%, which is still higher than the 3% inflation rate.

Slide 6 of the speech, Conditional Forecasts for the Federal Fund Rate and Housing Prices, shows that the interest rate, for both the fed rate and the mortgage rate, rise does not slow down the price increase prior to 2006. According to the Post-Science rule, the requirement for crash is when Rate of Return is equal to or less than the mortgage rate. Generally, social science needs rigorous derivation, but does not need precision. Here the Federal Reserve must decide whether it prefers the precise, but non-rigorous, Taylor rule or the flexible, but rigorous, Post-Science rule.

Slide 6 shows another very fundamental issue relating to past historical data. Knowledge can be separated into descriptive and structural knowledge. The practical example of these two types of knowledge is given in computer hardware chip design, where the designer needs both a software for the actual operation of the circuitry and a software for the layout of the circuitry. Slide 6 shows the descriptive part of the information without any structure. The lack of effect of the interest rate on the price should be explained by the structural knowledge. Here is where the Taylor rule and the Post-Science rule should be compared.

The Post-Science rule is not a non-violable law of nature, but is based on a law of nature, namely, the solution of value. It simply states the logical order for the three rates, all of which, by the way can be considered some type of rate of return. It can be violated. It works both ways in that it can either be mandated by the government or it will be the natural order when left to the free market. Thus, if the Federal Reserve just keeps the interest rate stable, the rate of return will gradually adjust to it, but not the inflation rate, which should be regulated by $PQ=VM$, as suggested by Milton Friedman and executed boldly and faithfully by Chairman Bernanke in the current crisis to avoid another Great Depression.

Slide 6 shows another fundamental issue regarding the nature of historical data. Science deals with time-invariant non-violable laws of nature. Value, which could be considered the foundation of

social science, is a time-variant quantity, which is not seen in science. A time-variant quantity changes with time continually to infinity in time. Value can be defined as the sum total of all the benefits and losses to infinity in time. Quantitatively value can be expressed either as the percentage of the rate of return of the price in dollar amount. Since infinity never arrives, the correctness of, say, the price of an ounce of gold can never be empirically verified.

Thus, historical data should be separated into approximately time-invariant and time-variant. The approximate time-invariant data have the advantage of being usable for future comparison. The time-variant data should not be used for future comparison, if the financial condition is not perfectly stable. The left side chart of Slide 6 deals with an approximately time-invariant interest rate, and the right side chart, the price which is time-variant. In the solution of value, the time-variant price is determined based on all the expected future inputs, which are expressed in the form of approximately time-invariant quantities.

The solution of value should be the foundation of economics. But, unable to obtain a complete solution of value, economic theories try to avoid the solution of value, as in the Taylor rule and the concept of a bubble, even the familiar notion of the invisible hand and the vague concept of utility. Federal Reserve should survey all the available practical solutions of valuation.

Post-Science Institute in the course of the Savings and Loan Crisis and the Subprime Woe has investigated technically into practically all the commercially available valuation systems. All the valuation system based on market comparison of the price, such as the market comparison method, the Discounted Cash Flow Methods using a resale price or a resale capitalization rate, are fatally flawed; they tend to cause financial crises by keeping the real estate price inflexible due to the comparison to the past price. In addition to the post-science solution of value, the terminal value calculation is conceptually correct, as presented by Gerard Debreu on page 34 of his book "Theory of Value." However, the terminal value calculation can only be applied in limited financial conditions, but it can be transformed into the post-science solution of value with increasing rigor.

An advanced topic related to the current discussion on real estate market prediction is the difference between stock and real estate predictions. In real estates, the price generally lags the earning data, and, thus, real estate prediction is relatively easy, taking about 30 minutes and three calculations to detect over-valuation of one real estate market. In stocks, the price generally leads the earning data, and stock prediction is difficult.

Post-Science Institute had communicated with Milton Friedman extensively regarding $PQ=VM$. Initially, both parties suspected that V could be a time-invariant quantity. But, from some detailed study of the historical data, for example, by Chairman Bernanke, V has been shown to be not a time-invariant quantity. The current financial crisis has shown that V plays a central role in the crisis and is far from being time-invariant. Yet, Post-Science Institute still holds, with the objection from both Friedman and Bernanke, that V should be considered an approximate time-invariant quantity, which reflects the efficiency of an economy. Its current volatility is due to the volatility of another

time-invariant quantity, the interest rate. Thus, conclusion is that the solution of value, not the interest rate, is the key solution to the financial crisis. As long as the interest rate is kept relatively stable, the solution of value, when available to all the market participants including the government, should be sufficient to help all the market participants set their prices according to reasonable rates of return, which is an approximate time-invariant quantity.

In June of 2006, Post-Science Institute wrote to the Federal Reserve Board expressing its concern that the rate of return for real estate was almost equal to the rising mortgage interest rate around 7-8%. A few weeks later, the first sign of Subprime Woe flared up, but, not believing in the warning from Post-Science Institute, the Federal Reserve raised the fed rate by another quarter of a percentage point to 5.25%.

Up to now, the clock has only been wound back halfway with the fed rate being lowered back to nearly 0% so that the low-tech housing and auto industries can continue to support the economy, until the demand for housing and auto exhausts.

To undo the damage done by former Fed Chairman Greenspan completely, the clock needs to be wound back to before 2000 when there was an Internet boom or an "Internet Bubble." The economy needs innovations so that high-tech industries with high rate of return can increase P, Q, and V in $PQ=VM$. Without the increase in P and Q, the sudden increase in V will mean inflation. The Federal Reserve still has a difficult economic balancing act in the years ahead.

Finally, post-science would like to comment on the Austrian School and Representative Ron Paul with their objections to the Federal Reserve. The Austrian School advises against government interference with the Free Market of Ludwig von Mises and Milton Friedman. It is similar to Buddhism, which advises abstinence. Historical record, up to now, seems to be on the side of the Free Market, supporting that if there is not sufficient knowledge, it is better to do nothing.

However, from a post-science point of view, the Free Market is not free; it is regulated by non-violable laws of nature, such as the commonly accepted notion of the invisible hand or the qualitative law of supply and demand, which has been quantified in the patent "Quantitative Supply and Demand Model Based on Infinite Spreadsheet" (Pat. No. 6,078,901).

In conclusion, being a knowledge leader of society, the Federal Reserve should be the most knowledgeable organization in society. If the Federal Reserve continues to follow the open policy of Chairman Bernanke, it will become, if it is not already, the leader in knowledge. And because knowledge should be more important than money and politics, knowledge should be freed from the control of money and politics. Post-Science Institute, email: postscience@ymail.com 1-11-2010

Savings and Loan Crisis Commercial Real Estate Market in California USA (1970 - 1995)

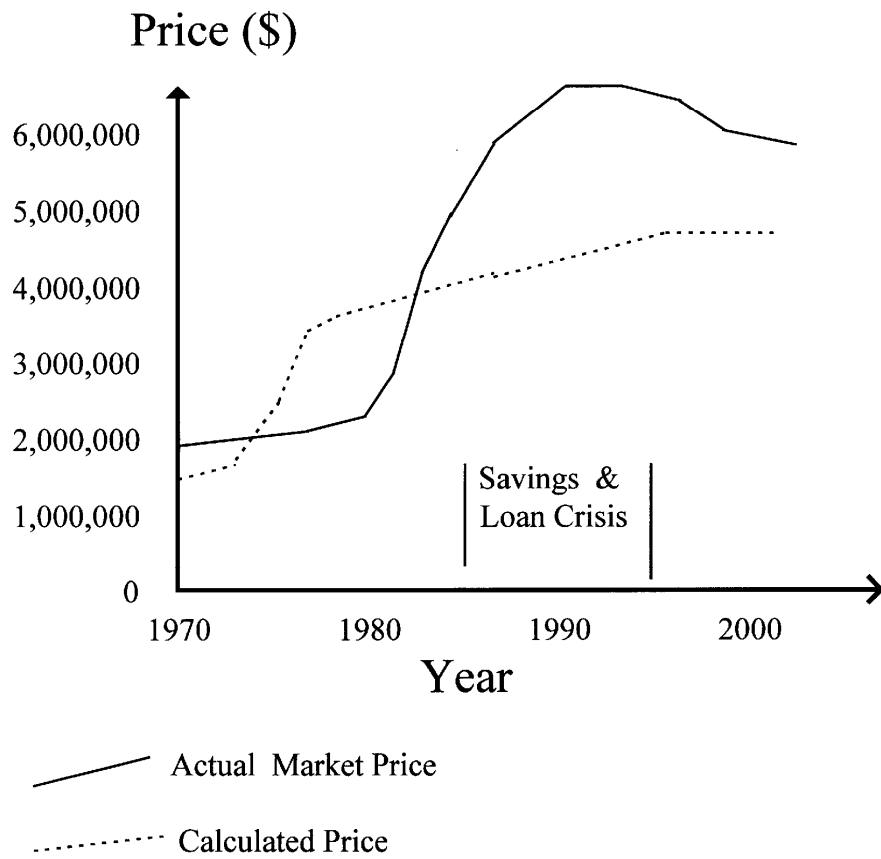


FIGURE 5