

Economic Outlook

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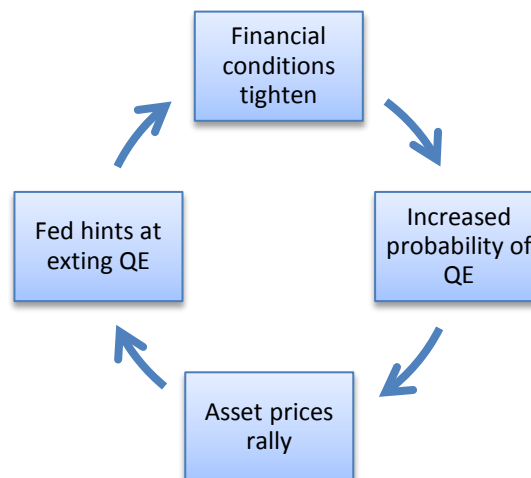
Escaping the Fed's Asset Price Cycle

BY JASON M. THOMAS

- By conditioning future quantitative easing (QE) on incoming data, the Fed has created an "asset price cycle" where "bad" data is "good" for asset prices
- Asset prices can rise because of increases in expected future cash flows or declines in the discount rates applied to the same cash flows
- QE reduces expected future interest rates and risk perceptions, which increases current asset prices at the expense of future expected returns
- "Tapering" will improve future investment opportunities by allowing risk premia to be re-incorporated into asset prices

By announcing that further asset purchases (quantitative easing or QE) will be conditional on incoming macroeconomic data, the Federal Open Market Committee (FOMC) has created a feedback cycle where changes in economic conditions have a perverse impact on asset prices. If investors rationally anticipate that the Fed will "taper" QE in response to a sustained improvement in labor markets, evidence of acceleration in growth could tighten financial market conditions by increasing future discount rates. "Good" news about growth is then "bad" news for asset prices because of its implications for future monetary policy.

Figure 1: U.S. Asset Price Cycle



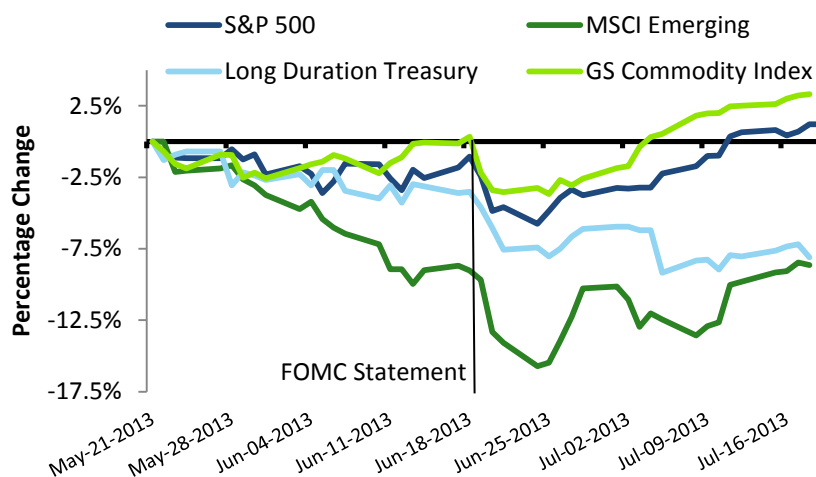
Nonstandard monetary policy seems to have a greater impact on asset prices and financial conditions than it does on real economic activity. Although increases in asset prices are generally thought to stimulate household and business spending through wealth and collateral effects, not all asset price increases are created equal. If asset prices rise because expected future earnings or productivity have increased, consumption and investment tend to adjust upward naturally in response to the positive wealth shock. If instead the asset price increase is the result of applying lower discount rates to the same expected cash flows, then higher prices today may come at the expense of lower future returns and wealth remains unchanged.

Of the 25% return on the S&P 500 over the past twelve months, 23 percentage points has come from increases in valuations (price-to-earnings ratio) while only 2 percentage points has come from increases in earnings.¹ Optimists could attribute the valuation gains to increases in future earnings growth, but they are more likely to reflect a sharp decline in discount rates engineered by accommodative monetary policy. The bad news for investors is that high prices relative to fundamentals have depressed expected returns, increased the importance and difficulty of investment selection, and depressed the “hedge” value of Treasury bonds, whose prices have varied in response to the same discount rate shocks influencing stock returns. The good news is that a growing economy continues to provide profitable investment opportunities that will tend to improve as tapering eventually reintroduces volatility to financial markets.

Asset Price Response to Fed Tapering

In the May 22 Congressional testimony, Federal Reserve Chairman Ben Bernanke explained that if the FOMC sees “continued improvement [in the labor market], and we have confidence that that is going to be sustained, in the *next few meetings* we could take a step down in our pace of [asset] purchases (emphasis added).”² That simple statement, which came during the question-and-answer portion of an otherwise carefully scripted testimony, triggered a widespread selling of assets exposed to interest rate, credit, foreign exchange, and equity market risk (Figure 2). Asset prices declined further after the June 19 FOMC Statement, which reaffirmed that a sustained improvement in the labor market would likely reduce the pace of asset purchases. Between May 22 and June 24, the S&P 500 fell nearly 6%, long duration Treasuries fell 8%, emerging market stocks fell by 16%, and commodities fell by 3%.

Figure 2: Cumulative Returns since May 22³



While the precise channel through which nonstandard monetary policy impacts asset prices is the subject of scholarly debate,⁴ the message it sends to market participants has been unmistakable: Get out of cash. When interest rates are held well below the rate of current and expected inflation, investors must assume

¹ S&P Capital IQ Database Accessed July 23, 2013.

² Bernanke, B. (2013), “The Economic Outlook,” Before the Joint Economic Committee, May 22, 2013.

³ S&P Capital IQ Database Accessed July 23, 2013. The “Long Duration Treasury” is a portfolio with a weighted average effective duration of 15 years.

⁴ C.f Woodford, M. (2012), “Methods of Policy Accommodation at the Interest-Rate Lower Bound,” Columbia University Working Papers; Bini Smaghi, L., (2013), “Many Targets, Many Instruments: Where Do We Stand?” Rethinking Macro Policy II: First Steps and Early Lessons, International Monetary Fund; and Gertler, M. and Karadi, P. (2013), “A Framework for Analyzing Large Scale Asset Purchases as a Monetary Policy Tool,” *International Journal of Central Banking*.

interest rate, credit, foreign exchange, or macroeconomic risk simply to keep purchasing power constant through time. But by inducing investors to hold riskier portfolios to avoid being trapped into excessively low returns, QE may also create the impression that future policy would help to mitigate those risks. In this context, announcement of plans to taper QE introduces a degree of uncertainty about future Fed policy that widens risk premia and generates asset price responses much larger than those predicted by structural models.

The magnitude of the repricing that occurred between May 22 and June 24 certainly seems to have come as somewhat of a surprise to members of the FOMC, many of whom used subsequent speeches, interviews, and testimony to encourage a far more dovish interpretation of the Fed's policy stance. Specifically, Fed officials emphasized: (1) any "tapering" of asset purchases would have to be warranted by clear and compelling economic data; and (2) any decision to reduce the pace of asset purchases should not be interpreted as a decision to increase the fed funds rate earlier or at a faster pace than was previously supposed. In the July Congressional testimony, Bernanke suggested the Fed would not begin tapering asset purchases "if financial conditions – which have tightened recently – were judged to be insufficiently accommodative."⁵ Basing the decision to taper on "financial conditions" is almost perfectly circular, given the way QE directly influences those conditions. Bernanke also emphasized that the fed funds rate could remain at zero well after the unemployment rate fell below the announced target of 6.5%. Both equity and bond markets responded favorably to these clarifications, with the S&P 500 rising above its (record) May 21 level by July 10. Yields on the 10-year Treasury note declined by about 0.25% from their early-July peak but remained about 0.6% above their May 22 level.⁶

Unusual Correlation across Disparate Asset Classes

The most interesting aspect of the recent price dynamics has been the positive correlation between the returns on Treasury bonds and corporate equities. Returns on the two asset classes tend to move in opposite directions, with Treasury yields rising (prices declining) when stock prices increase. Since 2000, the "beta" of a 10-year Treasury portfolio has been -0.12; that is, a 10% increase in the value-weighted U.S. stock market has been associated with a 1.2% decline in the value of the 10-year Treasury, on average (Figure 3). The relationship reversed in early 2013 and the covariance between the asset classes increased through the first five months of the year: the yield on the 10-year fell by 20 basis points (11%) at the same time that the S&P 500 rose by 8%.⁷ By July, the beta of the 10-year Treasury reached 0.34, a level generally associated with a low volatility stock as that of a water or electric utility.

The current positive relationship between stocks and Treasury bonds is troubling because long duration Treasuries are supposed to serve as a natural hedge asset. A hedge not only cushions the blow from the decline in other parts of the portfolio, but also provides more resources to invest when expected returns are high.⁸ For example, a portfolio of 10-year Treasuries gained 17% during the final six months of 2008 when the S&P 500 declined by 33%. If an investor rebalanced his portfolio to prior allocation targets by selling a portion of the (appreciated) Treasuries to buy (depreciated) stocks, he would have owned more stock units, on net, than he did in mid-2008. More stock units would translate to greater participation in the subsequent equity rally, as the S&P 500 doubled since early 2009. If returns on long-duration Treasuries instead move in tandem with stocks, their assumed hedge properties will prove to be illusory, making portfolios with large bond allocations significantly more risky than models fitted on past data would suggest.

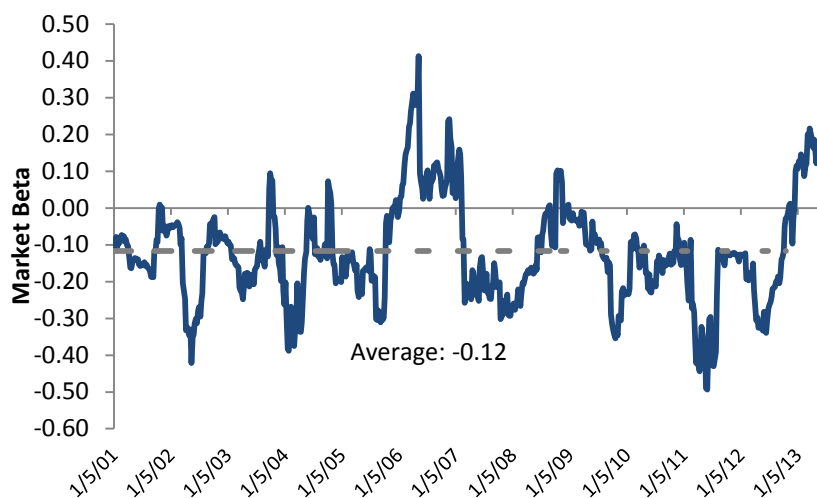
⁵ Bernanke, B. (2013), *Semiannual Monetary Policy Report to Congress*, July 2013.

⁶ U.S. Department of the Treasury, *Daily Treasury Yield Curve Rates*.

⁷ S&P Capital IQ and U.S. Treasury. Measured from January 1 to May 1, 2013.

⁸ Merton, R. (1973), "An Intertemporal Capital Asset Pricing Model," *Econometrica*.

Figure 3: Market Beta of a 10-Year Treasury Portfolio⁹



Monetary Policy and Discount Rates

Correlation in *realized* returns likely stems from correlation in discount rates or *expected* returns. Monetary policy influences the discount rates used to value future cash flows by conditioning expectations for the future path of the fed funds rate and by influencing risk perceptions. If the FOMC credibly guarantees to maintain the fed funds rate at 0.25% for five years, the risk-free portion of the five-year discount rate (i.e. the yield on the five-year Treasury note) should fall immediately to 0.25%. Accommodative monetary policy also tends to lower the risk premium portion of discount rates by lowering forward-looking estimates of market volatility.¹⁰ It is not clear why monetary policy influences risk perceptions. Some argue that monetary easing creates expectations that the Fed will truncate the distribution of future returns to guard against any low-probability, but high-impact events (the so-called “Fed put.”)¹¹ Others argue that by increasing funding liquidity, more accommodative monetary policy increases the balance sheet capacity of leveraged intermediaries, which reduces volatility and increases asset prices.¹² Lower risk premia could also simply be the result of “reaching for yield” where investors with fixed nominal return targets naturally respond to lower risk-free rates by diversifying into riskier portfolios.¹³

Uncertainty regarding the precise channel through which monetary policy influences investors’ risk perceptions makes it impossible to construct precise estimates of the impact tapering will have on asset prices.¹⁴ Chairman Bernanke has emphasized that Fed models suggest that QE works through a “stock” rather than “flow” effect so a \$40 billion decline in new purchases would be expected to have little to no effect on asset prices next month given the Fed’s accumulated \$3.4 trillion balance sheet.¹⁵ Bernanke also suggests that tapering should not impact the risk-free portion of future discount rates because the fed funds rate will remain at zero well after asset purchases conclude. But if monetary policy’s primary influence on

⁹ Bank of America Merrill Lynch and Federal Reserve Board of Governors. The beta is measured as the weekly return on the 10-year Treasury portfolio net of the 90-day bill rate regressed on the excess weekly return of the value-weighted U.S. stock market.

¹⁰ Bekaert, G., Hoerova, M., and Lo Duca, M., (2010), “Risk, Uncertainty and Monetary Policy,” NBER Working Paper No. 16397.

¹¹ Poole, W. (2008), “Market Bailout and the Fed Put,” Federal Reserve Bank of St. Louis Review, March/April 2008. The European Central Bank’s announcement of Outright Monetary Transactions (OMT) to backstop sovereign bond markets seems to be a clear case of reducing discount rates (increasing asset prices) by taking the risk of currency zone fragmentation off of the table.

¹² Danielsson, J., Song Shin, H., and Zigrand, J.P. (2011), “Balance Sheet Capacity and Endogenous Risk.”

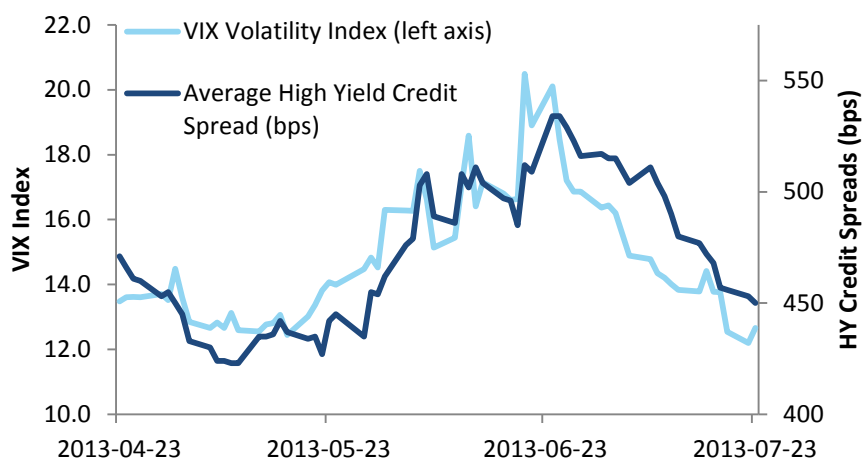
¹³ Rajan, R. (2006), “Has Finance Made the World Riskier,” *European Financial Management*.

¹⁴ Uncertainty about the quantitative effects of nonstandard policies is emphasized in Bernanke, B., Reinhart, V., and Sack, B. (2004), “Monetary Policy Alternatives at the Zero Bound: An Empirical Assessment,” *Finance and Economics Discussion Series*.

¹⁵ Bernanke (2013).

asset prices is through investors' willingness to take risk, then any increase in uncertainty regarding the Fed's commitment to accommodation could reduce risk tolerance and increase the discount rates applied to all future cash flows.

Figure 4: Implied Stock Market Volatility and Credit Spreads



For example, if the FOMC said it “seemed likely” that the fed fund rate would remain at 0.25% for five years, the yield on the five-year Treasury note would likely be somewhat higher than 0.25% to compensate investors for the risk that the Fed raises interest rates in the interim. Similarly, if funding liquidity conditions are expected to become less accommodating, credit risk premia would rise to account for the elevated refinancing risk on speculative grade credits. Perceptions of less accommodation also increase forward-looking indicators of stock market volatility, such as the VIX Index, which increased by 53% (a 7-percentage point increase in expected annualized volatility) in the month following Bernanke’s May 22 testimony.¹⁶ Finally, a tightening bias could also reduce the enthusiasm with which investors would borrow in dollars to fund positions in other currencies or commodities, depressing liquidity conditions in these markets.

The Decline in Expected Returns

Increases in asset prices are thought to catalyze household consumption and business investment through permanent income, financial accelerator, and “q” effects: increases in household net worth increase the amount of current period income a household is inclined to spend rather than save; increases in the market value of business assets relax financing constraints and incent new investment to put more (highly valued) physical assets in place. The hypothesized positive relationships between asset prices and spending may depend on the source of the asset price increase. Consider an asset expected to make a one-time dividend payment of \$100 in five years. If the five-year Treasury yields 3% and the appropriate risk premium is 3%, an investor would be willing to pay \$75 today for the asset (the present value of \$100 discounted at an annual rate of 6%). The price of the asset could rise to \$90 in one year either because the expected dividend increases to \$114 or because the discount rate applied to the dividend falls to 2.5%. The first case represents a positive shock to the investor’s long-run wealth; the second simply rearranges returns through time.¹⁷

If spending is less responsive to asset price increases when they are generated by lower discount rates, the Fed may be waiting for an acceleration in economy activity that may not be forthcoming. At the same time, a decline in asset prices (increase in discount rates) may do less damage to economic activity than is commonly

¹⁶ Federal Reserve Bank of St. Louis.

¹⁷ Campbell, J. and Vuolteenaho, T. (2004), “Bad Beta, Good Beta,” *American Economic Review*.

supposed. Investments profitable with interest rates at 4.5% are likely to still be made at 5.5%; those that won't were probably of dubious value in the first place.¹⁸ While Fed tapering will not meaningfully alter the economic outlook, the reintroduction of risk premia is anticipated to improve *future* investment opportunities.

Conclusion

The decline in expected returns is the natural outgrowth of aggressive monetary accommodation, which suppresses discount rates by reducing expected future short-term interest rates and risk perceptions. Eventually, continued improvement in the economy will force the Fed to taper asset purchases, which will lead to increased risk premia and improved investment opportunities. Between now and then, investors may have to content themselves with lower expected returns and a higher degree of correlation across asset classes. Investment selection is likely to prove more important than ever, as are direct investments that allow for active management and operational improvements. Although average prices are high, valuations are relatively low in the transportation, health care, and capital goods sectors.¹⁹ The decline in emerging market stocks has also created opportunities; valuations of Chinese businesses listed in Hong Kong have halved over the past four years.²⁰ European businesses remain heavily discounted relative to comparable U.S. companies, while the ongoing credit crunch has created profitable opportunities to lend to credit-rationed small-to-medium-sized businesses. Overall, a growing global economy continues to provide profitable investment opportunities, even if expected returns have fallen as a result of monetary easing.

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¹⁸ Larry Summers raised a similar point: "It is also worth querying the quality of projects that businesses judge unprofitable at a -60 basis point real interest rate but choose to undertake at a still more negative real interest rate."

¹⁹ S&P Capital IQ. TTM Ebitda measured relative to its 10-year moving average.

²⁰ The average enterprise value of Hang Seng China Enterprises Index constituents declined from 15x trailing twelve month (TTM) Ebitda in July 2009 to 7.3x Ebitda in 2013. S&P Capital IQ.