Monetary Mystery: Why has the post-great recession recovery been so disappointing?

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ABSTRACT

This paper applies the textbook model of the Quantity Theory of Money equation to investigate data from the closing of the "Gold Window" in 1971 to 2015. The purpose is to evaluate the significance of prime factors that may help explain the weak performance of quantitative easing monetary policy relative to U.S. economic recovery since 2008. Time series regression analysis determines herein that key economic variables related to the velocity of money which were significant before 2008 were not significant thereafter. Contrary to the previous periods, under quantitative easing the estimated coefficients on inflation, the federal funds rate, and the growth of the real monetary base are insignificant since 2008.

Key Words: Monetary Policy, Quantitative Easing, Velocity of Money, Quantity Theory of Money, Business Cycle, Central Banking

INTRODUCTION

Despite nagging concerns in some quarters that quantitative easing has not achieved universal theoretical acceptance, the Federal Reserve Board adopted its monetary policy pursuits thereof in the intense environment of the "great recession" (2007 – 2008) because of very real concerns that the U.S. might have been on the precipice of another great depression. David Wessel (2009) labels this period as "Ben Bernanke's war on the great panic" in his 2009 bestseller In Fed We Trust. It was a time of heroic actions on the part of Bernanke, Treasury Secretary Hank Paulson and others; but although it is generally accepted that the efforts to save the financial intermediary system were laudable in effect, many remain abhorrent of the idea of associated bailouts. Moreover, frustrations that the "top 1%" have grown richer and wrongdoers have gone unpunished have tainted public perceptions of the policy.

The purpose of this paper is to explore the issue of why quantitative easing has failed to achieve inflation targets (which the quantity theory of money holds to be a normal outcome), and yet it has been unable to timely stimulate the economy. Technically, the paper will apply time series analysis using explanatory variables consistent with the quantity theory of money and the notion that the "transmission mechanism" (of F.O.M.C. purchases putting money into circulation) had broken down because banks were not lending sufficiently to stimulate the markets as explained below and presumably expected by Bernanke and the Fed.

Our findings will support increasing criticisms that in the more than six years since the end of the great panic, the zero interest rate policy (Z.I.R.P.), the enormous injection of base money into the financial and banking system, and the totally unprecedented growth of the Feds' balance sheet have not performed as the Feds might reasonably have expected. Instead, as of spring 2016, global securities markets are in disarray, commodity prices have collapsed, interest rates along the time spectrum seem confused, and fears of a global recession and talk of contagion fill the airwaves (Michel & Moore, 2014; Ricketts, 2011). Moreover, populist sentiments about the bailouts are spawning concerns that quantitative easing injections may have contributed to the so-called inequality problem through distorted resource allocations and that "cheap money for the top 1%" may have prompted speculative asset bubbles and caused more harm than good in the long run. The fact that "Wall Street" and corporate leadership have shored up balance sheets and obtained disingenuous profits via "financial engineering" tactics, instead of investing in productive assets, has contributed to these accusations.

BACKGROUND

Albeit at enormous taxpayer expense, the federally assisted purchases and bailouts of financial entities during the initial phase of the financial crises mainly served to prevent a complete collapse of the liquidity structures necessary to the functioning of the U.S. credit system and to thus prevent a global contagion. Quantitative easing (Q.E.) policy subsequently came about somewhat as an unproven experiment due to the lack of any other theoretical, legal, and practical alternatives available under Fed powers to directly inject funds into the credit channels (see Thornton, 2015; Joyce et. al., 2012). Despite the disarray of a Q.E. prompted liquidity trap that prevailed under Japanese central bank efforts at the time, the Fed went ahead with Q.E. because it had an urgent need to restore bank solvency sufficient to withstand certain

anticipated (Dodd-Frank Act) "stress test" criteria and because it was still necessary to get the credit system functioning. Some six years of Q.E. effort to incubate productive lending and restore robust credit functions came to an end in October 2014. The associated F.O.M.C. interest rate policy finally escaped zero lower bound in December 2015. Currently, most observers are holding their breath and hoping that the Fed's "data dependency" will reveal a chance to continue to normalize interest rate policy. It is noteworthy that to do so will put the Fed prospectively out of step with most other central banks.

Since the second quarter of 2009 (technical end of the "great recession"), however, the Fed has failed to achieve its dual mandate goals of "full" employment and "stable" prices except in the terms it has informally defined for itself: During this period (2009.Q2 – 2015.Q2) annualized quarterly real economic growth has averaged 2.2% (goal, at least 3%) and inflation averaged 1.56% as measured by the P.C.E. (target 2%). In January 2016 the December jobs report came in strongly at 292,000 jobs increase, meeting the Fed's nominal goal of 5% unemployment rate. However, this encouraging result (technically a decrease in unemployment insurance claims) was tempered by a slack 62.2% labor force participation rate, middling wage growth of 2.4%, and a post-holiday January announcement of 151,000 jobs increase. Whether the data dependent news on employment will continue to improve is currently uncertain due to other economic data which suggest global economic slowdown trends. The plain "common sense" facts are, however, that the functional unemployment rate is closer to 10%, and only 48% of working age adults have full-time jobs. The realistic unemployment rate among young blacks exceeds 50%; and over 47 million Americans depend upon food stamps to fill their larders.

Meanwhile, the Fed's balance sheet has grown over three Q.E. rounds of bond buying (treasuries, mortgage-backed securities, and various other collateral qualified under "unusual exigency" standards) from roughly $905 billion in 2008, to over $4.5 trillion currently. Criticism of the Q.E. efforts is often focused on these enormous holdings and slow growth results: A typical example: Bernanke and the Slow-Growth Crew (Wall Street Journal Opinion piece by Peter J. Wallison of the American Enterprise Institute, November 5, 2015) went so far as to suggest that the Federal Reserve leadership misunderstood the causes for the 2007-2008 financial collapse. We don't necessarily agree with Wallison's accusation, but our results below will suggest that there are very serious needs for further research into the statistically distorted and yet tardy employment gains, sluggish real G.D.P. growth, and unresponsive inflation data (Posen, 2011, 2013). Another unsettling situation is the similarity of trying to increase employment via Q.E. interest rates and old fashioned Phillips curve unemployment vs. inflation tradeoffs.

THEORETICAL AND EMPIRICAL DISCUSSION

The identity model of the quantity theory was meant to explain the relationship between money and the price level and nominal growth of money and inflation. The model assumes that with G.D.P. at its full employment level and a constant velocity of money, money growth causes an equal rate of inflation in the long run. But in the short run of the quantitative easing (December 2008 – October 2014) Bernanke and the Fed felt that credit channels were clogged and the banks were not lending sufficiently, so they continued various "unusual exigency"

measures deemed to be necessary to resuscitate the financial system during the "great panic". Consequently, the Fed loaned directly in the markets, purchasing treasuries, mortgage backed securities, commercial paper, securitized student loans, and various other collateral as further increases in its' balance sheet assets (Bernanke, 2012).

In two recently published papers (Cline, 2015; Neumann & Meyer, 2015) the quantity theory equation is applied to study the effect Q.E. had on economic activity. Both papers explored the issue of why economic activity did not sufficiently respond to the massive injection of base money into the economy. Cline was primarily concerned with the lack of inflation in the economy and what policy prescriptions the Federal Reserve should use in order to stimulate credit activity and yet limit or subdue latent inflation. Neumann and Meyer were concerned with the reasons for the lack of both real gross domestic product growth and targeted inflation. The subject matter of this paper continues that concern herein as a time series study.

Both papers applied the quantity theory equation $M*V = P*y$ as the initial model. Additionally, each extended the money supply function with the money supply process equation which states $M = m*B$ (Mishkin, 2013). Substituting this equation into the quantity theory we have:

$$M * V = P * y$$
$$(m * B) * V = P * y$$

The quantity theory of money is simply restated in the following widely known and applied iterations of this equation.

Where:

M = the Money Supply
V = the Velocity of Money
P = the Price Level
y = real income (Real Gross Domestic Product)
m = the money multiplier
B = the monetary base

Transforming the traditional quantity theory into its percentage change, we have:

(1) $\%\Delta M + \%\Delta V = \%\Delta P + \%\Delta y$

We can break equation (1) down further by using the equally well-known money supply process equation. Transforming the money supply equation into its percentage change, we have:

(2) $\%\Delta M = \%\Delta m + \%\Delta B$

Substituting (2) into (1)

(3) $\%\Delta m + \%\Delta B + \%\Delta V = \%\Delta P + \%\Delta y$

Rearranging equation (3) we have the $\%\Delta y$ or real economic growth equation:

(4) $\%\Delta y = \%\Delta m + \%\Delta B + \%\Delta V - \%\Delta P$

Again, rearranging equation (3) we have the $\%\Delta P$ or the inflation equation:

(5) $\%\Delta P = \%\Delta m + \%\Delta B + \%\Delta V - \%\Delta y$.

The papers cited above focus on equations (4) and (5). This paper will again rearrange the terms in equation (3) but in this case, solve for the percentage change in the velocity of money, $\%\Delta V$, illustrated in equation (6).

(6) $\%\Delta V = \%\Delta P + \%\Delta y - \%\Delta m - \%\Delta B$

Stated in general terms, growth in the velocity of money is a positive function of the rate of inflation and real economic growth and a negative function of the money multiplier and the monetary base. While Cline focused on the ability to control inflation issue and the money

multiplier factor, the focus in this paper is on the entire right-hand side of equation (6) above in our estimations. Cline's concern about the money multiplier function is certainly relevant to money velocity in that it refers to the step-wise succession of transactions deposits, whereas the "transmission mechanism" would focus generally on the failure of newly created reserve funds to result in expanded lending. The money multiplier is apt and may well be a more precise prime suspect for this failure; but there is a need to (1) focus on the paucity of beneficial lending and (2) we also do not want to exclude that there were very substantial expenditures of Q.E. created funds for direct purchases of securities by the banks from the government in order to shore up the bank's balance sheets (Neumann & Meyer, 2015).

The transmission mechanism of monetary policy includes the money multiplier and should take the following course: Procedurally, an open market purchase initiated by the F.O.M.C. directive would initially lower interest rates on the short-term with the related expansion in bank reserves. Commercial banks are then expected to lower their lending rates which, in theory, would augment real investment and durable consumption expenditures in the economy. The new lending would spawn real spending in all sectors of the economy thus stimulating employment, economic growth and, ultimately, inflation. Inflation would not only be in the form of price rises for consumer durable and non-durable goods and services, but also in wages.

It is thus currently evident that some stage of the expected function of this transmission mechanism of monetary policy has at least partially underperformed or broken down under Q.E. and Z.I.R.P. So too, it also appears that the Fed has concluded it would do no good to further stuff the "credit channels" full of funds via continued Q.E. Logically, either Q.E. has worked and the effects are excessively lagging; or it failed to cause continued acceleration of the aforesaid process and the expected results. In the case of the former presumption, the slow recovery seems to be based on improving, but fragile, data dependency. This is why the results of Q.E. have been quite disappointing, but still mysterious (Meltzer, 2013). In either case, it has been a huge effort at very slow gains; and in the worst case it has been a surplusage on top of a normal unassisted recovery. Quantitative easing is not only suspect because the real extent of unemployment is not revealed by Fed data, but recently also because the financial markets have swiftly moved from enthused reaction to data dependency announcements from the Fed to "data skepticism." This is the worrisome stuff of which the "great panic" was composed in its earliest symptoms.

As indicated in Table 1 (see Appendix) the weighted average of real economic growth and inflation for the expansion period over the business cycles covering the post Bretton-Woods period from 1971 to 2007 with that of the current expansion from June 2009 to July 2015. Clearly, over the current expansion, the rate of growth of real G.D.P. has under-performed the weighted average of all business cycle expansions between 1971 and 2007. Moreover, the weighted average of inflation, as measured by the C.P.I. and P.C.E., are, in all cases, in excess of the current expansion period. The pertinent question is: why, compared to the previous periods, have real gross domestic product and inflation grown at these relatively low rates? In the following section data is explored to identify the cause of the suspected dysfunction in the transmission mechanism of monetary policy. But as explained in our concluding comments, it is believed that a substantial part of the problem is because the loans largely went into intangible investments rather than productive ones.

Neumann and Meyer (2015) examined the quantity theory framework to most simply decompose its components in order to isolate where the break-down in the transmission mechanism of monetary policy might have originated. They found the velocity of money and the money multiplier to be the primary suspects for the failure of the predicted transmission of money expansion to the economy. The decrease in the velocity of money is attributed herein (through the following estimations) to the change after 2008 in some primary economic factors that would be expected to be robust, but instead show insignificance since the start of Q.E. See Friedman (1956, 1974) for his original, albeit a more complex, model and additional potential factors.

This paper concentrates herein on inflation and real G.D.P. growth, the estimated equation structure of M1 and M2, and Q.E. policy. This investigation follows a familiar methodology and applies the identity form of the illustrative textbook equation for the quantity theory of money which takes the form:

$$M * V = P * y.$$

Table 1 (see Appendix) reports a comparison of the right hand side of the quantity theory equation. As can be observed, the growth of real gross domestic product and prices in the current expansion do not follow the trends in the average for the six expansions the U.S. economy has experienced since 1971. Table's 2 and 3 report statistical evidence on each of the components of the left hand side of the quantity theory equation and, again, compare the six business expansions since 1971 with the current.

Table 2 (see Appendix) reports the annualized average growth of quarterly M1 and M2 for the previous six expansions and the current expansion period. The current average trend in M1 growth exceeds that of the previous periods by practically a factor of 2, while M2 growth is slightly below that of the past.

Table 3 (see Appendix) reports the average annual growth of velocity in M1 and M2 again comparing the average growth of velocity over the prior six expansion periods to the current expansion period. It is evident M1 and M2 velocity of money measures do not reflect the average trend of the previous six expansions. Average velocity of both M1 and M2 in the current expansion are both negative contrary to the positive growth in the previous period. It is thus suspected that the current expansion period from June 2009 to July 2015 experienced a dysfunction in the traditional transmission mechanism of monetary policy which may be traced to the behavior of the velocity of money.

This data is consistent with the previous conclusions quoted below from Neumann and Meyer (2015). Although, as reported therein, the major force behind the lack-luster movement in general economic conditions was indicated by falling velocity; Cline (2015) also supports the evidence of the falling velocity due to the reduction in the money multiplier because it necessarily tends to re-enforce the trends of the velocity of money:

> As it appears from our descriptive statistics and graphics, the breakdown of the transmission mechanism of monetary policy is directly related to diminished velocity of both M1 and M2. The extreme fall-off in the money multiplier provides additional evidence why Q.E. failed in stimulating economic activity. It is quite evident that injection of bank reserves and the monetary base did reduce interest rates as expected; however, it appears these reserves ended up financing government spending activity as Federal Reserve Banks purchased

> Treasury securities and mortgaged backed securities at historically high levels (Neumann & Meyer, 2015).

As previously mentioned, Cline (2015) does not place the blame for the lack of inflationary forces and the general economic conditions on the fall in the velocity of money but rather on the "collapse" of the money multiplier:

> So far Q.E. has not caused a massive increase in the money supply that matters for inflation; the money base has indeed risen sharply, but the broad money supply has not. The reason is that excess bank reserves held at the Federal Reserve have risen sharply but have not increased the money supply available to the public. Correspondingly, it turns out that the lack of inflationary pressure reflects a collapse not in so-called "velocity" in the quantity theory of money, but instead in the so-called "money multiplier" relating the effective money supply in the economy to the money base of currency plus bank reserves at the Federal Reserve. By implication, the legacy of quantitative easing would only turn out to be high inflation in the future if two conditions were to materialize: first, a breakdown in the Fed's control that permitted a rapid resurgence of the money multiplier and money available to the public; and second, a reversal of the pattern of the past three decades to an earlier pattern in which rapid growth in the money supply was associated with high inflation. (Cline, 2015)

The conclusions stated below are consistent with those of Cline, the only difference being that Cline was most concerned with the likelihood that as economic activity picks up and, with the previous explosion in bank reserves and the monetary base, future inflationary forces are eminent. His main concern was the appropriate monetary policy and what the Federal Reserve can do to mop up the reserves so as to stall and eliminate the latent inflationary forces. He suggested raising the interest rate on reserves commercial banks hold at the Federal Reserve which would have the predicted effect of lowering the money multiplier. This all makes perfect sense, but the question why all of this Q.E. activity has not achieved full employment and stable price objectives remains.

A closer look at the current data illustrates the money multiplier has, indeed, been falling since second quarter of 1987. Chart 1 (See Appendix) illustrates the path of the M1 money multiplier. In July 2008 the M1 multiplier made a steep fall-off, however, the M1 money multiplier moved back to trend by the second quarter of 2012. The dotted line tracks the trend of the M1 multiplier. This chart also supports the observation made by Cline that the Federal Reserve has the ability to halt any return of inflationary forces by raising the interest rate paid to banks on reserves held at the Federal Reserve, (see timelines, Chart 1).

EMPIRICAL INVESTIGATION

The purpose of the empirical section of this study is to identify those specific economic variables which caused the velocity of both M1 and M2 to fall. The general linear model to be estimated is based on the Quantity Theory of Money discussed above. The implicit function of the set of equations to be estimated takes the following form:

Velocity = f(growth of real GDP; inflation; short and long-term interest rates; growth of real base money; dummy variables identifying the post great recession period).

All data used in the estimations was down-loaded from the Federal Reserve Bank of St. Louis data based FRED. The time series data is quarterly from the first quarter 1971 through the second quarter 2015. Charts of M1 and M2 velocity depict the movement of velocity over the post Bretton-Woods period. (see Appendix Charts 2 & 3).

Each time series was tested for a non-stationarity using the Dickey-Fuller test. When a unit root was identified, first differences in the time series was calculated, which, in each case, produced a stationary time series (Stock & Watson, 2015). Additionally, serial correlation in the error terms was an estimation issue. The Cochrane-Orcutt iterative estimation procedure was applied to eliminate serial correlation in the error structure (Cochrane & Orcutt, 1949; Stock & Watson, 2015).

Tables 4, 5 and 6 (see Appendix) report the regression results. The dependent variable in Table 4 is the change in M1 Velocity (DM1Velocity) while Tables 5 and 6 report the regressions using the change in M2 velocity (DM2Velocity). The time periods for the regressions are 1971Q3 to 2015Q2, 1971Q3 to 2007Q4 and 2008Q1 to 2015Q2. There are three dummy variables testing for differences in the post-great recession period for the growth of real G.D.P, inflation and a shift in the constant term. The Real G.D.P. Growth Dummy crosses the growth of real G.D.P. and the post-great recession dummy, Growth of the Real Monetary Base Dummy crosses the growth of the real monetary base and the post-great recession dummy, and the Great Post-Recession Dummy is a shift dummy variable for the post-great recession period. Below each partial regression coefficient the t-statistic is reported in parenthesis. A level of significance of one percent is denoted by three starts, two stars implies a five percent significance level, while one star implies a ten percent significance level. Also included in each equation is the first order auto-correlation coefficient (AR(1)), the Durbin-Watson Statistics (DW) and the coefficient of determination, R^2.

Table 4 (see Appendix) reports the regression results for 4 equations with the change in the velocity of M1 as the dependent variable. Equation 1 and 4 are estimated over the full period with equation 4 including the three dummy variables. In all four equations the growth of real G.D.P. was positive and significant at the one percent level. The inflation coefficient is positive and significant at the 1% level in equation 1 and at the 10% level in equation 4. In both sub-periods inflation is not significant. The change in the federal funds rate and interest rate spread of the ten year and one year treasury security is 10% significant and negative in the early sub-period and 1% significant and positive in equation 4. The interest rate spread is significant and negative in equation 1. The growth of the real monetary base in each equation is significant at the 1% level and negative. Both slope dummy variables were positive and significant at the 1% level, while the shift dummy is negative and significant at 1%.

Table 5 (see Appendix) reports the regression results using the same explanatory variables as Table 4 however the dependent variable is the change in the velocity of M2. Real economic growth is again positive and significant at the 1% level in each equation. The rate of inflation is significant at 1% and positive in all equations but equation 3. Equation 3 was estimated over the 2008 Q1 to 2015 Q2 where inflation was found to be insignificant and

negative. The change in the federal funds rate is insignificant in equation 3 and positive and significant at 5% all other equations. The ten year - one year treasury spread is never significant while the growth of real monetary base is negative in all cases but significant only in the entire 1971 to 2015 estimation period.

Table 6 (see Appendix) builds on the results using the change in the M2 velocity as the dependent variable. The results are again similar to those described above. The most striking result is in equation 4 in which the estimation time period coincides with the quantitative easing period from 2008 Q1 to 2015 Q2. Again, as in the previous results, only the growth of real gross domestic product is positive and highly significant. There appears to be a shift in the model over the period encompassing the great recession and subsequent expansion.

DISCUSSION OF EMPIRICAL RESULTS

The most striking results are the insignificance of the estimated coefficients on inflation, the federal funds rate and the growth of the real monetary base in all equations estimated over the time period 2008 Q1 through 2015 Q2. This consistent outcome was not repeated for the equations estimated over the entire post Bretton-Woods period 1971 to 2015 nor the pre-great recession period 1971 to 2007. The estimated equation structure of both the velocity of M1 and M2 has evidently changed since inception of the 2008 Q1 – 2015 Q2 period.

Over the longer period of time the velocity of both M1 and M2 are shown to be influenced, first and foremost, by the growth of real gross domestic product. Inflation over the entire estimation period is also found to have a positive and significant effect on the velocity of money. It is noteworthy that the real federal funds rate and the interest rate spread influence velocity, and it is not surprising that, these results are mixed both in sign and significance.

The down-trending reduction in the velocity of M1 and M2 shown in charts 1 and 2 (see Appendix) is also estimated to be at the root cause for the failure of the economy to rebound. Indeed, since 2008 targeting inflation and interest rates are shown to be insignificant and supportive of the idea that they have failed to increase the velocity of money and assist in the economic rebound. The question raised by this result is whether the Fed's inflation and interest rate targets via Q.E. monetary policy alone could be sufficient to bring about a full employment rate of economic growth. Either Q.E. is suspiciously tardy in its efficacy, or other phenomena have interfered with its' theoretical operation and effects.

The regression results imply that Q.E. monetary policy in itself is either not sufficient or for timely purposes has not worked; however, other important factors were involved: it is generally accepted that fiscal policy has effectively failed and financial regulation aimed at the abuses leading to the 2007-2008 collapse via Dodd-Frank has been a drag on lending activity. Thus, there are plenty of potential culprits to investigate. The causes for the great panic, of course, in this paper must remain largely unrecognized; but we should mention the mortgage banking mania, "no-doc" loans, and the government's 80% home ownership goals, as well as Fannie and Freddie accommodations of these abuses of traditional precautions. As mentioned above, the call for further research into what loans were actually made, to whom, and for what purposes is supported by the results herein.

SUMMARY AND CONCLUDING THOUGHTS

This paper applies time series regression analysis to the velocity component of the Quantity Theory of Money to examine the slow rebound of the U.S. economy subsequent to the so-called "great recession." Although the Fed has increased bank reserves and base money through quantitative easing, the economy remains in a slow growth mode with inflation below 2%. As shown in Tables 2 and 3 (see Appendix) the growth of the money supply in the post great recession expansion for M1 exceeded that of previous expansions while M2 increase was slightly below previous expansions while the velocity of M1 and M2 fell.

The regression results provide supporting evidence that the decrease in velocity of money since 2008 was empirically related to the weak growth of real gross domestic product. Although in past periods inflation and interest rates had an influence on velocity, in the current expansion these key variables no longer appear to have such an impact on either M1 or M2 velocity. The decrease in velocity is statistically linked to and thus a contributor to the lack-luster expansion since 2008.

The historic high levels of reserves created by Q.E. policy have not yet translated into robust expansion in economic activity and the desired level of inflation. The velocity and movement of money throughout the economic system requires greater and more penetrating levels of lending and consequential growth of production. It appears holding interest rates at historically low levels in excess of six years has done little to promote timely growth. Nor has an unmet policy promoting a 2% rate of inflation. What is necessary to meet the Feds mandates is a monetary policy which will effectively stimulate fundamentally productive lending and economic activity.

As J.S. Mill (1929) succinctly stated money "…exerts a distinct and independent influence of its own when it gets out of order." Milton Friedman (1968) added to Mill's truism when he commented "But money has one feature that these other machines do not share. Because it is so pervasive, when it gets out of order, it throws a monkey wrench into the operation of all the machines." Quantitative easing and the growth of the Feds balance sheet could yet turn out to be that monkey wrench and one can only hope the current criticisms do not become testament to the insights of both J.S. Mill and M. Friedman.

The slow economic recovery since the "great recession" raises the legitimate question whether the long continuation of emergency Federal Reserve monetary policy was overdone. It is common knowledge that Fed policy is currently faced with high risks of a global slowdown. Yet the Fed is currently faced with a dilemma that they need to normalize policy despite a federal funds rate in the range of 0 to .25% and an inflation rate of 2% but Q.E. policy has not yet resulted in the expected recovery of economic performance and job creation that would enable raising rates. This raises the base question whether the Q.E. targeted Fed policy was sufficiently effective, and whether it was the appropriate cure for anemic economic performance since 2008.

A new monetary policy is now slowly evolving. In the February 2016 Humphrey-Hawkins report to Congress it was suggested by several members that less extreme monetary policy could be based on a rule or other alternatives to guide policy makers (Taylor 2012, 2013; Posen, 2013). Disciplined monetary policy coupled with the long term constraints of the market

economy seem intuitively better able to direct resource allocation towards generally beneficial wage and economic growth. Disciplined monetary policy based on rules or other alternatives could also help put an end to some of the Fed's current monetary dilemma and quell some of the accusations of the faulty price signals created by quantitative easing.

What apparently went wrong under the Fed's Q.E. regime was that the Fed couldn't control where all the new excess reserves were going; yet it appears that problems of perverse and unproductive lending were timely known by Bernanke and the Fed to be taking place, but appropriate borrowing demand and real redirected lending somehow failed to timely occur (Thornton, 2015). This seems to us to be a disappointing case of good intentions; the Fed kept pumping money at a hoped for solution that hasn't worked very well. Unfortunately, the fat cats and top 1% made out just fine via financial engineering (stock buybacks) and speculative hedged investments. Is it any wonder though, that ordinary entrepreneurs with limited or not good prospects will not borrow money until better opportunities emerge, no matter how cheap the interest rates are? It is strongly suspect that this simple truth has something to do with the disappointments with at least the lending function of the transmission mechanism. It wasn't entirely a money multiplier problem as we see it. Instead, the situation was such that the sectors of our economy that normally create the most jobs: housing, construction, manufacturing, durable goods, retail sales, etc. never took the Fed's bait.

The situation still prevails, and thus calls for further effort to identify the actual proximate cause for the break-down in the transmission mechanism and the disappointing movements in key economic variables. It seems to imply a start from a factual question: did the banks substantially hold the Q.E. enabled funds as reserves or other collateral instead of using them to make loans? The problem continues in that the banks have been pronounced "stress test sound" and yet lending is not robust. Secondly, did the loans (if made) go to only prime credit borrowers who put them to mostly tactical balance sheet or speculative intangible use? The extraordinary reserves, created by quantitative easing, injected into the banking system remain, but they have not done their job. The huge monetary base remains and, at some point, must be reduced through contractionary monetary policy. This would entail an increase in the discount rate, an increase in the required reserve ratio, or, more than likely, open market sales. It certainly looks like the Feds dare not do any of these very forcefully right now.

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APPENDIX

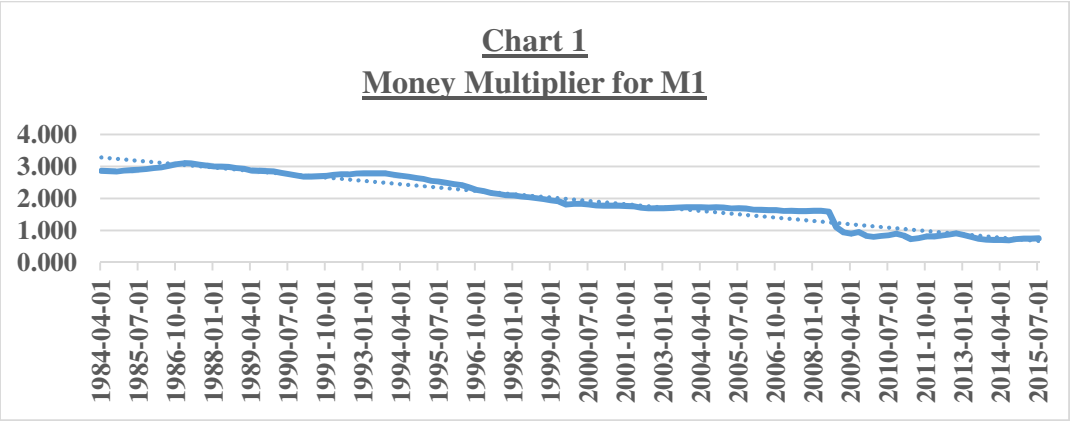
Chart 1
Money Multiplier for M1
4.000
3.000
2.000
1.000
0.000
1984-04-01
1985-07-01
1986-10-01
1988-01-01
1989-04-01
1990-07-01
1991-10-01
1993-01-01
1994-04-01
1995-07-01
1996-10-01
1998-01-01
1999-04-01
2000-07-01
2001-10-01
2003-01-01
2004-04-01
2005-07-01
2006-10-01
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2010-07-01
2011-10-01
2013-01-01
2014-04-01
2015-07-01

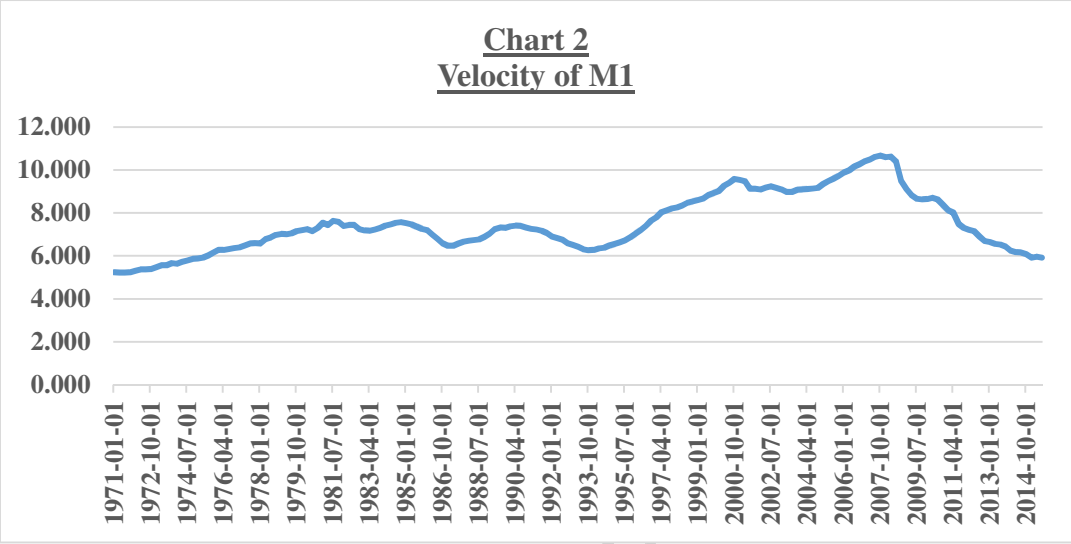
Chart 2
Velocity of M1
12.000
10.000
8.000
6.000
4.000
2.000
0.000
1971-01-01
1972-10-01
1974-07-01
1976-04-01
1978-01-01
1979-10-01
1981-07-01
1983-04-01
1985-01-01
1986-10-01
1988-07-01
1990-04-01
1992-01-01
1993-10-01
1995-07-01
1997-04-01
1999-01-01
2000-10-01
2002-07-01
2004-04-01
2006-01-01
2007-10-01
2009-07-01
2011-04-01
2013-01-01
2014-10-01

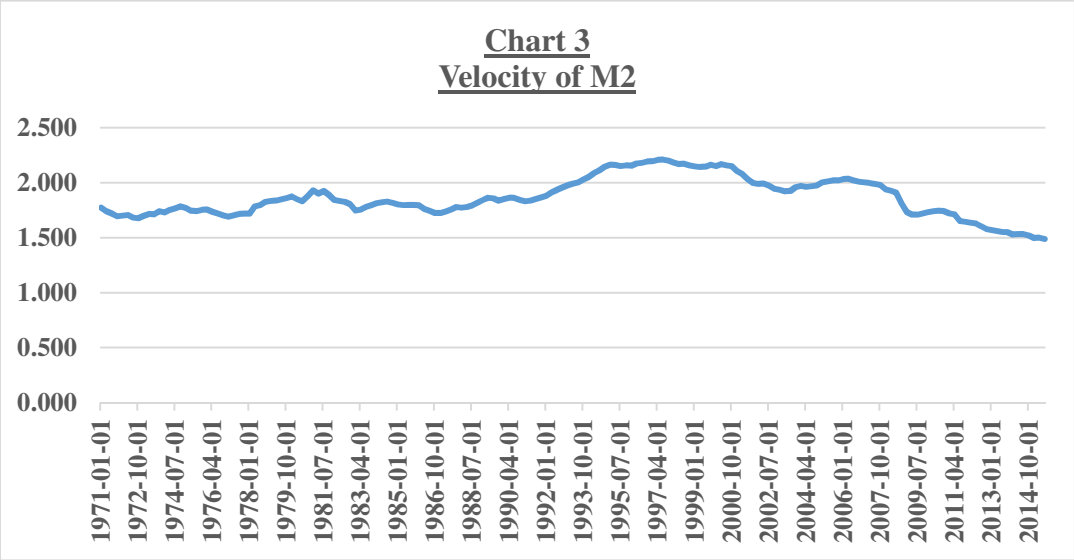
Chart 3
Velocity of M2
2.500
2.000
1.500
1.000
0.500
0.000
1971-01-01
1972-10-01
1974-07-01
1976-04-01
1978-01-01
1979-10-01
1981-07-01
1983-04-01
1985-01-01
1986-10-01
1988-07-01
1990-04-01
1992-01-01
1993-10-01
1995-07-01
1997-04-01
1999-01-01
2000-10-01
2002-07-01
2004-04-01
2006-01-01
2007-10-01
2009-07-01
2011-04-01
2013-01-01
2014-10-01

Table 1
Real Gross Domestic Product Growth and Inflation
Over the Six Expansions from 1971 – 2007
Compared to June 2009 to July 2015 Expansion

	Real Gross Domestic Product Growth Rate	Consumer Price Index Inflation	Personal Consumption Expenditure Inflation
Average of Six Expansions	3.659%	4.168%	3.673%
Expansion June 2009 to July 2015	2.134%	1.736%	1.549%

Table 2
The Growth of M1 and M2
Over the Six Expansions from 1971 – 2007
Compared to June 2009 to July 2015 Expansion

	M1 Growth	M2 Growth
Average of Six Expansions	5.299%	6.989%
Expansion June 2009 to July 2015	10.247%	5.950%

Table 3
The Growth in the Velocity of M1 and M2
Over the Six Expansions from 1971 – 2007
Compared to June 2009 to July 2015 Expansion

	The Growth of Velocity of M1	The Growth of Velocity of M2
Average of Six Expansions	2.201%	.498%
Expansion June 2009 to July 2015	-6.308%	-2.202%

Table 4

Dependent Variable DM1Velocity

	Equation 1 (1971 Q3 – 2015 Q2)	Equation 2 (1971 Q3 – 2007 Q4)	Equation 3 (2008 Q1 – 2015 Q2)	Equation 4 (1971 Q3 – 2015 Q2)
CONSTANT	-0.0891***	0.0284	-0.1951***	-0.0447*
	(3.6354)	(1.1770)	(3.4679)	(1.8538)
REAL GDP GROWTH	7.5992***	6.6590***	14.8447***	6.4091***
	(9.0952)	(9.8944)	(3.4554)	(8.1752)
INFLATION	6.2418***	-0.1320	6.0705	3.5050*
	(3.2571)	(0.0782)	(0.5330)	(1.9528)
DREAL FEDERAL FUNDS RATE	0.0154	0.0152**	-0.0660	0.0220**
	(1.5379)	(1.9890)	(0.5865)	(2.2034)
DSPREAD TEN AND ONE YEAR TREASURY	-0.0252**	-0.0168*	0.0177	0.0512***
	(1.9875)	(1.7163)	(0.1467)	(2.6070)
GROWTH REAL MONETARY BASE	-0.8770***	-5.4218***	-0.6673***	-1.1451***
	(7.1138)	(7.3775)	(2.5759)	(9.1556)
REAL GDP GROWTH DUMMY				8.4896***
				(2.7959)
GROWTH OF REAL MONETARY BASE DUMMY				1.4222***
				(4.4915)
POST GREAT RECESSION DUMMY				-0.1448***
				(3.3565)
AR(1)	0.8175***	0.6021***	0.2907	0.6036***
	(10.0639)	8.6174	(1.4097)	(9.3522)
DW	2.1484	2.2169	1.9056	2.1846
ADJUSTED R^2	0.6771	0.6578	0.6334	0.7283

*** 1 % level of significance ** 5% level of significance * 10% level of significance

Table 5

Dependent Variable DM2Velocity

	Equation 1 (1971 Q3 – 2015 Q2)	Equation 2 (1971 Q3 – 2007 Q4)	Equation 3 (2008 Q1 – 2015 Q2)	Equation 4 (1971 Q3 – 2015 Q2)
CONSTANT	-0.0241***	-0.0250***	-0.0196***	-0.0231***
	(6.6011)	(4.9222)	(2.9129)	(5.9024)
REAL GDP GROWTH	1.7608***	1.7018***	2.4594***	1.6845***
	(13.9982)	(13.3244)	(5.2639)	(13.0749)
INFLATION	1.3389***	1.5061***	-0.3284	1.2338***
	(4.6804)	(4.3141)	(0.2382)	(4.2204)
DREAL FEDERAL FUNDS RATE	0.0034**	0.0037**	0.0057	0.0034**
	(2.0399)	(2.5725)	(0.4640)	(2.0813)
DSPREAD TEN AND ONE YEAR TREASURY	-0.0026	-0.0030	0.0039	0.0036
	(1.3595)	(1.6411)	(0.2957)	(1.1206)
GROWTH REAL MONETARY BASE	-0.0484***	-0.0920	-0.0209	-0.06117***
	(2.6499)	(0.6631)	(0.7310)	(3.0318)
REAL GDP GROWTH DUMMY				0.4326
				(0.8762)
GROWTH OF REAL MONETARY BASE DUMMY				0.0678
				(1.3155)
POST GREAT RECESSION DUMMY				-0.0002
				(0.0252)
AR(1)	0.6167***	0.6746***	0.3337	0.6034***
	(10.1988)	10.7542	(1.4263)	(9.7237)
DW	2.0442	2.0763	1.9162	2.0939
ADJUSTED R^2	0.6876	0.6435	0.7401	0.6868

*** 1 % level of significance ** 5% level of significance * 10% level of significance

Table 6

Dependent Variable DM2Velocity

	Equation 1 (1971 Q3 – 2015 Q2)	Equation 2 (1971 Q3 – 2015 Q2)	Equation 3 (1971 Q3 – 2007 Q4)	Equation 4 (2008 Q1 – 2015 Q2)
CONSTANT	-0.0242***	-0.0233***	-0.0254***	-0.0203***
	(6.6247)	(6.5693)	(4.9713)	(3.6519)
REAL GDP GROWTH	1.7705***	1.7278***	1.7145***	2.3751***
	(14.2610)	(14.1119)	(13.4672)	(6.0947)
INFLATION	1.3570***	1.2839***	1.5521***	0.0577
	(4.7492)	(4.5887)	(4.4238)	(0.0496)
DREAL FEDERAL FUNDS RATE	0.0024**	0.0018**	0.0026***	0.0036
	(2.4361)	(2.0372)	(2.6985)	(0.4287)
DTEN YEAR TREASURY	-0.0028		-0.0037*	0.0160**
	(1.4046)		(1.9078)	(2.6777)
DTEN YEAR TREASURY DUMMY	-0.0188***	0.0161		
	(2.6429)	(2.3328)		
GROWTH REAL MONETARY BASE	-0.0501***	-0.0508	-0.1106	-0.0232
	(2.7811)	(2.7952)	(0.8076)	(0.9485)
AR(1)	0.6222***	0.6058***	0.6812***	0.2724
	(10.2943)	9.9122	(10.9517)	(1.1819)
DW	2.0746	2.0992	2.0458	2.0435
ADJUSTED R^2	0.6957	0.6941	0.6457	0.8004

*** 1 % level of significance ** 5% level of significance * 10% level of significance