

# “Reflections concerning the money supply, velocity, and the quantity theory of money: the Great Depression and the Great Recession, in the United States”

## AUTHORS

Paul F. Gentle  
Joseph Jones

## ARTICLE INFO

Paul F. Gentle and Joseph Jones (2015). Reflections concerning the money supply, velocity, and the quantity theory of money: the Great Depression and the Great Recession, in the United States. *Banks and Bank Systems*, 10(2), 72-82

## RELEASED ON

Friday, 31 July 2015

## JOURNAL

"Banks and Bank Systems"

## FOUNDER

LLC “Consulting Publishing Company “Business Perspectives”



NUMBER OF REFERENCES

0



NUMBER OF FIGURES

0



NUMBER OF TABLES

0

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Paul F. Gentle (Thailand), Joseph Jones (USA)

## Reflections concerning the money supply, velocity, and the quantity theory of money: the Great Depression and the Great Recession in the United States

### Abstract

The Great Depression, as it manifested itself in the United States of America, was caused by different factors, including both levels of the money supply and the velocity of money. There were also other factors worsening the Great Depression, including the Smoot-Hawley Tariff and banking deregulation, the latter also being a causal factor in the Great Recession. These factors and more are examined in this paper. The paper concludes that economists are best served by examining different schools of economic thought concerning these two economic downturns. Also, the quantity theory of money, as it relates to the money supply and velocity are worthy of the attention of economists, in order to understand other time periods of economic history.

**Keywords:** money supply, velocity, Great Depression, the United States.

**JEL Classification:** E4, E5, N1.

### Introduction

The topics of money supply and velocity are especially important, when considering all the causal factors of the greatest economic downturn in United States history and the most recent economic downturn. Ben Bernanke (1995, p. 1) states that “understanding the Great Depression is the Holy Grail of macroeconomics”. Trying to understand this historical event of “the 1930s continues to influence macroeconomists’ beliefs, policy recommendations, and research agendas” (Bernanke, 1995, p. 1). Discussions concerning the magnitude of the money supply and its velocity during the Great Depression and Great Recession are significant, in their impact. In 1933, the Glass-Steagall Act was adopted in the worst year for unemployment, in American history, when unemployment was 25.2% (Gordon, 2009). Yet it was repealed in 1999. Lax practices in approving mortgages and the lack of adherence to the Taylor Rule, resulting in a boom followed by a bust situation, were also further causal factors in resulting Great Recession (Koenig et al., 2012). This article is written with the goal of providing an overview of the different views on these subjects of the money supply and velocity, along with other factors that are thought to have created the broad economic history of the Great Depression and the Great Recession.

The next section presents an overview of the background of these two economic downturns. Following that, there will be a detailed section for discussion of the quantity theory of money. Subsequent to that, there will be a review of some of the research in regard to the money supply and velocity, during the Great Depression and Great Recession in America. Non-

monetary factors as causes of the Great Depression and Great Recession are included, in discussions. This paper reviews and summarizes some of the key studies concerning these two major economic events.

### 1. Historical background

Preceding both the Great Depression and Great Recession, there were economic booms of some degree. In the late 1920s the U.S. Federal Reserve Bank pursued a more restrictive monetary policy, after easier credit had allowed the stock market and construction market, to “overheat” (Gordon, 2009). The stock market crashed in October, 1929 (Gordon, 2009). Once the Great Depression witnessed the highest unemployment rate in U.S. history, at 25.2% in 1933, President Franklin Roosevelt’s New Deal started soon after he came into office also, in that same year. The Glass-Steagall Act was one of the most influential banking reform acts, in terms of impact up to that time in American history (Gordon, 2009; Mishkin, 2006). This Act prohibited banks from underwriting or dealing with corporate securities. There was also the FDIC creation, which insured deposits and brought a perception of less risk to part of the economy and regulation concerning interest rates on deposit accounts (Mishkin, 2006).

The resulting stability in the financial institutions sector, with the near elimination of failed financial institutions was a boon to the U.S. economy. However, starting in 1981, the U.S. witnessed some piece meal dismantling of the Glass-Steagall Act and some associated acts, until finally in 1999, President Clinton approved the legislation that repealed the Glass-Steagall Act’s prohibition of banks from underwriting or dealing with corporate securities. This regrettable legislation is called the Gramm-Leach-Bliley Act and allowed some financial institutions to allow too much credit for financial stability in the economy (Mishkin, 2006; Stiglitz, 2010). For a few years prior to the housing bubble peak and demise in 2007, the

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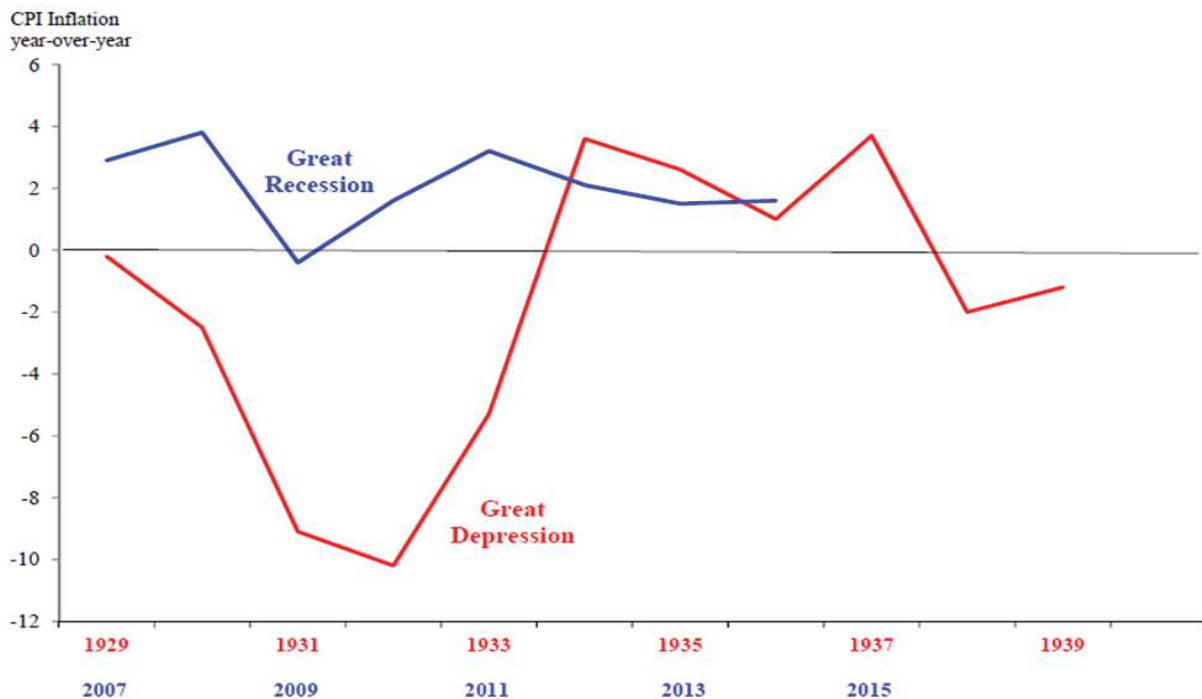
Paul F. Gentle, Ph.D., Visiting Assistant Professor of Economics, Webster University – St. Louise, Hua Hin, Thailand.

Joseph Jones, M.S., Former graduate student, University of New Mexico, Albuquerque, New Mexico, USA.

Federal Reserve of the United States ignored the Taylor Rule, a well recognized rule for prudent monetary policy. This rule is designed to produce steady economic growth, without the economy going into an overheated state of high inflation and malinvestment (Koenig et al., 2012). Increasing the money supply too much caused high inflation, an appreciation of housing prices and eventually a housing bubble. In fact, houses were bought for both dwelling and speculative purposes, in the hope that prices would go up in the future, as they had been doing. Also, in order to sell houses, normal procedures were ignored, resulting in some agents selling houses to people who could not afford to make payments (Gordon, 2009). These particular buyers were known as “subprime” buyers. As long as housing prices kept quickly rising, the prospective appreciation on the home gave some reassurance to buyers that they were building up some equity. However, the bubble finally reached a peak in August, 2007, whereupon the value of some mortgages subsequently decreased, instead of further appreciating. Trouble began for securities backed by Adjustable Rate Mortgages (ARMs); in the year 2001, there were 1.6 million housing starts. In 2005 there were 2.1 million housing starts and in 2007, that figure had

dropped to 1.5 million housing starts (Gordon, 2009). The advent of mortgage based securities (MBSs) further spread the effects of the Great Recession, as the MBSs, were owned throughout much of the World. Such securities are composed of the returns of many mortgages. Often investors would not wish to hold anyone’s mortgage will be willing to hold MBSs. So the housing boom in the United States was partially being fueled from capital supplied by foreigners. When the housing boom crashed, foreigners felt some of the aftershocks (Blanchard et al., 2013; Ali et al., 2015).

So we have explained some of the factors that precipitated both the Great Depression and the Great Recession. Now we look at some of the characteristics of the Great Recession and Great Depression. Both of these economic events witnessed an increase in unemployment; although, the increase was higher during the Great Depression than the Great Recession. During the Great Depression, there was a great amount of deflation, shown especially in the years from 1931 to 1933. However, the Great Recession experienced only a short bout of deflation and that deflation was of a very small amount. These phenomena can be seen on Figure 1.



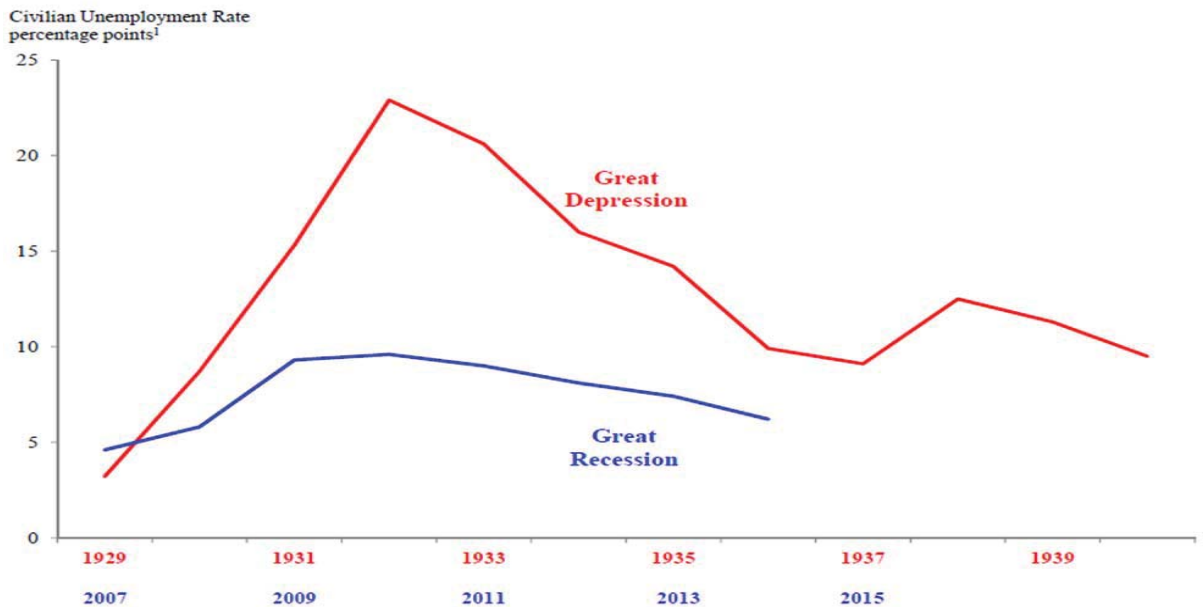
Source: Anderson et al., 2015.

Fig. 1. Inflation and deflation rates during the Great Depression and Great Recession

Likewise, the Great Depression had exhibited more adverse effects, in terms of total unemployment, than what the Great Recession has experienced. One can see this in Figure 2. The maximum point of unemployment is very high and was greatest in the 1932-1933 area. On the other hand, one can see that indeed there was an

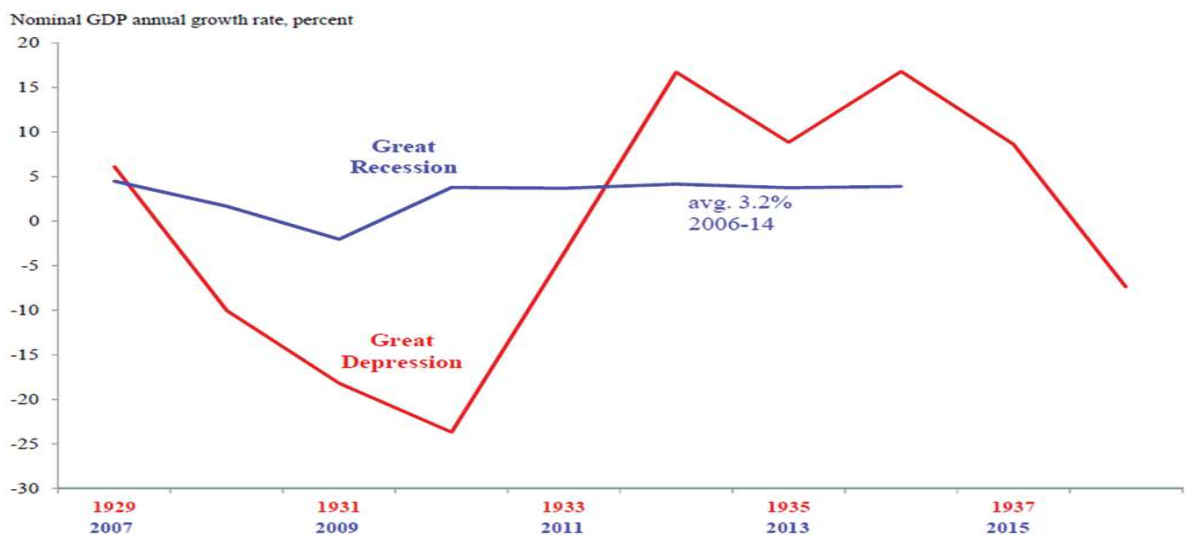
increase in unemployment during the Great Recession, peaking in the 2009-2010 area.

Gross Domestic Product changes are an important way to track economic downturns. We can see from Figure 3, that there had been a less severe drop in GDP during the Great Recession, compared to the Great Depression.



Source: Anderson et al., 2015.

Fig. 2. Unemployment rate during the Great Depression and Great Recession



Source: Anderson et al., 2015.

Fig. 3. Nominal GDP growth – this was more stable during the Great Recession, compared to the Great Depression

## 2. The quantity theory of money

The quantity theory of money (also known as the equation of exchange), is  $MV = PY$ , where  $M$  equals the money supply,  $V$  denotes the velocity of that money supply;  $P$  equals the price level and  $Y$  equals aggregate output. Sometimes this equation is shown as  $MV = PQ$ , with  $Q$  meaning aggregate output (Mishkin, 2006, pp. 517-521; Quantity, 2015). Either a drop in  $V$  or a drop in  $M$  or a drop in both, results in a drop in inflation, assuming that  $Q$  is constant. A great drop in the product of the multiples  $M$  and  $V$ , may result in deflation, as was true during part of the Great Depression. The Monetarists support the idea that during the Great De-

pression, Velocity ( $V$ ) was constant. Whereas the New Keynesians view  $V$ , as not constant during that time period but instead maintain that it was variable (Mishkin, 2006, pp. 521-533).

## 3. Contraction

Massive bank failures occurred during 1930-33, one of the worst parts of the Great Depression, wiping out the savings of many depositors. In 1934, the Federal Deposit Insurance Corporation FDIC was created to help prevent depositors' losses (Mishkin, 2006, p. 40). Friedman and Schwartz (1963) maintain that the "monetary contraction", the continuing crises in the banking crises, dropping prices and outputs, resulted in the Great Depres-

sion. Fisher (1933) explains how the deflation of the early 1930s caused the real value of debt to be much higher, than it was nominally. More real aggregate debt may slow the economy. Cecchetti (1989) states that deflation was a major factor as a cause of the Great Depression. This is one reason for the failure of banks at that time. Meltzer (1976, 2003) and Mishkin (2006) concur with this. Samuelson et al. (1960) found a relatively high unemployment rate, associated with U.S. deflation. Christiano et al. (2004) examined the data from the 1920s and 1930s and created a model that revealed that better monetary policy could have reduced the severity of the Great Depression. "This is consistent with the Friedman-Schwartz hypothesis" (Christiano et al., 2004). Similarly, Bernanke (1995) puts forth the idea that monetary factors played a causal role in the decline of prices, and output, during the Great Depression, which occurred in many countries. The two most common measures of the money supply, are described in Table 1.

Table 1. Two most common measures of the money supply

Measurement	Components of measurement
<i>M1</i>	The sum of currency, traveler's checks, and checkable deposits—assets that can be used directly in transactions. <i>M1</i> is also called <i>narrow money</i> .
<i>M2</i>	<i>M1</i> plus money market and savings deposits, and time deposits. <i>M2</i> is called <i>broad money</i> .

Source: Blanchard et al., 2013, p. G-5.

Bernanke (1995) provides the *M1* data for Table 2. An examination of Table 2 shows that the magnitude

of the *M1* money supply decreased from 26.434 million in 1929 to 19.759 million in 1933. Then in 1934, there is the amount of 22.774 million, when the *M1* money supply increases. Furthermore, it is important to remember that *M1* makes up only part of the *M2* measure of the money supply.

Table 2. Money supply (*M1*) for selected years

Year	<i>M1</i> (in millions of dollars)
1929	26.434
1930	24.922
1931	21.894
1932	20.341
1933	19.759
1934	22.774
1935	27.032
1936	30.852

The high real interest rates of the 1929-1933 period caused an adverse reaction to both the unemployment rate and the output growth rate. Blanchard et al. (2013) presented the data, in Table 3. Both Eichengreen and Temin (1992) and Mishkin (1981, p. 25a, 25b) agree that regardless of the various debates concerning monetary policy during the years of the Great Depression, one of the most salient points is that real interest rates were high during the hardest years. Chen and Gentle (2011) examine the effect of real interest rates on the economy of the United States from the time period 1939-2007. Clearly the movement of real interest had effects on the American unemployment rate throughout that time.

Table 3. Unemployment rate, output growth rate, real interest rate

Year	Unemployment rate (%)	Output growth rate (%)	One year nominal interest rate (%)	Inflation rate (%)	One year real interest rate (%)
1929	3.2	- 9.8	5.3	0.0	5.3
1930	8.7	- 7.6	4.4	-2.5	6.9
1931	15.9	- 14.7	3.1	-9.2	12.3
1932	23.6	-1.8	4.0	- 10.8	14.8
1933	24.9	9.1	2.6	- 5.2	7.8

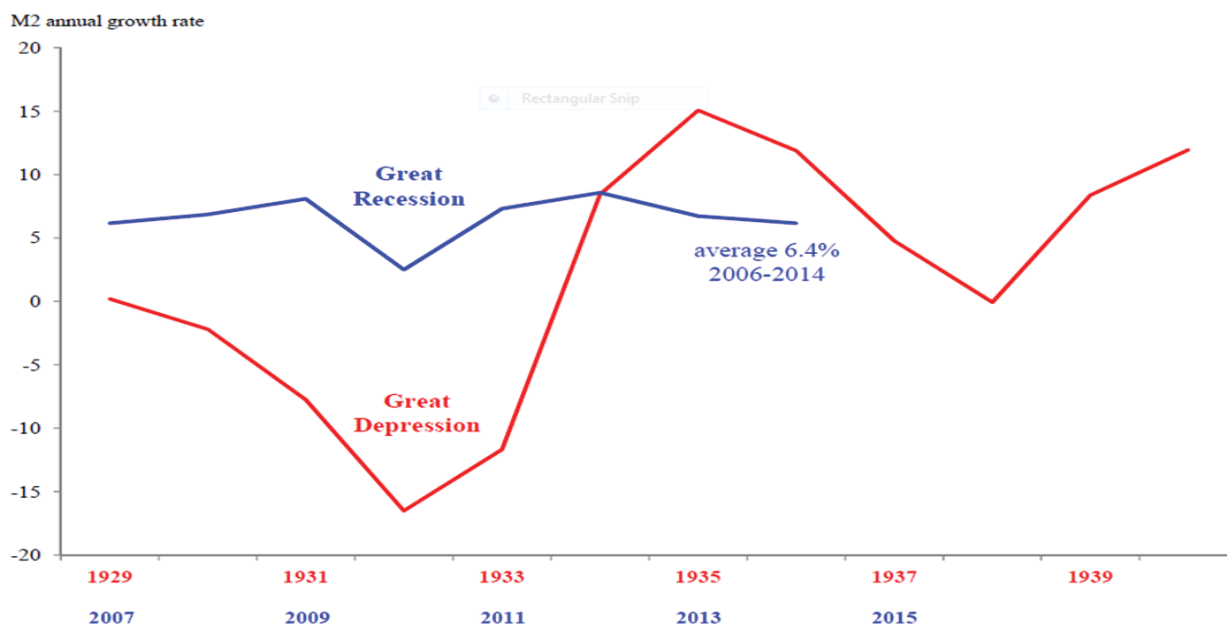
Source: Blanchard and Johnson, 2013, (p. 296).

Bernanke (1995, p. 10) provides evidence that the *M1* measurement of the money supply reached a relatively low point during 1933, which is also the year in which the USA experienced a high unemployment rate, with Gordon supplying one of the highest estimates, at 25.2% (Gordon, 2009, p. A-2). An increase in the money supply was pursued after 1933 (Blanchard et al, 2013, Bernanke, 1995, p. 10). However, as Velde (2009) points out, an erroneous concern about inflation took hold and the money supply growth was cut and income taxes increased. Furthermore, in 1937 the monetary policy, notably, pursued an increase in the reserve re-

quirement for banks. Finally, Social Security began collecting taxes in around this time. In summary, several government decisions caused a slow down in the economy (Velde, 2009). Unlike many economists, Temin (1976; 1989) theorizes that policy concerning the Fed and the money supply played a minor role in causing the Great Depression. Instead he supports a view that there was a drop in autonomous spending. Other economists believe a decrease in the money supply during the early 1930s, was a factor in the Great Depression's impact on output and employment. Gordon and Wilcox (1978) conclude that paying attention only to monetary factors as the cause of the

Great Depression, is inadequate; they also maintain that ignoring monetary factors is a mistake. There were other factors which contributed to the descent into the Great Depression (Gordon and Wilcox, 1978). Continuing research could re-verify the importance of the money supply, the velocity of money, and other factors in the causation of the Great Depression. Some factors may be more significant than others. Yet all factors are important in learning lessons for policy

makers to avoid severe economic downturns. Figure 4 is of the broad money supply, most often thought of as  $M2$ . The graph compares the Great Depression time with the Great Recession period (Broad, 2015). Figure 4 has a trend that only very loosely agrees with Table 1. That is, there was a contraction of the money supply the worse part of the Great Depression. Yet the trend is not an exact match, since Table 1 data is based on  $M1$ , instead of  $M2$ .



Source: Anderson et al., 2015.

Fig. 4. Broad money supply  $M2$ : Great Depression vs. Great Recession

Above in Figure 4 is a graph of the money supply category  $M2$  the more popular measurement. We can see that the money supply hit a low point in magnitude in 1933.

**3.1. Gold standard and gold exchange.** Many economists view the gold standard that was present in the early 1930s as being a factor that hampered economic growth and had adverse effects on the unemployment rate. It is clear the mainstream schools of economics (New Keynesian/Monetarist/New Classical) agree that what they call the gold standard, was a factor in slowing the economy down in the early part of the Great Depression. Eichengreen et al. (1985) found that those countries which got off the gold standard first, benefited the most in terms of not experiencing deflation. Bernanke et al. (1991) state that the gold standard caused deflation and relief came as countries abandoned the gold standard during the 1930s. Bernanke et al. (1991) did a study of twenty-four, mostly industrialized countries, and concluded that those countries which left the gold standard fared better in terms of economic recovery, than those countries which remained on it.

An economic crisis having different effects in different countries is not unheard of. For instance the Great Recession was more severe in some parts of the world than others. Bangladesh was less affected than either Vietnam or Spain. Different countries have different economic structures and the way they are tied into the USA economy may also be different. For instance, Bangladesh was not too vulnerable to the toxic assets, that arose during the Great Recession, in the USA (Ali et al., 2011; Ali et al., 2015; Parejo, 2012). Looking at a country similar to the USA in some ways, we may examine the United Kingdom. C. Jones and Masters (2011) maintain that according to research conducted by the UK Financial Services Authority, the Central Bank, the Bank of England should have the power to limit mortgages, mandate tougher liquidity rules and put a cap on banks' leverage in order to help prevent financial crises in the future (Shin, 2009; Northern Rock, 2012a, 2012b). The USA also has many ties to Canada. But Canada did not suffer as much during the years of the Great Recession, in the USA. The Canadian government, including the Bank of Canada, has not been so free in granting credit and encouraging debt, as has been the case with some other countries. For example there is no deduction

for mortgage interest in Canada; whereas there is such a deduction in the USA. Canadian banks have more recourse to collect on a housing mortgage, compared to the USA. However, Canada may have a less stable housing market, than it had during the Great Recession years in the USA (Kiff, 2009; Hargety, 2010; Matthews, 2014; Mattich, 2014).

Due to the Equation of Exchange, if one or more of the estimated measurements are different, all variables are impacted. Importantly, the Phillips Curve analysis in Chen et al. (2010, 2011) and Gentle et al. (2005, 2008, 2013) employs the familiar  $MV = PQ$  and is considered, in light of the mainstream schools (Quantity, 2015). It may need to be reiterated that New-Keynesian Greg Mankiw (1991) states that New Keynesians do use the quantity theory of money. The use of that by Mainstream schools is common (New Palgrave, 1989; Quantity, 2015). In Gentle and Thornton (2014), Austrian economist, Mark Thornton, provides the Hayekian Triangle analysis and implies the Austrian Equation of Exchange, which is quite different from Phillips Curve analysis and its conventional, Mainstream Equation of Exchange. To avoid confusion, only the Mainstream approach forms the basis for the graphs, tables and the Mainstream view of  $MV = PQ$ , in this paper, as explained by Quantity (2015) (See Appendix 1, of this article, for a more detailed explanation of the Austrian School of economic thought on these and related issues.)

#### 4. Velocity

Discussing velocity is also a key factor in discussing the effect of the product of the left hand side of the quantity theory of money. Mishkin (2006, pp. 517-521) states that even in the short run, there is fluctuation of velocity. In times of recessions and especially during the Great Depression, velocity decreases. As volume of total commerce increases, the velocity increases and as total commerce decreases, so does velocity. (Higgins, 1978; Mishkin, 2006, pp. 520-521). In Figures 5 and 6, the velocity of money is examined over time, with the corresponding measurements of risk. The time period where in the Great Depression era when monetary velocity most greatly fell is in the early part of the 1930s. Bartlett (2008) points out that velocity was understood by Keynes, to be volatile and even diminished during the Great Depression, though that was not the only problem. As we can see, there is a drop in velocity during the hardest times of the Great Depression. If we couple that knowledge from what we have verified about the fall in the money supply during the same time, we can see the product of both a decrease in  $M$  multiplied by a decrease in  $V$ , will cause a catastrophe for the United States economy, during the Great Depression. Higgins (1978) points out that even amongst the Mainstream Schools of Economic Thought, there has sometimes

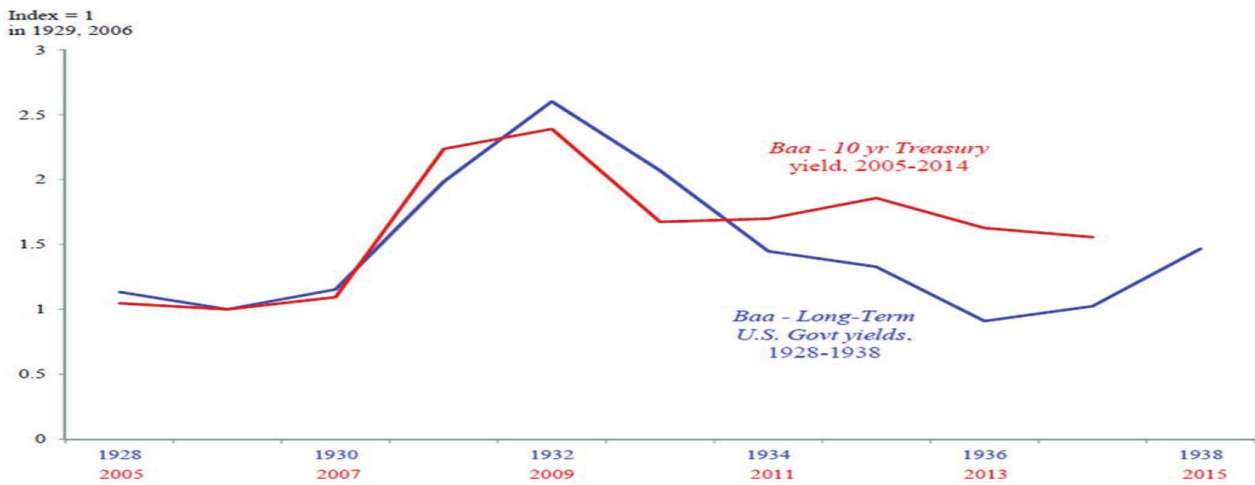
been disagreement as to the exact nature of how the concept of velocity should be examined. Anderson et al. (2015, p. 6) state they have used a common framework to illustrate both differences and similarities between the Great Depression and the Great Recession, as highlighted in Tables 5 and 6. When there is a financial crisis, there will be an increase in *risk premia*, increases and decreases in business and consumer confidence are somewhat related to risk premia. This is measured by the spread between the yields on Baa-rated corporate bonds and 10-year Treasuries (Table 5). This *risk premia* peaked in 1932 for the Great Depression and 2009 for the Great Recession, respectively (Anderson et al., 2015). The empirical results suggest an important explanatory role of this *risk premia*, for the understanding the behavior of velocity before and after these crises (Anderson et al., 2015). During the Great Depression, velocity relatively quickly regained its earlier level, once stabilization of the banking system occurred. However, in the case of the Great Recession, this has not happened, even with implementation of banking reform (Anderson et al., 2015). So it is somewhat difficult to judge the overall impacts of banking reform on velocity (Anderson et al., 2015).

In Figure 6, Anderson et al. (2015), show the actual path of  $M2$  velocity and what was anticipated due to the Dodd-Frank Act's counterfactual path of how credit provision was to be given by the formal banking sector, rather than the shadow banking system (Duca, 2014). Bordo and Jonung (1987, 1991, 2004) and Bordo, Erceg and Evans (1990) maintain that significant changes in financial institutions, including the regulation of those institutions will affect the demand for money  $M2$ , that is the velocity,  $V2$ . So that means both changes in *risk premia* and financial reform affect velocity, though it is hard to be accurate in separating out the impacts that these factors have on velocity,  $V2$  (Anderson et al., 2015). The highly detailed paper written by Anderson et al. (2015) describes historical factors concerning both the broad money supply ( $M2$ ) and its velocity ( $V2$ ) over a period from the 1870s forward. Much of this is done by reviewing other's work. The model he uses for velocity  $V2$ , has data since 1929 (Anderson et al., 2015, p. 11). A key statement from that paper is that:

- ◆  $V2$  is notably affected by *risk premia*, financial innovation, and major banking.
- ◆ Regulations: Findings suggest that  $M2$  provides guidance during crises and their unwinding, and that the Fed faces the challenge of not only preventing.
- ◆ Excess reserves have to be prevented. Also as risk premia become normalized, velocity needs to be monitored, for any reason, including changes due to financial institutions reform. (Anderson et al., 2015, abstract).

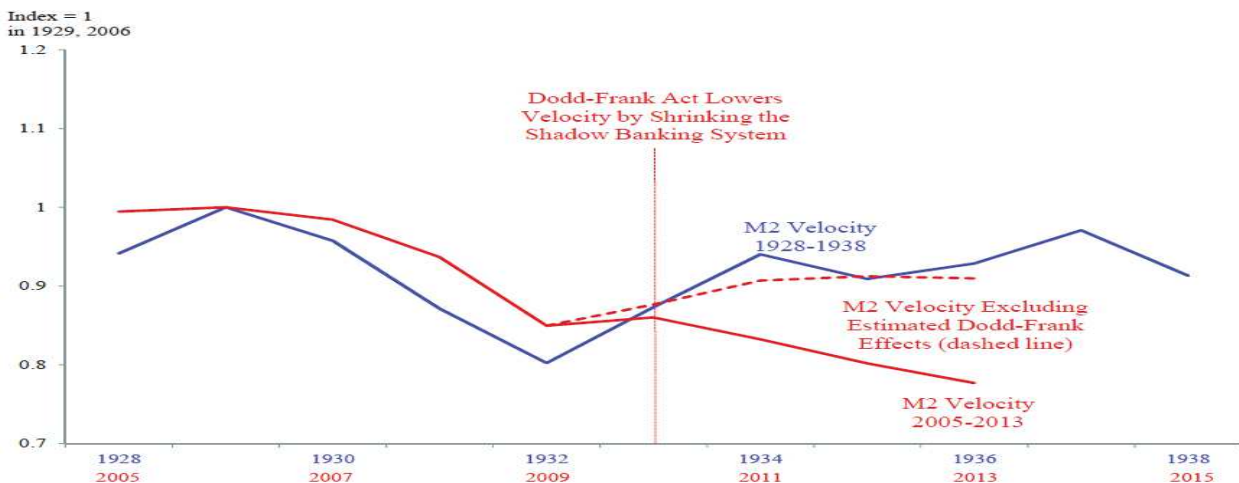
Anderson et al. (2015) seeks to track *M2* velocity both during financial crises and in more orderly times. The results of the (Anderson et al, 2015) study incorporate the “interactions among three variables”. The first variable is the traditional opportunity cost of having *M2*. Secondly, there are “long-run decreases in the transactions costs through using *M2* substitutes” and thirdly, there is “a measure of financial market participants’ perceived risk” (Anderson et al, 2015, p. 39). It is maintained by Anderson et al. (2015, p. 39) that “models that accurately track *M2* velocity are particularly valuable to policymaking not only during financial crises, but also during the periods of re-recovery that follow crises”. When the economy is operating during a time after an economic crises, velocity increases as

*risk premia* falls, from where they were during crises peaks. Both the Great Depression and Great Recession witnessed this phenomena. At the heights of those crises, velocity had decreased with a concomitant increase in *risk premia*. An important phenomenon is that after the most critical level of the Great Recession, the Dodd-Frank Act induced shifts into money from other assets by altering the structure of the U.S. banking and financial system. This had an only temporarily dampened velocity, from what ordinarily would happen, once the Great Recession Crises had abated (Anderson et al., 2015). The passage and implementation of the Dodd-Frank Act created some drag on what would have been a more strongly recovering velocity (*V2*).



Source: Bureau of Economic Analyses, Board of Governors of the Federal Reserve System, Friedman and Schwartz (1970), and authors’ calculation. Anderson et al. (2015).

**Fig. 5. Financial market risk premium circa two financial crises (Baa – 10 year Treasury Bond Yield Spread)**



Source: Friedman, Milton and Anna J. Schwartz (1970). *Monetary Statistics of the United States: Estimates, Sources, Methods*. Columbia University Press for the NBER.

**Fig. 6. Velocity: *M2* velocity circa two financial crises (normalized to equal 1 in 1928 and 2003)**

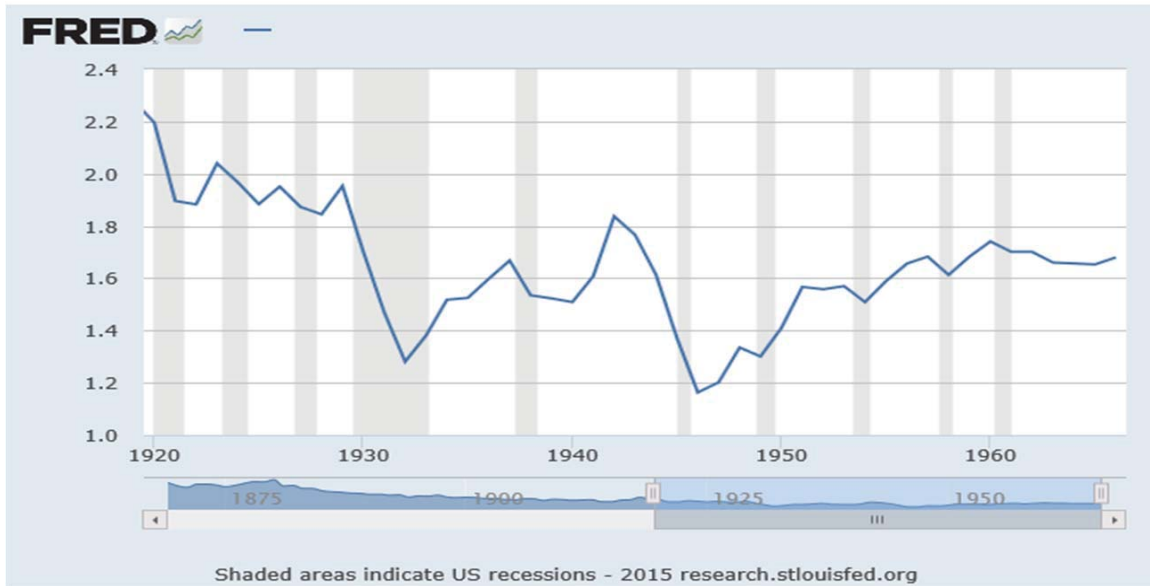
Two other graphs – Figures 7a and 7b take a look at the changes in *V2* velocity in two time periods. In Figure 7a, we can see a drop in velocity, especially during the worst part of the Great Depression. There is also a temporary drop after World

War 2, as the economy adjusted to one of more consumer goods, compared to what was produced during the war. In Graph 7b, we see velocity dropping greatly, during the Great Recession, which reached its depths in 2009. The efforts to



increase the money supply by the U.S. Federal Reserve may be helpful. But with the velocity having decreased so much, the product of  $M$  and

$V$  is not as great as it would have been, had  $V$  held a level closer to what it was, prior to the Great Recession.



Source: Saint Louis Federal Reserve. Retrieved April 16, 2015.

**Fig. 7a. Velocity of USA money supply (January 1, 1920 to January 1, 1966)**



Source: Federal Reserve Bank of St. Louis, Shaded areas indicate US recessions – 2015 research. stlouisfed. org.

**Fig. 7b. Velocity of USA money supply (January 1, 1920 to July 1, 1966), Source: Saint Louis Federal Reserve Retrieved April 16, 2015**

### 5. Non-monetary theory factors

Christine Romer (1990) gives a good explanation of how the October, 1929 stock market crash figures in, as one of the causes of the Great Depression. That seminal event created uncertainty about future income. This in turn led consumers to forgo purchases of durable goods. Contemporary economic forecasters of that time, expressed their uncertainty about the economy. Consumer durables experienced a decline in consumption, starting in late 1929 (Romer, 1990). Additionally, the high magnitude of the Smoot-Hawley Tariff slowed trade, had negative effects on both the United States and other countries' economies (Bartlett, 2008).

The Smoot-Hawley Tariff affected over 20,000 goods with tariff rates for some items, at about fifty-nine percent, at the tariff's peak! (U.S. Census Bureau, 1975). In addition, Bordo et al. (2000) state that the National Industrial Recovery Act established the National Recovery Administration (NRA), in operation from part of 1933-1935, complicated the situation, due to prices and wages become much more sticky (NRA, 2015). These and other non-monetary factors should always be considered.

### Summary and conclusion

Both in terms of the severity of the unemployment rate and the drop in GDP, the Great Depression was the

worst economic event in the USA. Though the Great Recession, is the greatest economic downturn since the Great Depression (Parejo et al., 2012).

The left hand side of the equation for the quantity theory of money, has the multiple of two variables,  $M$  and  $V$ , and is equal to the right hand side of the equation, with the price level ( $P$ ), as it interacts with output ( $Q$ ). From our research, we conclude that both the money supply ( $M$ ) and the velocity of money ( $V$ ) are important in describing the most famous economic downturn in American history. The point is there was a drop in both the money supply and velocity (Mishkin, 2006). Furthermore the drop in velocity ( $V$ ) during the deepest part of the Great Recession is reminiscent of the drop in velocity during the worst part of the Great Depression. The large injections through quantitative easing, may have helped the money supply ( $M$ ), as a partial remedy for the downturn of the Great Recession but velocity ( $V$ ) has greatly decreased, with the advent of the Great Recession. Just expanding the money supply, will not get the United States to a completely recovered position, as it was in most of the 1990s. Focusing on the Great Depression time period, the way to economic stability has many important elements, one of which is proper monetary policy but proper fiscal policy and other policies are also important. Sticky wages were worsened by the National Recovery Administration (NRA) and there was a

slowing of trade brought on upon by the Smoot-Hawley Tariff's large tariffs. Only considering one factor and disregarding others, is to ignore the chance to understand all the valuable lessons of the Great Depression. For those of you who may be puzzled at the variance between Mainstream Schools (New Keynesian/Monetarist/New Classical) and the Austrian School of economics, we have provided an appendix on the basics of how terms such as money supply, the equation of exchange and the particulars of having a gold exchange standard, are just the starters of the differences for the schools of thought. These differences and other differences account for how the Mainstream Schools versus the Austrian School in describing the Great Depression as historical event. We agree that New Keynesianism, Monetarism and New Classicism are very different schools. But they have more in common with each other than any of them have with the Austrian School of economics. Studying many schools of economic thought has to improve the outlook of economists. Learning from each school of economic thought makes our work as economists, more enjoyable. Further studies need to be conducted, especially on *risk premia* and how to determine that. Anderson et al. (2015) are on the forefront of such issues. The United States has been our prime focus in this article. Comparative economic studies involving different countries help increase our understanding of economic phenomena.

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## Appendix

As stated in the Phillips Curve section of Gentle and Thornton, (2014, p. 13). Austrian economist Thornton, states that the source of problems in the 1920s was actually a "gold exchange standard", not a gold standard. The Gold Exchange standard allows for the government to manipulate the way gold is traded and valued in its monetary worth. The "Classic Gold Standard" has a more market approach in determining the trading values of gold and currencies that can be converted to gold (Gentle and Thornton, 2014, Gold Exchange, 2015; Gold Standard, 2015). Austrian economists believe what is called the gold exchange standard by them and what is sometimes called the gold standard by the mainstream schools, was one of the factors in the genesis of the Great Depression. This is but one example of the fact that a reason for much of the difference between the Austrian School of Economics and the Mainstream schools (New Keynesian/Monetarist/New Classical) is how each of them believes certain economic terms should be defined. Another example is the Austrian School of economics measuring the money supply differently from the methods accepted by the mainstream economics schools (Pollaro, 2015). So economists of the Austrian School may have a different view about the money supply during the Great Depression, partially because of how they measure the money supply compared to the Federal Reserve figures used by the New Keynesian, Monetarist and New Classical schools. The work of Rothbard (1978, 2000, 2010) and Pollaro (2015) may be consulted by the reader, for more information on Austrian School of economics. In regard to the Great Recession, Mainstream economists, notably John Taylor (Koenig et al, 2012) and such Austrian economists as Thornton (2004, 2006) warned of the housing bubble, before it reached its height (Thornton, 2004; Thornton, 2006; Thornton, 2014). Moreover Austrian economist, Roger Garrison (2005), tells us the conventional equation of exchange is different from the Austrian version, in regard to the variable  $Q$ . Austrian school economists see the variable  $Q$  as disaggregated into many variables  $Q_c$  for immediate consumption and ( $Q_2 + Q_3 + \dots + Q_9 + Q_{10}$ ) to indicate "higher order goods", i.e. investment (Garrison, 2005) The Austrian Schools have different way of measuring  $Q$  and  $M$ , that naturally means they see  $V$  with different measurements. In regard to  $P$ , the Austrian School is more interested in relative price changes rather than the overall price level. They believe relative price changes can be distorted by overall inflation rates. Yet both the Austrian school of economic thought and the Mainstream ones see that monetary policy played an important role in the genesis of the Great Depression (Friedman et al., 1963; Rothbard, 1978, 2000; 2010; Gentle and Thornton, 2014; Thornton, 2014; Austrian money supply, 2015; Austrian Theory of Money, 2015). Gentle and Thornton (2014) see a "kernel (central core) of truth" in the Equation of Exchange, with Phillips curve analysis based on the mainstream view of the equation of exchange and the Hayekian triangles analysis is based on the Austrian version of the Equation.

- ◆ Austrian School economists advocate the classic gold standard where there is easy convertibility of currency to gold (Gold Standard, 2015).
- ◆ American Heritage Dictionary, "kernel", New York: Houghton Mifflin Co, August, 1994.