Unrestrained Credit In A Credit Economy, The Credit Cycle, And Fiat Money Defy Monetarism In The Attempt to Control Price Level Changes

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UNRESTRAINED CREDIT IN A CREDIT ECONOMY, THE CREDIT CYCLE, AND FIAT MONEY DEFY MONETARISM IN THE ATTEMPT TO CONTROL PRICE LEVEL CHANGES

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> One of the great difficulties of dealing with the subject . . to be discussed . . . arises from the use of the same words in different senses. . . .
> . . . [T]he "value of money or currency," for the rate of interest or discount. "Abundance and cheapness, or scarcity and dearness of money," to signify a lower or a higher rate of interest, or a tendency to either. And "expansion and contraction of the currency, or of the circulation," *when undue extension of credit, and its consequent revulsion, would be the correct description of the facts of the case*. . . . This consists in a shifting of the meaning of the term, when applied indiscriminately in the same argument to designate things and processes totally distinct. . . .
> The instances in which confusion and inconsistency in reasoning may be traced to this loose and ambiguous use of language are innumerable .. [Tooke March, 1844a]. *(Italics added.)*

ABSTRACT

Monetarists maintain that changes in the price level are attributable to the level of the money supply. Hence, price stability has been the rationale for the money supply rule derived from the Quantity Theory of Money. Consequently, to curb inflation, the general price level index is the lever for periodic adjustments of the short-term interest rate. Nevertheless, monetary control is ineffective due the fact that: (1) with the collapse of the *gold* standard during the 1930s and the removal of the final link to a *commodity* - gold (an exogenous variable with a variable nominal value), *fiat money* (an endogenous variable with an invariable nominal value) emerged unchallenged; (2) the realignment of relative prices - the perennial cause of changes in the general level of prices - cannot be abated since it is the effective mechanism for the efficient functioning of the economic system; and (3) unrestrained consumer credit - driven by unbridled aggressive business policies and producing documented credit cycles with periods of credit expansion and credit saturation - has severely amplified the impact of price level changes. This paper examines the issue of price level changes within the context of money (types and functions), economic systems (barter, monetary, and credit), aggressive business practices, unrestrained consumer credit, and credit cycles.

1 - INTRODUCTION

According to Lyons [1977:25], it is quite common in scientific research that failure to secure agreement on terminology in scientific research has caused much confusion. While terminological agreement alone would not resolve theoretical disputes in the *inflation* debates, it could help to clarify issues and most likely would eliminate some misunderstandings.

Historically, according to the monetarists, changes in the price level are attributable to the level of the money supply. Given that line of reasoning, the money supply rule derived from the Quantity Theory of Money has been deemed to be the mechanism to achieve and maintain price stability. Consequently, movements in the general price level index induce the monetary authorities to adjust the short-term interest rate to curb inflation. This action is deemed necessary since it is maintained that, in periods of rising prices, money loses value. This paper posits that the value of fiat money changes only when there is monetary *dislocation or revaluation* [Salvary 1993:163-164;1997/1998:91,95-96;2001:275-282; 2002:35,40].

Essentially, changes in the general price level are attributable to the net effect of the realignment of relative prices which are caused by factors (e.g., credit cycles, technological advances, legislative action for pollution abatement, etc.) other than the level of the money supply. Also, this study maintains that fiat money is an endogenous variable; consequently, the money supply rule for monetary policy would be ineffective at best and disruptive at worst. Apart from adverse financial impacts on business, the 'quantity theory' inflation-designed short-term interest rate policy, has induced significant negative effects on capital markets under Chairman Greenspan on October 18, 1987 [Investor's Business Daily October 19, 2007][1] and Chairman Bernanke on June 5 & 6 2006 [Valetkevitch, 2006; Simon 2006]. Financial market conditions have been adversely affected by economic conditions over the four years (2005 to 2008), as reflected in the Dow Jones Industrial Average Index Value.[2]

Even though changes in the general price level can be accommodated or accentuated by an increase in the money supply, changes in the general price level do not constitute a monetary

phenomenon [Ball 1964:69,77; Cairncross 1975:67-69; Hansen1951; Harrod 1973:82; Hawtrey 1950:Chap.1; Holtfrerich 1986]. Inflation is attributable to non-monetary factors [Dow and Seville 1988:240]. Historically, there is a continuing trend of price level changes due to changes in the supply and demand conditions in the economy. In which case the entire set of exchange ratios are realigned, redistributing the exchange (purchasing) power among the members of that society. Price level changes as experienced in the current economic setting did exist in a barter economy [Fuller 1980:6-7]. The following passage attests to that fact.

> If one attempts to review the economic history of Western Europe in the sixteenth century as a whole, one is struck by the fairly continuous upward movement of prices, continuing far into the seventeenth, so great as to have earned the conventional name of the "price revolution". By 1600 most goods, *even allowing for currency debasements* in many countries, cost nearly three times as much as in 1500. Efforts at governmental price-fixing proved wholly futile. Since wages tended to rise more slowly than prices, at least until the latter part of the century, real wages declined, causing much suffering. Perhaps hardest hit, however, were the landlords, who throughout Western Europe had by this time converted most of their tenants' obligations into fixed money rents; as a result the economic position of the bourgeoisie was greatly strengthened against the old nobility. [Brooklyn College 1960:207] *(Emphasis added.)*

In the normal course of events in the modern economic environment, supply and demand conditions do change due to population growth, technological changes, psychological influences on tastes, and natural or human-induced catastrophes. These forces produce realignment of commodity prices producing changes in the price level. Unfortunately, over time and particularly so in recent times, two significant factors - *aggressive business practices and very costly unrestrained consumer credit* - have accelerated price level changes. The need exists to focus on consumer credit and unrestrained credit that accommodate uncontrolled expansion and induce consumer-credit cycles. These factors aggravate and accentuate changes in the general level of prices in the US [Salvary 1996:451,457,458;1997/1998:91,98;2002:37].

> In any given period, all prices do not rise simultaneously; but rather some prices rise, some fall, and others remain unchanged. The net effect of this realignment of prices is a change in the general price level. With price level changes, the money supply adjusts itself to accommodate the change in demand for money. Also, given an ad hoc interest-rate policy of banks, firms adjust their credit policies to accommodate their customers. Thus interest rates can be high yet produce no lowering effect on the general level of prices.
>
> The preponderance of empirical evidence supports the view that money is an endogenous variable. If inflation is not induced by fiat money, then monetary control based upon the quantity theory of money is likely to confound the signalling ability of nominal money prices leaving anomalies in its wake. A proper functioning of the economy requires sound monetary policy, one that would limit the extension of credit and repayment periods for consumer loans. Such a monetary policy, by removing the upward push on consumer goods, would be compatible with fiscal policy and enable an amelioration of the chronic unemployment situation, which is accompanied with business downsizing. [Salvary 1997/1998:101]:

Apparently, the aforementioned factors have not been adequately considered in the monetarist literature, which perpetuates the idea that inflation is a function of the supply level of fiat money. With that idea as doctrine, an interest rate policy (raising or lowering of interest rates primarily through the discount rate and open market operations [Federal Reserve Bank of San Francisco 1999]) is prescribed to restrain or eliminate the ever persistent changes in the level of prices. With the implementation of this policy, a contraction of the economy ensues bringing in its wake some unemployment, which produces loss of purchasing power of the unemployed. Consequently, for a short period of time *prices tend to fall*.

The temporary fall in prices conveys the impression that the policy (interest rate approach to combat rising prices) is effective. But subsequently, to the chagrin of the policy-makers, prices resume their upward movement - they proceed to rise anew. This condition, which has been experienced quite frequently, is directly related to the credit (selling and lending) policies administered by businesses and banks. The duration of payment on instalment purchases are extended by businesses and the time for loan repayment on

consumer loans are lengthened by financial institutions [Consumer Bankers Association 1995]. In addition, the cost of the consumer loans are exorbitant.

In reality, the economic condition is aggravated by the interest rate policy. With each dose of the administered interest rate policy, the cycle is repeated. The interest-rate medicine produces more instances of temporary price stabilization. Unemployment is unabated and prices resume the upward movement. The illusion continues! The interest rate policy has a temporary stabilization effect. Yet, it is accepted as evidence that changes in the level of the money supply is accountable for the changes in the general level of prices [Salvary 2002:37].

According to Clower [1971:118]: "[T]he monetarist school has not provided an explicit formal account of the dynamics of monetary adjustment, . . . the bulk of monetarist literature . . . [is] so much sound and fury, signifying little more than the personal charm, dialectical skill and encyclopaedic factual knowledge of its chief apostle, Milton Friedman. The monetarist literature is important--and highly so--for the questions it forces us to ask about observed patterns of behavior; but it is worth almost nothing as far as the answers to these questions, or guidance in seeking answers, is concerned."

In many countries, central banks use interest *rate-control* to implement monetary policy [Grivoyannis1991:140; Poole1990:38; Sellon1982:85-89]. Although epistemological relevance is necessary to address unmitigated price level changes, national monetary policies are influenced by a *research* literature that is lacking epistemological relevance. To Illustrate, McCandless and Weber [1995:7] reported a simple correlation for the period 1960-1990 between inflation (defined as "changes in a measure of consumer prices") and money growth of .96 for M1 and .92 for M0 (the monetary base). Referring to that study, Lucas [1996:665-666] maintained that the quantity theory of money "applies, with remarkable success, to co-movements in money and prices generated in complicated, real-world circumstances."

As per Meyer [1998], in the long run monetary policy is the principal determinant of inflation. Consequently, price stability emerges as the direct, unequivocal, and singular long-term objective of monetary policy. In the U.S., as well as most central banks, it is by

means of the control of (short term) interest rates that monetary policy is implemented. As has been deemed appropriate, a forward-looking policy is deemed to be pre-emptive. Accordingly, a pre-emptive move against inflation would be a movement in interest rates in response to rising utilization rates to control the money supply.

The rest of the paper consists of ten sections: (2) Crisis of Doubt and Control of the Money Supply; (3) Monetarism, Monetary Control, and The Money Supply; (4) Functionalism, A Potential Framework, and A Classification Schema; (5) The Organizational Impact of Money and Regional Differences; (6) Transitional Stages of the Economic System; (7) Money to Measure, Exchange Ratios to Establish Purchasing Power, and Money to Facilitate Economic Activities; (8) The Credit Economy - A Fiat Money System; (9) Purchasing Power, Price, and Price Level Changes; (10) Unrestrained Credit and Credit Cycles; and (11) Closing Comments - Conclusion.

2 - CRISIS OF DOUBT AND CONTROL OF THE MONEY SUPPLY

The monetarist view, that price level changes is related to the supply of money, obtains *only* whenever there is a loss of confidence in the government. This condition - identified as a "crisis of doubt" - brings about a rejection of paper money. As noted by Bresciani-Turroni [1937:172], *this crisis* leads to an increase in the velocity of circulation of paper money. When that situation emerges, the economic system reduces to a barter system when full repudiation of the paper money is reached. The use of foreign currency prevented Germany in 1923 from being completely transformed into a barter economy. In the early part of the 1990s, the "crisis of doubt" was experienced in Russia; with the dislocation of the domestic currency, the preferred means of saving was the U.S. dollar [Vasiliev 1994:134].

In addition, given the findings of Smith [1985a:532-533,535,542-543;1985b:1193-1196], there is substantial empirical evidence which casts doubts on the relationship between the growth rate of the money supply and rate of change of the price level. When an attempt is made to treat money as exogenous by policy, the available empirical evidence suggests that

financial innovations on the part of business firms emerge and restore the endogenous nature of money in the economy [Judd and Scadding 1982:1001-1005,1013]. This point was further reinforced by Hendry and Ericsson [1991:32]

As per Benjamin Friedman [1990:70-71]: "The simple correlation between money growth and inflation . . calculated in the form often recommended by Milton Friedman, although statistically significant, is now significantly negative. One can only wonder what, other than a tautology, is left of the notion that inflation is always and everywhere a monetary phenomenon."

2 -1 The U.S. Experience

In view of the fact that control of the money supply is undertaken to stabilize prices, it is important to note that in the 1980s *reductions in the general level of prices* in the U.S. economy became associated with more rapid growth of the money supply. In the period 1975 through 1982, while average growth in the money supply (M1) was slightly over 7 percent per year, the GNP implicit price deflator rose on an average of 9 percent [Boschen 1990:84]. However, from 1982 through 1990, while the average annual growth of M1 had accelerated to 9.5 percent, growth in the general price level averaged a mere 3.5 percent [Walsh 1990:8-9,186]. To further complicate matters, the velocity of money had declined [Fisher 1989:156-158].

In spite of the foregoing, to defuse inflation, from July 2004 up to March 2006, the discount rate had been raised from 2% to 4% [Federal Reserve Bank of Minneapolis]. By May 2006, the Federal Reserve Board (FRB) had pushed a key interest rate up for the 16th consecutive time. Given this development, analysts predicted that interest rates would keep rising as long as Bernard Bernanke continued to be concerned that the central bank was lagging in fighting inflation [Crutsinger May 6, 2006]. Owing to the fear of a recession caused by the sub-prime mortgages, slight downward movements of the discount rate began in August 2007 [Board of Governors, Federal Reserve System *Historical Discount Rate*].

Of grave importance is the fact that that while wide changes in individual commodity prices have been observed over time, the rates of change in the general level of prices have

been relatively stable [Benjamin Friedman 1990:71]. In this regard, it has been noted that:

> In the normal operations of the economic system, owing to the proper functioning of the price system, the net effect of specific price changes of all goods and services produces change in the general level of prices. Such a change is not to be confused with a change in the general level of prices due to the *simultaneous and proportional rise* in the prices of all goods and services. A change in the general price level caused by the net effect of the realignment of specific prices is a phenomenon entirely different from that of a change in the general price level caused by the failure of the monetary system. [Salvary1998:3]

If the cause of general price level changes is as described above, then inflation is not attributable to the money supply. Given available historical evidence, monetary policy consistent with the Quantity Theory has an aggravating impact on an inflationary situation. This policy issue should not be trivialized. The implication for the monetary authority would be the elimination of the reactionary approach to monetary policy. The short-term interest rate policy interferes with price signalling in the short run and crowds out fiscal policy in the long run [Harrod 1973:50].

Prolonged adherence to the monetarist school of thought is not identifiable with explanatory causes. Reliance on statistical goodness of fit of economic data is considered as support for the monetarist philosophy, the focus of which is on controlling the money supply to manage price level changes [Salvary 2002:39]. This research maintains that price level changes are not induced by the quantity of money. As stated earlier, the realignment of commodity prices as a direct consequence of changes in supply and demand due to population growth, technological changes, psychological influences on tastes, and natural or human-induced catastrophes. Unfortunately, *unrestrained consumer credit and aggressive business sales practices are formidable forces that accentuate the inflationary pressures resulting from the realignment of commodity prices* [Salvary 1996:450-451,457].

Noteworthy is the fact that in an empirical work using simple time series forecasting procedure, Rasche and Johannes [1987:187] concluded that the money stock in the U.S.

appears to be controllable. In spite of being able to accurately forecast the money multipliers, those researchers question the validity of monetary control as a serious policy objective. A similar question has been raised by Poole [1990:38]. Due to the endogenous nature of money, past experience has revealed that controlling the money supply imposes a very heavy cost to society in terms of unemployment. As suggested by Salvary [1997/1998:91]: "If money is endogenous to the system, then policymakers have to consider rather seriously whether monetary control is desirable. . . . [P]olicy-makers should focus on monetary policy consistent with the *institutions* and functioning of the economy and not on monetary control."

The foregoing discussion suggests that policymakers should forego monetary control per se and pursue monetary policy with explicit recognition of the existing *institutions* and *functioning* of the economy. Advisably, due consideration should be given to the following:

(1) The existing economy is a credit economy.

(2) Acceptance of *fiat*/fiduciary[3] money as a medium of exchange is based upon the full faith of the populace in the *credit* worthiness of the issuing authority.

(3) Credit is the basis of all contracts and money as a species of credit is the measure of credit [Steuart 1767:406-407].

(4) Settlement of transactions in *a credit economy is characterized by a cash-flow process* [Salvary 1989:98-99].

Additionally [Salvary 1996:457-458;2002:37]:

(5) Problems associated with *commodity money* should not be attributed to *fiat money.*

(6) *Purchasing powe*r is: (a) the exchange ratio between one commodity and another and between each and every other commodity, and (b) an attribute of commodities *but not of fiat money.*

(7) The functions of *fiat money* are as: (a) a medium of exchange, (b) a measure of exchange ratio - price, (c) a store of *a certain or assured nominal value,* and (d) a store of *uncertain purchasing power.*

(8) *Fiat money* measures the value of exchanges as *transaction prices.*

(9) Currently price level changes are reinforced by *unrestrained consumer credit* in the form of account receivables, loans, and credit cards. Yet much more bothersome, unrestrained consumer credit, due to aggressive sales practices of business enterprises, induce credit cycles.

3 - MONETARISM, MONETARY CONTROL, AND THE MONEY SUPPLY

In the literature, changes in the general price level are attributed to the amount of money in circulation [e.g. Wicksell 1935; Friedman 1980/1969/1958; Sprinkel 1971]. The members of the monetary school maintain that supply of money is the measure of liquidity, and it is the level of liquidity which determines the price level. The founder of the money growth rate rule has been identified as Jeremy Bentham [Tavlas 1977]. In the U.S., before the money growth rate rule was taken up by the Chicago school, Carl Snyder and Lionel Edie have been identified as its early advocates [Tavlas 1977]. Sprinkel, (Milton Friedman's most devoted disciple as per Wanniski [2001:5]) maintained:

> The inverse or reciprocal of the price level is the price of money. ... *an increase in the quantity of money tends to raise prices and reduce the value of money. (Emphasis added.)*
> [Sprinkel 1971:207-208]

3-1 Monetarism: The Liquidity Theory of Price Level Changes

The following passage reinforces the monetarists' view that added liquidity due to an increase in the quantity of money causes an increase in the price level.

> A rapid rise in overall liquidity resulting from an increase in monetary growth creates an excessive amount of liquidity among individuals and businesses. Under such conditions, businesses and individuals will attempt to convert their excess liquidity into less liquid assets in order to maximize their income or satisfaction from their portfolio of assets. This action tends to place upward pressure on the prices of less liquid assets. Spending units will be inclined to attempt to reduce their liquidity by increasing their outlays on goods and services relative to the current flow of income. This action raises the overall level of monetary demand, resulting in either a higher level of production goods and services if unemployed resources are available, or upward pressure on the general price level if full employment of resources exists. [Sprinkel 1971:32-33]

In light of the above, before condemning fiat/fiduciary money as being responsible for price level changes, *there is a need to examine the significant features of the economic system,*

the difference between commodity money and fiat money, and the role of fiat money in the economic system. Based upon historical arguments within a historical perspective, this study maintains that: (1) deficiencies associated with commodity money are erroneously ascribed to fiat money; and (2) under general economic conditions, *except for monetary dislocation or any collapse of the monetary system and instances of government revaluation or devaluation of the currency,* fiat money has an unchanging value.

Monetary dislocation, "a crisis of doubt" [Bresciani-Turroni 1937:172], is the loss of confidence which brings about a repudiation of nominal money. Germany in 1918-1923 has been the classic example of monetary dislocation; milder cases were witnessed in Poland, Austria, and Hungary [Bresciani-Turroni 1937; Sargent 1982; Holtfrerich 1986], and Russia in recent times [Vasiliev 1994:134; Sachs and Woo 1994:127; Edwards 1999:199]

Indubitably, effectiveness of monetary policy is critical to the efficiency of the economic system. Historically, the basis of monetary policy to stabilize prices is the unified liquidity theory (monetarism - the quantity theory of money). As noted by Mill [1857 (1929):493-494], the money in circulation exchanges regularly and repeatedly for the physical output and the output's money value is distributed as money income which underwrites the purchases of the output. Effectively, in view of this scenario, with the assumption that velocity is held constant, increases in the money in circulation can only affect changes in the general price level.

3-2 Monetary Control and Price Level Changes

In accordance with the monetarist view [Wicksell 1935:136,141], a special proportionality relation exist between the quantity of money and commodity prices. Hence, whenever the natural rate of interest differs from the market rate of interest, the money supply is no longer in alignment with the demand for money, and the resulting misalignment manifests itself on commodities prices - the price level change effect [Wicksell 1935;1936]. This conception of the impact of the quantity of money, leads to the conclusion that controlling the money supply will enable the price-level to be controlled. Given this

perspective, the interest rate would be the means to alter the money supply. Alas! *the emergence of the money growth rule*.

Implicit in the directive by the U.S. Congress [1975:1194] to maintain the long-run growth of monetary and credit aggregates consistent with the economy's long-run potential to increase output, the trade-off accepted by the U.S. government was less inflation at the expense of more unemployment [Solomon 1982:191-193]. From 1975-1985, in accord with the directive, the Federal Reserve had set out to control the growth rate of the money supply at around 5.8%; but, the growth rate experienced for that period was 8% [Rasche and Johannes 1987:185-186].

For the period 1967 to 1997, the Federal Reserve focused on the federal funds interest rate. In 1979, to combat entrenched changes in the general price level, the Federal Reserve broadened the federal funds target range and maintained a restrictive monetary policy for an extended period of time. The general price level did decline precipitously [Thomas 1999:142-143]. However, the erratic behavior of the velocity of M1 revealed that the mathematical model did not conform to economic reality. Consequently, in February 1984 the US shifted to measures of *performance of the domestic economy* in lieu of M1 as an intermediate target [Melton and Roley 1990:78]. Since then business expansion, inflationary pressures, and developments in foreign-exchange markets has been the focus for the Federal Reserve [Melton and Roley 1990:67].

Due to the failure of output to recover from the recession during 1990-1991, the federal funds target was dropped by the Federal Reserve [Thomas 1999:143]. Then, a zero weight was assigned to monetary aggregates by the Federal reserve and the *dominant role for monetary aggregates* in monetary policy was abandoned [Blinder 1998:29]. As per Meyer [1998], in the long run monetary policy is the principal determinant of inflation. Apparently, the accepted view is that the unequivocal and singular long-term objective of monetary policy is price stability. It is the contention that *a growth rate for money* should be adopted to achieve a rate of nominal income growth that equals the growth rate in real output and the rate of inflation.

In the U.S., as well as most central banks of other countries, it is by means of the control of (short term) interest rates that monetary policy is implemented. As suggested by Greenspan [1999:1]: "it is useful to pre-empt forces of imbalance before they threaten economic stability." Accordingly, a pre-emptive move against inflation would be the adjustment of interest rates in anticipation/response to rising prices. Noteworthy is the fact that in recent years, the focus of attention is on deciding what weight should be placed on asset prices given the booming activities in the financial markets [Greenspan 1999].

3-3 The Money Supply and Interest Rates

Apparently in the quest to trash inflation, policy makers at the Federal Reserve have been more influenced by the elegance of mathematical models relating to M1 and M2 than by the epistemological relevance of those models.

In accordance with other monetarists, Greenspan [2000] maintains that:

1. *Inflation* - by definition a fall in the value of money relative to the value of goods and services - *is at root a monetary phenomenon*.
2. The ability to identify particular claims as money, near money, or a store of future value has become exceedingly difficult, because the financial system is continuously being revolutionize by technology.
3. While what constitutes money eludes our analysis, it is safe to conclude that an *excess of money relative to output* is the fundamental source of inflation.
4. To cope with uncertainty, it is necessary to ensure that growth in the money supply, using a reasonable definition of money, does not exceed perceived prudent limits.
5. Being that it is difficulty to define those limits precisely, significant scope for discretion in setting policy remains within any such prescribed limits.

While controlling the money supply is undertaken to stabilize prices, it is important to note that in the 1980s *reductions in the general level of prices became associated with more rapid growth of the money supply.* During the period 1975 to 1982, while average growth in the money supply (M1) was slightly over 7 percent per year, the GNP implicit price deflator

rose on an average of 9 percent [Boschen 1990:84]. However, from 1982 through 1990, while the average annual growth of M1 had accelerated to 9.5 percent, growth in the general price level averaged a mere 3.5 percent [Walsh 1990:8-9,186]. Also, as noted by Fisher [1989:156-158] the velocity of money had declined. Poole [1988:73,74,78,97] has provided empirical evidence on adjustment in the velocity compensating for an excess in the money supply.

Furthermore, to defuse inflation, from July 2004 up to March 2006, the discount rate had been raised from 2% to 4% [Federal Reserve Bank of Minneapolis]. By May 2006, the Federal Reserve Board (FRB) had pushed a key interest rate up for the 16th consecutive time. Given this development, analysts predicted that interest rates would keep rising as long as Bernard Bernanke continued to be concerned that the central bank was lagging in fighting inflation [Crutsinger May 6, 2006]. Owing to the fear of a recession caused by the sub-prime mortgages, slight downward movements of the discount rate began in August 2007 [Board of Governors, Federal Reserve System *Historical Discount Rate*].

It is important to note that while wide changes in individual commodity prices have been observed over time, the rates of change in the general level of prices have been relatively stable [Benjamin Friedman 1990:71]. Empirical evidence does give strong support to the position that inflation is not attributable to the money supply. Furthermore, based upon available the historical evidence, monetary policy consistent with the Quantity Theory has an aggravating impact on an inflationary situation. The short-term interest rate policy interferes with price signalling in the short run and crowds out fiscal policy in the long run. The implication for the policy-makers would be the elimination of the reactionary approach to monetary policy.

Unequivocally, the Quantity Theory of Money was developed in times of commodity money. It was based upon a genuine loss in the value of *commodity money,* which made it an unstable measure. This condition holds since it was experienced that commodity money did lose value due to either a debasement of the metal content or an increase in the supply or decrease in demand for the metal commodity, which constituted the commodity money [Ricardo 1809-1823:103-114; Marshall 1929:12-20,38-50]. Importantly however, at the

current stage of economic development, it is fiat and not commodity money that is in use. Therefore, monetary policy ought to be developed within that context. To pursue the matter further, as noted by Salvary [2001:285-286]:

> When paper money and commodity prices interact and form certain patterns which appear in a visual field, such as price indices, the perception of the strong interaction can lead to a distorted view. This situation is comparable to the issue of apparent movement: "when local stimulations occur in different places under certain temporal conditions" [Kohler 1969:34-45]. The distortion in perception [Ayer 1958:91-148] is the apparent shrinkage of the measuring unit or loss in the value of paper money [Walsh 1903:117-131,199; Bernstein 1935:503]. However, money does not change in value except in the case of an official revaluation/devaluation or lack of acceptability (in rare cases) due to loss of faith in the government. For example, in Germany during 1918-1923, a *new paper money,* which was introduced to replace the previous commodity money, was rejected by the populace. Subsequently on October 15, 1923, *another new paper money*, the Rentenmark, was introduced and it was accepted [Sargent 1982:82; Stolper, Hauser, and Borchardt 1967:53-93].

Apparently, current monetary policy suffers from a lack of clarity pertaining to the *evolutionary path of the economic system, different types of money (commodity, representative, and fiat) and the impact of credit*. Given the endogeneity of fiat money, it is unlikely that the attempt to control the money supply via periodic adjustments of a short-term interest policy can achieve/maintain price stability. The question to be answered: Is *monetarism,* control of the money supply, consistent with *functionalism* - the *functioning* of the economic system? This issue is addressed in the following section.

4 - FUNCTIONALISM, A POTENTIAL FRAMEWORK, AND A CLASSIFICATION SCHEMA

In this treatise, the usefulness of the equation of exchange (MV = PQ) is not being questioned. Despite the fact that the equation of exchange cannot provide any answers, investigations about the behavior of velocity and money supply can be undertaken in light of

the assumptions about M or V [See Spindt 1985]. In this regard, the thrust of this paper is on *functionalism: the endogeneity of nominal (fiat) money and the existence of a credit economy as the basis for the development of monetary policy.*

4-1 Functionalism - Economic Behavior

Given the claim that the value of money and the price level are correlative ideas, then any change in the price level would constitute a change in the value of money [Wicksell 1935:129]. As per Friedman [1980:254-255]: inflation - wherever its presence happens to be observed - is a monetary phenomenon. (For an in depth exposition, see Friedman [1958;1969]). Friedman's hypothesis has been contradicted by evidence for twenty countries for a period of about eight years [Fellner, et al., 1964:13]. As per Meltzer [1977:201-202]: results of the study deny that inflation - defined as the average rate of price change - has been entirely attributable to growth in the money supply. In addition, Laidler [1989:1157], reinforced the findings of earlier studies:

> 30 years of monetarists analysis has not been able to demonstrate the empirical existence of a structurally stable transmission mechanism between money and inflation to the satisfaction of its own practitioners, let alone its critics. ... Monetarists in search of support for the case that money is more a causing than a caused variable often turn to the analysis of extreme experiences.

According to Dow and Saville [1988:240]: inflation is attributable to non-monetary factors in which case commodity exchange ratios are realigned (i.e., in a barter economy [Fuller 1980:6-7]). Early studies [Ball 1964:69,77; Goodhart 1975:199,216-217; Hansen 1951; Harrod 1973:82; Hawtrey 1950:Chap.1; Holtfrerich 1986] have concluded that an increase in the money supply can accentuate a rise in the price level; however, a change in the '*general price level'* is not a monetary phenomenon.

In a barter economy, commodities existed in the absence of money. In that type of economy price level changes occurred, since the exchange ratios of the individual commodities varied due to changes in the environmental/economic setting. Hence, there is

no direct relationship between the quantity of money and the change in level of prices. Unfortunately, in the inflation debate *fiat money is deemed to be the villain for a problem which is inherent in the price system*.

As noted by Arrow [1981:140], since goods and services (Y) exist in the absence of money (M), then the higher the degree of monetization of an economy, the greater is the interdependence of Y and M. Unmistakably, it would be rather surprising if the flow of M was not positively correlated with Y in a money economy. Since Y is exogenous whereas M simply reflects the extent to which goods are exchanged for money rather than goods for goods, causation would run in the direction of Y to M rather than in the reverse direction.

Hence, it is not farfetched to conclude [Salvary 1997/1998:96] that:

1. Changes in the general level of prices is inherent in the price system.
2. Changes in nominal money prices constitute efficient signals of the effect of changes that are taking place in the economic system.
3. Changes in taste, technology, income, and population growth do have a significant impact on commodity prices.
4. During periods of changing conditions, an increase or decrease in the average of all prices occurs due to a realignment of the entire set of commodity exchange ratios.
5. Consequently, in the absence of instances of monetary dislocation--collapse of the monetary system--or a direct devaluation of the money by the issuing authority, inflation is not a monetary phenomenon.

Given that *fiat* money is in use, adherence to the 'quantity theory' imposes an unfair burden on it. The implications of monetary policy 'a la quantity theory' are quite problematic for society. As noted above, this paper focuses on an alternative view: *changes in the general price level are the end result of the net effect of changes in relative prices*. That is, *changes in the general price level occur as a result of a net realignment of prices of individual commodities--some go up, others go down, while others stay the same*. Through their behavior, people determine prices. This condition obtains since production decisions are influenced by people's consumption decisions. Evidently, it is in this manner that demand and

supply conditions are determined reflecting the existing reality of the economic situation.

While monetary policy - *monetary control* a la monetarism - has been deemed to be the means to stabilize prices, past experience has revealed that monetary control has had significant negative impacts [Crutsinger 2006; Simon 2006; Valetkevitch 2006]. Since, in most cases negative economic conditions have been aggravated, the following *suggested framework* is a modest attempt to arrive at a better understanding of some of the problems.

4-2 A Potential Framework for Monetary Policy

Essentially, a research finding becomes a principle because it is derived from a certain research process. Inadvertently, in some instances (e.g., price level changes), in the characterization of the phenomena being investigated to provide the basis for the emerging principle, the inappropriateness of the research approach used is not recognized.

In economics, as in any other science, two groups of principles - *taxonomic and causal* - are needed. *Taxonomic principles* accommodate classification (i.e., type of economic settings) and *causal principles* capture the cause-effect structure under study (i.e., exchange mechanism, exchange ratios, and price levels). While the *taxonomic principles* provide guidance on the nature of changes in the economic system, the *causal principles* determine in advance the general picture of the mechanisms which are responsible for specific changes.

Taxonomic principles in economics, accommodating the classification of systems of exchange (barter, monetary, and credit), can be identified in accordance with the mechanisms responsible for the flow of activities in the economic system and the relationships of certain forces. For instance, in physical chemistry, if a gas is compressed then its pressure must increase. The essential nature of a gas shows how the mechanism of pressure production is such that only one outcome can follow from a decrease in volume - a decrease in the room for molecules to move. *Causal* principles in economics identify the forces (changes in supply and demand, changes in the exchange mechanism, population growth, technological forces, introduction of new commodities, and obsolescence) that produce a decrease or an increase in

economic activities. Monetary policy *presumably* is supposed to negate or at least ameliorate the impact of negative developments arising from disturbances caused by any of the identified forces. Table 1, presented below, is a simple classification of economic systems.

4-3 Classification Schema

Apparently, the difficulty with current monetary policy arises from a lack of clarity with regards to *taxonomic* and *causal* principles. Policies established on the basis of the unified liquidity theory (i.e., monetarism) has been ascribed with the ability to stabilize prices. Possibly, very little attention has been given to the impact of the *social evolutionary process* and the analysis emerging from a classification schema (Table 1) that is implied given the economic development during *society's evolutionary stages* (see Section 6).

TABLE 1

Classification Schema

1. Barter Economy - Pure Exchange System

2. Monetary Economy - Commodity Money System

3. Credit Economy - Fiat Money System

As a prelude to the further development of the issues and to facilitate the subsequent exposition, the following points pertain to the features of commodity money and *fiat* money. When there is change in the exchange ratios of commodities and a *commodity money, which inherently has a variable value, is in use as the medium of exchange*, the need arises for an invariable measure to measure the changes in the relative value of commodities. Ricardo [1821:40,294,367;1809-1823:103-114] pressed the need to find an invariable measure since during his times a metal commodity money served as the medium of exchange.

Commodity money has a *variable* value; hence, commodity money is an *unstable* measure. The issuance of an excess of representative money, over the underlying stock of

the commodity (e.g., gold or silver) which it represents, reduces the value of the representative money. While these two points are capsulized by Jevons [1884:104], the effect with gold digging is documented for the U.S. during the period 1897-1914 by Myers [1970:243]. It is most unfortunate that a problem from the past associated with commodity money - the susceptibility of loss in value due to the variability of its value - is ascribed to fiat money, the current medium of exchange, which has an *invariable nominal value*.

The attributes of "fiat money" are: (1) the intrinsic value of the material substance, of which it is comprised, is divorced from its monetary face value; (2) it is not legally convertible into anything other than itself; and (3) it has *an assured* nominal value but no objectively determined fixed value [Keynes 1930:7]. *Fiat* (fiduciary - paper and coins) money is defined as: "money issued by governments backed only by the words that are written on pieces of paper" [Friedman 1982:99], "and of no utility except in exchange" [Sargent 1982:91]. "[It] is . . . intrinsically useless, non-counterfeitable pieces of paper that are costlessly produced by the government. They can be costlessly stored, . . . identified, and . . . transferred from one individual to another" [Freeman 1985:148]. At this stage it is necessary to reflect upon the organizational impact of money.

5 THE ORGANIZATIONAL IMPACT OF MONEY AND REGIONAL DIFFERENCES

Historically, commodity money has been plagued with problems in particular the fluctuation in value of the commodity serving as money [Burns 1927]. This condition induced the movement to fiat (nominal) money, which is free of the problem of instability associated with commodity money. Fiat/paper money has been shown not to be the cause of general price level changes [Thornton 1802 (1939); Tooke 1844 (1959)]. Similar to the metre or the yard (each a measure of length), fiat money is arbitrary; and within the context of measurement, it is absolute as a counting device. As the basis of exchange in a credit economy, fiat money is a relative frame of reference by capturing the various exchange ratios of the various goods and services throughout the economy reflecting regional differences.

5-1 The Organizational Impact of Money

During the social evolutionary process, out of social exchanges, money evolved as a social welfare maximizing device. The number of intermediate barter transactions necessary to arrive at the desired exchange transaction were drastically reduced. Money made possible the transition from payment in kind (in a barter system) to payment in nominal money terms in a monetary system. As this transition took hold, money became the parameter in the measurement of want satisfaction in the economic system [Zimmern 1961:302-303].

Quite frequently, purchasing power is deemed to be the quantity of goods that can be purchased with money; if that view is correct, then the value of money is inversely related to the price level [Bernstein 1935:503]. The preceding statement holds true for *commodity money but not for fiat money*. Since fiat money is an arbitrary measure, the foregoing statement leads to the *erroneous conclusion* that: (1) commodities (C) provide a measure of the value of fiat money (M), and (2) it is fiat money (M) that is being measured and not the exchange ratios of commodities (C) that are being exchanged. In such a situation, depending on the commodities that are purchased, it is the amount (and not the value) of fiat money units that will change to reflect the differences in the exchange ratios of the differing commodities. According to Hayek [1931,17]: however defined, the *value of money* as something directly related to the inverse of the level of prices is arid.

Evidently, fiat money - in exchange for any commodity - simply represents the purchasing power of *the* specific commodity being exchanged at that particular time. "[M]oney serves as a convenience and temporary repository of value in goods transactions Field [1984:44]." Essentially, a certain/specified amount of nominal value resides in a given amount of fiat money that is being stored for the future. However, since purchasing power resides in commodities, the stored amount of fiat money constitutes an uncertain amount of purchasing power. This condition holds simply because while the purchasing power (exchange ratio) of each and every commodity is subject to change, the nominal value of fiat

money is constant in the absence of monetary dislocation. Since fiat money has a certain specified nominal value, what is being stored is simply the nominal quantity of the medium of exchange by means of which to measure the purchasing power of the specific commodities that are exchanged for fiat money.

It must be noted that at each given point in time and place, the given purchasing power of available commodities or set of exchange ratios (the relationship of one commodity to another and each to every other) is a function of the demand and supply conditions. The purchasing power of each commodity is subject to change. The changes in prices of commodities do reflect the changes in relative utilities among commodities. Since the utilities of the various physical units are not the same over time, Bailey [1825:71-73], Pareto [1927:225], and Keynes [1930:95-120] have questioned the propriety of making comparisons of physical units over time.

Going one step further, according to Greidanus [1950:298], because money does not purchase the same quantities of commodities in different periods, it is fallacious to conclude that money is not stable. *It is possible to artificially keep the level of prices constant* by stipulating a certain constancy of the number of monetary units to acquire goods and services over time. However, *this constancy in the number of monetary units in exchange would no longer represent (but instead would violate the changes that are taking place in) the purchasing power relationships of the various commodities*.

As observable in periods with an abundance of commodities, the prices of those commodities are low. It is important to note that the varying low prices reflect the purchasing power exchange ratios that exist among the various commodities. The reverse holds true for periods with a scarcity of commodities during which the varying high prices reflect the purchasing power exchange ratios existing among the various commodities. Evidently, after a period of abundance expires and a scarcity of commodities exist, inescapably there will be an increase in the general price level. Monetary authorities are powerless to preserve the former level of prices or eliminate the increase in the general level

of commodity prices. To maintain a stable price level during the period of scarcity, the unit prices for the commodities during the period of abundance would have to be maintained. To achieve this end, the governmental authorities would have to sanction an upward revaluation of the currency. However, while, the constancy of the money value in exchange would be preserved artificially, *the law of supply and demand would be abolished and a system of customary prices would prevail. The problem is further compounded by the existence of regional price differences owing to differences in regional demand and supply conditions.*

5-2 Regional Differences

For constancy in commodity prices to exist there has to be no change in taste or technology and the utility in times of scarcity of commodities is identical with the utility derived from the same commodities in a period of plenty. However as noted by Jevons [1905:2,3,52,53]: utility is not some physical characteristic which is inherently constant in an object; utility is conditional - it depends exclusively on existing conditions.

The existence, of similar physical units at different moments in time and in different places being exchanged for money, gives the illusion of purchasing power residing in money. In reality, constancy/invariability is expected in the manner in which money performs its function as a measure of the value of utility. Utility changes; therefore, if the exchange ratio (relative purchasing powers of commodities) as represented by nominal money can be artificially kept constant, money is clearly not performing its function because it will not be expressing the change in relationship which has occurred among the values (utilities) of the various commodities [Bernstein 1935:37-42; Jevons 1875:194].

Noteworthy is the fact that the price level in most countries are given on a regional basis - large, medium, and small cities. This condition holds since a certain amount of money does not buy the same amount of goods and services on the same day and for extended periods of time in different parts of a country. Is it that the value of the country's currency varies from region to region? Definitely not! Regional price differences merely

reflect regional supply and demand conditions and not differences in the *value of fiat money*. The purchasing power of a commodity is space and time dependent; it is a relationship between that particular commodity and all other commodities in a particular place at a particular time.

The following statement pertaining to "purchasing power parity" illustrates the point quite well:

> [S]uppose we found, by some kind of index-number calculation, that the *general price level in region A* was 10 percent higher than in region B of *the same country.* Given a common currency, the "exchange rate" between the money circulating in the two regions is clearly 1.0, but the PPP for region A, in comparison with region B, is 0.91, this being the number by which it is necessary to multiply a given nominal income in A to give it the same purchasing power as a corresponding income in B. [Marris 1984:40] *(Italics added.)*

Within the context of the *social evolutionary process*, the collapse of the gold standard during the 1930s brought about the abandonment of *commodity money*. Since that time much of the economies in the world use *fiat money* - *a* money with no commodity value whatsoever [Hendrickson 1970:26]. Unmistakably, commodity money is clearly different from fiat. Inadvertently, however, the instability of commodity money is erroneously associated with fiat money. The difference between *commodity money* and *fiat money* is quite clear throughout society's evolutionary stages - *the transitional stages of the economic system*.

6 - TRANSITIONAL STAGES OF THE ECONOMIC SYSTEM

Given its quest for self-perpetuation, throughout its evolutionary journey, society as an adaptive system introduces *innovative measures* to deal with a *changing environment* and improve its operating efficiency. Two transitional stages have been witnessed: from a Barter (Pure Exchange) Economy to a Monetary (Commodity Money) Economy, and then to a Credit (Fiat Money) Economy.

6-1 A Barter Economy - Pure Exchange System

In the initial stage, the economic system was a system of *pure exchanges* - a *barter economy* wherein commodities and services are offered in exchange for other commodities and services. As noted by Salvary [1998:308]:

> Prior to the 15th century, prices were established by custom and a unit of account (either solidus or mancus which were both measures in relation to an ox) was adopted [Cunningham and McArthur 1896:117,122]. While such prices were expressed in monetary terms, they constituted 'customary' prices (the money equivalent of payment in kind) and not 'competition' prices [Lees 1935:clxxxiii; Cunningham 1910:458-459]. Food rents were the earliest form of manorial revenue. By the middle of the twelfth century A.D., except for a few sporadic food rent payments, the economy of the Bury St. Edwards manor was dependent upon money payments [Douglas 1932:cxxxi,cxxxiii]. While a change from "natural husbandry" to a "money system" began in the thirteenth century and was accentuated in the fourteenth century, there was no transition from a "natural economy" to a "money economy" [Davenport, 1906:48]. The transformation came in the fifteenth century when the use of money had become general. However, while the old forms of natural economy were eliminated, prices could be quoted in a money form but they were not yet determined simply by monetary considerations [Cunningham 1910:459].

In the ensuing stage, *to improve the* operating efficiency *of the Barter Economy* - a pure exchange system, *commodity money* was introduced [Salvary 1989:98-99]. Consistent with the noted motive, the introduction of commodity money gave rise to a *Monetary Economy* which was a significant enhancement of the operations of the former economic system.

6-2 A Monetary Economy - Commodity Money System

Along society's evolutionary path, *prices* were established by custom and a unit of account (either solidus or mancus - both measures in relation to an ox) [Cunningham and McArthur 1896:117,122]. While such prices were expressed in monetary terms, they constituted the money equivalent of payment in kind [Lees 1935:clxxxiii; Cunningham 1910:458-459]. At that stage, money was purely an imaginary/conceptual measure of value

that existed primarily for calculating. Of necessity a money form - *a medium of exchange* - was introduced, the generally acceptability of which permitted a uniform command over the purchasing power embedded in goods and services.

In a world of steady farmers, while oxen were not always of same value, an established bar of gold or silver was always a bar of gold or silver. This condition rendered gold or silver a convenient measure of value. Around 700BC, when executing exchanges, the need for a common measure was recognized to reduce the time consuming effort to calculate the exact value of everything tendered in exchange. At that stage, coin currency (gold and silver) at an established value was introduced for the daily transactions. Hence, a monopoly in exchange emerged with commodity money as the monopolistic agent [Zimmern 1961:302-303].

Commodity money possesses an extrinsic value (a medium of exchange) and an intrinsic value (an independent variable value) that is directly related to the commodity itself [Walsh 1903:31; Newlyn 1962:3]. The primary use of commodity money, with its *variable nominal* value, is to facilitate exchange as a medium of exchange. Undeniably, the monetary economy experienced enhanced specialization and increased efficiency [Hendrickson 1970:29-30]. As *a medium of exchange,* money provided a means of trading labour services for commodities without holding commodities. Money became the parameter in the measurement of want satisfaction in the economic system [Zimmern 1961:302-303].

The next innovation, introduced by society, was *fiat* money with an assured/*invariable* nominal value based upon the full faith and credit of the issuing authority. This innovation transformed the *Monetary Economy* into a *Credit Economy*, which is ever present. As per Pirenne [1933:212]: The system "was perfected by new devices such as the techniques of acceptances and of protests of the bill of exchange."

6-3 A Credit Economy - Fiat Money System

In society's evolutionary progress, to overcome the inherent limitations of a commodity money, commodity money was replaced with fiat/nominal money.[3] This change was necessary

because when a commodity serves as money, two problems exist: (1) depending upon alternative uses for that commodity, the exchange relationship with each and every other commodity is subject to change; and (2) in the case of metallic currency (gold and silver), the need for specialists in that commodity exists [Lees 1935:cii]. Each of those two conditions impose a cost. In situation (1) the cost exists to acquire the necessary information on the changing exchange relationships of the commodity [Bautier 1971:164,168,169]. In situation (2), in each exchange a cost exists to ascertain the quality of the commodity when it is tendered.

When a representative paper money (the underlying value of which is a commodity - e.g., gold, silver, etc.) is in use, any change in the value of that commodity cannot be overcome by assigning an arbitrary value to the representative paper money. This condition holds, due to the fact that the representative paper money is merely a convenient and efficient means of representing the commodity. Simply stated, assigning an arbitrary value cannot provide an unchanging nominal value to the representative paper money which is de facto commodity money [Hendrickson 1970:39,42,45,53,300,301].

By official decree, an assured and specified *nominal* value is conferred upon *fiat* money that circulates in the form of paper and coins. As a medium of exchange, general acceptance of fiat money is based upon the full faith of the populace in the *credit* worthiness of the issuing authority.[4] To obtain transaction cost-reduction, society adopted fiat money which is cost efficient [Alchian 1977]. By eliminating two types of cost attached to commodity money, fiat money reduced the cost of transactions arising from: (1) the vulnerability of transactions to fluctuations in the exchange ratio of the commodity money and (2) the need to monitor the quality of commodity money. Nevertheless, fiat money is not a costless agent. The cost associated with fiat money is derived from the intensity of its use; it is available at a cost: the rate of interest, which is determined by supply and demand in the extension of credit.

Fiat money, because of the general acceptability of its assured nominal value, is a reference frame for measuring the exchange ratios of commodities. Due to its *assured* nominal value, fiat money provides a level of predictability which would be unattainable if it were an *uncertain*

nominal value. Fiat money, which is a store of uncertain future value (i.e. a nonspecified purchasing power) [Hawtrey 1913:14-15], is hoarded until it is needed. Importantly, being a definite nominal value, fiat money has a measurement capacity which enables it to effectively facilitate the organization of economic activities. To be hoarded until needed for use in exchanges and the ability to facilitate exchange are the par excellence uses of fiat money.

Based upon hindsight, it is evident that a *credit* system is a *cost efficient* means of extending the monetary economy - a money economic system. Unmistakably, in the *credit* economic system, transactions are significantly increased without any increase in the money base; *the supply and maintenance cost of a larger money supply is virtually eliminated*. In this setting, only as the need for *liquidity* (the desire to hold cash) increases will the money base be increased Extrapolating from the evolutionary process presented in the preceding passage, one may envision *cash flows* as an appendage of *credit flows*. In line with this evolutionary progression, the following passage is presented.

> The fact that the extent of money and credit increase together shows that they render the same services, and when the functions of one of them are enhanced the other is also provoked into more lively activity. *This does not contradict the other relation between money and credit, in which credit makes cash superfluous . . . . The significance of credit, both as inciting a greater circulation of cash and as taking the place of this cash circulation, indicates the unity of the service which these two means of exchange render* [Simmel 1978:194].

Theoretically, *in a pure money economic system* there would be no credit; all transactions would be settled immediately. In a credit economic system, while there are cash transactions occurring, the bulk of the transactions are executed on credit with cash settlement taking place at some later point in time. Credit flows precede money/cash flows in a credit economic system and it is credit flows that give rise to money/cash flows [Salvary 1989:89].

The next section briefly reviews the role of money as a measuring device, a store of uncertain purchasing power, and a facilitator of economic activities. Also, issues about the invariable nominal value of fiat money and the association of the exchange ratios of commodities with purchasing power are considered.

7 - MONEY TO MEASURE, EXCHANGE RATIOS TO ESTABLISH PURCHASING POWER, AND MONEY TO FACILITATE ECONOMIC ACTIVITIES

According to Mill [1857(1929):488]: "[T]he relations of commodities to one another remain unaltered by money," and "things which by barter would exchange for one another will, if sold for money, sell for an equal amount of it." In a similar fashion, Simmel [1978:124] maintained that money "expresses the *relation* between things, a relation that persists in spite of changes in the things themselves."

Money of account, introduced into the barter system as a standard measure, engendered a *nominal money price system*. Unaltered in the transition, physical exchange ratios of the various commodities were translated into their corresponding nominal money prices - a conversion to *a system of relative prices*. Once x money units were assigned as the price of commodity A, the prices of all other commodities were simultaneously established. Money made possible the expression of the relationship of all commodities (one to another and each to every other) at any given point in time [Bernstein 1935:37-42; Jevons 1875:194].

7-1 Money to Measure

As an *institutional arrangement,* the general acceptance of money [Weber 1947:112] removed some of the inequities on the working populace that had existed in a barter economy [Babbage 1835:309-311; Malynes 1622; Cunningham and McArthur 1896:165]. As an arbitrary measure, *fiat* money serves as a *measure* of the value of goods and services *exchanged*. Noteworthy is the fact that whenever the value of goods and services do change, money - as *a measure of value exchanged which is expressed as price* - clearly reflect such a change. Consequently, the concept of price level emerged. While money enables measurement of changes in the level of prices by capturing changes in exchange ratios of the various goods and services, price level changes is not attributable to the quantity of fiat money in circulation.

Apparently, in the current debate, the purchasing power of each commodity being expressed as a money price obscures the fact that price level changes actually capture the

effect of changes in the exchange ratios of the various commodities. Despite the fact that the economic environment appears to have changed considerably, the mechanism for determining the basis of exchanges has persisted throughout the social evolutionary process.

7-2 Exchange Ratios to Establish Purchasing Power

As noted earlier, the transition from a barter system - a pure exchange system - a system reflecting the set of exchange ratios of the various commodities - to a money economic system, which reflects the purchasing power relationship among the various commodities that are exchanged for nominal money. The capacity of a good to obtain other goods in exchange is its 'power of exchange' or 'purchasing power'. Having an arbitrary assigned value but no intrinsic value, nominal money permitted an uniform expression of the ratio of exchange among all commodities (e.g., A = 1/4B; B = 1/2C; C = 2D; etc.).

Validity in measurement of exchange ratios of commodities is needed for the effective functioning of an economy. Indubitably, such validity depends on the ability of money to reflect changing conditions underlying or affecting commodities in the market place [Ensley 1958:6; Greidanus 1950:228; Myrdal 1939:129-130]. Evidently, when relative prices are changing, money - which buys the same quantities of commodities at every point in time under changing conditions - cannot be stable money [Greidanus 1950:297-300].

According to Smart [1931:6]: The exchange/purchasing power “lies in the connection or relation of two things, and not in either of the things". Consequently, in a money economic system, the purchasing power of a commodity determines the amount of fiat money for which it will be exchanged. With the passage of time, the realignment - among the various exchange ratios of commodities - alters the general level of prices. Hence, as expressed in nominal money prices, the new exchange ratios reveal the *purchasing power gains and losses sustained by the individual commodities*.

As noted by Ensley [1958:6]; Greidanus [1950:228]; and Myrdal [1939:129-130], money reflects changing conditions as they affect commodities. Yet, inadvertently, monetarists

consider the net change among the exchange ratios as a change in purchasing power of fiat money.[2] As the "quantity theory of money" is conceived, the price level is deemed to vary independently of changes in the average height of individual prices [Moulton 1958:198-200].

In the absence of monetary dislocation, the information on the realignment of the exchange ratios of commodities is brought about with clarity. Evidently, as intended when adopted along the evolutionary path, fiat money significantly facilitates economic activities due to its *general acceptability and invariability*.

7-3 Money as the Means to Facilitate Economic Activities

Apparently, money captures the psychological aspect of want satisfaction. This phenomenon is a definite and clear indication that money facilitates economic activities. The aggregate nominal money expended on a particular commodity is reflective of the intensity of the want satisfaction of that particular commodity. Indubitably, expected consumer nominal money expenditures (expected nominal money prices) is the guide for output decisions (physical quantities) and hence the expected business nominal money expenditures to produce the output. By enabling society to value, distribute, and contract for commodities of various kinds - in spite of inconsistent decisions among investors and savers, and producers and consumers - money lubricates the allocative process [Goodhart 1975:94,199,216,217].

The following passage abstracts from reality the basic aspect of money in the facilitation of economic activities:

> [T]he exchange system can be characterized as a system in which each exchange involves one party giving up points and another party earning those points. These points can be accounted for in a central recording place. . . . [To] minimize checking with a central office on a person's stored entitlements (points), entitlement chips called money are used. Since exchange on open *credit* would require checking with the central entitlement office, an individual can hold chips (money) to expedite exchange. [Salvary 1993:160]

General acceptability is a unique characteristic of money. This quality makes it an effective agent for organizing economic activities [White 1984:703,708; Smith 1985b:1184;

Hendrickson 1970:26-27]. At its inception, money contributed to efficiency in the exchange of goods and services, but it did not produce an exchange system. Nominal money, while providing for an effective and precise price system, effectively enabled the incorporation of the element of time (*time is money*!) into the decision-making process. By permitting *the storing* of an unspecified but nominal liquidity (general exchange acceptability) and/or services in the form of durable machines, etc., nominal money accommodated the further development of an exchange economy. Monetization of the economic system enabled the storing process [Salvary 1996/1997:72].

Since goods and services do not possess the quality of general acceptability by all members of society, acceptance of money is a form of "social action" [Weber 1947:112]. As a fixed claim [Spindt 1985:177], money: (1) is a buffer stock against transactions requirement, (2) permits the extension of the production period, and (3) due to its substitutability for goods and services, it accommodates divisibility to goods and services which are indivisible. Quite noticeable is the standardization and systematization of the labor and commodities markets [Mitchell 1927:116;1967:603; Hendrickson 1970:21-22]. With the introduction of fiat money, the *monetary economy* was transformed into the *credit economy.* This transformation was noted by Steuart [1767:406-407]: "[s]ymbolical or paper money is but a species of credit; it is no more than the measure by which credit is measured. Credit is the basis of all contracts . . . He who pays in paper puts his creditor in possession only of another person's obligation to make the value good to him: here credit is necessary even after the payments is made."

Historically, commodity money has been plagued with problems in particular the fluctuation in value of the commodity serving as money [Burns 1927]. This condition induced the movement to fiat (nominal) money, which is free of the problem of instability associated with commodity money. As can be deduced from the works of Thornton [1802 (1939)] and Tooke [1844 (1959)], fiat money is not a contributing force to changes in the general level of prices. Similar to the metre or the yard (each a measure of length), fiat money is arbitrary; and within the context of measurement, it is absolute as a counting

device. It functions as the basis of exchange capturing the exchange ratios of the various goods and services flowing in the *credit economy,* which is explored in the next section.

8 - THE CREDIT ECONOMY: A FIAT MONEY SYSTEM

In the credit economy, fiat money is the medium of exchange and units of *uncertain* purchasing power are held in the form of fiat money [Keynes 1930:55-56]. The flow of fiat money, the dimension for the settlement of transactions, is the means by which uncertain purchasing power is transferred over time [Davidson 1972:62]. As a cost efficient means of transacting [Brunner and Meltzer 1989:250], fiat money has a demand and supply function. As an agent, it is priced in terms of itself (e.g, $1.00 = 100 cents) and its *use* is compensated for in terms of itself, which is expressed as a rate (viz: interest rate). The liquidity cost of money is zero; the same is true for the expected change in its nominal value and its carrying cost.

This study holds the view that fiat money in its domestic economy is - as advanced by Davidson [1972:62-64] - an "unchanging standard against which all other . . . readily reproducible capital goods . . . and titles to capital goods and debt contracts can be measured." It is this *unchanging standard that enables* the general level of prices to be transparent and measurable. Conceivably, given the presence of such information, financial institutions adjust their lending rates to incorporate changes in the general level of prices.

Fiat money maybe considered a commodity. However, it is its use (credit) which is the commodity.[5] In this case, the *interest rate* is the price of credit. When there is an increase in the supply of credit, its price will fall. Given this scenario, more goods and services will be provided. On the international scene, fiat money is akin to representative money or bills of exchange because it is traded. Yet, it is the economic conditions in a country that determines the rate of exchange of that country's fiat money vis-a-vis money of other countries.

8-1 The Dynamics of a Fiat Money System - The Credit Economy

In a credit economy, the value of exchange transactions (goods and services) - expressed in fiat money and stated in nominal terms as prices - constitute signals for

transactors. Money prices do reflect changing conditions; in so doing, money fulfills its signalling function. Monetization (the interconnection of all parts of the economic system via the flow of fiat money) enables the storing of services and permits an investment in the process of production, which gives rise to the concepts of: *money-capital, finance*, *earnings,* and *profit*. Fiat money permits the *storing of uncertain purchasing power in nominal terms*.

In a surplus-oriented money economy, adaptation to this socio-economic stimulus (storing) results in the production process being motivated by monetary exchanges to accumulate money in the profit seeking process. As indicated by Boulding [1950:6,112] and Georgescu-Roegen [1971:216], the firm/producer is concerned with the accumulation of a stock of money. Whereas, the main concern of the general public in periods of rising prices is the preservation of purchasing power. As noted earlier, this study maintains that purchasing power resides in commodities and not in nominal money. The next section focuses on the purchasing power, price, and price level changes.

9 - PURCHASING POWER, PRICE, AND PRICE LEVEL CHANGES

As noted by [Steuart 1767:408-413], the purchasing power of a commodity is measured by a scale: nominal money, which is only a reference frame for expressing the purchasing power of commodities. Importantly, the measurement - of commodities exchange ratios - does not constitute the transference of price to commodities nor transform the commodities into the measurement scale [Salvary 2001:290, Table 1].

As noted by Cassel [1921:54], the changes in the relative prices of goods and services reflect the changes in demand and supply conditions of individual goods and services. The change in nominal money price creates the impression that money possesses a certain property: an intrinsic value (want satisfaction). However, except in the case of hoarding, fiat money has no intrinsic value; by decree - as a clearing mechanism - it has a constant value only in exchange. Having a service function in society, nominal money possesses utility; and as per Jevons [1875:63-66,73,190]: utility is not a quality *intrinsic* in a substance.

Gold and silver currency (possessing ornate qualities - i.e., want satisfaction qualities) would lose value. Yet, *fiat money, with no intrinsic value* but an agreed upon arbitrary value, cannot change in value [Crowther 1948:5-8]. "Clearly, the conditions which determine relative prices [of commodities] do *not* determine the value of money, for the relative price of the medium of exchange in terms of itself is by definition unity [Uhr 1960:217]." Being that fiat money is a nominally defined parameter, it enables/captures ***in terms of price*** the changes in the intrinsic values of commodities that are being exchanged in the economy.

As an institutional arrangement, money expresses, in a consistent and uniform manner, the relative values of all commodities*, and in so doing introduces certainty into calculation* [Jevons 1875:75]. In the setting of purchasing power uncertainty, money is a *known quantity*, whereas the want satisfaction of the various commodities are *unknown variables*. Hence, it is important to note that the processing of signal information generated by nominal money prices - the identifiable attribute of nominal money (a specified and unequivocal nominal value) - permits individuals to accrue information over time [Salvary 2001:300].

According to Arrow [1981:140], singling out a specific good and knowing the exchange ratios of all other goods for it, all the existing exchange ratios between pairs of goods can be determined. Thus, for any given commodity in relationship to all other commodities, a host of exchange ratios exist and these ratios translate into the *prices* of the goods. Hence, as stated by Cassel [1935:30,54], money price is a relative measure because it merely expresses the relationship of want satisfaction properties among commodities. As a coordinative definition of the exchange relationships among all commodities, it is a relative measure. Yet, it is an objective measure of the capacity of a commodity to satisfy an individual's perceived need.

It is reasoned that the effectiveness and efficiency of a credit economy hinges on the *stability* of fiat money - its *invariable* nominal value. While fiat money has an invariable nominal value and only a perceived variable purchasing power, the instability/variability of the exchange ratios (i.e., purchasing power) of commodities is attributed to fiat money in monetary policy discussions. This development is due to a sensory illusion caused by partial analysis

[Salvary 2001:289-290]. The information in Table 1 [Salvary 2001:290], focusing on the nature of money and the basis of purchasing power, attempts to expose the sensory illusion.

TABLE 1
THE RELATIONSHIP BETWEEN AND THE CHARACTERISTICS OF EXCHANGE VALUE OF COMMODITIES AND NOMINAL MONEY

ATTRIBUTES	
Money	***Commodities***
1. Nominal Value	Exchangeable Value
2. Non-Consumable	Consumable (a Final/Intermediate Good/Service)
3. Produced under Monopolistic Conditions	Produced generally under Competitive Conditions
4. **An Invariable Value** (*Nominally Defined to Measure Commodity Exchangeable Value*)	**A Variable Value** (*Dependent upon Demand and Supply Conditions*)
Expressed as: ***Price***	Expressed as: ***Purchasing Power***
SENSORY ILLUSION - TRANSFER OF ATTRIBUTE	
Purchasing Power Ascribed to: ***Money***	**Nominal Money *Price*** Ascribed to: ***Commodities***

Given the foregoing, it can be deduced that fiat money provides a homogeneous (standard) means of comparing exchange ratios among the various commodities. Therefore, any reference to the value of a commodity is in reality reference to its purchasing power; which is the amount of nominal money for which it is exchangeable - its exchange ratio within the milieu of commodities [Jevons 1875:3-11; Walsh 1903:8; Cassel 1935:30,54; Coulborn 1950:30-31]. Inadvertently, despite the fact fiat money is a medium of exchange, which simply measures the variability/instability of the exchange ratios of the various commodities, the variability/instability of prices among commodities is attributed to fiat money.

In summary, the measurement of price level changes involves prices reflecting the values of commodities as measured in money terms. Exchange transactions - buying and selling of goods and services - constitute the source of the information. Accordingly, the price level change as measured is an average change for prices in this dynamic transacting

process. The value of any commodity is its purchasing power - the nominal money price that it can fetch in the market. Purchasing power (an attribute of goods and services that satisfy human needs) is the *want-satisfaction value* of a commodity in relation to other commodities. This condition precludes that value from being constant. It is a relative value based upon the psychological intensity of desire and institutional forces (e.g., union strength in pay increases and technological changes) acting upon each and every commodity. [Salvary 2002:40-41]

Being an arbitrary constant, as an invariable measure of exchange value (purchasing power), fiat money measures in a consistent manner. Fiat money is established on the basis of arbitrary rules similar to an alphabet (basic unit of a language); thus, the unit of money always performs the same amount of service [Eiriksson 1954:174; Pareto 1927:225-228]. According to Steuart [1767:408]: "Money of account . . . performs the same office with regard to the value of things, that degrees, minutes, seconds, etc. do with regard to angles, or as scales do to geographical maps or to plans of any kind."

Since want satisfaction is psychological, exchange value is variable; it is a temporal measure of the value assigned to the physical quantity of the specific goods or services acquired to satisfy the want. Due to its: (1) value established by convention - general acceptability in nominal terms - and (2) mission to measure relationships (intensity of want satisfaction) and not physical quantities, fiat money is a stable measuring device in a credit economy [Cassel 1935:54]. *The problem that exist in the credit economy is the lack of or failure to control credit.* Unrestrained credit induces price level changes and uncontrolled economic expansion, which culminates with business cycles [Salvary1996:450-458].

10 - UNRESTRAINED CREDIT AND CREDIT CYCLES

Unmistakably, the available evidence, on the extension of the repayment periods for automobile and mobile home loans, clearly demonstrate the impact of banks and finance companies in accommodating price increases. During 1980 the repayment period for new automobile loans was 45 months. In 1994, while the maturities of 79% of ***all*** new-auto loans

booked by respondents exceeded 48 months, 5% of new-auto loans serviced by banks exceeded 60 months - a significantly higher portion than the 3% reported by finance companies. Apparently, by offering longer maturities and lower monthly payments, with other things being equal, banks are competing with finance companies. More likely than not, the longer maturities on new car loans by banks reflect their effort to compete with finance companies that offer low monthly payments on auto leases [Consumer Bankers Association 1995].

For the period 1978-1994, statistics for auto and mobile home loans revealed there was no correlation between changes in the prime rate of interest and changes in consumer loans. Such a finding is indicative that monetary control was thwarted [Salvary 1997/1998:98,99]. Apparently, since monetary policy is not a restraint, auto dealers and lenders have extended the repayment period for car loans. In 2005, new-vehicle loans made by 55.3 percent of Consumer Bankers Association's members (including banks and a few automakers' captive finance companies) were for a period greater than 60 months [Allen 2006].

In a study of business cycle creations [Salvary 1991:451-457], the behavior of business firms and that of consumers were utilized to provide support for the existence of three cycles an investment cycle, a consumption (durable goods replacement) cycle, and a credit cycle.

> Customers are granted credit to the very limit of their credit capacities. Their repayments are scheduled for several years into the future. Except for basic consumption goods and services, this condition produces a significant negative impact upon future consumption. It is only when the debts of consumers have been reduced considerably that another wave of frantic expansion can be experienced [Salvary 1996:451].

Hall [1986:239,254-255], sharing the view of a consumption cycle, concluded that shifts in consumption expenditures are an important source of overall economic fluctuations. Benjamin Friedman [1986:437], although not advocating a credit cycle, maintains that money is incapable of providing an explanation of economic fluctuations, and that the *credit system can provide a better gauge than money of business activities and accordingly of economic fluctuations*. The findings of Salvary [1996:457,458 Tables 6 and 7] support such an assertion.

TABLE 6
Consumption Expenditures (CE), Disposable Personal Income (DPI)
and Consumer Instalment Credit Position (CICP)
(Current $ Billions)

	CE		DPI		CICP[1]		CICP/
Year	Amount	Index	Amount	Index	Amount	Index	DPI-%
1980	1,732.6	100	1,918.0	100	297.6	100	15.5
1981	1,915.1	110	*2,061.0	107	310.7	104	15.1
1982	2,050.7	118	2,261.4	118	323.5	109	14.3
1983	2,234.5	129	2,428.1	127	367.9	124	15.2
1984	2,430.5	140	2,668.6	139	442.5	149	16.6
1985	2,629.0	152	2,838.7	148	517.8	174	18.2
1986	2,807.5	162	3,019.6	157	571.8	192	18.9
1987	3,012.1	174	3,209.7	167	613.0	206	19.1
1988	3,296.1	190	3,548.2	185	664.0	223	18.7
1989	3,517.9	203	3,788.6	197	718.9	241	19.0
1990	3,742.6	216	4,058.8	212	729.4	245	17.3

[1] Balance outstanding on instalment credit at end of year. * Estimated to conform to this series.
GNPIPD 1980-1987 (1982=100): 85.7, 94.0, 100.0, 103.9, 107.7, 110.9, 113.9, 117.7 (respectively).
Source: 1970-1987 Statistical Abstracts of the United States 1989:421,424,499;
1988-1991: SAUS 1992:428,434,504; and 1991: SAUS 1993:445.

Table 7
Annual Changes in Expenditures, Income and Credit Position
1980 through 1991
(Current $ Billions)

Period	CE	DPI	CICP
1981-80	182	143	13
1982-81	135	200	13
1983-82	184	167	44
1984-83	196	240	74
1985-84	198	170	75
1986-85	179	181	54
1987-86	204	190	41
1988-87	284	338	51
1989-88	222	240	55
1990-89	225	270	16
1991-90	146	151	- 6

Source: Derived from Table 6.

Inescapably, after a given period of economic expansion, consumers' credit capacity becomes strained - credit is saturated. Since consumption is a function of disposable income and consumers' credit, *credit cycles* emerge. At that stage, the economy is prone to recession because the system no longer can accommodate more debt. Over a thirty-year period, a rather dramatic increase in consumer credit has been experienced in the U.S. Consumer credit outstanding, at the end of 1975 in the U.S., amounted to $168.7 billion; at the end of June 2005, consumer outstanding credit had increased to $2,145 billion [Federal Reserve Board 2005].

As reported by Crutsinger [Sept. 18, 2007]**:** For the first time in four years, the Federal Reserve cut a key interest rate. It acted with an aggressive half-point cut to prevent a steep housing slump and turbulent financial markets from triggering a recession. While a huge rally on Wall Street greeted the FRB's action, it is important to note the financial market conditions has deteriorated over the last four years (See endnote 2).

Hayek [1932:106] maintained that:

> "The assertion that changes in the *general* level of prices must always originate on the monetary side, ... obviously depends on circular reasoning. It starts from the postulate that the amount of money must be adjusted to changes in the volume of trade in such a way that the price-level shall remain unchanged. *If it is not, and the volume of money remains unaltered, then,* according to this remarkable argument, *the latter becomes the cause* (!) of changes in the price level."

Furthermore, should there be an excess in the money supply, seemingly overlooked is the fact that: (1) there is some empirical evidence [Poole 1988:73,74,78,97] on the adjustment in velocity to compensate for such excess, and (2) according to Myrdal [1939:22]: "savings is excluded ex hypothesi."

Failure, to consider the conditions under which fiat money would induce changes in the general level of prices, perpetuates the belief that the level of the money supply is the cause of price level changes. Evidently, the invariability of fiat money as it functions, in the absence of monetary dislocation or revaluation, can be compared with time. Time, which is

a coordinative definition supplied by the equations of mechanics, is a relative reference frame [Reichenbach 1963:147]. Time puts events into perspective [Reichenbach 1963:144]. Fiat money, in a similar fashion, is a relative reference frame. It captures the purchasing power relationships of the many commodities available for exchange in an uniform manner. In so doing, it puts economic events into perspective [Montague 1925:129,255].

11 - CONCLUSION

The intent of the Federal Reserve is to adjust the money supply to prevent inflation. Apart from the ambiguity of controlling the money supply in a credit economy, the problem is far more complex. The reason for this negative view should be clear given the nature and role of fiat money in the credit economic system as has been discussed and elaborated upon in this paper and summarized below.

In the absence of monetary dislocation, nominal money is a stable and valid measure. As a frame of reference, money prices permit an expression of the changing relationships among commodities of their purchasing powers. Importantly, independent of the subjectivity which produces the exchange relationships among the various values of commodities, money measures in an uniform manner the flow of commodities. The information flowing from this process enables the formulation of production and consumption plans. Apart from being prone to recessions, the failure to control the extension of credit is a significant factor that contributes to the changes in the general price level.

Finally, purchasing power is an inherent attribute of commodities. The *exchange relationships* of the various commodities are determined on the basis of the respective *purchasing power* of the individual commodities. In the *want satisfaction process*, money price (a *nominal* value) captures and reflects the exchange relationship - purchasing power - of a commodity (a relative variable) which has a variable value. Since the *want satisfaction capacity of a commodity* is: (1) independent of nominal money and (2) varies over time, a constant purchasing power does not exist and is not controllable by monetary policy

ENDNOTES

1 **The Lessons Of Black Monday** [INVESTOR'S BUSINESS DAILY] Thursday, October 18, 2007 4:30 PM PT Oct. 19, 1987 — infamous Black Monday — when the Dow industrial average plummeted 22.6%, the equivalent of more than 3,000 points today. With the benefit of hindsight, they're throwing in "lessons learned" for good measure. Alan Greenspan has been given much of the credit for "saving" the market after the crash by promptly adding liquidity to the system. Less often noted, however, is the role he played in instigating the sell-off.

. . . . . [In] the summer of '87 . . . the Fed chairman designate appeared on Louis Rukeyser's "Wall $treet Week" TV show. In response to a question about the U.S. economic outlook, which at the time seemed pretty good, Greenspan said something to the effect that things would probably get worse before they get better. Then, only weeks after being sworn in, Greenspan[’s] . . . prediction came true: He raised the discount rate for the first time in 3 1/2 years — and the stock market crashed for the first time in 58 years. Rates should be changed only for economic reasons. When policymakers try to "prove" themselves, it only creates mischief. Fear of inflation is almost as bad as inflation itself**.** Inflation was fairly modest in 1987.

2

Dow Jones Industrial Average - Close

Date: August 1	Index Value
2004	10,179.16
2005	10,623.15
2006	11,125.73
2007	13,362.37
2008	11,326.32

SOURCE:http://finance.yahoo.com/q/hp?s=%/5EDJI

3 The terms: fiat money, fiduciary money, paper (not representative) money, and nominal money, are used interchangeably.

"China was the first country to issue bank-notes, and the founder of the Ch'in dynasty, Shih Huang Ti (249-202 B.C.) was the first to experiment with this form of currency." [Quiggin 1949:248].

4 For an in depth view of this position, see Friedman [1958;1969].

5 According to Hayek [1932:44], if money is a commodity, it is unlike all others because it is incapable of satisfying final demand.

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