Modeling Austrian Business Cycle Theory. Outline of the Goods Side/Money Side Model

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ABSTRACT

Despite the attention that the Austrian business cycle theory has been receiving from academic economists and financial market operators over the past couple of decades, its analytical knowledge has remained obscure because of the lack of an analytical model similar to the ISLM/AS model of textbook economics. The goods side/money side (GS/MS) approach represents such a model, which should make the Austrian theory of the business cycle accessible to those who have a formal education in economics but are unfamiliar with the Austrian business cycle theory. Different from the ISLM/AS analysis, which serves to design monetary and fiscal policy intervention in order to obtain macroeconomic policy goals, the GSMS model is non-interventionist. In the perspective of the GSMS model, macroeconomic policies are the sources of economic disturbances. The present paper gives an outline of the GSMS model and shows the perils of macroeconomic policies be it inflation targeting and Taylor rule or nominal national income targeting.

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Despite the attention that the Austrian business cycle theory has been receiving from academic economists and financial market operators over the past couple of decades, its analytical knowledge has remained obscure because of the lack of an analytical model similar to the ISLM/AS model of textbook economics. The goods side/money side (GSMS) approach represents such a model, which should make the Austrian theory of the business cycle accessible to those who have a formal education in economics but are unfamiliar with the Austrian business cycle theory. Different from the ISLM/AS analysis, which serves to design monetary and fiscal policy intervention in order to obtain macroeconomic policy goals, the GSMS model is non-interventionist. In the perspective of the GSMS model, macroeconomic policies are the sources of economic disturbances. The present paper gives an outline of the GSMS model and shows the perils of macroeconomic policies be it inflation targeting and Taylor rule or nominal national income targeting.

1. Introduction

It is not only the financial crisis and the difficulties of mainstream macroeconomics to provide consistent explanations and remedies that revived the interest in Austrian economics as an alternative model. In fact, there has been a rising interest in the Austrian business cycle theory over the past couple of decades. Austrian economics was an integral part of classical economics before the Keynesian revolution swept it away almost overnight. Yet while there has been a resurrection of classical economics, the rehabilitation of the Austrian school of economics is still wanting. Prominent academic economists still feel vindicated when they admit their ignorance about Austrian Economics or enunciate outright erroneous versions of its business cycle theory. One reason that the Austrian business cycle theory is not yet part of the mainstream comes from not having a persuasive analytical model. There is a need for a model that presents

the main features of the Austrian theory of the business cycle theory in a manner that facilitates its understanding particularly for those academic economists who are unfamiliar with Austrian economics.

A model does not tell the whole story, and this is the case with the GS/MS model as well. The main function of this macroeconomic model is to show the links among the main parts of the economy. As such, the GSMS model serves as a guide for teaching and research and offers a framework for the critical discussion of economic policy concepts.

2. Modeling Austrian business cycle theory

The starting point of the Austrian business cycle theory is the question how a multitude of economic agents simultaneously could commit the same type of error. How is it possible that entrepreneurs misdirect investments on a large scale? Why do consumers overestimate systematically their future income streams? Rejecting psychological explanations, Austrians argue that economic agents must have followed guidelines, which as a rule prove reliable but failed at the onset of the cycle (Hayek 1975:142). Relative prices and the interest rate in particular must have conveyed false signals. Market forces by themselves hardly can account for extreme disruptive price swings, particularly as to the formation of the interest rate, which guides inter-temporal allocation. The Austrian business cycle theory claims that with more liquidity in the economy than provided by authentic savings, the intentions of consumers clash with those of the investors. When monetary authorities push the market interest rate below the natural rate, real savings fall short of credit demand. This discrepancy disrupts the perception of resource availability and instigates misallocation of investment. With the monetary rate of interest below its free market level, investment plans collide with consumption plans. While consumers have no intention to reduce consumption, entrepreneurs will want to invest more. The economy gets stimulated, indeed, but what happens is an artificial boom (Garrison 2000). In as much as economic activity moves towards full capacity utilization, the more costs and consequently prices will rise. When interest and wage rates adapt to the higher degrees of scarcity of the factors of production and when economic actors consequently revise expectations, profit rates come under pressure and indicate that the earlier calculations of profitability were the result of an overestimation of the economy's capacity to grow.

Balance sheets deteriorate for both borrowers and lenders. Economic agents realize in the bust that they have less wealth than expected. At the inflection point from boom to bust, the lending and borrowing excitement turns into gloom. Sentiments change from optimism to pessimism, yet it is not psychology that drives the business cycle. Mood swings accompany the up and down of the cycle. The actual motor of the business cycle is the expansion and contraction of macroeconomic liquidity. Inflation and deflation in their original meaning as expansions and contractions of the circulating means of payments drive the cycle. Monetary expansion initiates the inception of the business cycle and financial markets accelerate the economic expansion with a credit bonanza when all the while the contraction builds up due to bad investment that bring about the reversal of the inflationary boom into deflationary contraction. Both, expansion and contraction develop their own dynamics as cumulative self-feeding processes.

The Austrian business cycle theory structures the story of boom and bust around inflationary monetary creation at the inception of the boom, while monetary contraction marks the bust (de Soto 2012). Consequently, the focus of the present model lies on the effects of the variations of the means of payment on output and prices.

3. Outline of the GSMS model

What moves the economy are not aggregates and averages, but individual human action (Mises 2010). Telling the story in terms of human action is the prime domain of Austrian economics. The whole story must be told in terms of human action, yet it the model, which provides the plot in terms of the structure of the story. The criteria of a good model is to serve as a tool of analysis. Such a model leaves much space for what a good teacher and analyst should be able to do: to fill the structure with life in terms of human action.

The quantity theory of money forms the basis for the present approach. This theory goes back to the 16th century. Over the centuries, the quantity theory of money has experienced its own cycle with highs, downs and a persistent comeback, particularly at times when declared as dead. The quantity theory relates (M) to national income (Y) and transactions (T) and links money to these variables with the concept of velocity of circulation (V) or cash balance (k).

In distinction to the Chicago/Fisher transaction version

$$M \times V = P \times T$$

and the Cambridge/cash balance/income version

$$M = kPYr$$

Evans and Thorpe (2013) identify

$$M = kPT$$

as the Austrian version as found in the writings of Ludwig von Mises.

For the approach that will presented here, however, the model makes the fundamental distinction between the "goods side" (GS) and the "money side" of the economy. As such, the basic equation for the GSMS model becomes

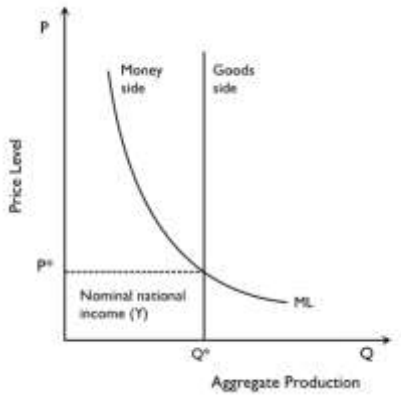
$$\frac{MV}{P} = Q$$

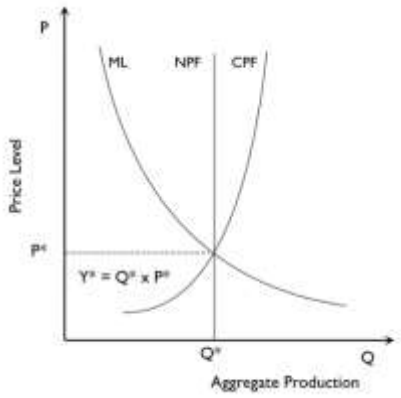
The GSMS model distinguishes between the "goods side" (GS) and the "money side" (MS) of the economy based on a reformulation of the equation of exchange to separate the monetary variables from the variables for real production, so that the "money side" ($\frac{MV}{P}$) emerges in distinction from the "goods side" (*Q*).

With a fixed money supply and a constant velocity, the relationship between prices (P) and product (Q) forms a hyperbola. In its graphical representation (curve ML in figure 1), the stock of money in circulation represents macroeconomic liquidity (*ML*) and is composed of money as a means of payments (M) multiplied by its income velocity (V).

Figure 1
Goods side – money side

Figure 2
Macroeconomic equilibrium





Given that nominal national income (*Y*) is equal to real production (*Q*) multiplied by the price level (*P*), nominal income is the rectangle of the area with the price level and production as its sides. In order to capture nominal national income, the basic model experiences an extension in the form of

$$M \times V = Q \times P = Y$$

A further extension of the equation by the components of expenditures for consumption (C), investment (I) and government (G) reveals how the standard Keynesian analysis relates to the money side and the goods side of the economy.

$$Q \times P = Y = C + I + G = P_C \times Q_C + P_I \times Q_I + P_G \times Q_G + P_{EX} \times Q_{EX} - P_{IM} \times Q_{IM}$$

Likewise, one can extend the left side in order to include the sources of liquidity. Macroeconomic liquidity (*ML*) in the money side of the equation is the result of the monetary base (*MB*) multiplied by the financial market or banking multiplier (m_b) and the velocity of circulation (*V*).

$$ML = MB \times m_b \times V$$

At this stage, the macroeconomic story to tell includes the account of money, prices and goods that begins with the monetary base and continues with the structure of production.

$$BM \times m_b \times V = Q \times P = Y = C + I + G = P_C \times Q_C + P_I \times Q_I + P_G \times Q_G \ldots$$

In terms of actors and decisions, the equation contains, beginning at the left and moving to the right, the central bank, which decides on the monetary base, the actors in the financial market, which determine the banking multiplier, and all those economic agents, which decide about cash holdings. At the right side of the equation, the black box of overall production (*Q*), price level (*P*) and nominal national income (*Y*), opens up in terms of relative prices, such as P_C/P_I or P_I/P_Q, and so on at the level of intermediate aggregation. In detailed form, the extension of the model beyond the intermediate aggregation in terms of consumption, investment and government, and the addition of the external sector, would lead to the analysis of the structure of production.

While the natural production frontier depends on the efficiency of the factors of production, current output comes from firms as entities where entrepreneurs and managers combine labor (*L*), capital (*K*) and knowhow (*A*) in order to have an output (*q*) that are sold at a price (*p*) with the intention of earning a profit (*Π*).

Defining costs in terms of labor and capital with the wage rate (*w*) and the quantity of labor (*L*) along with the interest rate (*i*) and the capital stock (*K*), *ceteris paribus*, both a higher price (*p*) and more quantity sold (*q*) will increase profits. Likewise higher profits will result from a lower wage rate (*w*), less use of labor (*L*) as well as from lower interest rates and less use of capital. Higher productivity shows up as a reduction of costs. *Ceteris paribus*, the productivity variable (*A)* determines profits when the stock of labor and capital are fixes and wage and interest rates remain unchanged. Taxes (*T*) add to costs and consequently diminish profits. For business, the tax rate (*t*) typically falls on profits so that a company pays taxes (*T*) as a component of its profits (tΠ).

$$\Pi - \mathrm{t}\Pi = (p \times q) - (wL + iK) + A$$

An increase of the wage rate (*w*) will raise prices (*p*), the more production approaches capacity limits as a reflection of increasing scarcity. The GSMS model thus distinguishes between a "natural" and a "cyclical" production frontier (NPF and CPF respectively in figure 1). The distinction between the normal or regular course of affairs and exceptional business activity either beyond or below this level is fundamental to the conduct of a firm. The more economic activity approaches the limits of capacity, the more costs will rise as the result of increasing scarcity, and the more it will be necessary to

obtain higher prices in order to maintain profitability. Likewise, when activity falls below its normal level, unused capacity exist and competition drives down prices. Different from the cyclical production frontier (*CPF*), which indicates the variation of current production in relation to the price level, the natural production frontier (*NPF*) is independent of the price level and shifts according to changes of the quantity and quality of the factors of production.

3. Dynamics of the GSMS model

The GS/MS model is composed of the money side (*MS*), and the goods side (*GS*) with the differentiation between the natural production frontier (*NPF*), the absolute production frontier (APF), and the cyclical production frontier (*CPF*).

The dynamic version of the equation of exchange reads as:

$$g_M + g_V = g_Q + \pi$$

Given that macroeconomic liquidity (*ML*) is composed of money multiplied by its velocity, the equation becomes

$$\pi = g_{ML} - g_Q$$

In this reduced form, price changes result from the relationship between growth of liquidity and real economic growth (g_{ML} - g_Q), while when applying the determinants elaborated above, the equation for price inflation becomes:

$$\pi = (g_{MB} + g_{m_b} + g_v) - (g_{Q_n} + g_{Q_c)}$$

In order to obtain price stability with an inflation rate of zero *(π=0)*, the condition is:

$$(g_{MB} + g_{m_b} + g_v) = (g_{Q_n} + g_{Q_c)}$$

The rate of unemployment is inverse to economic expansion, i.e. to cyclical growth, while natural economic growth (shift of the NPF-curve to the right) comes with steady employment or an employment rate that remains at its natural level (u_n). Therefore, the current unemployment rate (u_t) is a function of cyclical economic activity ($g_{Q_c)}$),

while the natural unemployment rate (u_n) coincides with the natural production frontier (*NPF*). Finally, nominal national income (*Y*) is the product of real production and the price level, or, specified by the model, its growth rate (g_Y) is:

$$g_Y = g_Q + \pi = g_{Q_n} + g_{Q_C} + \pi$$

These equations provide the tools to compose a table of macroeconomic constellations composed of the variables that show up in the set of the basic equations of the GS/MS model. These macroeconomic constellations, which show up in the table (table 1) as shifts of the natural and cyclical productions functions along with the curve for macroeconomic liquidity, have at their basis potential and actual changes of the variables as determined in the extended dynamic equation of exchange.

$$\pi = (g_{MB} + g_{m_b} + g_v) - (g_{Q_n} + g_{Q_c})$$

Table 1

The GS/MS model as a classification tool of macroeconomic constellations

	Macroeconomic liquidity (ML)	Cyclical production frontier (CPF)	Natural production frontier (NPF)
PLG	0	↘	→
MPI	↗	↑	0
MHI	↗	↖	←
MPD	↙	↓	0
DD	↙	↙	←
IS	0	↑	0
IB	↗	↑	0

PLG: Productivity-led (deflationary) economic growth – MPI: Monetary price inflation - MHI: Monetary hyperinflation – MPD: Monetary price deflation – DD: Deflationary depression – IS: Inflationary stagnation (stagflation) - IB – Inflationary boom
The arrows indicate the direction of the moves of the curves

The GSMS model serves to identify specific macroeconomic configurations and to orient their analysis. The following table (table 2) shows the variables of the model in order to analyze the links among the different parts of the macro-economy.

Table 2
Macroeconomic constellations in terms of the variables of the GS/MS model

	g_{MB}	g_{mb}	g_V	g_{Qc}	g_{Qn}	π	Q	Y
PLG	0	0	0	+	+	-	+	0
MPI	+	+	0	0	0	+	0	+
MHI	+	+	+	-	-	+	-	+
MPD	-	-	-	-	0	-	-	-
DD	-	-	-	-	-	-	-	-
IS	0	0	0	-	-	+	-	-
IB	+	+	+	+	0	+	+	+

PLG: Productivity-led (deflationary) economic growth – MPI: Monetary price inflation - MHI: Monetary hyperinflation – MPD: Monetary price deflation – DD: Deflationary depression – IS: Inflationary stagnation (stagflation) - IB – Inflationary boom with g: growth rate – MB: Monetary base – mb: banking multiplier – V: velocity of circulation – Qc: cyclical production – Qn: natural production – π: price inflation rate – Q: Current output – Y: nominal national income

The tables (table 1 and table 2) provide a sample of typical macroeconomic configurations. One can also capture specific macroeconomic constellations, such as the current Great Recession, for example, which would show up as strong growth of the monetary base, which does not transform into equivalent higher liquidity because of a low banking multiplier and negative velocity. Consequently, the effect of monetary policy on output and prices remains flat.

Classifications and categorizations are an important part of science but science must go beyond schemes and models. This is also the case with the tables above. There is the need to come up with approaches that capture complexity on the one hand and of filling the lacunae of the models with human actions. The difficulties of mainstream economics not only not to foresee the present crisis but also being largely helpless in dealing with the crisis has led to the expectations that mainstream economics will change its face (Colander et al. 2004). However, so it seems, a basic model will always be at the heart of these endeavors to capture reality. This is particularly the case when it comes to the business cycle.

4. Business Cycle Analysis

In terms of the GS/MS model, "deflationary economic growth" (figure 3a) represents the dynamic equilibrium of the system. Productivity-led deflationary economic growth develops in a slow manner and allows the continuous adaptation of expectations. In contrast to this "beneficial deflation", a "malicious depression" represents a slide into a deflationary depression as consequence of a preceding inflationary boom that typically takes place as a collapse compressed in a short time span (figure 3d). The unexpected collapse of liquidity disrupts economic contracts in nominal terms and leaves no sufficient time for revision.

Figure 3a
Productivity-led expansion

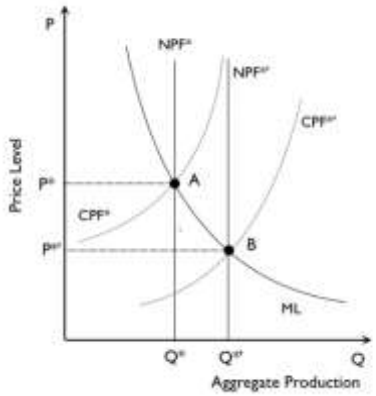


Figure 3b
Inflationary boom

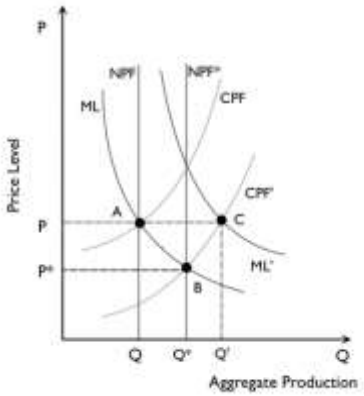


Figure 3c
Inflationary contraction

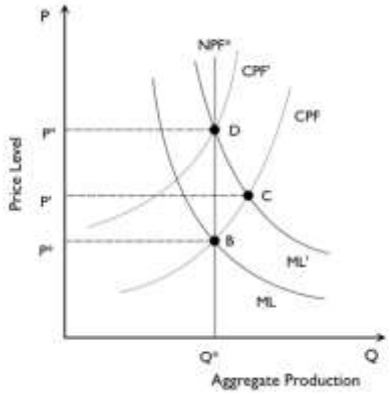
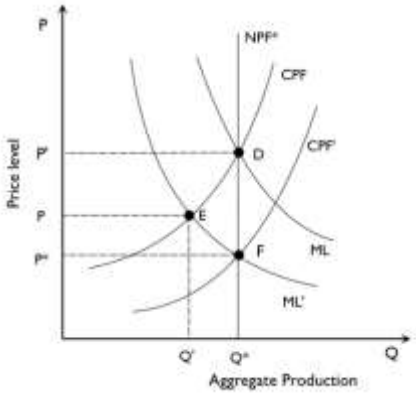


Figure 3d
Deflationary contraction



The four graphs (figure 3) present a sequential analysis of the business cycle in the context of the GS/MS model. Without monetary intervention, increases in

productivity would lead to deflationary economic growth (figure 3a). Such an expansion would come with increasing purchasing power of money. Monetary authority bring about an inflationary boom when they try to maintain "price stability" by expanding the money supply that moves economic activity beyond the natural production frontier (figure 3b).

Economic activity that exceeds the natural level ($Q'>Q^*$) will raise production prices as consequence of higher degrees of scarcity given the increased amount of macroeconomic liquidity that is available. In due course, the cyclical production frontier, which otherwise would have fallen, moves back in direction towards its original position (CPF^*). At this stage, the hidden monetary inflation would become open price inflation as the economy moves towards stagflation (figure 3c).

The inflationary boom that turned into a bust comes with an overhang of bad debts. When central banks try to re-inflation the deflationary contraction of liquidity, they actually commit the same errors twice. The first time, when they warded off beneficial productivity-led deflationary economic growth, which instigated the inflationary boom (move from A to C in figure 3b). The second time, when the bust has come, when monetary policy makers confront malicious deflation and hamper its swift elimination in their endeavor to re-inflate the economy making the economy stick a point E in the bust (figure 3d).

Macroeconomic policies that fabricate monetary expansion and push the interest rate below the free market rate stimulate economic expansion beyond the economy's natural production frontier. The original error is the inflationary boom and not the deflationary contractions. The bust serves to rectify the errors committed in the inflationary boom. The deflationary contraction is the consequence of the inflationary boom. Rather than quicken recovery, monetary and fiscal stimuli will hamper the return to self-sustained economic growth and actually prolong stagnation. In terms of the model (figure 3d), the natural way of the adaptation would go from D over E to F. Trying to avoid this process of deflationary expansion, monetary authorities commit in the bust the same error that initiated the boom.

Since the Keynesian revolution, macroeconomics has found its main *raison d'être* in providing tools for policy makers. The central focus of modern macroeconomic is the thesis that when left on its own, the economy will plunge into depression because of wide swings of business cycle. Macroeconomic policy must stabilize the economy and prevent it from falling into deflationary depression. In light of the GSMS model, however, interventionist macroeconomic policy concepts are flawed. Instead of stabilizing the

economy, macroeconomic policy interventions tends to be ineffective or they will even contribute to instability.

5. The GS/MS model and monetary policy concept

5.1 Inflation targeting and Taylor rule

Either by default or intent, monetary policy will become excessively expansive in the face of productivity gains, which in its natural way would move the economy to the new equilibrium of P'/Q* at point B (figure 3a). With the aim of maintaining a certain inflation target, central banks apply expansive monetary policy measures (shift of ML to ML') that will move the economy from A to C instead of to B. This way, a sustainable deflationary expansion turns into an inflationary boom (figure 3b). Point C, however, is not stable because it lies outside of the natural production frontier (NPF*). Rising scarcity provokes an upward shift of the cyclical production frontier and moves the economy into stagflation at point D (figure 3c). In the final stage of the cycle, stagflation transforms into deflationary depression because the malinvestment of the past and the debt overhang produce a contraction of liquidity and move the economy back into direction of point E (figure 3d). Different from the situation at the inception of the boom point E marks deflationary depression and fiscal and monetary policies prove ineffective in instigating another boom. While at the beginning of the business cycle, expansive monetary policy pushed the economy into an inflationary boom, they now keep the economy stuck in the bust.

The so-called Taylor rule includes the goods side into the policy model and provides a trade-off rule between monetary stability and economic growth. The purpose of the original version of the Taylor formula (Taylor 1993) was to model the setting of the federal funds rate over the period 1987 to 1992 by taking into account a rate of two per cent for the inflation target and the long-run average of the real interest rate. The Taylor formula includes policy reaction coefficients for the deviation of the prior four-quarter inflation rate from the target and for the output gap defined as the percentage of deviation of real gross domestic product from the trend of potential output. Taylor put the values of both reaction coefficients original at 0.5, yet modified this value for inflation rate to over one per cent claiming that effective inflation targeting would require a

coefficient of more than one. In normative terms, monetary authorities will set the policy interest rate (which for the United States would be the Federal Funds Rate), to check deviations of the current inflation rate from the central bank's target and of current output from its trend potential.

Applied to the GSMS model, the last term of the Taylor equation corresponds to the deviation of the cyclical production frontier from its equilibrium with the natural production frontier. In the case of inflationary boom (*IB*), for example, as classified in table 2 above, the cyclical production frontier rises different from the natural production frontier. For the Taylor rule, such a deviation would require a raise of the policy interest rate even more so that in the GSMS model the deviation of current production from the natural production frontier would show up a price increases. This way, in addition to the Taylor rule, the GSMS model would reveal the mechanisms that are at work at the deviation and its correction.

Yet the Taylor model would lead to the same type of error like simple inflation targeting in the case of productivity gains. There would appear no output gap because in the case of a productivity-led expansion, higher current output comes along with a corresponding shift of the production potential as represented by the natural production frontier. Yet the current price level (π_t) would deviate from the target (π^*) with $\pi_t < \pi^*$ and induce monetary policy makers to lower the policy rate of interest (i_t) and expand the money supply thereby fabricating an inflationary boom.

5.2 Nominal GDP-targeting

Nominal national income (or gdp) targeting (is a broader monetary policy concept than the Taylor rule. As such, it includes the Taylor rule as a special as (Koenig 2012). The GSMS model serves also quite well to analyze targeting nominal gross domestic product. This macroeconomic policy concept aims at keeping the nominal gross domestic product constant. As the nominal gross domestic product in equivalent to national income (Y) and in terms of the GS/MS model, it is graphically (see figure 2 above) the rectangular area formed by current production (Q) and the price level (P). Nominal gdp-targeting would inhibit expansive monetary policies in the case of a productivity-led expansion in as much as nominal income would not change because higher output compensates for lower prices and nominal national income remains constant with this kind of economic

expansion ($Y = Y'$). In as much as nominal gdp-targeting advocates a laissez-faire position, it is compatible with the Austrian position. In fact, nominal national income targeting would avoid the inception of the inflation-targeting cycle. Beyond that, the targeting of nominal gross domestic product suffers from the same ailments as any of the many other interventionist macroeconomic policy concept that call for anti-cyclical monetary and fiscal policy.

The deficiency of a macroeconomic policy that targets nominal national income becomes particularly visible when the economy is stuck in deflationary depression (point E in figure 3d). The size of nominal gdp has come down from the P"/Q*' to P*/Q*. In terms of GSMS analysis it would be correct to maintain the size of nominal gross domestic product as the economy follows its path of natural adaptation and moves from A to B with gdp unchanged at Q*'/P'. Yet when point A marks the completion of the cycle instead of its inception, nominal national income targeting would take point D as reference and try to inflate the economy to the size of P"/Q*. Yet in the light of the Austrian theory of the business cycle and consequently seen through the lens of the GSMS model, such as policy would not cure but exacerbate the crisis. Monetary expansion and fiscal stimuli in the bust would perpetuate the maladjustment of the economy and instead of bringing the debt burden down, would increase the debt overhang if not of the private than definitely of the public sector.

5.3 The GSMS model and monetarism

Different from the GSMS model, which extends the basic equation of the quantitative theory of money to include velocity, monetarism reduces the equation of exchange by assuming trend-stable velocity. In this interpretation, the price level becomes a simple function of the money supply.

The practical design of monetarist policy, however, requires the calibration of the money supply. To do this, monetary authorities must take the velocity of circulation into consideration in order to calculate the variation of the monetary aggregate in order to bring the inflation to the target. At the time when Milton Friedman (1968) proposed his rule, velocity of circulation was highly trend stable, a tendency, which continued until 1979. That time the US central bank began to apply monetarism and volatility became highly erratic. (see figures 5 and 6)

Figure 5
Velocity of money 1959-1980

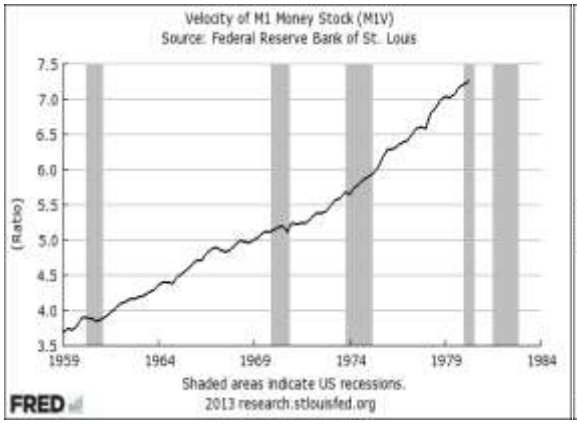
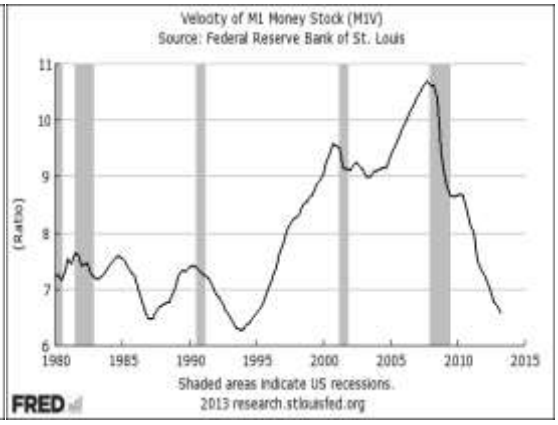


Figure 6
Velocity of money circulation 1980-2013



Monetarism stopped working at the very moment when the US central bank implemented the theory. Since the 1980s, velocity of money circulation is highly volatile with abrupt changes of trends. Taking the presumed continuing rise of the velocity of circulation into consideration requires the design of a package of monetary restriction that would compensate for the presumed rise of velocity. Yet when disinflationary expectations take hold among economic agents, the velocity of circulation will change. In such a case, macroeconomic liquidity (*ML*) will contract much more than the monetary authorities had devised.

Beyond the multitude of problems of the practical implementation of monetarist policy, such as which monetary aggregate to target, the GS/MS analysis sheds light to the fundamental problem that monetarism would fall into the same trap as inflation targeting and is not immune to creating inflationary booms.

The monetarist policy concept aims at the growth of a specific monetary aggregate (*M1, M2, M3, etc.*). Yet is not the money stock (*M*) that matters, but macroeconomic liquidity (*ML*). In addition to the variations of the money supply, macroeconomic liquidity moves with velocity, while it is expectations that largely determine velocity. This way, a steady increase of the money supply does not transform into a steady increase of macroeconomic liquidity but will become pro-cyclically. While in the phase of the inflationary boom, velocity will rise and augment the effect of the increase of the money stock, velocity will fall in the bust and offset the increase of monetary aggregate.

5.4.The GSMS model and the principle of effective demand

The Keynesian revolution of macroeconomics swept away not only Austrian economics but with it Say's law and the respect for scarcity. The principle of effective demand, which lies at the heart of the basic Keynesian approach, says that aggregate demand determines aggregate production. The magic of Keynesian economics exists in the formula that the identification of the cause *uno actu* promises the cure. When lack of effective demand is the cause of the depression, all that it takes to get out of the bust is to produce economic expansion with the help of additional demand. If private business cannot exert enough demand, government must do it. Debt is the key to prosperity. When John Hicks (1937), who actually was very sympathetic to Austrian ideas, presented the Keynesian claim in a graphic model, actually more out of a whim than by conviction (Hicks 1980/81) there was no longer any halt for the triumph of Keynesianism. In this spirit, the currently dominant ISLM-AS approach of mainstream economics is more an engineering tool than a model of the economy (Mankiw 2006).

Despite its triumph, the basic tenet of the Keynesian idea is flawed. The synthesis of the ISLM model with aggregate supply did not eliminate the faults but added new inconsistencies (Colander 1995). The GSMS model can help to reveal the contradictions and omissions of the Keynesian approach. Different from the GSMS model, there is a profound confusion in Keynesian standard models such as the ISLM scheme about which variables represent "real" and which "nominal" values. Keynesian models suffer from obfuscation concerning time when variations of aggregate demand determine production. Yet while with more money in the economy, demand indeed can augment instantly, production takes time and its realization confronts a plethora of specific scarcities. Furthermore, also the aggregate supply and demand model (AS/AD), which was to substitute and complement the ISLM model, could not do away with fundamental inconsistencies. While the ISLM model only works as intended when prices are constant, variations of the price level determine the aggregate demand side of the AS/AD model. These and many other problems that diminish the analytical value of the Keynesian models and their derivatives do not show up in the GSMS approach.

In the early decades of the Keynesian revolution, there was an almost complete negation of money as a macroeconomic factor until the beginning of the monetarist counterrevolution. Yet what Keynesians did not see or did not want to see was that money

indeed also matters with fiscal policy. Spending is a monetary concept as the term "expenditure" includes side by side with the good the price component. Deficit spending implies the creation of additional money that government spends. This way, the principle of effective demand shows up in the GSMS model as a shift of the ML curve upward to the right. Yet different from the Keynesian cross or the ISLM model, the GS/MS analysis draws automatically attention to the question to which degrees such a fiscal stimulus would stimulus would affect the price level in distinction to real production.

In contrast to the Keynesian approach, the GSMS model makes, firstly, a clear distinction between the money side and the goods side of the economy. Secondly, with its crucial distinction between the cyclical and natural production frontier, the GSMS model discards the illusion of the Keynesian models that sustainable economic growth could simply come from more spending. Thirdly, the GSMS model opens up the black boxes of both Keynesianism and monetarism. While the production side evaporates completely in monetarism, Keynesianism fabricates the illusion of spending as production.

6. Conclusion

The GSMS analysis differentiates systematically between expenditures that go into prices and that part which goes into real production. Concerning macroeconomic policy, the GSMS model is non-interventionist. By letting beneficial deflation happen, malicious deflation will not show up. The GSMS model highlights the quintessence of the Austrian business cycle theory according to which inflationary economic expansions are the result of monetary stimuli (which includes public deficit spending) that provoke unsustainable booms that revert into busts. While expansionary policy measures function to initiate a boom, they are ineffective in the bust as the deflationary depression is the direct consequence of the earlier inflationary boom and the economy suffers from an overhang of bad debts as the result of misdirected investments. As to its policy implications, the GSMS model is non-interventionist. Therefore, the GSMS model is immune to the Lucas critique because the ineffectiveness of macroeconomic policies lies at the heart of this model.

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