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Some Fundamentals of Austrian Macroeconomics

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Abstract

This article presents a slightly modified extract form my recently published booklet "Adanced Macroeconomics. Tools for Research and Teaching" (2025). This publication provides a comprehensive and accessible guide to advanced topics in Austrian macroeconomics, structured to serve both as a teaching material for a one-semester academic course and as a stimulus for further research. Rooted in the core principles of the Austrian School, it aims to provide students and instructors with a coherent framework for understanding macroeconomic phenomena. By organizing the content into twelve focused modules, the book facilitates a step-by-step engagement with complex ideas while encouraging critical inquiry and scholarly exploration. The following text is an excerpt from this book and presents some of the fundamental models of Austrian macroeconomics. The text gives an overview of the approach that serves as an introduction to the subsequent twelve modules. A series of preliminary articles about the project of capital-based macroeconomics can be found at the author's SSRN page.

Keywords: *Austrian macroeconomics, Business cycle, Monetary policy, GAM-model*

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1. Introduction

My recently published booklet "Advanced Austrian Macroeconomic. Tools for Research and Teaching" (Mueller, 2025) introduces concepts that get usually neglected by the mainstream. As such, the Austrian approach is to be understood as a complement and a path for the advancement of macroeconomics. Mainstream models typically tell the policymakers what to do. The message of this book is different. It shows why macroeconomic policies fail and, therefore, what policymakers should not to.

Starting with Carl Menger's "Principles of Economics" (1871), the caution against the hubris of policy interventionism has been the prime policy message of Austrian Economics as it was expressed, a century later, by Friedrich von Hayek in his Nobel Prize Lecture 1974 titled "*The Pretence of Knowledge":* "The curious task of economics is to demonstrate to men how little they really know about what they imagine they can design."

Austrian macroeconomics offers a framework for preventing extreme boom-and-bust cycles. However, even when misguided policies have already triggered a severe downturn, the Austrian approach provides a cure. Rather than attempting to reverse the bust with the same tools that caused it—namely, excessive monetary expansion and increased government spending—the remedy lies in pursuing the opposite: allowing the money supply to contract and reducing government expenditures. While this approach may initially intensify the slump, this phase is short-lived. Recovery tends to follow if market forces are allowed to reassert themselves. By contrast, the conventional alternative—prolonging intervention through continued stimulus—risks entrenching a drawn-out recession accompanied by persistent price

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inflation and a weak economy even after the deep slump is over.

The material presented here concentrates on theoretical models. For their better understanding and contextualization, it may be helpful to study additionally "*A Primer on Austrian Macroeconomics: Austrian Capital Theory for Macroeconomic Research and Teaching*" (Palgrave Studies in Austrian Economics (2025).

In contrast to the exposition in the Primer, the "*Advanced Austrian Macroeconomics*" booklet concentrates on the formal aspects of a general model of Austrian macroeconomics and, as such, it is particularly directed at scholars and students of economics and related areas to serve as a complement to the conventional courses. particularly at the graduate level. Divided into 12 modules and various appendices, this booklet covers the material of a whole semester. For those interested in research, each of these modules contains models that invite further investigations, be they theoretical or empirical.

The first module, which is presented here, provides an overview of the features of the general Austrian macroeconomic model. It is helpful to get a first taste of the approach, learn about its composition and gain some comprehension about what Austrian macroeconomics is about.

The complete model has the shape as shown below.

This graph can only provide a taste of the approach. A thorough appraisal of this model would require the study of the whole approach. The following text presents some of the parts that are fundamental for the construction of the General Austrian Macroeconomic (GAM) model, which contains variables that range from the natural rate of interest to the output.

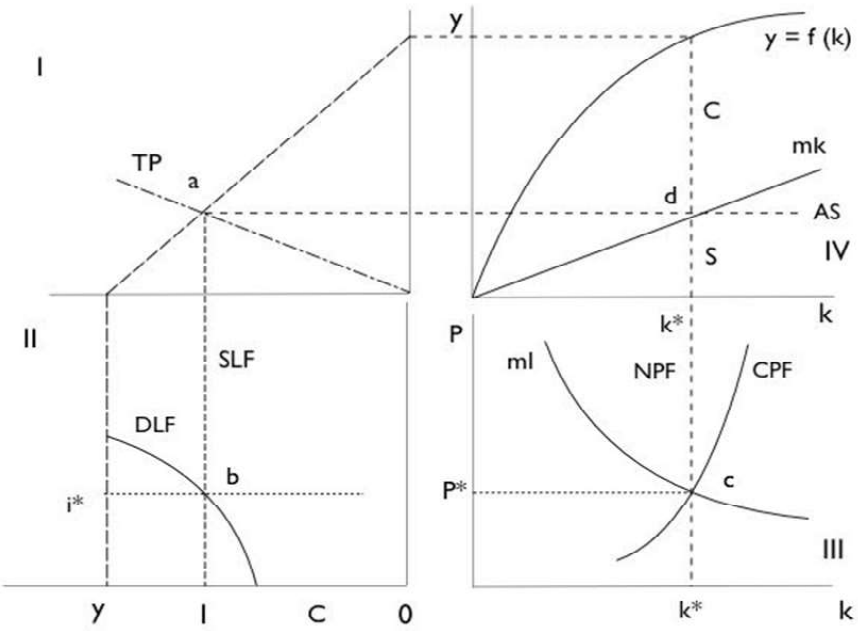

Figure 1: General Austrian Macroeconomic (GAM) Model

Source: Anthony P. Mueller, 2025

Besides the usual macroeconomic variables as they are used in mainstream macroeconomics, the GAM-model also brings time preference (TP), the supply and demand of loanable fund (SLF, DFL), macroeconomic liquidity (ml), the natural, the cyclical production frontiers (NPF, CPF), and authentic savings (AS) as well as the costs of capital maintenance (mk) and their interrelationships into focus. As one can see in quadrant I, the pivot of the system is time preference (TP), which determines the division between savings and consumption (point a), followed by the determination of natural rate of interest (b), the equilibrium point among the natural and cyclical production frontier (NPF, CPF), and macroeconomic liquidity (c) up to the point of the steady state (d), which is determined by authentic savings (AS), derived from time preference and the rate of the costs of capital maintenance (mk).

2. Time Preference

Time preference is a fundamental concept in Austrian Macroeconomics. It says that Individuals prefer present goods over future goods of the same kind and quantity. This praxeological principle has implications for the determination of

the interest rate, savings and investment, and the capital structure. Time preference is a crucial for the analysis of economic growth and intertemporal coordination.

In the diagram below, time preference (*TP*) is put into a graph that represents consumption of the vertical and savings on the horizontal axis. The line of income (Y) represents the budget constraint and according to prevailing time preference, the individual allocates his income into consumption and savings. The steeper the curve of TP, the higher is time preference which means that more of one's income goes into consumption in contrast to savings (Figure 1).

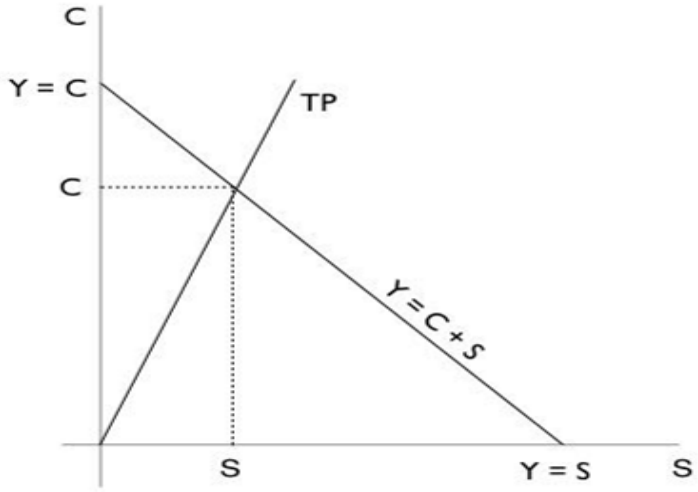

Figure 2: Time Preference Model

Note: The vertical axis in this graph depicts consumption, the horizontal savings; *The line Y = C+ S is a budget line that represents the trade-off as it is determined by the degree of time preference (TP). The lower TP, the more of the available income (Y) goes into savings.*

Source: Anthony P. Mueller, 2025

Time preference determines the partition of one's income between consumption and savings. It is depicted in a graph whose vertical line represents consumption, and whose horizontal line shows savings. A rise of time preference (TP') shows a steeper line and shows up in less savings (S') and consequently more consumption (C') out of the given income Y.

Higher savings can result from a lowering of the time preference or when income rises. The graph at the right side shows the effect on savings and consumption because of a higher income (Y')

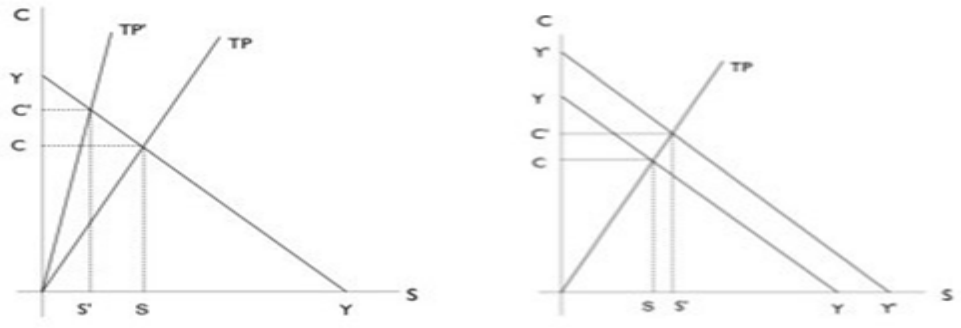

Figure 3: Effects of Change of Time Preference and Income on Consumption and Savings

Note: These two graphs show the effect of changes of the time preference (TP) in comparison of changes of national income (Y). The graph on the left shows how an increase in time preference (steeper TP' curve) reduces savings (S'). The graph at the right shows how an increase of income (Y') increases savings (S') without a change of time preference (TP).

Source: Anthony P. Mueller, 2025

These two graphs show the effect of changes of the time preference (TP) in comparison of changes of national income (Y). The graph on the left shows how an increase in time preference (steeper TP' curve) reduces savings (S'). The graph at the right shows how an increase of income (Y') increases savings (S') without a change of time preference (TP).

In the general model of Austrian macroeconomics, time preference determines the supply of loanable funds (SFL) and in combination with the demand for loanable funds (DLF) determines the natural rate of interest (i*)

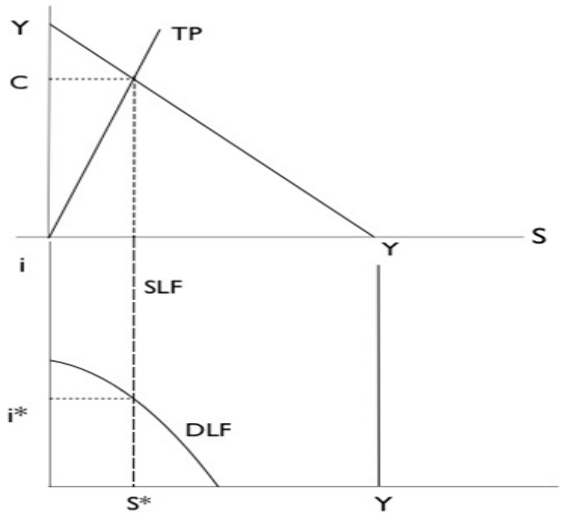

Figure 4: Determination of the Natural Interest Rate

Note: This graph shows in the upper part how time preference (TP) together with income (Y) determines savings (S) and consequently the supply of loanable funds (SFL). The natural interest rate (i*) is the result of the interplay between the supply and the demand for loanable funds. The curve for the demand for loanable funds (DFL) is concave different from the usual textbook presentation, where the investment schedule is convex which leads to the false perception that investment could be extended without a limit simply by lowering the monetary rate of interest. In the model above, investment is limited by savings (S*) and would stop at least when savings surpass the threshold where a further extension of savings and investment would reduce the point of maximal consumption.

Source: Anthony P. Mueller, 2025

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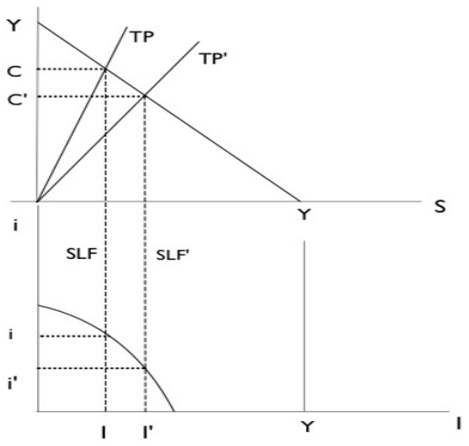

Figure 5: Effect of Change of Time Preference on the Natural Interest Rate

Note: The graph shows how a lower time preference (TP' < TP) reduces the rate of interest (i'< i) and allows for higher investment (I' > I)

Source: Anthony P. Mueller, 2025

supply and the demand for loanable funds. The curve for the demand for loanable funds (DFL) is concave different from the usual textbook presentation, where the investment schedule is convex which leads to the false perception that investment could be extended without a limit simply by lowering the monetary rate of interest. In the model above, investment is limited by savings (S*) and would stop at least when savings surpass the threshold where a further extension of savings and investment would reduce the point of maximal consumption.

The natural interest rate rises when time preference increases and falls when time preference decreases.

The curve of the demand for loanable funds (DLF) has a negative declination reflecting the diminishing marginal efficiency of capital. The quantity demanded for loanable funds increases when the interest rate falls. Please note that in this presentation the curve of DLF is concave. This depiction introduces the realistic insight that there is a maximum rate of interest when investment becomes zero and that lower rates add less and not more marginal investment, as it is the case in the conventional representation.

The typical way to present the loanable funds model (also the way how Keynes represented it in chapter 14 of his General Theory) depicts both the demand and supply of loanable funds as elastic convex curves.

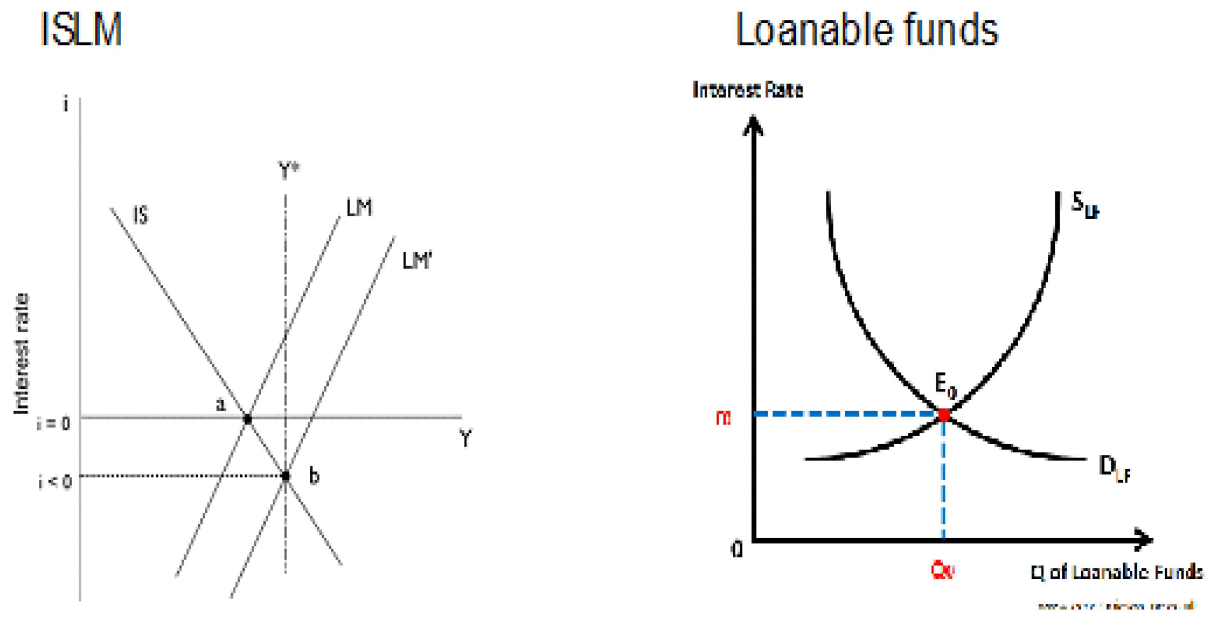

Figure 6: Mainstream Representation of the Relation Between the Interest Rate and Investment

Note: Be it as lines in the standard ISLM textbook model or as curves in the loanable funds model, this kind of presentation spreads the illusion that monetary policy could achieve full employment (or, even worse, unlimited economic growth) just by lowering the interest rate, and, if necessary, set it below zero. The standard depiction of the loanable fund model assumes that the supply of loanable funds, as a function, not as a determinant, is positive, while the demand for loanable has a negative slope. Thus, the more the monetary interest rate (assumed to be set by the central bank) will fall, the more loanable funds become available in the economy and, as the downward slope of the demand function suggests, is linked to higher investment.

Source: Anthony P. Mueller, 2025

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Different from the mainstream representation, the supply of loanable funds is inelastic and derived from time preference (Quadrant I and II of the overall model).

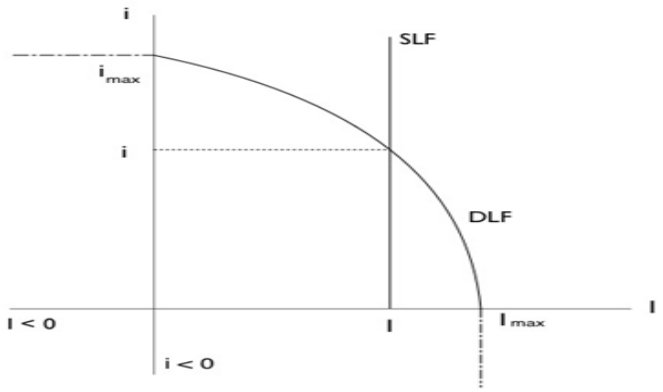

Figure 7: Supply and Demand for Loanable Funds

Note: This graph is a reminder of the approach in the GAM-model concerning the demand for loanable funds (DFL). The curve is concave and sets a maximum rate for the interest rate (imax), where Investment (I) would become zero as well as an interest rate where investment would reach is maximum (Imax) amount and would no longer increase if the central bank were to lower its policy rate of interest even further.

Source: Anthony P. Mueller, 2025

The supply of loanable (SFL) is determined by time preference (TP) and the intersection with the demand for loanable funds (DLF) determines the natural interest rate.

Because of policy intervention, the monetary rate of interest may divert from its natural rate. In this case, the supply of loanable funds shifts to the right because of additional money (*dM*) that enters the system. Consequently, the monetary interest deviates from its natural rate. Investment increases but such an expansion is not sustainable because of the lack of authentic savings.

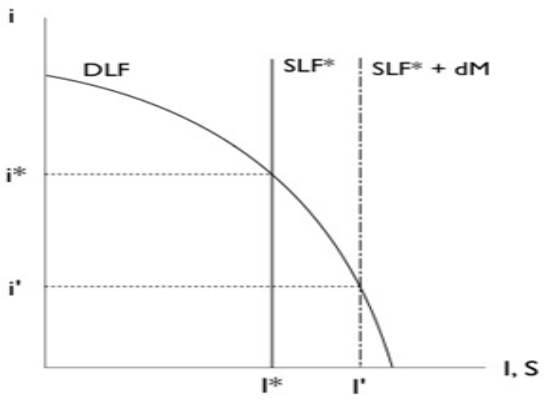

Figure 8: Determination of the Monetary Rate of Interest

Note: This graph is a reminder of the approach in the GAM-model concerning the demand for loanable funds (DFL). The curve is concave and sets a maximum rate for the interest rate (imax), where Investment (I) would become zero as well as an interest rate where investment would reach is maximum (Imax) amount and would no longer increase if the central bank were to lower its policy rate of interest even further.

Source: Anthony P. Mueller, 2025

The GAM-model recognizes that central banks can manipulate the interest rate in a certain degree through the supply of additional quantities of money (dM). This would move the curve of the supply of loanable fund beyond its natural level of SLF*, lower the interest from its natural level (i*) to i', and thereby stimulate investment (I' > I)

Time preference (TP) determines the supply of loans funds (SLF) and determines, in the form of authentic savings (AS), the point of steady state (SS) in the economic growth model at the intersection of curves of authentic savings (AS) and the rate of capital maintenance (mk), a term used here to avoid the bookkeeping concept "depreciation" used in the standard economic growth models and emphasize the central role of capital accumulation and its maintenance.

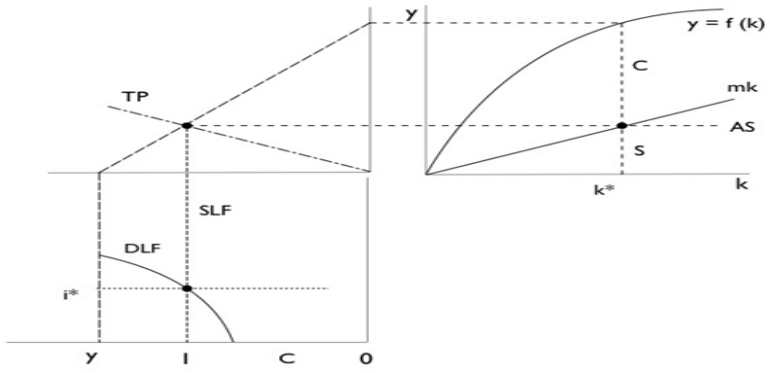

Figure 9: Extended Loanable Fund Model

Note: The extended loanable funds model includes the determination of income (Y) in form of the production function y = f (k). Different from the conventional model of economic growth (Swan-Solow model), savings is not a function of income but determined by time preference as autonomous savings (AS). Equilibrium in the sense of a "steady state" occurs, when authentic savings is equal to capital maintenance (mk), which rises linearly with the capital stock.

Source: Anthony P. Mueller, 2025

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3. The Goods Side-Monetary Side Model (GSMS)

3.1. The Goods Side

The goods side of the economy is represented by the natural (NPF) and absolute (APF) as well as the cyclical production frontier (CPF).

The natural production frontier (NPF) represents the output at the steady price level of P*. Along the cyclical production frontier (CPF), the expansion of output occurs with a rising price level.

The natural production frontier is derived from the production at steady state and, in terms of business activity, can be interpreted as the sustainable level of capital utilization. Expansion beyond the natural state is possible until the

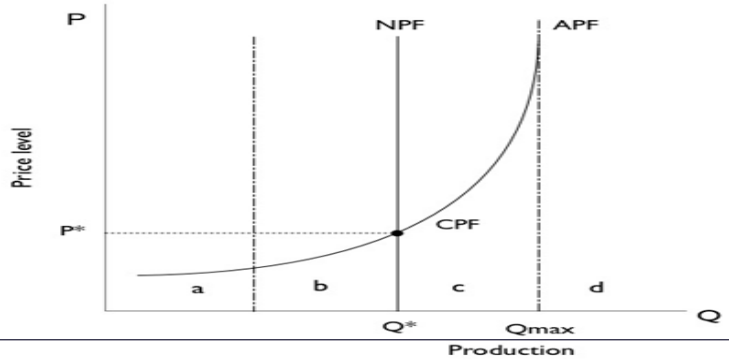

Figure 10: Goods Side Model

Note: The goods side model presents three different production frontiers. The natural production frontier (NPF) is that size of output which conforms to the steady state and reflects productivity and time preference as shown in the extended time preference model above. The curve CPF represents the cyclical production frontier. It is related to the price level (P) and based on the marginal cost curve. The absolute production frontier (APF) marks maximum output at the current state of the factors of production.

Source: Anthony P. Mueller, 2025

absolute production frontier (APF) will be reached. The cyclical production frontier (CPF) shows the effect of capacity utilization on prices. Prices rise along the cyclical production frontier in the shape of the marginal cost curve. Segment a represents stagnation, segment b the upswing, segment c a boom. Production stops at the absolute production (APF) und policy tentative to move to segment d produces pure hyperinflation without any gains in output.

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4. Macroeconomic Liquidity

At the point where the curve of the cyclical production frontier crosses the natural production frontier, the economy is at a steady state of production.

Macroeconomic liquidity (ML) represents the monetary side, which shows a curve that reflects the trade-off between output and price when macroeconomic liquidity (as the product of M1 and its velocity) remains steady.

Derived from the equation of exchange ($MV = QP$), the price level (P) is the result of the quotient between MV and Q. Using the term "macroeconomic liquidity" (ML) to denote nominal aggregate demand (Y), we get the formula:

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

The general mathematical expression of this relationship is a hyperbola of the type

$$y = \frac{1}{x}$$

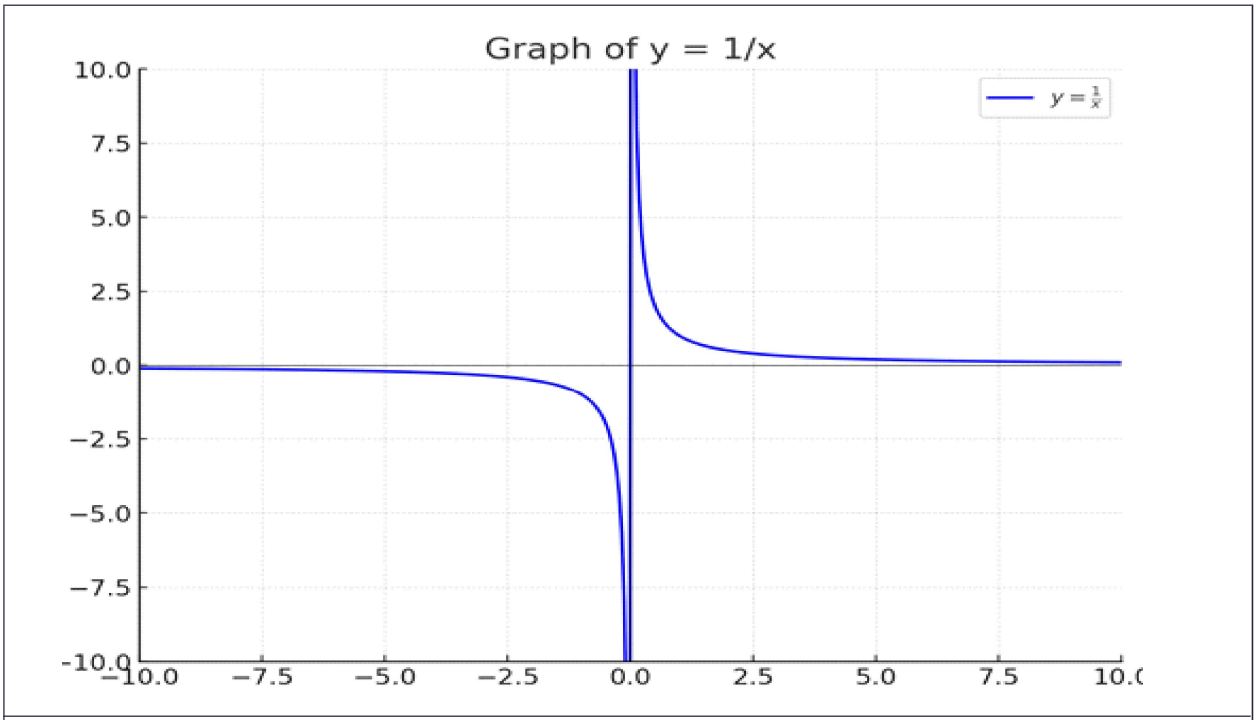

Figure 11: Properties of the graph y = 1/x

Note: This graph shows in numbers the mathematical representation of a hyperbola which is used to show the graphical representation of macroeconomic liquidity ($ML = M$ x V).

Source: Anthony P. Mueller, 2025

The relationship between the price level, macroeconomic liquidity and output, which each of them being one unit, would result in the graph as a point and the respective curves would result as percentage changes, starting from this point.

In the middle and short run, production changes are in the low percentages, while the rate of change of macroeconomic liquidity can be also much higher in the short run. Over a year, it is easily possible that ML doubles, while it is rare that the percentage change production (Q) would reach the double digits. With Q steady, a rise of ML, either because of an increase of the quantity of money or because a rise of its velocity, would shift the curve to the right.

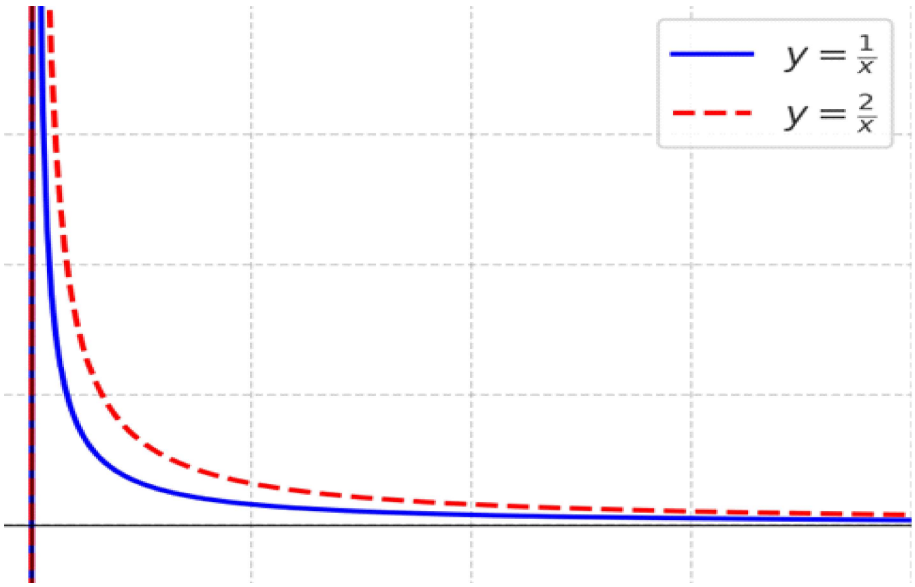

Figure 12: Dislocation of the ML-Curve When ML Doubles and Production Remains Fixed

Note: This graph shows the mathematical change of the graph when the macroeconomic liquidity (ML) doubles.

Source: Anthony P. Mueller, 2025

When macroeconomic liquidity remains fixed, the price level (P) and output (Q) move in opposite directions.

Focusing on the part close to the origin of the hyperbola, the shape of the curve macroeconomic liquidity shows the following form.

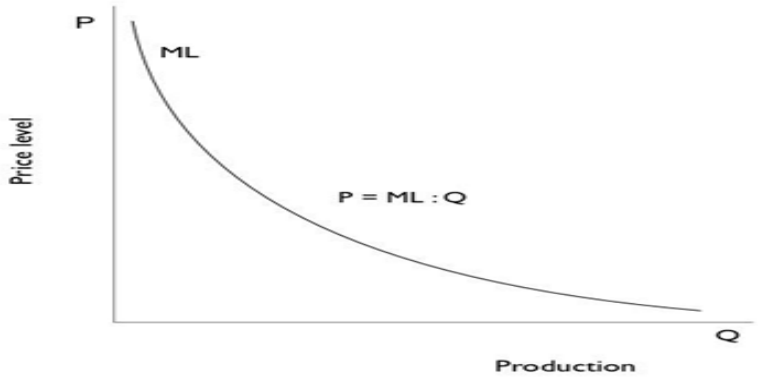

Figure 13: Shape of the ML-curve

Note: This graph shows the mathematical change of the graph when the macroeconomic liquidity (ML) doubles.

Source: Anthony P. Mueller, 2025

The intersection between the goods side (current production) and the monetary side determines the price level (P). The resulting rectangle represents nominal national income ($Y = Q \times P$).

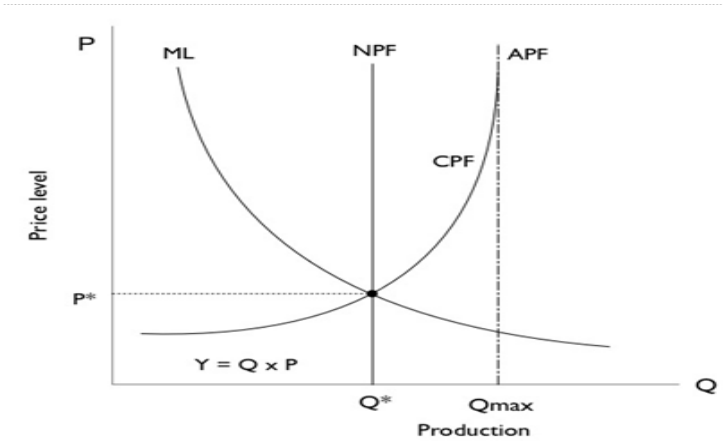

Figure 14: Good Side-Monetary Side Model (GSMS)

Note: This model brings the "goods side" (GS) and the money side (MS) together. The rectangle $Y = Q \times P$ represents nominal gross domestic production (gdp), with Q representing real output and P the price level. The natural price level (P*) is determined by the point where macroeconomic liquidly (ML) is equal to the output at the cyclical production frontier (CPF) and in line with the natural production frontier (NPF) at Q*.

Source: Anthony P. Mueller, 2025

An increase of the macroeconomic liquidity shifts the ML curve to the right and c. p. results in a higher price level, while a contraction has the opposite effect. A higher price level can also occur because of an adverse supply-side shock that moves the curve of the goods side to the left.

In this perspective, it is possible to characterize "natural economic growth" as an economic expansion that results from a outward shift of the natural production frontier, depicted as movement of NPF-curve to the right.

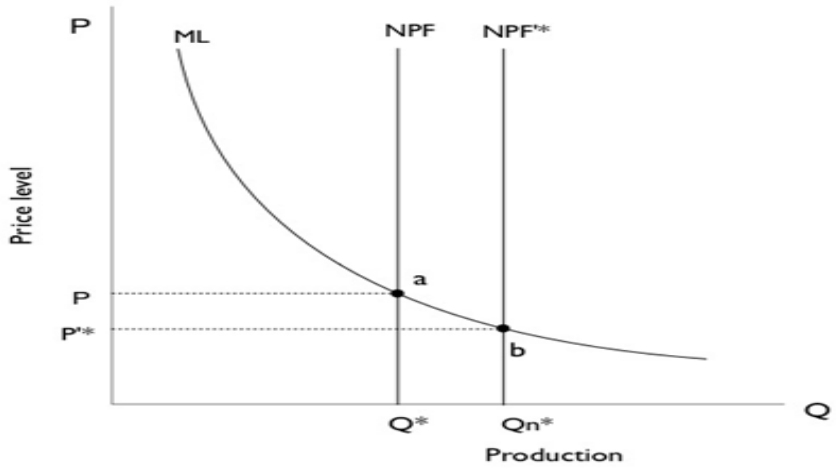

Figure 15: Natural Economic Growth

Note: This model shows how natural economic growth would happen as an expansion of the natural production frontier from Q* to Qn*. The move from a to b accurse with the fall of the price level from P to P'* as benign deflation.

Source: Anthony P. Mueller, 2025

Natural economic growth occurs with the expansion of the production because of an increase of the input factors and/or rising productivity. When macroeconomic liquidity does not change, natural economic growth is accompanied by a fall of the price level and as such represents benign deflation in contrast to price deflation that results from a collapse of macroeconomic liquidity.

This kind of economic growth must be distinguished from unsustainable booms that result from the expansion of macroeconomic liquidity and lifts the ML-curve to the right.

When the economic expansion is caused by an increase of macroeconomic liquidity while the natural production frontier remains steady, the price level will increase. When economic activity exceeds the natural production frontier, prices are rising. Consequently, the cyclical production frontier will shift upward in the model and move to the new equilibrium from a to b and finally back to the natural production frontier at the equilibrium point c, which reflects the earlier production level albeit at a higher price level.

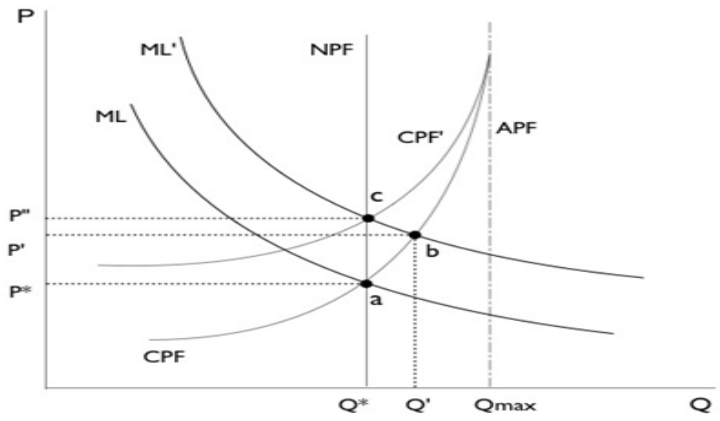

Figure 16: Unsustainable Boom Due to Monetary Expansion

Note: Different from the natural economic growth, a boom that is caused by monetary expansion is not sustainable. Such an economic expansion has come about because of a rise of macroeconomic liquidity (*ML' > ML*). Output moves beyond its natural level (*Q' > Q**) along the cyclical production frontier (CPF) from a to b which implies a rise of the price level from P* to P'. As consequence, the cyclical production frontier CPF shifts upward to CPF' as a move from b to c, which brings production back to its natural level of Q*.

Source: Anthony P. Mueller, 2025

As can be shown in the same model, unsustainable booms can also result from the policy of inflation targeting. When the economy experiences productivity progress, the natural curve shifts to the right, resulting in deflation. When

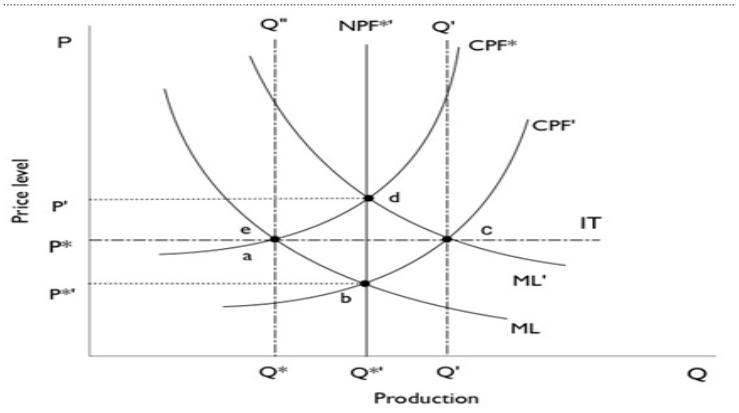

Figure 17: Unsustainable Boom Because of Inflation Targeting

Note: This model shows what happens when the monetary policy rule of inflation targeting responds to productivity gains by expanding the money supply and thereby creates an excessive boom. Starting from point a, where the economy is in equilibrium, productivity advances happen which shift the natural production to Q*' and to a lower price level of P*'. As this benign deflation lies beyond the inflation targeting level (IT), the monetary authority will expand the supply to ML', which fires up the economy toward an additional expansion of output to Q', which, however, is not sustainable and therefore moves the economy from point c back up to point d. Now, however, the price level (P') is above inflation targeting and in case the central bank sticks with its model, the monetary authorities will now produce a recession which moves the economy to point e.

Source: Anthony P. Mueller, 2025

the monetary authorities decide to fight this natural tendency to price deflation, they will initiate expansive monetary policy which results in an upward shift of the ML-curve. The result of such an operation will be that the economy moves beyond natural output. Policy makers have created an artificial boom which is unsustainable.

In the graph above, natural economic growth occurs which moves the NPF-curve to the right, resulting in a fall of the price level (move from a to b) and a higher output (Q*'). Because the new price equilibrium is below the inflation target (IT), monetary policy authorities initiate expansive measures which moves the ML-curve to the right (move from b to c). This point, however, is unsustainable because it is outside of the natural production frontier. As the economy moves back in line with the natural production frontier (move from c to d), prices receive an additional boost, while the economy shrinks. Faced with the prospect that the economy would fully back to the original starting point (from d to e) in a combination of falling prices and an economic contraction, the authorities will be motivated to initiate a new monetary expansion with the result of persistent price inflation and an economy that tends to stagnate instead of reaping the full benefits of the productivity increase. This procedure can go on for a prolonged period. Price inflation may be moderate as long as the productivity increases persist. However, if the rise of productivity gains peters out or stops because of detrimental external factors, including adverse governance conditions, the economy will fall into a deflationary depression.

5. Conclusion

The present study provides an overview of the fundamental models that are treated in detail in the booklet "Advanced Austrian Macroeconomics. Tools for Research and Teaching" (Mueller 2025a), which is based on the introductory textbook A Primer on Austrian Macroeconomics: Austrian Capital Theory for Research and Teaching. Palgrave Studies in Austrian Economics (Mueller 2025b). The main purpose of this study is making Austrian macroeconomics more accessible – be it to students of economics and business, professors of economics, or practitioners as well as to all those with a basic education in economics who are interested in Austrian economics. The GAM-model presented here shows that it is possible to model the Austrian approach with the tools that are common in the mainstream. This should facilitate the understanding of what the Austrians have to say in particular about sustainable economic growth, the business cycles, and stagflation.

References

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