

The Forgotten Real Bills Doctrine and Less Discussed Taylor Rule Coefficients: Two Macroeconomics Open-Book Exam Questions

GUO Kai
CF40 Institute

Abstract: Monetary policy is both a science and an art. The science aspect of monetary policy is not conjured out of thin air by economists but rather derived from central banks' painful trial-and-error. Unlike more complex Keynesian or monetarist theories, the Real Bills Doctrine is a simple, rudimentary theory that aligns with common intuition and is largely unproblematic in most cases. However, sticking to this theory may have been one of the significant reasons for the fatal mistakes made by the Federal Reserve in the early stages of the Great Depression. While the Taylor Rule is widely recognized, the debate surrounding one of its coefficient values has persisted for decades in the field of monetary economics. This debate has deepened economists' understanding of monetary policy, and these valuable insights, gained through trial and debate, have prevented contemporary central banks from making the same errors.

Please note that this writing is a new attempt: a significant portion of this article, including the chart, was completed with the assistance of a large language model.



For more CF40 research,
please scan the QR code

The English version is post-edited machine translation. In case of any discrepancy or ambiguity between the English and Chinese versions, the Chinese version shall prevail.



There are two intermediate-level macroeconomics exam questions:

Question 1: If the loan interest rates in an economy are hitting new lows every month, does this mean that the monetary policy is loose or tight?

Question 2: Which is a better size of rate adjustment: 75 basis points, 50 basis points, 25 basis points, or 10 basis points?

The standard answers to these questions are: it depends, or ‘on one hand, on the other hand.’ Hence what I want to discuss here is not the answers to these two questions, but rather the literature on answering these questions. Of course, if these two questions are thoroughly understood, they are not two separate questions, but essentially one question.

I. THE FORGOTTEN “ REAL BILLS DOCTRINE”

On November 8, 2002, Ben Bernanke, then a governor of the Federal Reserve Board, spoke at a conference celebrating Milton Friedman’s 90th birthday. In the conclusion of his speech, Bernanke made an official announcement to the world:

“Let me end my talk by abusing slightly my status as an official representative of the Federal Reserve. I would like to say to Milton and Anna: Regarding the Great Depression: You’re right, we did it. We’re very sorry. But thanks to you, we won’t do it again.

Best wishes for your next ninety years.”

Bernanke’s speech can be considered as a definitive statement. On one hand, with his dual role as a Federal Reserve Board governor and an academic authority on the Great Depression, perhaps no one was better qualified than him to provide a conclusive answer to the decades-long debate about the Fed’s responsibility in the Great Depression. On the other hand, this was also a conference marking the near end of Friedman’s long life, so Bernanke chose this moment to personally tell Friedman that he was right.

What did Friedman think the Fed got wrong? To save time, I asked a large language model (LLM) to summarize Friedman and Schwartz's views on the Fed's mistakes (I read it carefully, and even given an afternoon, I might not be able to write a better summary, so I decided to take a shortcut). The answer is as follows:

“Friedman and Anna Schwartz, in their seminal work ‘A Monetary History of the United States (1867-1960)’, conducted an in-depth analysis and critique of the Federal Reserve’s policies during the Great Depression. Their main views on the errors of the Federal Reserve can be summarized as follows:

Failure to act as lender of last resort: Friedman and Schwartz argued that the Federal Reserve failed to fulfill its role as lender of last resort during the bank panics of the Great Depression. This failure led to a catastrophic contraction in the money supply, as banks collapsed and the remaining banks became more cautious, further reducing lending and economic activity.

Contraction of Money Supply: They believed the Fed’s most significant error was allowing a drastic reduction in the money supply from 1929 to 1933. This contraction turned what might have been a normal recession into a prolonged and severe economic depression.

Mistaken Adherence to the Gold Standard: Friedman and Schwartz argued that the Fed’s commitment to the gold standard limited its ability to expand the money supply during the Depression. This adherence exacerbated deflationary pressures, worsening economic conditions.

Passive Stance During Bank Failures: They criticized the Federal Reserve for its passive stance during the wave of bank closures. The Fed failed to provide liquidity to the banking system, allowing banks to fail, which undermined public confidence and led to more bank runs.

Improper Monetary Policy: Friedman and Schwartz argued that the Federal Reserve’s monetary policy was improper and counterproductive. They raised

interest rates in the early 1930s to protect the dollar and the gold standard, which was completely contrary to the measures needed to combat deflation and stimulate the economy.

Overall, Friedman and Schwartz believed that the Federal Reserve's policies were not only insufficient but also exacerbated the Great Depression. Their analysis fundamentally altered the understanding of the Great Depression and had profound impacts on economic thought and monetary policy. Their work is often cited as a major reason for modern central banks' focus on controlling the money supply and acting decisively during financial crises."

The question is, why did the Federal Reserve make these seemingly foolish mistakes? The simple reason is that at that time, Friedman and Schwartz's theories did not exist; Bernanke was not yet born and even Keynes's seminal work, *The General Theory of Employment, Interest and Money*, would not be published until 1936. The Federal Reserve, still in this early stage, adhered to the gold standard like almost all central banks, and was also significantly influenced by the "Real Bills Doctrine." What is the "Real Bills Doctrine"? I asked a large language model to write a summary for me (Again, I read it carefully, and even given an afternoon, I might not be able to write a better one, so I decided to take a shortcut). The full text is as follows:

Fundamental Principle: *The Real Bills Doctrine advocates that central banks should issue currency only against short-term commercial bills representing real goods in production or circulation. Essentially, it suggests creating currency only for 'productive' economic activities, ensuring the amount of money in circulation is directly linked to the actual demands of the economy.*

Philosophy: *The idea behind this doctrine is to avoid inflation. By linking the money supply to the production of real goods, it aims to prevent central banks from issuing excessive currency, which could lead to inflation.*

Its Impact During the Great Depression:

Adherence to the Doctrine: In the early stages of the Great Depression, the Federal Reserve adhered to the Real Bills Doctrine. This meant the Fed was reluctant to expand the money supply without the backing of short-term commercial bills, which were scarce during the Depression.

Its Impacts on Money Supply: As the economic crisis deepened and businesses struggled, the availability of real bills decreased. The Fed's adherence to this doctrine meant it did not expand the money supply appropriately. This led to a significant contraction in the money supply, exacerbating the economic downturn.

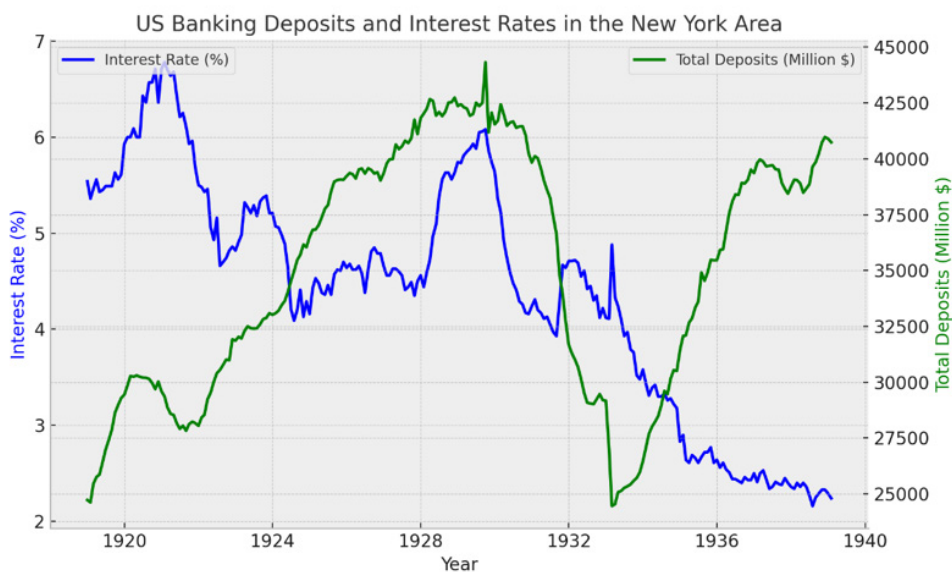
Criticism: Many economists, including Friedman and Anna Schwartz, later criticized the Federal Reserve's strict adherence to the Real Bills Doctrine during the Depression. They argued that this policy stance worsened the severity and duration of the Depression, as it failed to provide sufficient liquidity to the banking system and the broader economy.

Conclusion:

Legacy and Reassessment: The experience of the Great Depression and subsequent economic research led to a reassessment of the Real Bills Doctrine. Today, the doctrine is largely seen as an insufficient guiding principle for central banks, especially during times of economic crises. Modern central banks, learning from this historical lesson, are more likely to focus on broader economic indicators and objectives, such as inflation target and financial stability, rather than sticking to the Real Bills Doctrine.”

Simply put, the Federal Reserve at that time believed it had fully met the financing needs of the real economy, which meant the real bills corresponding to “productive” economic activities. In fact, the Fed thought it was providing very loose liquidity, evidenced by the continuously decreasing loan interest rates at the time. To demonstrate this, I asked a large language model to create a chart based on historical data from NBER (ultimately derived from Schwartz and Friedman) showing U.S. bank deposits (measuring the stock of money) and loan interest rates in the New

York area (indicating interest rate levels). This chart clearly shows that U.S. interest rates dropped from over 6% in 1929 to less than 3% in 1933, reaching a record low. The Fed might have noticed the decreasing money supply but believed, from the Real Bills Doctrine perspective, that it had done a lot, perhaps even too much. On the brink of an abyss, the Fed still thought its monetary policy was very loose. (For more, see: *“If There Had Been No Great Depression, Who Could Say the Fed Was Wrong?”*)



Therefore, in accordance with the Real Bills Doctrine, the observation of continuously declining monthly loan interest rates in an economy may lead one to infer that monetary policy is relatively accommodative. This inference mirrors the response by the Federal Reserve during that era. The Federal Reserve asserted that it had made substantial efforts to meet the financing demands of the real economy, resulting in a consistent decline in interest rates to historically low levels. Then the rest is history — the Great Depression and Ben Bernanke’s apology in 2002.

The Federal Reserve’s application of the Real Bills Doctrine is flawed, and the error lies in mistakenly treating the collapse of monetary demand as if there was too much monetary supply. There are two possible reasons for interest rate decline: one is due to an increase in monetary supply, and the other is due to a decline in monetary demand. If loan interest rates in

an economy are consistently hitting new lows every month, does it mean monetary policy is loose or tight? The answer, of course, is: it depends. In some cases, it may be loose, while in others, it may be tight.

II. THE LESS DISCUSSED TAYLOR RULE COEFFICIENTS

Fast forward to 1993. Professor John Taylor published the most famous paper of his career titled *Discretion versus Policy Rules in Practice*. In this paper, Professor Taylor sought to explore how the discussions regarding monetary policy rules at the time could be applied in practice. He then provided an example, which later became the renowned Taylor Rule:

The symbols in Taylor's equation may be confusing, but let me provide a textual explanation by a large language model:

"The Taylor Rule is an important monetary policy tool introduced by American economist John Taylor in the early 1990s. This rule aims to assist central banks in determining the appropriate level of interest rates to achieve economic stability and healthy growth.

According to the Taylor Rule, when central banks decide on their policy interest rates, they should consider two primary factors: the current inflation rate and the output gap. The inflation rate refers to the rate at which prices are rising, and the output gap represents the difference between the current economic output and potential output. Potential output is the maximum level of output that the economy can achieve without causing an acceleration in inflation.

The Taylor Rule posits that if the inflation rate exceeds the target level or if economic output surpasses its potential (indicating economic overheating), the central bank should raise interest rates to curb inflation and excessive economic growth. Increasing interest rates typically dampen economic activity as they push up the cost of borrowing, thereby reducing investment and consumption.



Conversely, if the inflation rate falls below the target level or if economic output falls short of its potential (indicating economic weakness), the central bank should lower interest rates to stimulate economic growth. Lowering interest rates reduces the cost of borrowing, stimulating investment and consumption, thus boosting economic growth.

The introduction of the Taylor Rule has provided central banks with a clear framework and guiding principles for monetary policy formulation. It emphasizes the control of inflation and the stabilization of economic growth through interest rate adjustments, making it an integral component of modern monetary policy. However, the rule also has its limitations, as it may not account for all the complex factors affecting the economy. In practice, central banks tend to consider a broader array of economic indicators and contextual factors when making decisions.”

However, what I want to stress here is that, if central banks were to set interest rates according to the Taylor Rule, for every 1 percentage point increase in inflation, interest rates should increase by 1.5 percentage points; for every 1 percentage point decrease in inflation, interest rates should decrease by 1.5 percentage points. The key point here is the coefficient of 1.5. Economists have, in fact, debated this coefficient of 1.5 for several decades, and I do not know if there is a definitive conclusion. However, what is certain is that there is a consensus that this coefficient must be larger than 1.

Why must the coefficient be greater than 1? The reason is quite simple. If inflation rises, nominal interest rates must increase by more than inflation itself for real interest rates to rise, thereby suppressing total demand and bringing down inflation. Conversely, if inflation decreases, nominal interest rates must decrease by more than the decrease in inflation, allowing real interest rates to fall and boosting total demand to push inflation higher.

In fact, if this coefficient were less than 1, the entire economic system would be highly unstable with multiple equilibria. During inflationary periods, inflation might spiral out of control indefinitely, while during deflationary periods, it could spiral downward indefinitely. To draw an analogy, the

former scenario somewhat resembles the Big Bang in the universe, while the latter resembles the formation of a black hole. Although central banks do not strictly base their monetary policies on the Taylor Rule, the underlying logic is the same.

In this case, what is the optimal size of interest rate adjustments, 75bp or 50bp, or perhaps 25bp or 10bp? The answer, of course, depends on the circumstances. Take the Federal Reserve's recent interest rate hike process as an example: when nominal interest rates were significantly lower than inflation, the Fed took large strides, raising rates by 75bp in a single move and repeating this action three times consecutively. As nominal interest rates approached inflation levels, the Fed began to take smaller steps, reducing rate hikes first to 50bp and then to 25bp. Now, with nominal interest rates noticeably higher than inflation, and real interest rates significantly positive, they have ceased to raise rates. Consider a scenario where the Fed encounters low inflation with high real interest rates, they would certainly opt for significant rate cuts because if the rate cut pace is slower than the rate of inflation decline, it would not be an easing of policy but rather a policy tightening.

III. HOW TO USE THE LESSER-KNOWN TAYLOR RULE COEFFICIENT TO UNDERSTAND THE FORGOTTEN “REAL BILLS DOCTRINE”?

Interpreting the error in the “Real Bills Doctrine” in an extremely simplified, though possibly less precise manner, can be as follows: The Federal Reserve did not set the coefficient for its response to inflation at 1.5, but rather chose a coefficient smaller than 1, such as 0.5 or 0.3. What would happen in this case? I invite the large language model to provide the answer:

“If during an economic recession, interest rates do not respond to inflation with greater than a 1-to-1 relationship, it may have several impacts on the economy:

Insufficient Monetary Stimulus: During an economic recession, the primary goal of monetary policy is to stimulate economic activity. If the inflation rate is low or negative (deflationary) and interest rates do not decrease proportionally, monetary policy may lack the necessary stimulus. Lower interest rates usually encourage borrowing and consumption, which adds impetus to the recovery of economic growth. If interest rates do not decrease sufficiently, this stimulating effect may be too weak.

Real Interest Rates May Rise: If inflation is declining (or deflation is occurring) and nominal interest rates do not correspondingly decrease, real interest rates (adjusted for inflation) may actually increase. During an economic recession, an increase in real borrowing costs can exacerbate the economic downturn because higher real borrowing costs may lead to reduced investment and consumer spending.

Risk of Falling into a Liquidity Trap: In an economic recession characterized by low inflation or deflation, there is a risk of falling into a liquidity trap. This occurs when interest rates are near zero and cannot be lowered further, limiting the central bank's ability to stimulate the economy. If interest rates do not respond adequately to low inflation or deflation, the effectiveness of monetary policy in combating the economic recession is diminished.

Weakening of Confidence and Demand: Inadequate interest rate cuts can also weaken consumer and business confidence. Confidence is typically fragile during an economic recession, and if people perceive that monetary policy is not responding proactively enough, it may lead to reduced spending and investment, further dampening economic activity.

Prolonged Economic Recession: In summary, if interest rates fail to adequately respond to low inflation or deflation during an economic recession, it may result in a deeper and longer-lasting recession. Due to insufficient monetary stimulus, higher real interest rates, weakened confidence, and reduced demand, the economy may struggle to recover.

In summary, during an economic recession, if interest rates fail to respond to inflation with a greater than 1-to-1 relationship, it may hinder the economic recovery process, making the recession deeper and more prolonged. Central banks usually aim to strike a balance in their responses to ensure that monetary policy is effective in supporting economic recovery.”

In fact, the US experience goes far beyond the description above; I refer to it as the “black hole contraction” pattern. Economic downturns lead to a decline in inflation. While nominal interest rates also decrease, the magnitude of the decrease is less than that of the inflation decline, causing real interest rates to rise and further compressing credit demand, leading to a continued economic decline. This dynamic can be a self-reinforcing process, and once certain conditions are triggered, without strong government or central bank intervention, the economy can spiral into a great depression. One possible condition here is the “debt-deflation” spiral described by Fisher-Minsky-Koo, which has been discussed in our article “*When Koo and Minsky Met Fisher.*” Another possible condition is Bernanke’s “macro-financial” spiral, which we have also covered in the “*Review of the 2022 Nobel Prize in Economic Sciences - Their Theories Guided Great Monetary Practices.*”

Let me add one more question: what kind of phenomena could serve as early warnings for an economy entering the “black hole contraction” scenario? A reference answer here might be: based on the description above, perhaps one should be sufficiently alert when the following two phenomena occur: First, the decline in nominal interest rates lags behind the decline in inflation. This indicates that real interest rates are rising. Second, the decline in nominal interest rates is accompanied by a significant drop in credit growth. This suggests that there is an issue with credit demand.

Lastly, a bonus question: What should be done to prevent an economy from entering the “black hole contraction” scenario? (feel free to answer this question.)



中国金融四十人研究院
CHINA FINANCE 40 INSTITUTE

Disclaimer

This publication is the property of CF40 Institute (the Institute) and by the Chinese Copyright Law. This publication or any portion of this publication may not be reproduced, duplicated, distributed, displayed, or exploited for any other purposes without prior written consent of CF40 Institute.

The views expressed herein are the author(s)'s own and do not represent those of CF40 or any other organizations. The analysis may include opinions, forecasts, estimates and assumptions based on currently available information which reflect judgments made at the time of initial release and are subject to change without notice. The English version is post-edited machine translation. In case of any discrepancy or ambiguity between the English and Chinese versions, the Chinese version shall prevail.