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Negative Interest Rates: Analyses Abroad and their Applicability to the U.S. Economy

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Abstract

The twenty-first century has thus far posed some of the most difficult economic challenges for policy makers that the world has ever seen. The most recent recession, the Global Financial Crisis of 2007-8, is considered the worst economic downturn in recent history. In light of unique challenges such as the recession, central banks around the world are coming up with new tools or new ways of thinking about tools in order to mediate financial crises. This paper investigates the possibility of eliminating the zero lower bound on nominal interest rates to stimulate the economy in reaction to severe financial crises. To substantiate my claim for negative interest rates in times of crises, I challenge the conventional theory regarding the fear of negative interest rates, examine the success of other countries that have employed negative interest rates in order to stimulate economic growth, and provide one example of how potential negative outcomes can be avoided. This paper makes the case that while more research on negative interest rates is to be done, they are a valid option for an economy in crisis and could be used in another circumstance similar to the recession that the U.S. economy faced in 2008-9.

Keywords

Global Financial Crisis, Recession, Interest Rates, Negative Interest Rates, Economic Downturn, US Economy

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By Danielle Cupp

Abstract

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I. Introduction: Interest Rates, Conceptually

The Global Financial Crisis of 2007-8 is said, by scholars, to have been the worst financial downturn the world had seen since the Great Depression of the 1930s. It threatened the collapse of major financial institutions that were only prevented through bailouts, which did not prevent a massive drop in stock prices worldwide. Risk-averse banks withheld from lending to businesses and households. Much of the recession can be characterized as a liquidity crisis, in reaction to which government and central banks resorted to unprecedented fiscal stimulus, monetary policy, and institutional bailouts.

When a central bank cuts interest rates, they are effectively using the tools that they have to

boost an economy that is not faring well.

Decreasing interest rates make investment and consumption more attractive. Additionally, net exports increase and the price of stocks increases.

Raising the interest rate also increases employment and increases the demand for financial assets. In times of economic crisis, the Federal Reserve has historically cut interest rates in order to stimulate the economy in all of the ways that were just listed.

After the financial crisis in 2007-8, not only did the Federal Reserve cut interest rates, but many other central banks around the world reduced their nominal interest rate to 1% or less as well (Ball, 20). The Federal Reserve, though, has neglected to lower interest rates below zero, having constructed a floor on short term nominal interest rate at zero, also referred to as the zero lower bound. In reality,

however, decreasing interest rates have the economic benefits listed above and lowering interest rates further (to below zero) only increases the stimulus to the economy. Conceptually, the difference between a 1% interest rate and a 0% interest rate is the same as that between 0% and -1%. If negative interest rates only further stimulate the economy, why did the Fed not employ them upon one of the worst financial traumas of the past century?

II. Analysis from the Taylor Rule

An analysis on the Taylor Rule provides a more concrete perspective on whether or not negative interest rates should have been implemented after the Global Financial Crisis of 2007-8. The Taylor Rule is a monetary policy

formulae created by John Taylor in 1993 to determine how much the Fed (or other central banks) should change the nominal interest rate in response to changes in inflation and output. The relationship between inflation and the nominal interest rate implies that as inflation rises by one percentage point, the nominal interest rate also rises. My analysis (Graph 1), however, reveals that the Taylor Rule shows that interest rates should have been negative after the start of the Global Financial crisis to one degree or another and that by keeping interest rates above zero after the recession of 2007-8, the Fed deviated from the Taylor Rule.

In order to conduct this analysis, I compared the effective Federal Funds Rate to two different interpretations of the Taylor Rule. In this case, the Taylor Formula was constructed by subtracting

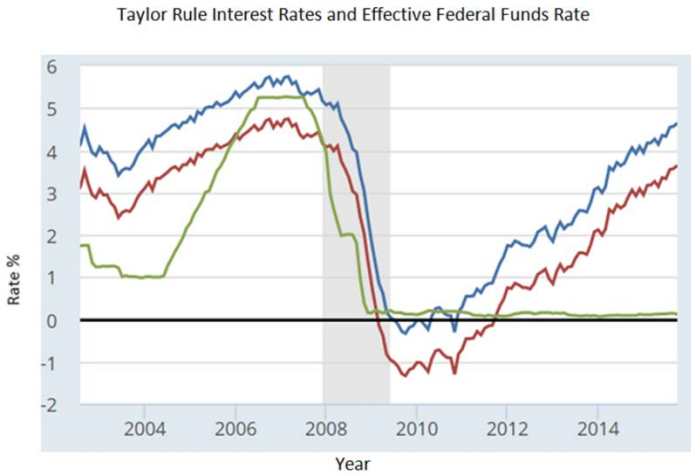
unemployment and personal consumption expenditures from the sum of the natural unemployment rate and the target inflation rate. The graph illustrates that if the Fed had followed the Taylor Rule and the target inflation rate was 2%, the interest rate would have been made negative in July 2009. Minimums as low as $-.3$, $-.34$, and $-.24$ would have been reached in November 2010, October 2009, and April 2010, respectively. The interest rate would have fluctuated back and forth from negative to positive until October of 2010 when they would have remained positive until present.

Some argue, however, that the target inflation rate is lower: 1%. If this is the case, then the projected interest rates as computed by the Taylor Rule would be even lower. According to this formula, negative interest rates should have been

implemented as early as March of 2009 and minimums as low as -1.3, -1.34, and -1.24 would have been reached in November 2010, October 2009, and April 2010, respectively. In addition, a negative Federal Funds rate would have been in effect until October of 2011 while the economy recovered. In actuality, however, between March of 2009 and October of 2011, the effective Federal Funds Rate was an average of .15%. During this time, the rate reached a minimum of .07% and reached a maximum of .21%, but the effective rate was never negative.

Either take on the Taylor Rule shows how there was a need for negative interest rates after the Global Financial Crisis of 2007-8 that were not employed.

Graph 1:

**Legend:**

- Taylor Rule; 2% inflation
- Taylor Rule; 1% inflation
- Effective Federal Funds Rate

Data from Federal Reserve Economic Data (FRED), Federal Reserve Bank of St. Louis

III. False Sense of Flight to Cash

The fears that the Fed has relating to negative interest rates are misplaced conceptually. Negative interest rates stimulate the economy

because banks are charging their depositors to hold cash reserves while reducing borrowing costs for businesses and households, driving the demand for loans up. Scholars however are concerned that by charging depositors to hold money in their accounts, there would be a ‘flight to cash’. In other words, due to the cost of holding money in accounts, people would prefer to hold their assets as cash instead. I will explore, however, why a decrease in interest rates below zero will not result in a ‘flight to cash’.

First, there are a lot of conveniences associated with having money deposited into accounts rather than holding it in cash that would incentivize depositors to keep their money in their accounts even if they were charged for doing so. Many aspects of society as they relate to finance

revolve around checking accounts. On an individual level, people pay their bills online and pay for their groceries or for a night out with their credit or debit card. For larger purchases, it is even more convenient to pay with a credit card as opposed to cash. To a certain extent, I would argue, people would be willing to keep their own money in an account because it would not be worth the inconvenience to have money *solely* in the form of cash. American society has created many processes in daily life that involve the use of bank accounts. If depositors were charged some fee to keep their money in bank accounts, individuals would be willing to put up with a fee in order to avoid the inconveniences of not having these accounts.

On a larger level, such as a big business, it is also unlikely that corporations would want to also

withdraw their money from their accounts because so many of their processes involve transactions through the banking system. They, for example, pay their customers through basic transactions.

Companies buy out other companies through transactions as well. The idea of a business partaking in either purchasing other companies or paying their employees through cash is almost unimaginable. Again, through the example of businesses, we see how inconvenient it would be for our society to transition from processes involving bank accounts to those of cash. To some extent, businesses would be willing to endure negative interest rates because it is so convenient to make transactions through bank accounts rather than through cash.

Additionally, a ‘flight to cash’ would not be reasonable considering that holding assets in cash would require some expense in order to keep them safe. Individuals who did not have a lot of money in their accounts (college students for example) might not feel compelled to buy a safe to store their few hundred dollars. Older individuals with life savings of greater magnitude would, rationally, want to buy a safe of some kind to secure their wealth. With more wealth comes a greater incentive (but also a greater cost as safes would need to be larger and therefore more expensive) to secure their wealth. On the level of businesses, again, the prospect that a large corporation would pull out their money into cash and finance some kind of vault and security system just to avoid a charge on keeping their money in an account is almost unimaginable. If

there were negative interest rates, individuals and businesses would be willing to endure a charge to keep their funds in a bank account as long as that charge was less than what it would cost to keep that money safe outside of a bank account.

There must be an interest rate at which either individuals or corporations do decide that it would not be worth it to keep money in accounts and does, in fact, partake in a ‘flight to cash’, but I suggest, for the reasons relating to convenience and security of assets above, that the zero lower bound does not exist. There is a lower bound on interest rates, but it is less than zero. The degree to which the lower bound is less than zero is unknown and requires further analysis.

IV. Negative Interest Rates in Europe

Negative interest rates have been implemented in countries outside of the United States and did not lead to the flight to cash that economists working at the Fed fear. Negative interest rates were implemented in certain European countries after the most recent financial crisis. An examination of these countries provides further evidence that the lower bound does not exist at zero and that negative interest rates are a viable monetary policy tool should the world see another severe recession.

Sweden was the first nation in this discussion to experiment with negative interest rates. From July 2009 to September 2010, nominal interest rates were cut to $-.25\%$ as a result of the deep recession and having an inflation rate that was persistently below the target rate. Beginning in

2014, the deposit rate was lowered to $-.5\%$ and in February of 2015, the repo rate also became negative, drawing the deposit rate down to -1.1% . It has also announced that it anticipates that the interest rate will remain negative until the end of 2016 at the earliest. Even though depositors at the Riksbank have charged a fee of -1.1% and some government and mortgage bonds, interest rate derivatives, and certificates, have traded at negative rates, the bank has reported that market functioning has been pretty average thus far, with some concerns only in the bond market (Jackson, 11).

Of any central bank in Europe, Denmark has experienced the longest duration of interest rates as well as the lowest interest rate of any country or region under analysis in this paper. In Denmark, interest rates were lowered to $-.2\%$ in July of 2012,

were raised to -0.1% in January of 2013, and only became positive again in April of 2014. This was done to discourage upward capital flows that were placing upward pressure on the krone. The central bank in Denmark, additionally, is one of the few banks to lower interest rates *back* to a negative rate. The central bank of Denmark lowered interest rates to -0.75% in September 2014 again to manage upward pressure on the krone and still has a negative interest rate today. In its most recent assessment, the Danmarks Nationalbank found that negative interest rates did not weaken the pass-through of money to money markets and there have been no significant increases in the demand for cash (Jackson, 8).

The European Central Bank lowered interest rates to -0.1% in June 2014 and again to -0.2% in

September 2014 due to weak economic growth and inflation. The euro area reported “no significant outflows or dislocations in money market funds” (Jackson, 9). Harriet Jackson, an economist at the Bank of Canada, notes that there was some concern in the Eurozone that there would be declines in borrowing from the central bank, but this has not happened (Jackson, 9-10).

As evident by the multiple countries in this study who have implemented negative interest rates in the past decade, there have been no major backlashes to these changes in monetary policy. There has been no indication of a flight to cash by depositors thus far. Jackson, a scholar who advocates for the use of negative interest rates who also draws evidence from these countries in his own analysis, however, warns that the expectations of

negative interest rates may discourage large deposits in the banks (Jackson, 14). Given that negative interest rates are still relatively new, there has not been evidence to indicate that this has happened in economies that have used interest rates, but, again, the longest a central bank has employed negative interest rates without any breaks of positive interest rates was one year and nine months in Denmark. Jackson concludes that while negative interest rates have not been in effect for very long and in many countries, evidence still suggests that they are a viable tool in monetary policy.

V. Gesell Stamp

For those who are convinced that a flight to cash would be within reason should the Federal Reserve decide to experiment with negative interest

rates, there have been economic scholars who have devised creative solutions to eliminate the zero lower bound in a way that the flight to cash is not a risk. The first to do this was Silvio Gesell, a German-Argentine alive during the late nineteenth and early twentieth centuries. He was the first to pioneer the idea of avoiding zero bound traps by paying a negative nominal interest rate on money (Buiter, 725). The possibility of taxing currency has not been realized in history mostly because of the practical difficulties associated with such a feat, but Gesell proposed that in order to provide evidence that negative interest rates, or the tax, had been paid, all cash could be stamped. Decades later, Keynes wrote his own thoughts regarding the complications that a tax on currency would entail. He argued that Gesell was “unaware that money

was not unique in having a liquidity-premium attached to it, but differed only in degree from many other articles, deriving its importance from having a greater liquidity-premium than any other article” (Keynes, 230). In other words, Keynes thought if currency was taxed, people would resort to bartering goods, but he did say that he regarded Gesell’s theory as sound. While there are still costs associated with administering a tax on money, even if a low-cost, tamper-proof high-tech version can be established. For this reason, Buiter brings up the importance of determining the benefits associated with eliminating the zero lower bound and the related costs of taxing currency in order to determine if a stamp-like system is optimal (Buiter, 730). In this way, Buiter is calling for more research to be done so that a central bank can understand the

costs associated with eliminating the lower bound and threats regarding the flight to cash.

VI. Conclusions and Further Research

We have seen how the Federal Reserve has historically respected the zero lower bound and refrained from lowering interest rates into the negative territory despite the worst financial crisis since the Great Depression. Even though cuts in interest rates stimulate the economy and a further cut to a negative interest rate would have only stimulated the economy more, still the Federal Reserve abstained from setting a new precedent of lower interest rates in 2009. Even analysis regarding the Taylor Rule, however, suggests that negative interest rates were appropriate for such a poor economic climate. Negative interest rates have been

avoided in the past because there is fear of a flight to cash, or a situation in which depositors would withdraw their funds from their accounts as keeping their funds in their mattresses would be more profitable than being charged to keep them in accounts. Contrary to this position, much of modern-day society is built around the convenience of modern day banking systems, meaning that keeping all money as cash would be inconvenient, which suggests that people would be willing to pay (to some extent) to keep their money in their accounts. The lack of which the world has seen a flight to cash is evidenced by the fact that multiple European economies have implemented negative interest rates and have not experienced severe occurrences where masses of individuals have withdrawn all of their money from their accounts.

While there have been no major increases in bank withdrawals to suggest that negative interest rates would not be a viable tool for monetary policy, their implementation is still in its infancy with only a handful of countries having experimented with them. The Fed should definitely consider negative interest rates as a future tool for economic crises and should pursue economic research relating to negative interest rates first to explore the unanswered questions relating to negative interest rates before there is an urgent need to use them. There is evidence, for example, that the lower bound does not exist at zero, which then raises the question of where it does exist. In other words, at what point would it not be worth it for people to keep their money in their bank accounts and decide to keep all of their money in cash? How low can

nominal interest rates go? One thing that influences this turning point is people's expectations. If individuals are indifferent about whether or not they should pull all of their money from their bank accounts, but expect that interest rates will rise above zero in the near future, then they will be more inclined to keep their money in their accounts where the opposite is true if they expect that interest rates will stay below zero for a prolonged amount of time. Negative interest rates are a viable option for economies of the twenty-first century even though analysis is still needed to understand the full extent of their implications on an economy.

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