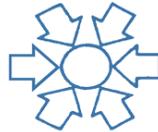


**POLICY BRIEF:  
What Negative Rates Do to Financial Stability**

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## Abstract

Recent market volatility has made it more than thinkable that nominal U.S. interest rates could slip below the zero lower bound (ZLB) and follow real rates into negative territory. Indeed, leading U.S. central bankers have suggested this might well be needed due to weak growth or stress scenarios. Recent global-market turmoil is indeed stressful, meaning that rates could drop below the ZLB even if the FRB itself leaves rates unchanged. While considerable debate continues about the monetary-policy impact of going below the ZLB, the considerable and often dangerous impact on financial stability has received far less attention.

Given the potential to go below the ZLB, this policy brief lays out financial-stability effects. These include a sudden reversal in the fundamental structure of financial intermediation (which will have far-reaching impact on banking even if only short-lived), still more outflows into high-yield assets with scant regard for duration risk, significant capital-market disruption, and flights into physical cash and even virtual currencies. Individual financial institutions may also be severely tested due to factors resulting from floating-rate loans, MMFs falling below positive NAV, and sudden shock resulting from interest paid on excess reserves. A “Minsky moment” is possible due to the sudden impact of these destabilizing forces.\*

This paper is a note, which does not discuss in depth these financial-stability implications. FedFin welcomes comments on its conclusions, which should be directed to [info@fedfin.com](mailto:info@fedfin.com).

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\* This paper represents solely FedFin’s analytics and its own views. It is not sponsored by any third party.

Quite simply, there is no precedent for nominal negative interest rates, even during the U.S. Great Depression. As a senior global central banker has said, “An experiment is under way to test the ‘boundaries of the unthinkable’ in monetary policy.”<sup>1</sup> This paper leaves for another day the question of whether transgressing the ZLB will have the desired monetary-policy effects in the European Union, Switzerland, or—should it come to that—in the U.S. However, financial markets will transmit the impact of negative rates quickly because private-sector institutions must quickly minimize risk and maximize gain. They will thus act in ways financial regulators may also find “unthinkable”—actions that could destabilize financial markets as the sum total of prudential and profit-seeking steps taken by individual banks, insurance companies, pension funds, and asset managers moves through financial markets. This paper thus assesses the financial-stability implications of negative rates so that policy-makers consider them in concert with monetary-policy objectives—a key and costly lesson of the 2008 crisis is that macroprudential risk to financial stability is entwined with monetary policy, meaning that a narrow-gauge view only of traditional central-bank goals (e.g., managing aggregate demand) may well exacerbate structural imbalances with dangerous financial-stability consequences.

Is a drop below the ZLB likely in the U.S.? Current market turmoil requires careful consideration, as does the mid-September conflict between Congress and the Obama Administration that could precipitate another U.S. fiscal-policy crisis. In our view, the Federal Reserve sees the ZLB as a no-trespassing sign for ordinary open-market operations, but it could well be forced to hop the fence if markets spiral dangerously toward flash crashes, liquidity freezes, and other systemic events. It could also be forced to resort to policies that lead to negative rates if economic weakness resulting from global turmoil demonstrates the need for additional quantitative easing and the FRB is reluctant or unable to add still more assets to its own balance sheet.

In this paper, we first demonstrate how negative rates may adversely affect monetary-policy transmission. We also assess the prospect that the FRB will seek to lower rates by dropping the interest paid on excess reserves (IOER). Reductions in IOER would lower the floor now holding nominal rates in positive territory without an overt change in open-market operations, but the huge volumes of excess reserves create significant financial-stability challenges in addition to those for further transmission of increased accommodative policy.

We then turn to direct implications for financial stability, focusing on:

- how the traditional construct of financial intermediation would change if for the first time in modern U.S. financial history depositors pay bankers and bankers pay borrowers. Funds could flow from banks into “shadow liabilities” or otherwise reallocate the deposit and funding flows on which both banks and counterparties have long relied. Current stress tests do not anticipate resulting risk;
- how new costs for depositors, especially retail ones, could lead to unprecedented holdings of physical cash and powerful incentives for the use of virtual currencies;
- new drivers of capital-market volatility and risk including sharp drops in already-low dealer capacity, exacerbating market illiquidity. Negative rates are likely also to hike volatility beyond levels already driven by illiquidity, creating new market reliance on volatility hedges with uncertain market-stability consequences. Dollar deflation could result from negative rates, creating potential for large trading-book losses;

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<sup>1</sup> Hervé Hannoun, *Ultra-low or negative interest rates: what they mean for financial stability and growth*, Remarks at the Eurofi High-Level Seminar, April 22, 2015, available at <http://www.bis.org/speeches/sp150424.pdf>.

- structural and contractual challenges for MMFs; and
- broader risk distortions in financial markets based on urgent yield-chasing forced upon financial-services firms, asset managers, and pension funds.

## **Crossing the ZLB: Monetary-Policy and Risk Transmission Channels**

### 1) Monetary-Policy Considerations

The monetary-policy purpose of low or even negative rates is to force financial institutions out of hiding when deposits are accepted and intermediated in central-bank placements, sovereign obligations, inter-bank loans, and other positions with no or minimal links to productivity and growth. If depositors are charged for securing funds, it is assumed that they will look for higher-yielding assets outside their accustomed safe havens. Banks will thus reallocate funds, encouraging lending, and financial demand will finally match and then exceed supply. However, if banks choose not to or cannot pass on negative rates, then a tax is imposed on banks that husband funds to protect themselves instead of putting deposits to productive use that boosts aggregate demand.

This is, in essence, another type of quantitative easing (QE) where central-bank holdings of sovereigns and similar obligations are intended to starve banks of their safe-haven assets to force productive lending. However, it remains to be seen if negative rates could accelerate lending any better than QE. The same combination of slow recovery, limited opportunities for traditional lending, and high capital requirements that have so far stymied QE could well also apply to negative rates. Indeed, banks are already denying certain large cash inflows or seeking to price for them, with no discernable effect on macroeconomic growth and considerable potential to destabilize financial markets.

As detailed in a new FedFin paper on the challenges resulting from constraints on U.S. custody bank deposit capacity,<sup>2</sup> funding taxed by negative nominal rates could well shift to “shadow liabilities” outside the direct reach of monetary policy. Indeed, as also detailed in that paper, Federal Reserve analysts and academics have already seen significant indications that QE has empowered shadow banking and blurred traditional monetary-policy channels. As a result, stimulus effects from intentional or market-driven negative rates are uncertain.

The implications of nominal negative rates on inflation are also uncertain. Real rates are in many cases already negative, but corporations and other large cash holders remain reluctant to deploy funds due to macroeconomic and other concerns except when high yields create over-riding investment and lending incentives. Negative nominal rates would focus public and market attention on the cost of holding funds and thus might spur greater productive deployment, but yield-chasing incentives (see below) could also spike in concert with reduced consumer demand for goods and services that would exacerbate deflationary risk and further complicate monetary-policy and financial-stability considerations.

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<sup>2</sup> Federal Financial Analytics, *Where The Money Goes and Why it Matters: The Market and Policy Impact of Reduced Custody-Bank Deposit Capacity* (August, 2015), available at [http://www.fedfin.com/images/stories/client\\_reports/FedFin%20Study%20-%20The%20Market%20and%20Policy%20Impact%20of%20Reduced%20Custody-Bank%20Deposit%20Capacity.pdf](http://www.fedfin.com/images/stories/client_reports/FedFin%20Study%20-%20The%20Market%20and%20Policy%20Impact%20of%20Reduced%20Custody-Bank%20Deposit%20Capacity.pdf)

Quite simply, it remains to be seen if depositors will spend money to promote demand if deposits cost them out of pocket in real dollars or if funds will be secreted in physical cash and other liabilities to countervailing effect.

## 2) Excess-Reserve Outflows

As of July 2015, banks held \$2.591 trillion in reserves at the FRB, of which \$2.499 trillion are excess reserves—a 25 times increase for reserves and a 1,300 times hike for excess reserves since 2008.<sup>3</sup> Banks currently earn 0.25 percent (25 bps) IOER, a rate set purposely above the zero fed funds rate to create a floor above zero in the market.

If the FRB expects the usual link between IOER and the fed funds rate to hold, then it would need to drop IOER to achieve negative rates. In a crisis, it would almost surely do so to push funds into the financial market due to Dodd-Frank constraints on its own emergency-liquidity powers. The FRB could of course choose to retain IOER at 25 bps either because markets are stable or out of fears that huge excess-reserve liquidations would make matters still worse. However, it would then be subject to renewed allegations that IOER is a big-bank subsidy.

For all of these reasons, it seems likely that IOER would drop below 25 bps or fall to zero if rates fall below the ZLB. Given the magnitude of excess reserves and the very uncertain state of markets at the time they would be liquidated, significant financial-stability problems could result either from the direct inflow of trillions into the financial market or the indirect effects of sharp reductions in bank IOER earnings.

## **Crossing the ZLB: Financial-Stability Impact**

### 1) Disintermediation

Although the purpose of negative rates is to spur productive-capital deployment, it is unclear that this would indeed result for the following reasons:

- Earnings disruptions at banks due to IOER changes could reduce their capital and thus their lending capacity.
- Uncertainty about the impact of negative rates on bank funding costs could exacerbate market stress. Current stress tests do not require the largest banks to anticipate this for capital-planning purposes and many also have not done so in their own strategic planning. Uneven patterns of negative-rate pass-throughs to those from whom banks receive funding and to those they fund could create major market disruptions. Banks could simply curtail intermediation operations (i.e., taking deposits when legally allowed, making loans) to the greatest extent possible until normal net-interest margin balances return.

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<sup>3</sup> Steve Cecchetti and Kim Schoenholtz, *How the Fed will tighten*, Money and Banking, August 10, 2015, <http://www.moneyandbanking.com/commentary/2015/8/6/how-the-fed-will-tighten>.

- Bank depositors and counterparties forced to bear higher costs to safeguard funds may not deploy them for additional investment or other productive activities, instead seeking shadow liabilities or even holding larger amounts of physical cash (see below).
- Retail depositors may be particularly averse to paying banks for fund holdings, especially given the potential for double fees in the event of overdrafts. Some funds may go to alternative providers of shadow liabilities (e.g., prepaid cards), while others will be housed in physical cash. Banks that rely on retail-deposit inflows will be particularly hard hit, possibly reducing funding for mortgages, small-business, and credit-card loans precisely when depositors may want to deploy funds and take out loans for additional consumption.
- Yield-chasing at banks may significantly increase interest-rate risk (IRR). There is currently no capital charge or other express prudential standard limiting this risk, creating near-term arbitrage incentives to hold assets with low credit risk (at least for regulatory-capital purposes) at long durations that may not be matched by funding costs. These incentives push banks from productive-capital deployment (where risk-based capital charges are high) into capital-markets and fixed-income holdings.
- Negative nominal rates are likely to wreak havoc with floating-rate loans tied to LIBOR or similar benchmarks. Absent a legal right to de-couple loan rates from the benchmark, banks could be forced to pay borrowers for the privilege of having lent them the money. As with depositors paying bankers, bankers paying borrowers fundamentally alters the entire construct of financial intermediation.

## 2) Physical-Cash Holdings/Virtual Currency

If depositors cannot earn even a small return for placing funds at banks and market turmoil makes shadow liabilities problematic, then investors—especially retail ones—may prefer simply to hold physical cash or, if they are daring or desperate, convert cash deposits into virtual-currency holdings that might increase in principal value. Given the sharp decline in bank-vault capacity in the decades since money has essentially become electronic, holders of physical cash will take risk of loss or theft, phenomena all too evident in Greece as funds fled the banking system. Virtual currencies of course present a wide array of potential risks, including loss of principal, theft, money laundering, and other challenges to this still-nascent technology.

## 3) MMF Risk

Negative rates pose a particularly acute challenge to money-market funds, which by law and practice hold large amounts of cash and cash-equivalent assets. Indeed, this is increasingly true across the spectrum of institutional investors (see the FedFin paper cited above). If rates for cash and even some cash-equivalent assets go negative in nominal terms, the challenges posed to asset managers are still more acute than those now confronted due to ultra-low rates.

Under contractual terms, most MMFs must pay a positive rate of return to investors. In the U.S., many funds are soon also to determine return to investors based on floating, not fixed, asset values. Funds may thus need to shut down to avoid breaching investor covenants or be forced to shutter themselves based on redemptions as investor holdings “break the buck.” Stress in this arena could force fund sponsors to make investors whole, but their capacity to do so remains to be seen.

#### 4) Trading-Market Disruption

Ultra-low rates combined with new capital requirements and other post-crisis regulatory constraints have already contributed to the large cash and cash-equivalent holdings reflected in the excess-reserve and institutional-investor data noted above. Trading volumes in key markets (e.g., U.S. Treasuries) are thus sharply lower since the crisis.<sup>4</sup> However, traders can sustain activity, albeit at diminished volumes, if nominal rates are positive because these do less damage to earnings than a drop in both nominal and real rates that cannot be offset by earning assets (especially after the cost of the U.S. leverage rule for large banks is taken into account).

Large traders in key fixed-income markets—especially primary dealers and large banks—may thus sharply constrain operations—the cost of holding a trading asset could well exceed any expected return. This would significantly and adversely affect market liquidity, as well as disrupt counterparty and execution risk across the debt and equity markets.

Reduced trading volumes may not only adversely affect liquidity, but also heighten volatility. As a result, traders may well seek greater protection in an array of instruments designed to hedge against this risk. Press reports indicate that large investors are increasingly seeking to sell volatility protection at premiums designed to improve returns.<sup>5</sup> Buying and selling market turmoil adds a new risk dimension with uncertain financial-stability implications, especially in situations in which volatility across different financial markets is correlated and large sellers of volatility protection are hit with correlated claims they may have difficulty honoring under stress.

Interestingly, volatility-protection sales are particularly vigorous in markets where sellers expect central-bank support to mitigate risk. This is a new form of too-big-to-fail—or at least too leveraged to pay—moral hazard.

Additional capital-market effects of negative interest rates may result from *de facto* deflation of the U.S. dollar. This would have very uncertain effects across financial markets. Few banks are likely to have priced dollar deflation into their value-at-risk (VaR) and related trading-book models, perhaps creating risk that is not well buffered by capital and almost surely leading to unanticipated trading-book losses. For U.S. banks, these may be particularly acute due to requirements of the Volcker Rule. These have insulated U.S. banks from trading losses in sectors like junk bonds (now barred for proprietary trading), but concentrated trading-desk operations in U.S. sovereign and agency obligations could magnify loss resulting from deflated-dollar holdings.

#### 5) Risk Incentives

Were rates to go negative in nominal terms atop real negative returns, incentives to hold high-risk assets at longer durations will increase, further compressing the long-duration premium that has

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<sup>4</sup> Tobias Adrian, Michael Fleming, Daniel Stackman and Erik Vogt, *Has U.S. Treasury Market Liquidity Deteriorated?*, Liberty Street Economics, August 17, 2015, <http://libertystreeteconomics.newyorkfed.org/2015/08/has-us-treasury-market-liquidity-deteriorated.html#.VdzUTflViko>.

<sup>5</sup> Michael Mackenzie, *Selling volatility in an era of low returns*, Financial Times, August 25, 2015, at <http://www.ft.com/intl/cms/s/0/fbe46b76-41ba-11e5-b98b-87c7270955cf.html#axzz3jvpfDqEP>.

historically characterized market yields. Further compression would, investors will hope, compensate depositors (including large banks and institutional investors) for negative funding costs that require higher asset yields if there is any chance of retaining a positive net-interest margin, especially in real terms. Negative nominal rates atop already negative real returns may thus exacerbate incentives for banks, insurance companies, asset managers, and pension funds to hold the largest amount of investments at the highest possible yield, extending duration to improve yield on permissible assets.

When these higher-risk assets (e.g., sovereign bonds from higher-risk countries) bear a zero risk weight and other capital constraints do not offset this (i.e., with a leverage requirement), funds may flow in disproportionate amounts to high-risk domiciles with results at best uncertain for financial stability under stress scenarios in which funds typically flee to genuine quality obligations (e.g., U.S. Treasuries). Flight-to-quality panics pose fire-sale and other risks — risks exacerbated in unknown ways if dollar or other reserve-currency deflation accompanies market instability sparked by negative rates.

Risk incentives from negative rates could also affect equity markets. Investors seeking to increase their own returns to compensate for newly-costly bank deposits would not only seek to join financial institutions in the high-yield debt market, but also increase their holdings of equities, real estate, and other assets. Asset-price bubbles in numerous classes could thus become an even more acute concern.

## Conclusion

In this brief, we have sketched significant policy considerations upon any decision by the FRB to promote nominal negative rates or market phenomena that force rates below the ZLB. Taking into consideration possible changes to financial intermediation, capital-market operations, and risk incentives, it is not hard to envision a “Minsky moment”—i.e., a sudden realization across some or even all markets that returns are dissociated from risk, risks central banks and fiscal policy are powerless to avert. The 2008 crisis was such a Minsky moment, sparked by sudden market recognition that large holdings of subprime mortgages and other highly-rated obligations were priced without regard to risk. In 2011, a similar frightening moment occurred when sovereign-debt holders suddenly agreed that higher-risk Eurobond issuers were unlikely to honor their obligations and that the Eurozone lacked the institutional or governance capacity to address this. The 2013 “taper tantrum” and subsequent U.S. flash crashes are not classic Minsky moments because of the role of liquidity, not just asset-price drops, but they do demonstrate that the illiquidity and other market phenomena described above can have a strong and immediate impact on market stability even without clear sources of asset volatility and other known valuation factors.

The possible financial-stability impact of negative rates demonstrates considerable risk. Policy-makers and market participants hope that macroprudential policies mitigate these risks. However, much macroprudential policy is incomplete and virtually none of it addresses non-bank financial institutions or broader markets. As a result, monetary-policy initiatives are unlikely to be buffered by macroprudential stabilizers. This makes it even more critical that monetary-policy initiatives be carefully constructed to prevent unanticipated, perverse results.