EVALUATING MONETARY POLICY'S NEW INSTRUMENTS

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Abstract

The leading central bank, the Federal Reserve of the U.S. has introduced after 2008 new instruments and unusual facilities to implement its new innovative monetary policy. The financial world and mostly the social scientists watch as the Federal Open Market Committee (FOMC) decides on a target interest rate in the federal funds market for the next period, especially, the last twelve years. How efficient was so far this ZIR monetary policy after the latest global financial crisis? Why they put all these burdens to the poor taxpayers (bail out) and to the risk-averse depositors (bail in)? The framework that the FOMC uses to implement monetary policy has changed over the last twelve years and continues to evolve today. Many people have started evaluating the new instruments and their "effectiveness". Before the 2008 financial crisis, policymakers used one set of traditional instruments (tools) to achieve the target rate. However, several policy interventions introduced soon after the crisis drastically altered the landscape of the federal funds market and the traditional economic theory. This new and uncertain environment, with enormous reserves and even interest on reserves, necessitated a new set of instruments by the Fed for its monetary policy implementation. Lately, after seven year of zero interest rate, the FOMC began in December 2015 to unwind the effects of these policy interventions; but many questions arise: Why the Fed follows the same rules? How they evaluated the effectiveness of these new instruments? Is the current federal funds rate the appropriate one for our economic wellbeing? The federal funds rate is very low and affects negatively the financial markets (bubbles are growing), the real rates of interest (it is negative for twelve years), the deposit rates (they are closed to zero for twelve years), and the redistribution of wealth of depositors and taxpayers, which means the true economic welfare is falling and a new global recession is in preparation, if the current unfair easy money policy will continue.

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JEL (Classification): E52, E58, E4, E44, E23, D60

I. Introduction: Traditional Monetary Policy before the 2008 Financial Crisis
Before the financial crisis, banks were holding reserves in an account at the Fed and were required to maintain a balance above a certain fraction of their deposits, the required reserves

(R_R),[1] eq. (2). At that time the federal funds market was an interbank market in which the largest players on both the demand and supply sides were domestic commercial banks, and the equilibrium effective federal funds rate was set bilaterally between the lending and borrowing banks. Some banks were holding excess reserves (R_E) to satisfy unanticipated demands; of course, the Fed did not pay interest on these excess reserves, which was and is economically reasonable and socially fair. So banks were looking to lend overnight these excess reserves in the federal funds market to earn a positive rate of return (EFFR, i_{FF}^{eff}). Approximately 60% of these transactions were bank-to-bank lending.[2] The main drivers of activity in this market were daily idiosyncratic liquidity shocks, along with the need from the deficit banks to fulfill their reserve requirements. Rates were set based on the quantity of funds available in the market and the perceived risk of the borrower, as follows:

$$i_{FF}^{eff} = f(\overset{-}{R_R^s}, \overset{+}{R_R^d}, \overset{+}{Risk}) \qquad (1)$$

where, R_R^d = demand for reserves, R_R^s = supply of reserves, and i_{FF}^{eff} = effective federal funds rate.

Although the Federal Open Market Committee (FOMC) sets a target for the federal funds rate ($\bar{i}_{FF}$), the actual funds rate is determined in the market, with the "effective" rate (i_{FF}^{eff}) being the weighted average of all the overnight lending transactions in the federal funds market. When the effective rate moved too far from the Fed's target before the financial crisis, the FOMC adjusted it through open market operations. For example, if the Fed wanted to raise the effective rate, it would sell securities to banks in the open market and banks reserves are falling. Buying those securities by the banks reduced the funds banks had available for lending in the federal funds market and drove the interest rate up. The Fed's portfolio of securities consisted mainly of treasury bills, generally of short maturity, and its balance sheet was small, less than $900 billion. Graph 1.[3]

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[1] See, Kallianiotis (2017).
[2] See, Afonso, Entz, and LeSueur (2013).
[3] Graph 1: All Federal Reserve Banks: Total Assets:

Note: Total assets were on August 22, 2007: $789.613 billion (T-Bills: $277.019 billion and L-T T-bonds: $512.594 billion); on September 10, 2008: $925.725 billion; then, on November 30, 2008 became $1,629.339 billion (U.S. Treasury securities $1,555.961 billion + other assets of $73.378 billion). In December 2008, Fed announced QE (purchase of L-T Treasuries and Mortgage-backed securities, T-Bills were only $18.423 billion). On December 31, 2008, the total assets became: $2,239.457 billion; on May 19, 2010: $2,350.890 billion; on February 1, 2012: $2,924.947 billion; on January 14, 2015: $4,516.077 billion; on June 14, 2017: $4,476.269 billion; then, on June 13, 2019: $3,849.955 billion; and on August 14, 2019: $3,331.637 billion. On December 26, 2019, they were going up again to $4,165.591 billion (T-Bills: $164.167 billion, Notes and Bonds: $2,159.857 billion, Mortgage-backed securities: $1,420.886 billion, other: $420.681 billion). Today (1/2/2020), the total assets are: $4,173.626 billion. Source: https://fred.stlouisfed.org/series/WALCL .
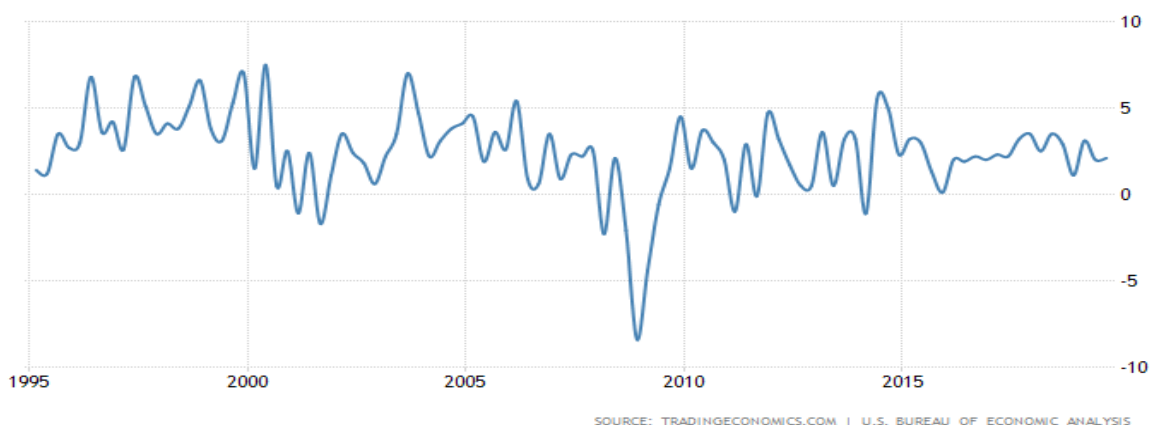
Banks hold reserves in an account at the Fed and are required to maintain a balance above a certain fraction of their deposits, called required reserves (R_R).[4] Prior to the onset of the Great Recession in January 2008 (Graph 2),[5] a defining feature of the fed funds market was that reserves were scarce.[6] As a result, throughout the day a bank's reserves would fluctuate as payments were made or received, and some banks would find themselves short of their reserve requirements at the end of the day. In order to avoid borrowing at the Fed's discount window, these banks would look to borrow from other banks in the fed funds market.[7]

See also, https://www.federalreserve.gov/releases/bulletin/1208assets.htm . Further, http://www.econdataus.com/fedbal08.html . Furthermore, https://www.federalreserve.gov/releases/h3/current/default.htm

[4] See, eq. (2) bellow. See also, "Reserve Requirements", https://www.federalreserve.gov/monetarypolicy/reservereq.htm

[5] Graph 2: **United States GDP Growth Rate**:

Source: https://tradingeconomics.com/united-states/gdp-growth

[6] Monetary Base = $821 billion (= Reserves: $46 billion + Currency: $775 billion). See, https://www.federalreserve.gov/releases/h3/20081229/

[7] Banks would try to avoid borrowing at the discount window because the rate was higher than the typical rate being offered in the fed funds market (with January 2020, they were: $i_{DR} = 2.25\% > i_{FF}^{eff} = 1.47\%$). See, *The Wall Street*

At the same time, some other banks would find themselves holding excess reserves at the end of the day (R_E). Since the Fed did not pay interest on reserves (excess and required reserves) deposited overnight, these banks would look to lend in the federal funds market or to offer loans to earn a positive rate of return. As there were a significant number of banks on both sides of the market, some looking to borrow and others looking to lend, trading volume in the fed funds market was substantial, and interbank trades dominated market activity. Afonso, Entz, and LeSueur (2013)[8] estimated an average daily trading volume of approximately $200 billion in the fourth quarter of 2006, of which approximately 60% was accounted for by bank-to-bank lending. (Graph 3).[9]

Journal, January 2, 2020), and because there was a stigma associated with borrowing at the discount window. See Ennis and Weinberg (2013). Also, Hajimichalakis (1982).

[8] See, "Who's Borrowing in the Fed Funds Market?", https://libertystreeteconomics.newyorkfed.org/2013/12/whos-borrowing-in-the-fed-funds-market.html

[9] Graph 3: Fed Funds Lending (2006-2012) in billions of dollars:
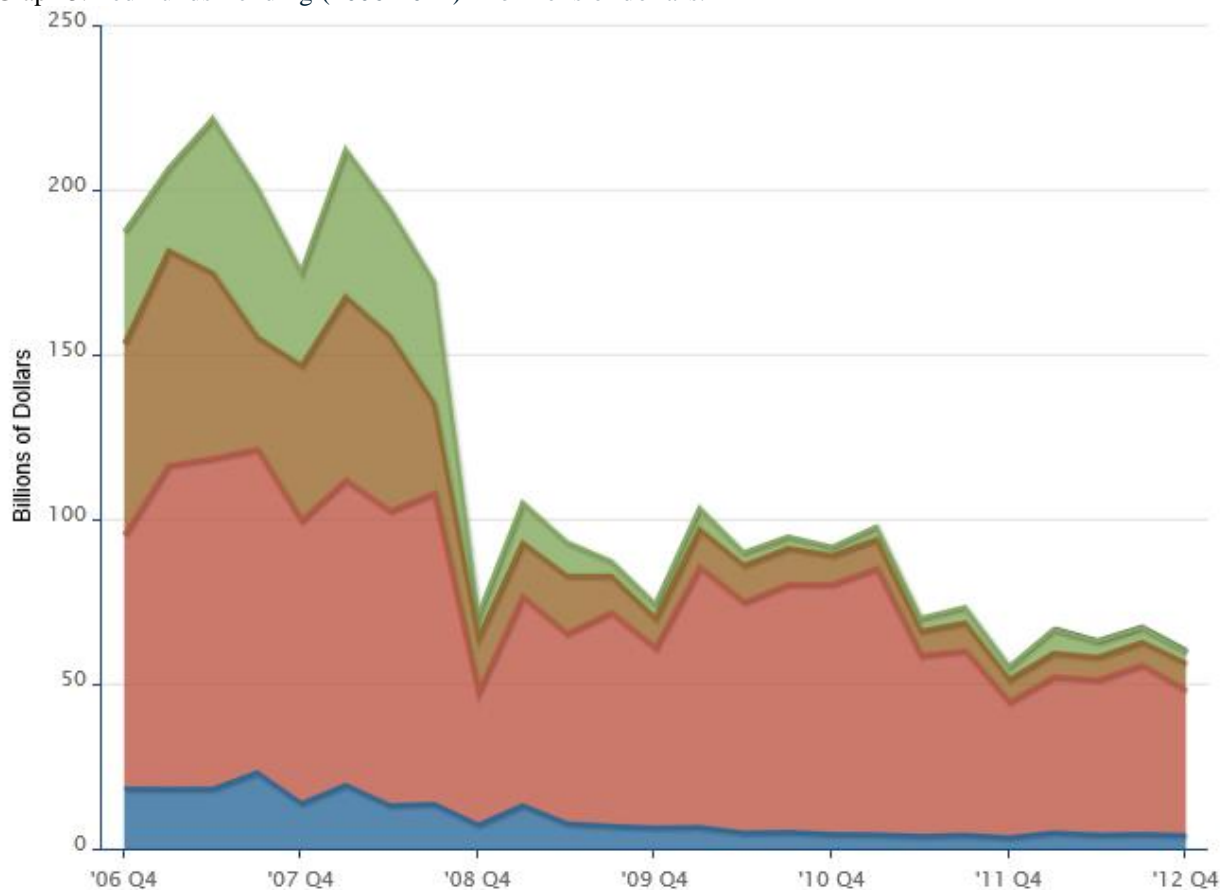
Note: For 2007:Q2, the Lending was the highest: Foreign Entities (green): $47.0 billion (21.2%); Domestic Bank Holding Companies (brown): $56.2 billion (25.3%); Federal Home Loan Banks (red): $100.4 billion (45.3%); Domestic Standalone Banks (blue): $18.2 billion (8.2%); Total $221.70 billion.

In this environment of scarce reserves, monetary policy implementation was fairly straightforward. The Open Market Trading Desk (the "Desk") at the Federal Reserve Bank of New York would implement the desired target for the effective federal funds rate (EFFR)[10] by adjusting the supply of reserves via open market operations,[11] eq. (3). If the Desk wanted to increase market rates, it would sell securities (such as Treasury bills and bonds) in the market, where, it is increasing the supply of securities and is decreasing the supply of cash held by banks. As banks' supply of cash became scarcer, the rate at which they would be willing to lend would rise. Hence, as in the usual model of supply and demand, a reduction in the supply of reserves in the market would lead to an increase in the fed funds rate, eq. (1). As the fed funds rate rose, market rates would rise as well. The Federal Open Market Committee (FOMC) did not achieve the desired rate directly; instead, it used supply and demand for reserves to achieve a rate within the target range (i.e., from 0.00% to 0.25% up to 2008). Now (January 2020) the target rate is between (1.50% and 1.75%) since October 31, 2019.[12]

Thus, the interbank lending in the Fed funds market was working before the crisis as follows. A bank with excess reserves was lending them to cover the shortfall of another bank with less reserve than the required ones. Banks' deposits (total transaction accounts)[13] determine the amount of reserves they are required to hold at the Federal Reserve, eq. (2).

$$R_R = r_R \, DD \tag{2}$$

where, R_R = required reserves, r_R = required reserves ratio, and DD = demand deposits (transaction accounts).

For 2008:Q4, the lending has declined drastically, the Lenders were: Foreign Entities (green): $6.9 billion (9.7%); Domestic Bank Holding Companies (brown): $16.5 billion (23.3%); Federal Home Loan Banks (red): $40.3 billion (56.7%); Domestic Standalone Banks (blue): $7.3 billion (10.3%); Total $71.03 billion.
For 2012:Q4, the Lenders have declined, too: Thrifts: $0.4 billion; Foreign Entities (green): $3.5 billion (5.8%); Domestic Bank Holding Companies (brown): $8.2 billion (13.6%); Federal Home Loan Banks (red): $44.0 billion (73.0%); Domestic Standalone Banks (blue): $4.2 billion (0.07%); Total $60.28 billion.
Source: https://www.newyorkfed.org/fed-funds-lending/index.html

[10] The daily federal funds effective rate (EFFR, i_{FF}^{eff}), calculated by the Federal Reserve Bank of New York (New York Fed), is one measure of the overnight fed funds rate and is a weighted-average rate of all overnight fed funds transactions.
[11] See, "Open Market Operations in the 1990s". https://www.federalreserve.gov/pubs/bulletin/1997/199711lead.pdf . See also, Kallianiotis (2017). If a bank cannot find a lender, it can borrow from the Fed directly at the discount window rate (borrowed reserves, R_B).
[12] See, https://apps.newyorkfed.org/markets/autorates/fed%20funds . Also see, https://fred.stlouisfed.org/series/DFEDTARU
[13] Total transaction accounts consists of demand deposits, automatic transfer service (ATS) accounts, NOW accounts, share draft accounts, telephone or preauthorized transfer accounts, ineligible bankers acceptances, and obligations issued by affiliates maturing in seven days or less. Net transaction accounts are total transaction accounts less amounts due from other depository institutions and less cash items in the process of collection. For a more detailed description of these deposit types, see "Form FR 2900" at http://www.federalreserve.gov/apps/reportforms/default.aspx and Return to table

Sometimes, the Federal Open Market Committee (FOMC) did not achieve the desired rate directly. Instead it used supply and demand for reserves to achieve a rate within the target range. Treasury securities held by the Fed were sold to banks. Federal funds market, Open Market Operations, were affecting the federal funds rate. Supply of reserves and demand for reserves (Graph 3) was determined the effective federal funds rate. To raise rates, the Fed sold Treasury securities to decrease the supply of reserves within the federal funds market. A high fed funds rate means banks will borrow less. That is because it costs more to borrow enough fed funds to meet the reserve requirement. Interest rates will be high as a result. A low fed funds rate means banks will borrow more. This allows them to charge a lower interest rate. Banks can also borrow from the Federal Reserve's discount window,[14] which interest rate, known as the Federal discount rate,[15] is usually 0.50% higher than the target federal funds rate. That encourages banks to borrow fed funds from each other. The lending bank is engaged in a *fed funds sale*. Similarly, the borrowing bank is making a *fed funds purchase.*

Lately, the fed funds market has been shrinking ever since the 2008 financial crisis.[16] In 2007, banks lent $222 billion. In 2012, it was only $60 billion. (Footnote 9, Graph 3). What happened? First, the Federal Reserve increased its balance sheet to $4 trillion through quantitative easing.[17] (Graph 1). On December 18, 2013: it was $4,008.062 billion. The Fed bought U.S. Treasurys and mortgage-backed securities[18] from banks.[19] That left them with lots of reserves on their balance sheets. Second, the Fed now pays banks interest on excess reserves.[20] Banks have less incentive to lend excess fed funds, eq. (4).[21] The Federal Reserve sets the reserve requirement in

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[14] See, Kimberly Amadeo, "Federal Reserve Discount Window and How It Works", https://www.thebalance.com/federal-reserve-discount-window-3305923

[15] The discount rate is: $i_{DR} = \bar{i}_{FF} + 0.50\%$. . Now (01/02/2020): $1.75\% + 0.50\% = 2.25\%$. See, Kimberly Amadeo, "Federal Reserve Discount Rate", https://www.thebalance.com/federal-reserve-discount-rate-3305922

[16] See, Kimberly Amadeo, "2008 Financial Crisis: The Causes and Costs of the Worst Crisis Since the Great Depression", https://www.thebalance.com/2008-financial-crisis-3305679

[17] See, Kimberly Amadeo, "Quantitative Easing Explained: How Central Banks Create Massive Amounts of Money", https://www.thebalance.com/what-is-quantitative-easing-definition-and-explanation-3305881

[18] See, Kimberly Amadeo, "Mortgage-Backed Securities, Their Types, and How They Work: How Mortgage-Backed Securities Worked Until They Didn't", https://www.thebalance.com/mortgage-backed-securities-types-how-they-work-3305947

[19] On November 30, 2008 the Fed assets were $1,629.339 billion (U.S. Treasury securities $1,555.961 billion + other assets of $73.378 billion, but Mortgage-backed securities were zero, $0.000). With June 27, 2019, the U.S. Treasury securities were: $2,110.193 billion, the Mortgage-backed securities: $1,532.956 billion, and other: $232.705 billion. A total of $3,882.854 billion. With August 8, 2019, there was a little reduction; the U.S. Treasury securities were: $2,080.703 billion, the Mortgage-backed securities: $1,511.775 billion, and other: $236.191 billion. A total of $3,828.669 billion.
https://www.federalreserve.gov/releases/h41/current/h41.htm

[20] See, Interest on depository institutions' required and excess reserve balances.
https://www.federalreserve.gov/monetarypolicy/20081006a.htm

[21] See, "Who's Lending in the Fed Funds Market?", https://libertystreeteconomics.newyorkfed.org/2013/12/whos-lending-in-the-fed-funds-market.html#. Also see, Graph 3: Total Federal Funds Sold (Lending).

order to control the amount of money available to lend. That is known as liquidity.[22] The requirement keeps banks from lending out all their money. The Fed requires that a certain percentage of the bank's deposits need to be reserved each night, eq. (2).

After 2008, the banking system has been awash (flooded) in reserves and the federal funds rate has been near zero; the market has continued to operate, but it has changed and has affected negatively (depositors' and taxpayers') social welfare. Different institutions now participate. Government-sponsored enterprises such as the Federal Home Loan Banks (FHLB) loan funds, and foreign commercial banks borrow. (Graph 3).[23] The literature is enormous on this new unorthodox monetary policy, as it is presented within the paper.

II. The Federal Reserve and its New Monetary Policy Instruments

The financial crisis and the policies enacted to deal with its consequences led to great change in the federal funds market. In general, three developments caused most of the change: (α') the Fed's balance sheet expanded in size,[24] (β') new banking regulations were enacted, and (γ') the Fed began paying interest to banks on funds they held in their reserve accounts at the Fed (IOR). Also, they started using new monetary policy instruments (tools).

The Federal Reserve utilizes four tools plus some new facilities of implementing monetary policy and managing short-term interest rates: (1) Open market operations, OMO,[25] (2) the discount rate, i_{DR},[26] (3) reserve requirements, R_R (actually, reserve requirements ratio, r_R),[27] (4) interest on required and excess reserves, IOR&ER;[28] also, (5) overnight reverse repurchase agreement facility, ON RRP,[29] (6) term deposit facility, TDF,[30] (7) expired policy tools,[31] and

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[22] See, Kimberly Amadeo, "Liquidity, Its Gluts, Traps, and Ratios, and How the Fed Manages It: How It Controls the Economy and Your Finances", https://www.thebalance.com/liquidity-definition-ratios-how-its-managed-3305939

[23] See, Kallianiotis (2019b).

[24] See, Wolla (2019).

[25] See, "Open Market Operations", https://www.newyorkfed.org/aboutthefed/fedpoint/fed32.html

[26] See, "The Discount Window", https://www.newyorkfed.org/aboutthefed/fedpoint/fed18.html

[27] See, "Reserve Requirements", https://www.federalreserve.gov/monetarypolicy/reservereq.htm

[28] See, "Interest on Required Reserve Balances and Excess Balances", https://www.federalreserve.gov/monetarypolicy/reqresbalances.htm

[29] See, Overnight Reverse Repurchase Agreement Facility, https://www.federalreserve.gov/monetarypolicy/overnight-reverse-repurchase-agreements.htm

[30] In the Policy Normalization Principles and Plans adopted by the Federal Open Market Committee (FOMC) on September 17, 2014, the FOMC indicated that during the process of monetary policy normalization, the Federal Reserve intends to use other supplementary tools, such as the TDF, as needed to help control the federal funds rate and move it into the target range set by the FOMC. See, Term Deposit Facility (TDF), https://www.federalreserve.gov/monetarypolicy/tdf.htm

[31] During the financial crisis, the Federal Reserve established several facilities to provide liquidity directly to borrowers and investors in key credit markets. As the performance of financial markets has improved, the Federal Reserve has wound down some of the programs. They were the followings:
- Money Market Investor Funding Facility

(8) the scorn margin requirements tool (r_m).[32] Using these tools (instruments), the Federal Reserve influences the demand for, and supply of balances that depository institutions hold at Federal Reserve Banks. The interest rate on fed funds transactions is typically sensitive to the level of reserve balances in the banking system, [eq. (1)], and so changes made through these tools influences the fed funds rate, and consequently, banks' and investors' decisions. Fed funds transactions neither increase nor decrease total reserves [eq. (3)], rather they redistribute reserves by using Fed-wire Funds services.

$$R_T^d = R_R + R_E = r_R\,DD + R_E \equiv R_T^s = R_B + R^* \tag{3}$$

$$R_E = f(\overset{+}{i_{IOER}},\ \overset{+}{i_{DR}},\ \overset{-}{I}) \tag{4}$$

$$F_{cash} = r_m\,V_{securities} \tag{5}$$

where, R_T^d = demand for total reserves, R_R = required reserves, R_E = excess reserves, r_R = required reserves ratio, DD = demand deposits, R_T^s = supply of total reserves, R_B = borrowed reserves, R^* = non-borrowed reserves, i_{IOER} = interest rate on excess reserves, i_{DR} = discount rate, I = investment opportunities, r_m = margin requirements, F_{cash} = Funds in cash for opening a margin brokerage account,[33] and $V_{securities}$ = market value of securities purchased.

Traditionally, at the directive of the FOMC, the trading desk at the New York Fed ("the Desk") adjusts the level of reserve balances in the banking system through open market operations. In fact, the directive for implementation of U.S. monetary policy from the FOMC to the New York Fed states that the Desk should "create conditions in reserve markets" that will encourage fed funds to trade at a particular level. In formulating monetary policy, the FOMC sets a target level or range for the fed funds rate (currently, 1.50% - 1.75%)[34] appropriate for the

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- ABCP MMMF Liquidity Facility
- Commercial Paper Funding Facility
- Primary Dealer Credit Facility
- Term Securities Lending Facility
- Term Auction Facility
- Term Asset-Backed Securities Loan Facility
- Maturity Extension Program and Reinvestment Policy

See, "Expired Policy Tools", https://www.federalreserve.gov/monetarypolicy/expiredtools.htm

[32] The $r_m = 50\%$ since 1974. See, https://www.frbsf.org/economic-research/publications/economic-letter/2000/march/margin-requirements-as-a-policy-tool/

[33] See, "Cash or Margin Brokerage Account?" https://www.thebalance.com/cash-account-vs-margin-account-357409

[34] This new target was introduced on October 31, 20019 and it was a reduction by 0.25% from the previous rate, which was between of 1.75%-2.00%. See, https://apps.newyorkfed.org/markets/autorates/fed%20funds . See also,

desired level of monetary policy accommodation. When rates approach zero, the FOMC may utilize other indicators of the stance of monetary policy in addition to the fed funds target, as it did from 2008 until 2015. It is important to remember that actual fed funds rates (i_{FF}^{eff}) are determined by market participants, based on market conditions, eq. (1) above.

Although monetary policy has focused on setting an appropriate level for the federal funds rate since well before the financial crisis; but, the mechanics since the crisis have changed. In response to the crisis, several new policies were enacted that altered the structure of the federal funds market in profound ways. On the borrowing side, the Fed's large-scale asset purchases (LSAPs) flooded the banking system with liquidity and made it less necessary to borrow or to seek more deposits, which has raised serious ethical policy questions. Banks have a deposit rate closed to zero ($i_D = 0.05\%$) for more than eleven years. In addition, the Federal Deposit Insurance Corporation (FDIC) introduced new capital requirements[35] that increased the cost of wholesale funding for domestic financial institutions. On the lending side, the Federal Reserve is paying financial institutions interest on their excess reserves (IOER),[36] which exceeds the federal funds rate. (Footnote 47). When institutions have access to this low-risk alternative, they have less incentive to lend in the federal funds market, because $i_{IOR} > i_{FF}^{eff}$.

Lately, the Federal Reserve officials are weighing whether to use a new tool that could reduce the risk of a credit crunch in a downturn. The tool is known as *the countercyclical capital buffer.*[37] It allows the Fed to require banks to hold more loss-absorbing capital should the economy show signs of overheating, or to keep less of it during bad economic times. The buffer applies generally to banks with more than $250 billion in assets, including firms such as JPMorgan Chase & Co., Bank of America Corp. and Citigroup Inc.[38] Unfortunately, there is an

https://www.federalreserve.gov/monetarypolicy/openmarket.htm

[35] On April 16, 2019, the FDIC, the Office of the Comptroller of the Currency, and the Board of Governors of the Federal Reserve System issued a proposal that would establish risk-based categories for determining applicability thresholds for regulatory capital requirements for certain U.S. subsidiaries of foreign banking organizations and application of liquidity requirements to foreign banking organizations, certain U.S. depository institution holding companies, and certain depository institution subsidiaries. Comments on the proposal must be received by June 21, 2019. See, "Regulatory Capital", https://www.fdic.gov/regulations/capital/capital/index.html

[36] See, George Selgin, "The Strange Official Economics of Interest on Excess Reserves", October 3, 2017. https://www.alt-m.org/2017/10/03/strange-official-economics-of-interest-on-excess-reserves/

[37] See, "Countercyclical capital buffer (CCyB)", BIS, https://www.bis.org/bcbs/ccyb/ . See also, Occhino (2018). "Are the New Basel III Capital Buffers Countercyclical? Exploring the Option of a Rule-Based Countercyclical Buffer", https://www.clevelandfed.org/newsroom-and-events/publications/economic-commentary/2018-economic-commentaries/ec-201803-countercyclical-capital-buffers.aspx

[38] See, "Fed Considers New Tool for a Downturn", https://www.wsj.com/articles/fed-considers-new-tool-for-a-downturn-11565614800?mod=article inline . See also, The Federal Reserve is weighing whether to activate a dormant tool to combat credit crunches in a downturn as part of a broader overhaul of big-bank-capital and stress-testing requirements. Fed Vice Chairman for Supervision Randal Quarles, in remarks prepared for delivery Thursday in Frankfurt, proposed integrating the tool, the countercyclical capital buffer, into pending revisions to the annual stress testing exercises faced by the nation's largest banks. The countercyclical capital buffer allows the Fed to require banks to hold more loss-absorbing capital should the

important monetary policy tool, which is inactive for a very long time. This is the margin requirements, r_m,[39] which could confine the financial market bubble.

III. The Effects of the Recent Changes in Monetary Policy

In the new of unconfirmed effectiveness monetary environment, the institutions willing to lend in the federal funds market are institutions whose reserve accounts at the Fed are not interest-bearing. These include government-sponsored entities (GSEs) such as the Federal Home Loan Banks (FHLBs), Graph 3. The institutions willing to borrow are institutions that do not face the FDIC's new capital requirements and do have interest-bearing accounts with the Fed. These include many foreign banks. As such, the federal funds market has evolved into a market in which the FHLBs lend to foreign banks, which then arbitrage the difference between the federal funds rate and the rate on IOER.[40]

Between January 2008 (from $880.754 billion) and the end of the financial crisis in May 2009, the Federal Reserve's balance sheet increased by 150%, swelling to $2.196 trillion (Graph 1). Since then, the balance sheet has increased by an additional $2.2 trillion and by July 2014, it had become $4.4 trillion. It consisted of $2.46 trillion in Treasuries, $26.81 billion in agency debt, and $1.76 trillion in mortgage-backed securities. The highest value was on January 14, 2015: $4.516 trillion and on August 14, 2019, it was $3,337.347 billion. The total banks' reserves ($R_R + R_E$) were $200.608 billion and $1,386.237 billion = $1,586.845 billion.

Thus, the landscape of the federal funds market was altered dramatically following the financial crisis. First, and most important, the Fed's large-scale asset purchase programs left depository institutions swimming inside excess reserves. Over four rounds of "quantitative easing" (QE) in 2008, 2010, 2012, and 2014, the Fed purchased a huge amount of assets such as U.S. Treasury debt and agency mortgage-backed securities (Graph 4a and Graph 1).[41] As the Fed was buying

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economy show signs of overheating or to keep less of it during bad economic times. The Fed has so far never turned it on, but it is now considering whether to integrate the tool into a plan proposed last year to overhaul the annual exercise that tests big banks' ability to weather a doomsday scenario. See, https://www.wsj.com/articles/feds-quarles-floats-countercyclical-capital-buffer-changes-11567676701

[39] See, Kallianiotis (2017).

[40] The rates in the fed funds market are effectively split into two segments by the IOR rate. Government-sponsored enterprises (GSEs) lend to banks that then earn IOR on the additional funds. The agreed rates for these trades are typically between the ON RRP rate (the opportunity cost for the lender) and the IOR (the return for the borrower). Then, $i_{ON\,RRP} < i_{FF}^{eff} < i_{IOR} < i_{DR}$. See, Afonso, Armenter, and Lester (2018a and b), https://libertystreeteconomics.newyorkfed.org/2018/07/size-is-not-all-distribution-of-bank-reserves-and-fed-funds-dynamics/comments/
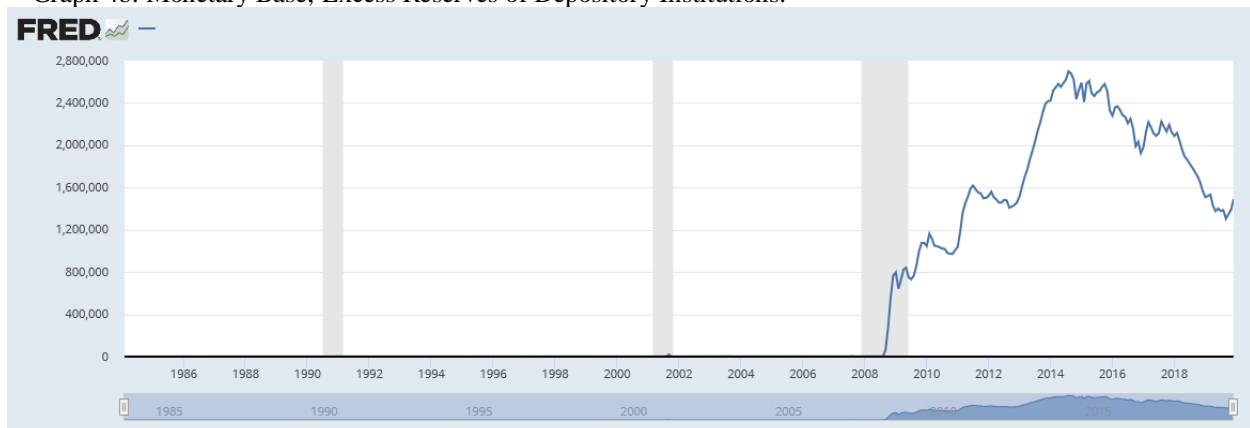
[41] Graph 4a: St. Louis Adjusted Monetary Base:

these assets, the banks that were selling them saw their excess reserve (R_E) balances to become enormous. As a result, excess reserves held by depository institutions reached $2,699.968 billion by August 2014. To put that in perspective, in the pre-crisis years, by August 2008 they were $1.876 billion; in December 2008 became $767.319 billion; in February 2010 were $1,161.852 billion; in July 2011 became $1,618.118; in August 2014 they reached $2,699.968 billion; and then, they started to decline and were in May 2019: $1,376.568 billion. (Graph 4b).[42] In July 2019, they were $1,378.447 billion. Today (December 2019), the monetary base is $3,382.800 Billion, the currency in circulation is $1,786.231 billion, the required reserves (R_R) are $206.586 billion, and the excess reserves (R_E) are $1,388.636 billion, also some other reserves of $1.347

Note: Monetary base was on September 10, 2008: $874.83 billion; December 31, 2008: $1,690.829 billion; February 24, 2010: $2,183.734 billion; February 22, 2012: $2,753.052 billion; September 17, 2014: $4,149.829 billion; April 15, 2015: **$4,167.780** billion; on June 14, 2019: $3,304.252 billion; on August 14, 2019: $3,331.637 billion; and on December 19, 2019 it was $3,441.873 billion (reserves: $1,649.453 billion and currency: $1,792.420 billion).
Source: https://fred.stlouisfed.org/series/BASE/ See, also, https://research.stlouisfed.org/datatrends/usfd/page7.php https://www.federalreserve.gov/releases/h3/current/

[42] Graph 4b: Monetary Base; Excess Reserves of Depository Institutions:

With December 30, 2019, they continue to growth to $R_{E=}$ $1,491.106 billion.
Source: https://fred.stlouisfed.org/series/EXCSRESNS

billion and continue to grow. (Graphs 4a, 4b, 4c, and 4d).[43] The money supply (M2) has surpassed all its limits. Graph 5.

Also, the average maturity of assets on the Fed's balance sheet rose as the FOMC rebalanced the portfolio, substituting long-term assets for short-term ones.[44] Interest rates were also expected to
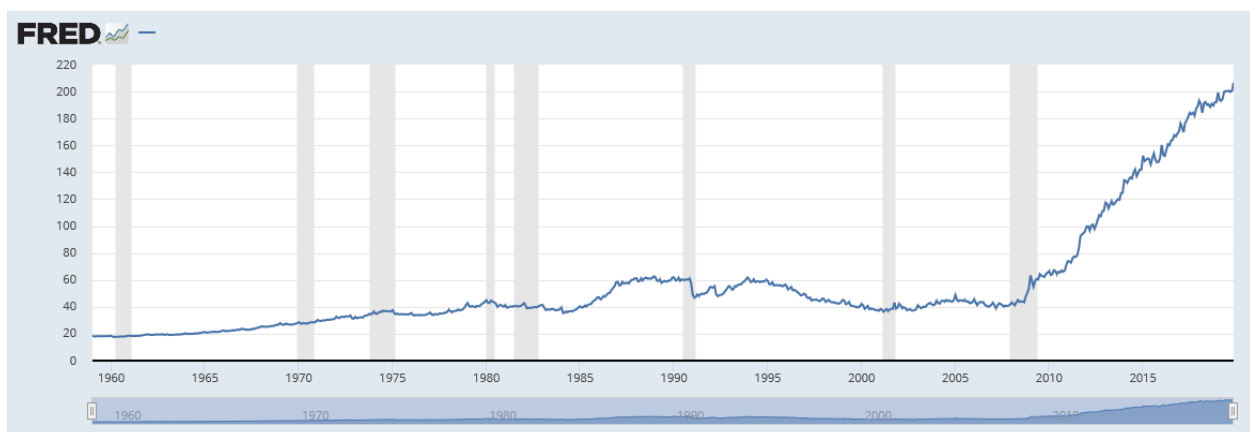
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[43] Graph 4c: Monetary Base; Currency in Circulation:
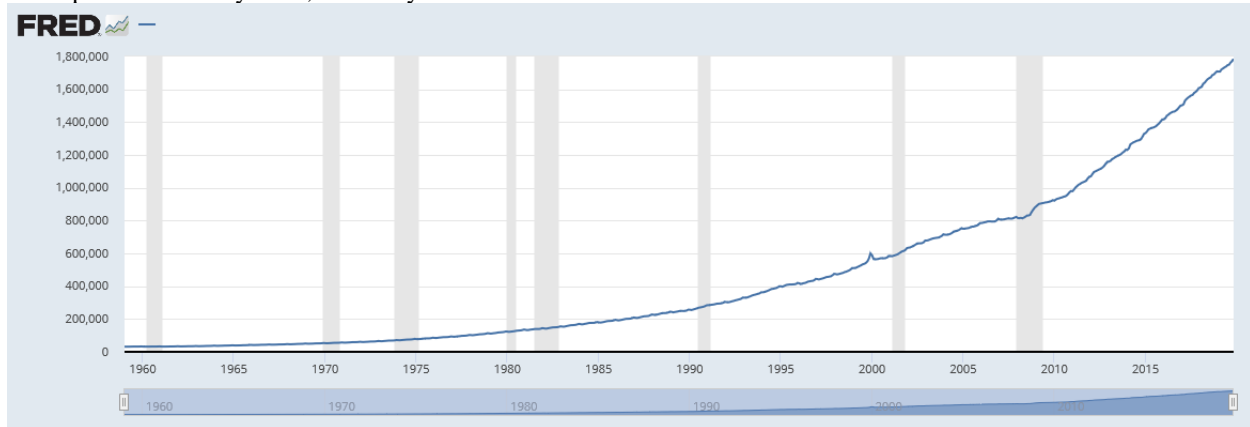
With December 30, 2019, C = $1,796.397 billion.
Source: https://fred.stlouisfed.org/series/MBCURRCIR

Graph 4d: Monetary Base; Required Reserves of Depository Institutions:

With December 30, 2019, M2 = $15,427.9 billion.
Source: https://fred.stlouisfed.org/series/M2

[43] With 12/25/2019, they were: (1) Bills: $164.167 billion; (2) Notes and Bonds: $2,159.857 billion; (3) Mortgage-backed securities: $1,420.886; and (4) Other assets: $462.392 billion; Total: $4,207.302 billion. See, https://www.federalreserve.gov/releases/h41/current/h41.pdf

Graph 6a: U.S. Gross Private Domestic Investment (billions of dollars, SA):
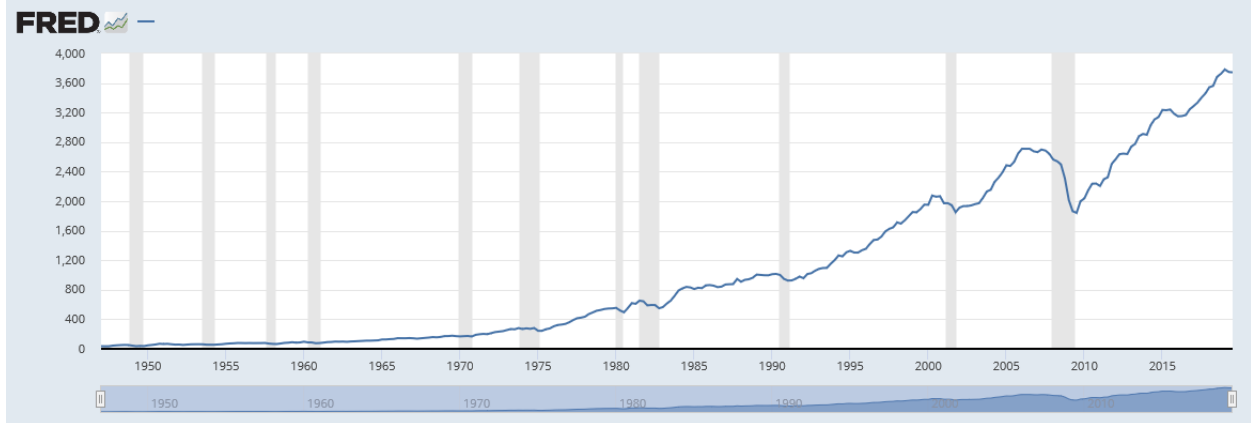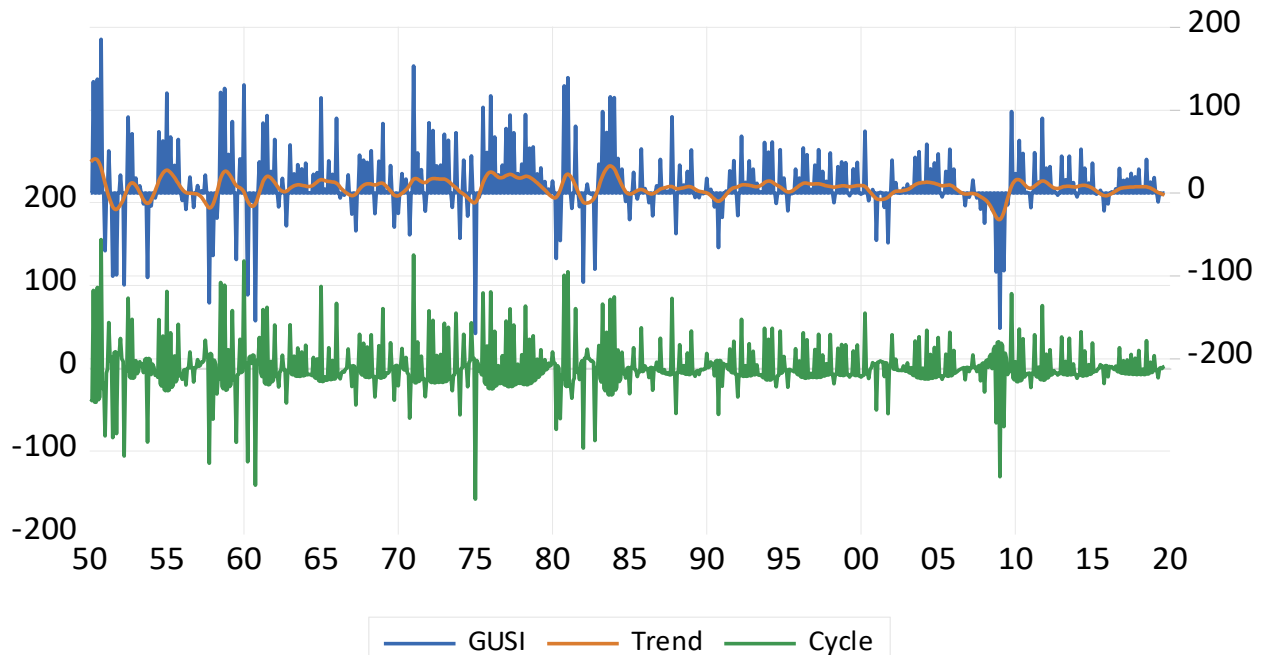

In 2007:Q2, it was I=$2,697.217 billion; in 2009:Q3, I=$1,841.416 billion and until 2013 it was below the 2007 level. In 2019:Q3, I= $3,744.607 billion.

Source: https://fred.stlouisfed.org/series/GPDI

When $D_{L-T} \uparrow \Rightarrow P_{L-T} \uparrow \Rightarrow i_{L-T} \downarrow$ and if $D_{S-T} \downarrow \Rightarrow P_{S-T} \downarrow \Rightarrow i_{S-T} \uparrow$.

Graph 6b: Growth of U.S. Gross Private Domestic Investment:

Hodrick-Prescott Filter (lambda=144)

Source: *Economagic.com*

[44] See, Potter (2017).

[44] The ill-omened day for our economic history because of its immense negative effects on social welfare.

[44] Interest on reserves (IOR=IORR+IOER) is the rate at which the Federal Reserve Banks pay interest on reserve balances, which are balances held by depository institutions at their local Reserve Banks. One component of IOR is

stay low because it was the goal of policy suggested in FOMC post-meeting statements, policymaker speeches, and Congressional testimony.[45] In October 2008 (ἡ ἀποφράς ἡμέρα),[46] the Federal Reserve had begun to pay interest on reserves (IOR).[47] The IOR was set at the top of the federal funds target range and remained about 20 basis points above the discount rate on 3-month Treasury bills ($i_{IOR} = i_{RF} + 0.20\%$).[48] This was a factor that increased banks' willingness to hold a large stock of excess reserves. Paying interest on excess reserves and supplying a large stock meant that the FOMC had switched from direct federal funds targeting to a floor system.[49] Interest rates paid on other short-term financial securities (for example, commercial paper and Treasury bills), often move up or down roughly in parallel with the funds rate. Yields on long-term assets (i. e., corporate bonds and Treasury notes), are determined in part by expectations for the fed funds rate in the future. These enormous federal funds cannot be absorbed by banks

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Interest on Required Reserves (IORR), which is the rate at which the Federal Reserve Banks pay interest on required reserve balances (R_R). Paying interest on required reserves aims to eliminate the opportunity cost that depository institutions incur by not investing required reserves in interest-bearing assets; but all these interests are paid by the taxpayers. The other component of IOR is Interest on Excess Reserves (IOER), which is the interest paid on those balances (R_E) that are above the level of reserves the depository institution is required to hold. Paying IOER increases the incentive for depository institutions to sell securities to the Fed, providing the Federal Reserve additional control over the effective federal funds rate (i_{FF}^{eff}) at the time that demand for loans is low. But, these IOR are paid by the poor taxpayers. (*Sic*).

[48] During the Zero Interest Rate Regime (2008:12-2015:11), on the average this i_{IOR} was: $\bar{i}_{IOR} = \bar{i}_{RF} + 0.20\% = 0.078\% + 0.20\% = 0.278\%$ (Table A1). This rate was on August 1, 2019, $i_{IOR} = 2.10\%$. See, "Interest on Required Reserve Balances and Excess Balances", https://www.federalreserve.gov/monetarypolicy/reqresbalances.htm . Then, if banks are receiving interest (2.10%=1.90% + 0.20%) from the Fed, why to pay interest on deposits? They do not need more funds from depositors as long as the Fed provides this enormous liquidity (R_E). Banks kept a deposit rate closed to zero ($i_D = 0.05\%$), which was giving a negative real deposit rate ($r_D = -1.536\%$). Now (January 2020), $r_D = -2.05\%$. This is another proof that the Fed has failed (or it has no interest) to maximize the depositors' interest income and consequently, their welfare. Fed is supplying these trillions of dollars reserves to banks and because there is no demand for investments (Graphs 6a and 6b), banks cannot offer loans (Graph 7), so they do not need all these excess reserves. Thus, the Fed offers to banks a high interest rate to avoid the opposition of the banks against this QE policy. (*Sic*). See, Kallianiotis (2019a). Depositors are paying interest, instead of receiving, on their bank accounts ($r_D < 0$). (*Sic*).

[49] See, Bindseil (2016). Vice President of Federal Reserve Bank of St. Louis, Stephen Williamson, explained that given the large stock of reserves outstanding, the Fed should, in principle, be able to target the federal funds rate (or the interest rate banks charge when they lend to each other overnight) by setting the interest rate on excess reserves (IOER). However, Williamson noted that the IOER was set at 0.25 percent from late 2008 through December 2015, while the fed funds rate has generally been 5 to 20 basis points lower than the IOER since early 2009. He wrote: "This difference between the IOER and the fed funds rate is typically ascribed to costs for commercial banks associated with borrowing on the fed funds market." Williamson noted that "the solution adopted by the Fed is unique in central banking—a floor system with a subfloor." The subfloor is dictated by the rate on what are called overnight reverse repurchase agreements, or ON-RRPs. See, "The Fed and Interest Rates: A Floor with a Subfloor". https://www.stlouisfed.org/on-the-economy/2016/july/fed-interest-rates-floor-subfloor

because there is no sufficient demand for investments[50] and for this reason, they cause only bubbles in the financial market (enormous liquidity, which is offered to financial investors by using margin accounts with $r_m = 50\%$) and keep the deposit rate closed to zero. Then, this policy is not only inefficient and ineffective, but bad (risky and unfair) for depositors, taxpayers and the economy (our financial system).

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[50] The demand for investments depends on the demand for goods by the Americans and their demand depends on their income and employment, which depend on domestic production. With the outsourcing, this production has gone abroad and the income of Americans has fallen and unemployment is very high. (See, Footnote 70). The domestic aggregate demand can increase only if manufacturing and agricultural production and jobs will come back to the country. Then, we need, here, a fiscal and a trade policy to improve these conditions. Monetary policy does not work by itself. The liberal central bank is in favor of liberals agenda for the country: Russia => Racism => Recession => Revenge (against the country) => Reproach (climate) => Refer to (impeachment) => Restraint (globalization). The establishment allowed for 26 years (since 1994) an unfair trade with the emerging markets and the country (the entire western economies) is suffering. The fake news is exposing the lies in the tariff fight with China and affects negatively the financial market. (*Fox News*, August 23, 2019). The demand for bank loans has declined.

Graph 7: Commercial and Industrial Loans, All Commercial Banks.

Source: https://fred.stlouisfed.org/series/CILACBQ158SBOG
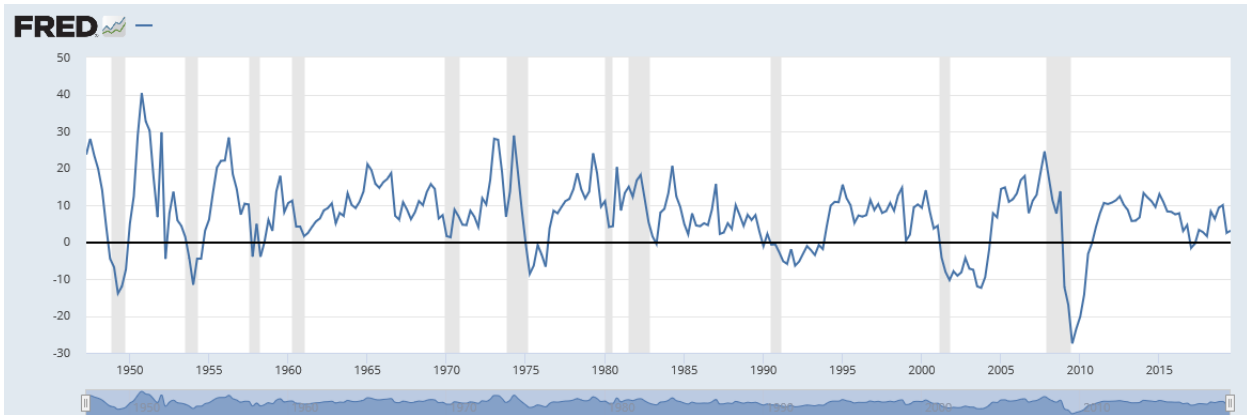
Consequently, in October 2008, in the hope of putting a "floor" beneath market rates, the Fed started paying an interest rate of 25 basis points on overnight reserves deposited by banks.[51] However, this overnight rate was not made available to other financial institutions, including government-sponsored entities like the Federal Home Loan Banks (FHLB) as well as money market funds. As a result, the introduction of interest on reserves (IOR), with eligibility restrictions, created a gap between the interest rates available to different types of financial institutions. Further, changes in the assessment of FDIC fees made borrowing in the interbank market more expensive for domestic banks. In response to the Dodd–Frank Act of 2010,[52] the Federal Deposit Insurance Corporation (FDIC) changed the basis for its fees from a bank's deposits to its assets. Since a bank's reserves are included in the calculation of its assets, this policy change increased FDIC fees and, hence, the cost of borrowing reserves on the interbank market. Economists estimate that these policy changes implied an additional cost between 4 and 7 basis points for each extra dollar of cash on a bank's balance sheet.[53] However, FDIC fees are imposed only on banks with U.S. deposits, and branches of foreign banks typically do not hold U.S. deposits, so this policy change raised the cost of borrowing for domestic banks while leaving foreign banks with U.S. subsidiaries largely unaffected.

The reason for the rapid increase of the bank reserves (R_T) is the introduction of quantitative easing (QE) programs by the Fed (the ZIRR).[54] The Fed purchased large amounts of longer-term securities like U.S. Treasury debt and mortgage-backed securities that are guaranteed by GSEs like Fannie Mae and Freddie Mac.[55] By reducing the supply of these securities, the Fed increased

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[51] This policy change was made possible when Congress passed the Financial Services Regulatory Relief Act in 2006, clearing the way for the Federal Reserve to start paying interest on reserves to eligible depository institutions effective October 1, 2011. This date was later moved up to October 1, 2008, as a result of the Emergency Economic Stabilization Act of 2008. The *Emergency Economic Stabilization Act of 2008* (Division A of Pub.L. 110–343, 122 Stat. 3765, enacted October 3, 2008), commonly referred to as a *bailout of the U.S. financial system*, is a law enacted subsequently to the subprime mortgage crisis authorizing the U.S. Secretary of the Treasury to spend up to $700 billion to purchase distressed assets, especially mortgage-backed securities, and supply cash directly to banks. The funds for purchase of distressed assets were mostly redirected to inject capital into banks and other financial institutions while the Treasury continued to examine the usefulness of targeted asset purchases. Both foreign and domestic banks are included in the program. The Act was proposed by Treasury Secretary Henry Paulson (who was an ex-Chairman and CEO of Goldman Sachs) during the global financial crisis of 2008 and signed into law by President George W. Bush on October 3, 2008. Banks are charging usurious interest on loans, paying zero interest on deposits, undertake risky investments and maximize their revenue (benefits). When a crisis is coming, we (the taxpayers) bail them out. These policies are completely wrong, unethical, and anti-social. Governments have to regulate financial institutions before the second global crisis of the 21st century.

[52] See, "Dodd–Frank Wall Street Reform and Consumer Protection Act". https://en.wikipedia.org/wiki/Dodd%E2%80%93Frank_Wall_Street_Reform_and_Consumer_Protection_Act. See also, https://www.cftc.gov/LawRegulation/DoddFrankAct/index.htm . Further, "H.R.4173 - Dodd-Frank Wall Street Reform and Consumer Protection Act". https://www.congress.gov/bill/111th-congress/house-bill/4173/text

[53] A basis point equals one hundredth of 1 percent (0.01%). McCauley and McGuire (2014) estimate a cost of 4 basis points, while Banegas and Tase (2016) find a cost of 7 basis points.

[54] The zero interest rate regime (ZIRR). See, "Gross: Low rates are the problem, not the solution". https://www.cnbc.com/2015/07/30/gross-low-rates-are-the-problem-not-the-solution.html

[55] See, "government-sponsored enterprise (GSE)": (1) Housing: The eleven Federal Home Loan Banks (FHLBanks) (1932); Federal National Mortgage Association (Fannie Mae) (1938); Federal Home Loan

their prices and lowered their yields, an approach designed to buoy mortgage markets and promote recovery. The first QE program was introduced in 2008, and two more rounds followed in 2010 and 2012. The QE programs flooded the banking system with liquidity and made it less necessary for banks to borrow in the federal funds market or to supply deposit accounts.[56]

The Fed's balance sheet growth has been mirrored in the cash holdings of commercial banks (Graph 1). The cash assets of domestic commercial banks increased by 467.4% between 2007 and 2016; where both large and small banks experiencing increases.[57] The U.S. branches of foreign-related institutions and the agencies of foreign banks experienced a huge increase in cash assets as well of 1,647.6%. A second requirement facing the largest domestic banks took effect in early 2018, when the largest U.S. bank holding companies and their large depository subsidiaries were required to have achieved an "enhanced supplementary leverage ratio" by January 31.[58] The requirement was based on the ratio of regulatory capital to all balance sheet assets (including cash reserves) and certain off-balance-sheet assets. Expanding the regulation to include cash reserves effectively made them more costly. All else equal, an increase in cash reserves increases the assets of the institution, which incurs a higher cost from the regulators. As such, it was costlier to borrow in the federal funds market and hold the borrowed cash as reserves. One estimate for a large U.S. bank was suggesting the cost for holding these reserves could be as high as 35 basis points by January 2018, when the new requirements took effect.[59] Again, these requirements do not affect foreign banks.

Further, a quick look at banks' balance sheets suggests that the new leverage ratio requirement has had a significant effect on the cash holdings of both domestic and foreign banks. Foreign banks went from holding about 19.1% of the cash reserves held by the banking system in June 2008 to 42.9% of the reserves at the end of March 2015. At the same time, the non-reserve assets of foreign banks decreased by $432 billion during this period. Meanwhile, domestic institutions

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Mortgage Corporation (Freddie Mac) (1970); Financing Corporation (FICO) (1987). (2) Veteran: National Veteran Business Development Corporation (1999). (3) Farming: Federal Farm Credit Banks (FCBanks) (1916); Federal Agricultural Mortgage Corporation (Farmer Mac) (1987). (4) Education: SLM Corporation (Sallie Mae) (1972-1995).

[56] Banks supply deposits (deposit accounts). Deposits are supply-determined (a downward negatively sloped supply curve) by the banks. See, Hadjimichalakis (1982, p.3).

[57] Large banks are defined as the top 25 domestically chartered commercial banks ranked by domestic assets. The small banks are all banks not included in the top 25. See,
https://www.federalreserve.gov/releases/lbr/current/default.htm

[58] See, "Regulatory Capital Rules: Regulatory Capital, Enhanced Supplementary Leverage Ratio Standards for U.S. Global Systemically Important Bank Holding Companies and Certain of Their Subsidiary Insured Depository Institutions; Total Loss-Absorbing Capacity Requirements for U.S. Global Systemically Important Bank Holding Companies". https://www.federalregister.gov/documents/2018/04/19/2018-08066/regulatory-capital-rules-regulatory-capital-enhanced-supplementary-leverage-ratio-standards-for-us . Also, https://www.federalreserve.gov/newsevents/pressreleases/bcreg20180411a.htm . Further, https://www.occ.treas.gov/news-issuances/bulletins/2018/bulletin-2018-7.html . In addition, see, "Capital", https://www.occ.treas.gov/topics/capital/index-capital.html

[59] See, Stella (2015).

have been charging fees to discourage large investors from making large deposits with them.[60] In addition, the deposit rate on small deposits is closed to zero since 2008, which makes the real deposit rate negative (depositors are paying the banks to keep their deposits). Thus, risk-averse depositors have been forced to avoid depositing their money to banks. These changes in monetary policy overturn and invalidate its ultimate objective, which is the improvement of social welfare.

IV. Testing Some Monetary Policy Rules

According to Taylor's (1993) original version of the monetary policy rule, the nominal interest rate should respond to divergences of actual inflation rates from *target* inflation rates and of actual GDP from *potential* GDP [eq. (6′)].[61] This Taylor's rule can be modified by using unemployment (u_t) instead of GDP:

$$\bar{i}_{FF_t} = \pi_t + r_t^* + \alpha_\pi(\pi_t - \pi_t^*) - \alpha_u(u_t - u_t^N) \tag{6}$$

If inflation rate is above target, $\pi_t^* \cong 2\%$, the central bank raises the federal funds rate, which encourages financial institutions to increase interest rates on their loans and mortgages. But the higher loans rates discourage borrowing and spending and thereby easing the upward pressure on prices. If the unemployment rate is above the natural level ($u_t^N \cong 4\%$), the Fed reduces the federal funds rate to lower the cost of capital and it might increase investment, which will affect positively output and employment.

A second rule is Bullard's[62] (2018), which is the following:

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[60] See, Grind, Sterngold, and Chung (2014).

[61] Taylor's rule, the nominal interest rate should respond to divergences of actual inflation rates from *target* inflation rates and of actual GDP from *potential* GDP:

$$\bar{i}_{FF_t} = \pi_t + r_t^* + \alpha_\pi(\pi_t - \pi_t^*) + \alpha_q(q_t - \bar{q}_t) \tag{6′}$$

where, $\bar{i}_{FF_t}$ = the target short-term nominal interest rate (the federal funds rate), π_t = the rate of inflation as measured by the GDP deflator, π_t^* = the desired rate of inflation, r_t^* = the assumed equilibrium real interest rate, q_t = the logarithm of real GDP, and $\bar{q}_t$ = the logarithm of potential output, as determined by a linear trend. In this eq. (6′), both α_π and α_q should be positive, as a rough rule of thumb, Taylor's (1993) paper proposed setting, $\alpha_\pi = \alpha_q = 0.5$. That is, the rule "recommends" a relatively high interest rate (a "tight" monetary policy) when inflation is above its target or when output is above its full employment level, in order to reduce inflationary pressure. It recommends a relatively low interest rate ("easy" monetary policy) in the opposite situation, to stimulate output and prevent deflation.

[62] See, St. Louis Fed President, James Bullard (2018) rule.

$$\bar{i}_{FF_t} = \rho \, i_{FF_{t-1}} + (1-\rho)[r_t^* + \pi^* + \phi_\pi (\pi_t - 2\%) + \phi_q (u_t - 4\%)] \tag{7}$$

Financial market plays a major role in market oriented economies and its optimal growth has a positive effect on investors' and consumers' confidence. The opposite happens, if growth is artificially enormous (abnormal bubbles). Kallianiotis' (2019b) rule is also putting an extra term, the growth of the financial market (g_{DJIA_t}), as follows,

$$\bar{i}_{FF_t} = \pi_t + r_t^* + \alpha_\pi (\pi_t - \pi_t^*) - \alpha_u (u_t - u_t^N) + \alpha_{DJIA}(g_{DJIA_t} - g_{DJIA_t}^*) \tag{8}$$

where, g_{DJIA_t} = the actual growth of the DJIA index, $g_{DJIA_t}^*$ = the optimal (the bubble prevention) growth of the DJIA ($g_{DJIA_t}^* \leq 7\% \cong i_{10YTB} + 5\%$), and $\alpha_\pi = 0.25$, $\alpha_u = -0.50$,[63] $\alpha_{DJIA} = 0.25$.

In addition, we would like to test the effectiveness of the monetary policy during these two regimes and a VAR model is constructed. We use a vector autoregression (VAR) model for the interrelated objective variables of the monetary policy ($djia_t$, $rgdp_t$, i_{10YTB_t}, p_t, and u_t)[64] as endogenous dependent variables. Also, the lagged values of these endogenous variables are used in the system together with the policy instruments ($i_{FF_t}^{eff}$, mb_t, and m_t) treating like independent exogenous variables. The mathematical representation is as follows:

$$djia_t = \alpha_{11}djia_{t-j} + \beta_{11}rgdp_{t-j} + \gamma_{11}i_{10YTB_{t-j}} + \delta_{11}p_{t-j} + \zeta_{11}u_{t-j} + c_o + \theta_{11}i_{FF_t}^{eff} + \kappa_{12}mb_t + \lambda_{13}m_t + \varepsilon_{1t}$$

$$rgdp_t = \alpha_{21}djia_{t-j} + \beta_{21}rgdp_{t-j} + \gamma_{21}i_{10YTB_{t-j}} + \delta_{21}p_{t-j} + \zeta_{21}u_{t-j} + c_o + \theta_{21}i_{FF_t}^{eff} + \kappa_{22}mb_t + \lambda_{23}m_t + \varepsilon_{2t}$$

$$i_{10YTB_t} = \alpha_{31}djia_{t-j} + \beta_{31}rgdp_{t-j} + \gamma_{31}i_{10YTB_{t-j}} + \delta_{31}p_{t-j} + \zeta_{31}u_{t-j} + c_o + \theta_{31}i_{FF_t}^{eff} + \kappa_{32}mb_t + \lambda_{33}m_t + \varepsilon_{3t} \tag{9}$$

$$p_t = \alpha_{41}djia_{t-j} + \beta_{41}rgdp_{t-j} + \gamma_{41}i_{10YTB_{t-j}} + \delta_{41}p_{t-j} + \zeta_{41}u_{t-j} + c_o + \theta_{41}i_{FF_t}^{eff} + \kappa_{42}mb_t + \lambda_{43}m_t + \varepsilon_{4t}$$

$$u_t = \alpha_{51}djia_{t-j} + \beta_{51}rgdp_{t-j} + \gamma_{51}i_{10YTB_{t-j}} + \delta_{51}p_{t-j} + \zeta_{51}u_{t-j} + c_o + \theta_{51}i_{FF_t}^{eff} + \kappa_{52}mb_t + \lambda_{53}m_t + \varepsilon_{5t}$$

where, $djia_t$ = LUSDJIA = ln of U.S. Dow Jones Industrial Average Index, $rgdp_t$ = LUSRGDP2012 = ln of U.S. real GDP, i_{10YTB_t} = US10YTB = U.S 10-Year Treasury Bonds Rate, p_t = LUSCPI = ln of U.S. CPI, u_t = USU = U.S. unemployment rate, $i_{FF_t}^{eff}$ = USFFR = U.S. effective federal funds rate, mb_t = LUSMB = ln of U.S. monetary base, and m_t = LUSM2 = ln of U.S. money supply (M2).

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[63] The coefficient of unemployment are higher because full employment is the most important objective of every policy. Citizens of a country need work (employment), certainty (zero risk), confidence for the financial market (no bubbles and enormous declines), and low inflation (the true cost of production of a good).
[64] Which are: ln of DJIA, ln of RGDP, yield on 10YTB, ln of CPI, and USU rate.

Then, by applying the data, we test the above rules of monetary policy. First, we use the Taylor's rule, eq. (6), to see if the target federal funds rate was the appropriate according to the rule. The coefficients are: $\alpha_\pi = 0.5$ and $\alpha_u = -0.5$, the other variables are $r_t^* = 1\%$, $\pi_t^* = 2\%$, and $u_t^N = 4\%$, π_t, and u_t are the averages of each period. The target federal funds rate was between (0.00%-0.25%) for seven years.

(α′). For the period 2008:12 to 2015:11[65] by using data from Table A1, i_{FF} must have been:

$i_{FF} = 1.586\% + 1\% + 0.5(1.586\% - 2\%) - 0.5(7.838\% - 4\%) = 0.46\%$; but, it was between 0% and 0.25% (average $\bar{i}_{FF}^{eff} = 0.129\%$), which was low.

(β′). From 2015:12 to 2019:12 the i_{FF} must have been:

$i_{FF} = 1.971\% + 1\% + 0.5(1.971\% - 2\%) - 0.5(4.286\% - 4\%) = 2.8135\%$; but it was between 0.25% and 2.50% (average $\bar{i}_{FF}^{eff} = 1.268\%$), which was too low.

Thus, Taylor's rule recommends higher federal funds rate ($i_{FF} \cong 3\%$). This is also my view, testing eq. (8) the $\bar{i}_{FF}$ must be $i_{FF} > 3\%$ to reduce the financial market bubble and to make the real rate of interest positive and the deposit rate above the inflation rate ($i_D > \pi$).

Now, by using the Bullard rule, eq. (7), we have:

(α′). For the ZIRR (2008:12-2015:11) the i_{FF} must have been:

$i_{FF} = 0.85(0.25\%) + 0.15[1\% + 2\% + 1.5(1.586\% - 2\%) + 1(7.838\% - 4\%)] = 1.14505\%$; but it was 0.129%, very low.

(β′). For the NR (2015:12-2019:12) the i_{FF} must have been:[66]

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[65] For federal funds target rate, see, http://www.fedprimerate.com/fedfundsrate/federal_funds_rate_history.htm

[66] The Bullard Rule for the different target rates during the New Regime is giving:

(i)   When $\bar{i}_{FF} = 0.50\%$:
         $i_{FF} = 0.85(0.25\%) + 0.15[1\% + 2\% + 1.5(1.971\% - 2\%) + 1(4.286\% - 4\%)] = 0.699\%$,   which was low.
(ii)   When $\bar{i}_{FF} = 0.75\%$:
         $i_{FF} = 0.85(0.50\%) + 0.15[1\% + 2\% + 1.5(1.971\% - 2\%) + 1(4.286\% - 4\%)] = 0.911\%$,   which was low.
(iii)   When $\bar{i}_{FF} = 1.00\%$;

         $i_{FF} = 0.85(0.75\%) + 0.15[1\% + 2\% + 1.5(1.971\% - 2\%) + 1(4.286\% - 4\%)] = 1.124\%$, which was low.

With $\bar{i}_{FF} = 1.75\%$ (today's target rate):

$$i_{FF} = 0.85(2.00\%) + 0.15[1\% + 2\% + 1.5(1.971\% - 2\%) + 1(4.286\% - 4\%)] = 2.186\% \,, \quad \text{which}$$

is very low.

Even Bullard's rule, who is a policy maker, President of St. Louis Fed, shows that the target federal funds rate is relatively low.

Lastly, by applying the data to Kallianiotis rule,[67] eq. (8), which includes the growth of the financial market, we receive the following results:

(α′). From 2008:12 to 2015:11 the i_{FF} must have been:

$$i_{FF} = 1.586\% + 1\% + 0.25(1.586\% - 2\%) - 0.50(7.838\% - 4\%) + 0.25(9.952\% - 7\%) = 1.3015\% \,, \quad \text{which was very}$$

low.

(β′). From 2008:12 to 2019:12 the i_{FF} must be:

$$i_{FF} = 1.992\% + 1\% + 0.25(1.992\% - 2\%) - 0.50(4.212\% - 4\%) + 0.25(11.671\% - 7\%) = 4.05175\% \,, \quad \text{which was very}$$

low again.

(iv)   When $\bar{i}_{FF} = 1.25\%$;
$i_{FF} = 0.85(1.00\%) + 0.15[1\% + 2\% + 1.5(1.971\% - 2\%) + 1(4.286\% - 4\%)] = 1.336\%$, which was low.

(v)   When $\bar{i}_{FF} = 1.50\%$;
$i_{FF} = 0.85(1.25\%) + 0.15[1\% + 2\% + 1.5(1.971\% - 2\%) + 1(4.286\% - 4\%)] = 1.549\%$, which was low.

(vi)   When $\bar{i}_{FF} = 1.75\%$;
$i_{FF} = 0.85(1.50\%) + 0.15[1\% + 2\% + 1.5(1.971\% - 2\%) + 1(4.286\% - 4\%)] = 1.761\%$, which was low.

(vii)   When $\bar{i}_{FF} = 2.00\%$;
$i_{FF} = 0.85(1.75\%) + 0.15[1\% + 2\% + 1.5(1.971\% - 2\%) + 1(4.286\% - 4\%)] = 1.974\%$, which was relatively good.

(viii)   When $\bar{i}_{FF} = 2.25\%$;
$i_{FF} = 0.85(2.00\%) + 0.15[1\% + 2\% + 1.5(1.971\% - 2\%) + 1(4.286\% - 4\%)] = 2.186\%$, which is relatively good.

(ix)   When $\bar{i}_{FF} = 2.50\%$:
$i_{FF} = 0.85(2.25\%) + 0.15[1\% + 2\% + 1.5(1.971\% - 2\%) + 1(4.286\% - 4\%)] = 2.3997\%$,   which was good.

[67] See, Kallianiotis (2019b)

Thus, the ZIRR and the NR are both having a very low federal funds rate (Table A1), (0.129%<1.3019%) and (1.324%<3.908%) respectively, compared to these rates calculated above. These low average federal funds rates do not satisfy the ultimate objective of monetary policy.

The empirical results and the above monetary policy rules (Graph 8)[68] show that the federal funds rate was and still is very low for over eleven years. The latest monetary policy has also overturned all the economic theories. It introduces the "new" dread-theories of the 21st century. Table A1 (in the Appendix) gives the average values and the standard deviations of different variables during the ZIRR (2008:12-2015:11) and during the current New Regime (NR, 2015:12-2019:12). We can see the low federal funds rate, the enormous liquidity (the immense money supply),[69] the negative real rates of interest, the low economic growth, the high unemployment,[70]

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[68] Graph 8: The Federal Funds Rates according to Different Rules
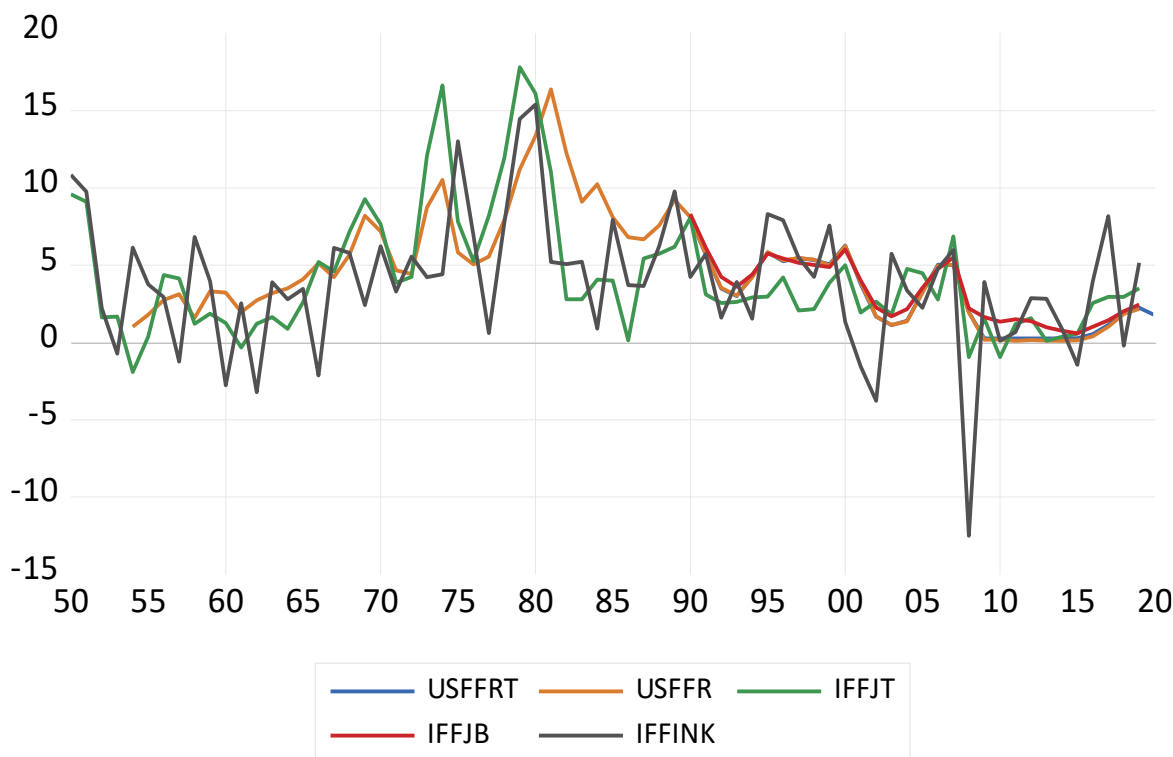
Note: USFFRT = U.S. Federal Funds Rate Target, USFFR = U.S. Federal Funds Rate (Effective), IFFJT = Federal Funds Rate Taylor Rule, IFFJB = Federal Funds Rate Bullard Rule, and IFFINK = Federal Funds Rate Kallianiotis Rule.
Source: *Economagic.com* and FRED. Calculations by the author.

[69] Graph 5: The U.S. Money Supply (M2): was $7,460.2 billion (1/14/2008) and today (12/30/2019), it is more than double: $15,427.9 billion. See, https://fred.stlouisfed.org/series/M2/29/ . Also,

and the low inflation (very stranger and odd).[71] The VAR results of eq. (9) are given in the Appendix, Tables A2 and A3, which show that monetary policy (its instruments, i_{FF}, MB, and M^s) have no major significant effects on the ultimate objective variables ($DJIA$, GDP, i_{L-T}, P, and u). During 2008:12-2015:11(ZIRR), the decrease of the federal funds rate has reduced unemployment, but the growth of monetary base has increased unemployment and the growth of money supply has increased the long term interest rate (i_{10YTB}), due to inflation expectations. Then, during the current NR (2015:12-2019:12), the increase in monetary base and money supply have a drastic significant effect on DJIA (an enormous bubble).[72] Also, the increase in i_{FF} and reduction of MB have improved the growth of the GDP. The increase in money supply (M2) has a significant effect on prices (prices went up). No effects on long term interest rates and unemployment.

Lastly, testing correlation and causality between the monetary instruments, we have the following results:

(a) From 1950 to 2019:

$$\rho_{i_{FF},M2} = -0.572 \,(\text{liquidity effect}) \text{ and } M2 \Rightarrow i_{FF} \,(F = 2.446^*)$$

$$\rho_{i_{FF},MB} = -0.582 \,(\text{liquidity effect}) \text{ and no causality}$$

$$\rho_{MB,M2} = +0.941 \text{ and } MB \Rightarrow M2 \,(F = 9.769^{***})$$

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https://www.bing.com/images/search?view=detailV2&id=9DFFEECC3FFB0D825DED843AF15F85CA107EBB4F&thid=OIP.YH-zy5ucv6KvZEADHuZi0wHaFK&mediaurl=https%3A%2F%2Ffred.stlouisfed.org%2Ffredgraph.png%3Fid%3DM2SL%26nsh%3D1%26width%3D600%26height%3D400&exph=418&expw=600&q=fred+m2+money+supply&selectedindex=0&ajaxhist=0&vt=0&eim=1,2,6 . Further, https://tradingeconomics.com/united-states/money-supply-m2. Furthermore, *Economagic.com*

[70] **Unemployment Data Series**. The official unemployment rate with November 2019 was u = 3.5%. **The ShadowStats Alternate Unemployment Rate for December 2019 is 20.8%.**
http://www.shadowstats.com/alternate_data/unemployment-charts
The real U.S. unemployment rate is 4.4% above the official rate (8.1% in August 2019). See, Komlos (2019).
[71] Official inflation rate was 5% (2008) and SGS was14%. Now, (December 2019), official 2.29% and SGS 10%. See,
http://www.shadowstats.com/alternate_data/inflation-charts . There is no official TRUTH anymore. (Ἡ ἀπάτη τῶν Illuminati). If you are a follower of the "big liar"; how is it possible to say the truth?
[72] The DJIA from 6,547.05 (March 9, 2009) reached 17,425.03 (December 2015), a 24.91% p.a. growth during the ZIRR and became 28,538.44 (December 31, 2019), a growth of 11,113.41 points during the period of the NR, which is 63.778% (15.94% p.a.). This is a total growth of 21,991.39 points or 335.90%; an average growth of 31.25% p.a. If this is not Fed's bubble, what else can it be?
See, *Yahoo, Finance*

(b) From 2008 to 2019:

$$\rho_{i_{FF},M2} = +0.287 \,(\text{no liquidity effect})$$
$$\text{and} \quad M2 \Rightarrow i_{FF} \,(F = 11.774^{***}), \, i_{FF} \Rightarrow M2 \,(F = 3.483^{**})\,[73]$$

$$\rho_{i_{FF},MB} = -0.160 \,(\text{liquidity effect})$$

$$\text{and} \quad MB \Rightarrow i_{FF} \,(F = 5.201^{***}), \, i_{FF} \Rightarrow MB \,(F = 3.818^{**})$$

$$\rho_{MB,M2} = +0.858 \,\text{and}\, MB \Rightarrow M2 \,(F = 2.409^{*})$$

These results are in consent with all the others. So the latest monetary policy is incompatible and contradictory with the traditional monetary policies and economic theories. (*Sic*).

V. Implications of the Latest Monetary Policy

The latest Fed's changes altered the fed funds market in a number of astonishing ways, including the types of financial institutions that were trading, the rates at which they were borrowing and lending, and the new tools fabricated by the FOMC that could effectively influence these market rates. Because banks were overflowed with reserves, their desire to borrow effectively vanished, and bank-to-bank lending largely disappeared.[74] However, once the Fed started paying interest on reserves to some (but not all) financial institutions, a new lending opportunity emerged. To understand this opportunity better, consider a financial institution ineligible to receive interest on reserves at the Fed, such as an FHLB.[75] At the end of the day, it likely holds some amount of cash, but the highest overnight interest rate it could receive (what economists call its "outside option") was a zero percent net return.

This Fed's anti-social "innovation", paying interest of reserves, has kept the deposit rate closed to zero for twelve years and because we are living in a free market economic system, banks charge an interest rate on credit cards of 39.99%[76] and are paying 0.05% on deposits. Kallianiotis (2017) suggests as optimal interest rates for our economy, the followings.[77]

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[73] This latest monetary policy has invalidated (inverted) the economic laws. (*Sic*).

[74] See, Key Features of the Federal Funds Market, *Liberty Street Economics*, https://libertystreeteconomics.newyorkfed.org/2018/07/size-is-not-all-distribution-of-bank-reserves-and-fed-funds-dynamics/comments/ . See also, Footnote 40.

[75] The Federal Home Loan Banks (FHLBs) provide funds to depository institutions in the form of loans collateralized by real estate. They were initially set up to provide liquidity to savings and loans, but they are now a source of funds for all banks. http://www.fhlb-of.com/ofweb_userWeb/pageBuilder/home

[76] This unreasonable, unethical, outrageous, and usurious interest rate is charged for the poor people by the unregulated and corrupted banks. Is this a social policy or a deception? The following statement is from one of my graduate students' answer for the following question: **Is the Risk Premium on our credit cards justifiable?**
"This is my ethical perspective on Risk Premium on credit cards. While pursuing my undergraduate degree, I worked for one of the most corrupt credit card companies. It is a sub-prime credit card company that preyed on vulnerable people with bad or no credit. The card would be sent out to consumers with $198 in processing fees with a $250 credit line. People did not read the small printed brochures and people would just activate these cards.

Eligible financial institutions, however, had a better outside option, since they could deposit money at the Fed and earn the IOR rate (initially set at 25 basis points), less any costs associated with expanding their balance sheet. Because only domestic banks incurred FDIC fees from increasing their asset position, foreign banks faced smaller costs and thus had an advantage in borrowing. Thus, an opportunity for arbitrage emerged: The FHLB could lend to an eligible bank at a rate above zero (its outside option) but less than the IOR rate, and the eligible bank could lend those reserves to the Fed at the IOR rate (its outside option). As a result of the many changes in the immediate aftermath of the crisis, the majority of trading in the fed funds market was occurring between ineligible financial institutions, like FHLBs, and eligible financial institutions with low costs of borrowing, like U.S. branches of foreign banks, at rates below the IOR rate being offered at the Fed. Moreover, with no bank-to-bank lending, the overall market volume dropped precipitously, to $80 billion or less per day.[78]

People would use these credit cards and not realize that they only had $52 to spend. At that point the card would be maxed out and the company began charging over limit fees of $30 and an interest rate of 29.99%. Soon this was followed by $35 late fees. I do not believe that a high Risk Premium is **morally** justifiable. I was the representative on the other end of the phone who listened to story after story. For example, an elderly person who purchased a prescription because he/she needed it; a young mother who put gas in her car; a disabled person who did not understand how the credit card worked. These were vulnerable people who were taken advantage of by a greedy, avaricious company. This credit card company did more than mitigate their risks. The company preyed on poor, uneducated people. As a side note, the owner of this company last year received an award for philanthropist of the year. This puts a real spin on what Americans views as value. This is an ethical/moral perspective on the horrors of unchecked free market capitalism." [K. L. (FIN 508) Summer 2013].

Note: In the U.S., the risk premium can reach the level of: RP = 40% (a regressive tax on the poor). In EU, there is a cap on credit cards risk premium of: RP = 15%.

[77] The optimal interest rate on deposits (savings accounts) must be: $i_{D_t}^* = \pi_t^e + 1\%$ and the optimal interest rate on loans (the highest) must be: $i_{L_t}^* = i_{P_t} + 5\%$, where i_D^* = the optimal deposit rate, π^e = expected inflation rate, i_L^* = the optimal loan rate, and i_P = the prime rate.

[78] Between October 2011 and September 2013 (before the introduction of the Overnight Reverse Repurchase Agreement Facility, ON RRP), an FHLB could earn a zero net return on any cash it held at the end of the day. However, it could lend that money to a bank eligible to earn the IOR rate, 25 basis points (bp), less any costs associated with expanding its balance sheet. If these costs were 5 bp, so there were "gains from trade" between the FHLB and the bank of 25−5=20 bp. This means the two parties would agree to trade at any interest rate between 0 and 20 basis points. What determines the interest rate at which they actually trade? In bilateral transactions, we assume that the two parties negotiate or "bargain". Moreover, we assume that the interest rate at which they agree to trade depends on each party's relative negotiating skill or "bargaining power". If the bank has more bargaining power, it negotiates an interest rate (i) closer to zero so that its profit, (20−i), is relatively large. If the FHLB has more bargaining power, it negotiates an interest rate closer to 20 bp, so that it earns more profit on its overnight loan. A number of factors could determine the bargaining power of a bank or an FHLB. For example, an FHLB that can quickly and easily find an alternative bank to trade with would be in a relatively strong bargaining position. However, a bank that was desperate to borrow to avoid violating reserve requirements would be in a relatively weak bargaining position. See, Overnight Reverse Repurchase Agreement Facility (ON RRP),
https://www.federalreserve.gov/monetarypolicy/overnight-reverse-repurchase-agreements.htm

Hence, these changes to the fed funds market required policymakers to devise a new system for implementing monetary policy. Since the market rate was no longer primarily determined by banks' supply and demand for reserves, typical open market operations would have essentially no effect on market rates.[79] Instead, when the FOMC decided to raise interest rates after a long period at zero, it did so by adjusting the outside options of the lenders and the borrowers in this market via administered rates. The Fed had been controlling the outside option of eligible banks via the IOR rate since October 2008. However, if the Fed adjusted this rate alone, the gap between the two outside options would widen as the IOR increased and, as a result, market rates might not rise in sync with the IOR. So in September 2013 the FOMC introduced an instrument to adjust the outside option of ineligible institutions, too, via the *overnight reverse repurchase agreement facility* (ON RRP). In a reverse repurchase, the Desk sells a security to an eligible counterparty with an agreement to buy the security back at a specified date and price, with the interest rate computed from the difference between the original purchase price and the (higher) repurchase price. Importantly, the FOMC included a wide range of market participants as eligible counterparties at the ON RRP facility, including FHLBs and key money market funds.[80] By adjusting the rate being offered at the ON RRP facility, the FOMC was thus adjusting the outside option of essentially all major financial institutions ineligible to earn IOR at the Fed.

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[79] If the Fed tried to conduct policy on pre-crisis terms, it would have had to execute very large open market operations to drain reserves in relatively short order. Selling large quantities of certain assets in a very short period would have negative side effects, as prices in these markets would likely experience sudden declines.

[80] For more information about eligible counterparties at the ON RRP facility, see, https://www.newyorkfed.org/markets/rrp_counterparties .

Since the FOMC began raising the target rate in December 2015, it has used these two instruments (the IOR and ON RRP rates) to raise and control the fed funds rate in a market characterized by ample excess reserves. In particular, as Armenter and Lester (2017) describe, the FOMC has raised rates by increasing both the ON RRP and IOR rates at the same time, while it has adjusted where the fed funds rate falls within the target range by adjusting the IOR rate.

The Fed uses the IOR and ON RRP rates to adjust the EFFR (i_{FF}^{eff}). From the time it "lifted off" from zero until 2018, the FOMC raised the IOR and ON RRP rates in tandem, with a 25 basis point spread between the two. The EFFR followed suit, staying safely within the target range until the second quarter of 2018. At that time, however, the outside option of ineligible financial institutions began rising, putting upward pressure on the EFFR. In response, when the FOMC raised the target range in June 13, 2018, it increased the ON RRP rate by 25 basis points but the IOR rate by only 20 basis points. Decreasing the spread between the IOR and ON RRP rates puts downward pressure on the fed funds rate, helping to keep it within the target range (1.75%-2.00%), as Kallianiotis (2019b, Graph 11, p. 161) presents it.

Because domestic depository institutions can receive IOER and the effective federal funds rate is below the IOER rate, they have largely ceased lending in the overnight market. This role is now mainly played by the government-sponsored enterprises (GSEs), especially the FHLBs. On the borrowing side, domestic institutions are awash with reserves from the Fed's asset purchases, and the FDIC's new capital requirements penalize them for holding reserves. On the other hand, foreign institutions, many of which have reserve accounts with the Fed, are not under the FDIC's regulatory umbrella. A foreign bank with an interest-bearing reserve account can borrow from the FHLBs at the federal funds rate, store the cash in its reserve account, and earn IOER minus the rate paid on the federal funds.[81]

VI. The Rude and Unethical Deception of Depositors and Tax-payers

In the summer of 2017 the FOMC announced its intention to stop reinvesting the proceeds from maturing assets (such as mortgage-backed securities) on its balance sheet. This decision marked the beginning of the Fed unwinding or "normalizing" its balance sheet. As the Fed's balance sheet shrinks, excess reserves in the banking sector decline. (Graph 1). However, at the time, the FOMC did not provide an explicit endpoint for this process.[82]

Last year, in January 2019 the FOMC announced *how* it planned to hold "no more securities than necessary to implement monetary policy efficiently and effectively": by using a "regime in which an ample supply of reserves ensures that control over the level of the federal funds rate and other short-term interest rates is exercised primarily through the setting of the Federal Reserve's administered rates, and in which active management of the supply of reserves is not

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[81] See, Footnote 40 above.

[82] In its June 14, 2017, statement, the FOMC announced only that "the Federal Reserve's securities holdings will continue to decline in a gradual and predictable manner until the Committee judges that the Federal Reserve is holding no more securities than necessary to implement monetary policy efficiently and effectively." (Federal funds target rate increased between 1.00% and 1.25%).

required."[83] In other words, the FOMC decided to shrink the balance sheet until reaching the minimal size still consistent with "ample" excess reserves, and to use the ON RRP and IOR rates to achieve the target fed funds rate. The target federal funds rate was between 2.25% and 2.50%.[84] Currently, it is between 1.50% and 1.75%.[85]

In the fed funds market, a bank can try to find a counterparty to borrow from (either an ineligible financial institution, like an FHLB, or another bank), it can try to find a counterparty to lend to (another bank), or it can remain idle. When all banks are awash with reserves, there is no motive to lend, since nobody in the market is willing to pay more than the IOR rate. Hence, when reserves are ample, banks with sufficiently low balance-sheet costs (such as banks not subject to FDIC fees) will borrow from institutions such as FHLBs at a rate between the ON RRP rate and the IOR rate ($i_{ON RRP} < i_{FF}^{eff} < i_{IOR}$), and the remainder of banks (with higher costs from expanding their balance sheets) will remain idle.[86]

However, as total reserves decline, some banks will find themselves close to their reserve requirement. To avoid coming up short of required reserves and being forced to borrow at the discount window, where rates are typically 50 basis points higher than the IOR rate (now, $i_{DR} = 2.25\%$)[87] these "desperate" banks will look to borrow from either an FHLB or another bank. If there are only a few "desperate" banks looking to borrow, they can likely satisfy their reserve requirements by borrowing from FHLBs at a rate below the IOR rate. But as total reserves decline further, there will be more and more "desperate" banks looking to borrow. The "non-desperate" banks can continue looking to borrow from an FHLB at a rate below the IOR rate,[88] pocketing the difference (less any balance-sheet costs), or they can try to lend to "desperate" banks at a rate above the IOR rate. When the Fed's balance sheet shrinks and reserves become increasingly scarce, the demand for reserves from "desperate" banks will grow, the supply of reserves from "non-desperate" banks will shrink, and lending to "desperate" banks will become more attractive. At some point, "non-desperate" banks will once again find

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[83] See, "Policy Normalization", https://www.federalreserve.gov/monetarypolicy/policy-normalization.htm . Also, "Why the Fed Pays Interest on Banks' Reserves", https://www.stlouisfed.org/open-vault/2018/april/why-fed-pays-interest-banks-reserves . Further, "Why Is the Fed Paying So Much Interest to Banks?" https://www.truthdig.com/articles/why-is-the-fed-paying-so-much-interest-to-banks/ .

[84] Federal Reserve officials held their benchmark interest rate steady on Wednesday June 9, 2019, but hinted they would cut rates in the months ahead if the economic outlook weakens. Nine of 10 members of the rate-setting committee voted to maintain the federal-funds rate in a range between 2.25% and 2.5%. St. Louis Fed President James Bullard dissented in favor of lowering rates, the first dissent since Fed Chairman Jerome Powell took lead of the central bank in February 2018. See, https://www.wsj.com/articles/fed-holds-rates-steady-hints-at-possible-cut-if-outlook-dims-11560967516?tesla=y&mod=article_inline

[85] This new target rate started on October 30, 2019. See, https://www.bankrate.com/rates/interest-rates/federal-funds-rate.aspx . Also, "Federal Funds Data", https://apps.newyorkfed.org/markets/autorates/fed%20funds . Further, http://www.fedprimerate.com/fedfundsrate/federal_funds_rate_history.htm

[86] See, Afonso, Armenter, and Lester (2018a).

[87] From December 19, 2018 to July 30, 2019, the $\bar{i}_{FF} = 2.50\%$ and the $i_{DR} = 3.00\%$. See, http://www.fedprimerate.com/fedfundsrate/federal_funds_rate_history.htm

[88] $i_{IOR} \cong i_{RF} + 0.20\% = 1.52\% + 0.20\% = 1.72\%$, today (January 3, 2020).

themselves lending in the fed funds market, and they will do so at rates above the IOR rate. However, since July 31, 2019, the Fed started increasing the reserves again.[89]

This shift in the behavior of individual market participants has several important implications for the fed funds market as a whole. First, the fed funds rate, which is an average of all rates in the fed funds market, will no longer reside within the corridor formed by the ON RRP and IOR rates. It will instead lie within the corridor formed by the IOR and discount-window rates. Second, as bank-to-bank lending resumes alongside trades between FHLBs and banks, trading volume should also increase. Lastly, since the market rate will be determined by supply and demand once again, the fed funds rate will be sensitive to relatively small changes in the supply of reserves.

The large increase in the Fed's balance sheet[90] greatly changed the environment in which the FOMC declares its intention for interest rates by setting a target federal funds rate. (Graph 1). The Federal Reserve Bank of New York added $63.5 billion to the financial system on September 30, 2019, using the market for repurchase agreements to relieve funding pressure in money markets. Banks were offering collateral in the form of U.S. Treasury and mortgage securities.[91] Before the crisis, the public announcement of a rate increase was accompanied by a policy at the Fed's trading desk in which the amount of reserves allocated to the federal funds market was directly reflected in a rate that banks paid one another for overnight liquidity. The further transmission of this policy from the overnight rate into the real economy could be a mystery, but it was plausible to think that affecting the borrowing costs of large domestic financial institutions would affect their domestic counterparties: firms and citizens seeking credit. But, this latest complexity of monetary policy has made its effectiveness reprehensible. The demand for investments has also been low and is declining.[92]

As it was mentioned above and it is known to every saver, the $i_D \cong 0\%$ ($i_D = 0.05\%$) since December 2008, more than eleven years. This has a negative effect on demand for deposits, but banks do not need deposits, they have all these excess reserves from the Fed. Deposits have

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[89] MB = $3,300.035 billion (July 31, 2019) and MB = $3,382.800 billion (December 18, 2019). See, https://fred.stlouisfed.org/series/BASE/ . The Federal Reserve released the minutes of its December 10-11, 2019 meeting on January 3, 2020, where officials voted to hold their benchmark rate steady in a range between 1.5% and 1.75% at the meeting after cutting it by a quarter percentage point at each of its previous three meetings. See, https://www.wsj.com/articles/fed-minutes-to-shed-light-on-interest-rate-consensus-11578047402

[90] It was $4,173.626 billion on January 2, 2020. See, https://fred.stlouisfed.org/series/WALCL

[91] See, https://www.wsj.com/articles/fed-adds-63-5-billion-to-financial-system-in-repo-transaction-11569846438 . See also, "Fed Adds $105 Billion to Financial System in Two Transactions", Banks bid for $32 billion more than the amount offered by the Fed. In its latest effort to calm short-term lending markets, the Fed offered $30 billion of two-week cash loans and received $62 billion in demand from banks offering collateral in the form of Treasury and mortgage securities. In a second offering, the Fed received $80.2 billion of demand for $75 billion of shorter-term overnight loans.
https://www.wsj.com/articles/fed-adds-to-financial-system-in-two-transactions-this-month-11569329248

[92] See, Graphs 6a and 6b above.

declined in the U.S. banks.[93] "Now, however, the average savings account pays only 0.10% annually—that's one-tenth of 1%—and many of the country's biggest banks pay less than that. If you were to put \$5,000 in a regular Bank of America savings account (paying 0.01%) today, in a year you would have collected only 50 cents in interest. That's true for most of us, but banks themselves are earning 2.4% on their deposits at the Federal Reserve. These deposits, called 'excess reserves', include the reserves the banks got from our deposits, and on which they are paying almost nothing; and unlike with our deposits, there is no \$250,000 cap on the sums banks can stash at the Fed amassing interest. A whopping \$1.5 trillion in reserves are now sitting in Fed reserve accounts. (Graphs 4a, 4b, 4c, and 4d).[94] The Fed rebates its profits to the government after deducting its costs, and interest paid to banks is one of those costs. That means we, the taxpayers, are paying \$36 billion annually to private banks for the privilege of parking their excess reserves at one of the most secure banks in the world—parking them, rather than lending them out."[95] This policy tool is, if not anything else, a criminal policy against small savers (investors) and poor taxpayers. Political leaders have to do something for these corrupted and controlled private central banks. Their policies are ineffective for the economy and anti-social for the people.
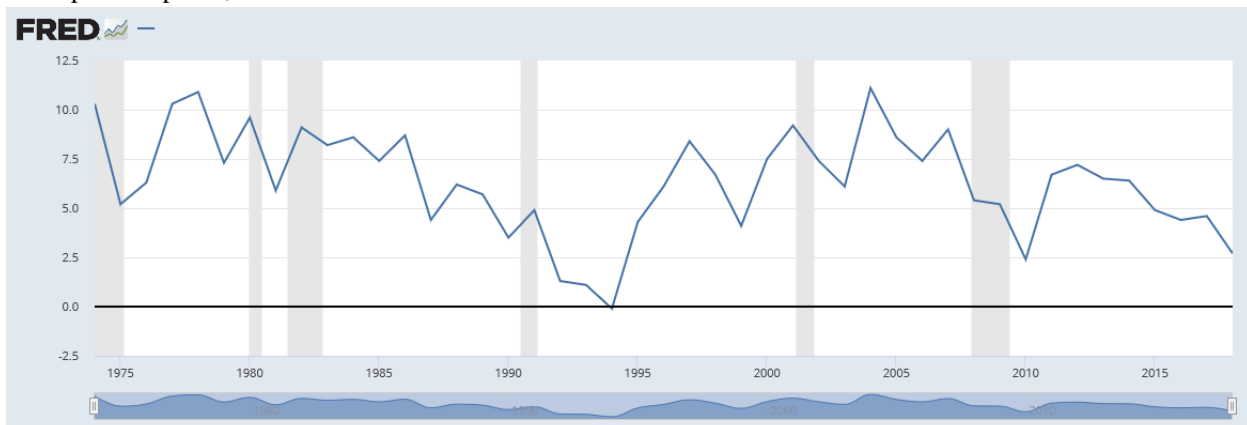
With December 2019, we had:

(I) R_R = \$206.586 billion + R_E = \$1,388.636 billion = R_T = \$1,595.222 billion.[96]

The $i_{IOR} = i_{RF} + 0.20\% = 1.52\% + 0.20\% = 1.72\%$.

Thus, Fed is paying total interest on these reserves (I_R) = \$1,595.222 billion x 1.72% = **\$27.438** billion per annum. This is a *bail out cost* that taxpayers are paying.

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[93] Graph 9: Deposits, All Commercial Banks

Source: https://fred.stlouisfed.org/series/H8B1058NCBCAG

[94] See, Footnotes 41, 42, and 43 above.
[95] See, Ellen Brown, "Why Is the Fed Paying So Much Interest to Banks?", https://www.truthdig.com/articles/why-is-the-fed-paying-so-much-interest-to-banks/ . See also, "2.4%, Why Is the Fed Paying So Much Higher Interest Rate to Banks?", https://www.econmatters.com/2019/04/24-why-is-fed-paying-so-much-higher.html
[96] See, Graphs 4a, 4b, 4c, and 4d above.

(II) Total deposits (D_T) = D_S = \$9,801.1 billion + $D_{S-D\,TD}$ = \$588.7 billion = \$10,389.8 billion.[97]

   $i_D = 0.05\%$

   Banks are paying a total interest on deposits (I_D) = \$10,389.8 billion x 0.05% = \$5.195 billion p.a.

(III) The official inflation rate is (π) = 2.1%; then, $r_D = i_D - \pi = 0.05\%$ - 2.1% = -2.05%

   Thus, depositors are paying to their banks (*bail in*): \$10,389.8 x (-2.05%) = **-\$212.991 billion**.

   The SGS consumer inflation (1980-based) [98] is $\pi = 10\%$.

   The true *bail in* is now: \$10,389.8 x (-9.95%) = **-\$1,033.785** billion p.a.

(IV) Banks can offer loans: $R_E + D_T$ = \$1,388.638 billion + \$10,389.8 billion = \$11,778.438 billion.

   Banks' interest rate is from 3% (mortgage rate) to 39.99% (credit cards with bad credit scores).[99] The average $i_{CC} = 19\%$.[100] Then, the average loan rate $\bar{i}_L$ = (3%+19%): 2 = 11%.

   Banks are having an interest revenue (R_I) of \$11,778.438 billion x 11% = **\$1,295.628** billion p.a.

The conclusion, here, is very obvious, the central bank is working for the banks and satisfies only their objectives, which are profitability and liquidity. This monetary policy is against poor depositors and poor taxpayers (a pure anti-social policy) and at the same time has created enormous bubbles in the stock market (a hidden new global crisis).[101]

The Fed's current balance sheet is so huge (\$4,173.626 billion with January 2, 2020)[102] that with an announced policy rate decrease, it could possibly generate surprising results and higher market risk and not significant improvement to the bail out cost (taxpayers) and bail in one (depositors). Another tool that is disdained is the margin requirements, which are very low ($r_m = 50\%$) and contribute to the financial market bubbles and to the risk of banks. The margin requirements must be: $r_m = 100\%$.

The level of banks' capital is another factor that must be considered by the regulators (central bank, FDIC, comptroller of the currency, etc.). A low capital level is increasing the risk of the bank and the cost of financial crises (by bailing them out); so the bank capital affects the real

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[97] See, *Economagic.com*
[98] See, http://www.shadowstats.com/alternate_data/inflation-charts
[99] See, https://www.economicshelp.org/blog/6775/debt/total-us-debt-public-private/ See also, https://usdebtclock.org/
[100] See, https://wallethub.com/answers/cc/highest-credit-card-interest-rate-2140660307/
[101] I had read somewhere a few years ago that: "we (the economic elites) will abolish the stock exchanges and we will create large financial institutions…" (Sic). Is this the plan or not yet?
[102] See Graph 1, https://fred.stlouisfed.org/series/WALCL

economy. Risk-averse consumers prefer higher capital levels because it increases the financial stability in the economy and the world. The tax-payers cannot bailout the corrupted and deregulated financial institutions in case of a crisis, as it happened in 2008 because it is completely unethical. Firestone, Lorenc, and Ranish (2019) by evaluating the economic costs and benefits of bank capital in the U.S., they found that the optimal capital ratio is from just over 13% to 26%.[103] The current average capital ratio is 12.5% for the U.S. banks, which is relatively low.

The former heads of the Federal Reserve made their case Monday (August 5, 2019) for the central bank to remain independent and free from short-term political pressures,[104] an implicit rebuttal to President Trump's repeated criticism of this private institution. All four former still-living Fed chairs—Paul Volcker,[105] Alan Greenspan, Ben Bernanke and Janet Yellen—cosigned an op-ed in The Wall Street Journal on Monday underlining their belief that the central bank and its leader should be allowed to serve without political pressures or "the threat of removal or demotion... for political reasons." "It is critical to preserve the Federal Reserve's ability to make decisions based on the best interests of the nation, not the interests of a small group of politicians," the former central bankers wrote.[106] This rhetoric is very good, but what we see so far, it is that Fed's policies are made only for the speculative financial market and its participants. Their effects on the real economy are insignificant and many times negative by creating bubbles and accomplishing the next recession. If the central bank's decisions were based

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[103] See, Firestone, Lorenc, and Ranish (2019). See also, Farla-e-Castro (2019). Further, "What's a Countercyclical Capital Buffer?", https://fredblog.stlouisfed.org/2019/09/whats-a-countercyclical-capital-buffer/

[104] But, President Woodrow Wilson had said that the U.S. lost control of its financial system by allowing its Central Bank to be independent of the government (private): "I am a most unhappy man. I have unwittingly ruined my country. A great industrial nation is controlled by its system of credit. Our system of credit is concentrated. The growth of the nation, therefore, and all our activities are in the hands of a few men. We have come to be one of the worst ruled, one of the most completely controlled and dominated Governments in the civilized world -- no longer a Government by free opinion, no longer a Government by conviction and the vote of the majority, but a Government by the opinion and duress of a small group of dominant men." [Woodrow Wilson President of the United States (1913-1921)].

[105] Paul Volcker passed away on December 8, 2019. https://www.sgtreport.com/2019/12/former-fed-chairman-paul-volcker-passes-away-at-92/

[106] *Paul Volcker, Alan Greenspan, Ben Bernanke and Janet Yellen say Fed should be free from short-term political pressures. See, "Former Fed Leaders Plea for Central Bank's Political Independence".*

https://www.wsj.com/articles/former-fed-leaders-plea-for-central-banks-political-independence-11565051192

. Unfortunately, "Our money is not our money. We rent it. We have rented it since 1781 when the Bank of North America gained control of the money supply in the closing days of the Revolutionary War. We need to own our money as citizens responsible for both the government and the economy of the United States." See, Bob Blain, The Root of United States Public and Private Debt, 2017. Also, "Permit me to issue and control the money supply of a nation and I care not who makes its laws." (Mayer Amschel Rothschild, 1744-1812). Further, "The privilege of creating and issuing money is not only the supreme prerogative of Government, but it is the Government's greatest creative opportunity." (Abraham Lincoln, 1862). In addition, "Until the control of the issue of currency and credit is restored to government and recognized as its most conspicuous and sacred responsibility, all talks of the sovereignty of Parliament and of democracy is idle and futile." (William Lyon Mackenzie King, Canadian Prime Minister, 1874-1950).

on the best interest of the nation, it would have a policy to prevent recessions and not to cure them, after their creation. Federal Reserve Chairman Jerome Powell gave his most forceful warning yet (on August 23, 2019) about the risks to the U.S. economy from escalating trade tensions and the limits to the central bank's ability to cushion any fallout. He signaled that the central bank would follow its rate cut last month (July 31 2019).[107]

Furthermore, another proof showing the control of the central banks is coming from U.K. The globalists of the Bank of England are against the Brexit and try to terrorize the British citizens to stay in EU by saying: "if they will leave the EU, there will be a global disaster."[108] How can we trust the central bankers, who to not believe in democracy? U.K. had a referendum and they voted in favor of leaving the oppressive EU.[109] The best solution for the society will be to make all these central banks public; so they will work only for the people, for their nations, and for their wellbeing and not terrorizing them and control (influence) their investment and economic decisions, their destiny, and their economic welfare.[110] Undoubtedly, except a good monetary policy, the country needs a good fiscal policy and a fair trade policy. Countries must be independent, homogeneous, and sovereign nations, too. The unfair free trade policies have destroyed the U.S. and the EU economies.[111] A paradox is that the Federal Reserve stands ready to respond to climate-change related weather disruptions to the economy and is working to ensure banks' resilience from unexpected shocks tied to a warming global environment, Fed Chairman Jerome Powell

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[107] See, https://www.wsj.com/articles/powell-says-fed-prepared-to-provide-stimulus-if-a-slowdown-hits-u-s-economy-11566568965 . Fed Chairman Jerome Powell's press conference on September 18, 2019 carried a subtle message for President Trump: If you are worried about an economic slowdown, find a way to cool down the trade war. See, "Analysis: Powell's Subtle Messaging to Trump on Trade Fight". Fed chairman mentioned trade 20 times at his news conference on Wednesday (9/18/2019). https://www.wsj.com/articles/analysis-powells-subtle-messaging-to-trump-on-trade-fight-11568971800 . On January 15, 2020, the U.S. and China signed a Trade Agreement. See, *The Wall Street Journal*, January 16, 2020, pp. A1, A7, B1, and B12.

[108] TV News *ANTENNA*, 8/1/2019.

[109] This was the *United Kingdom European Union membership referendum*; also known as the *EU referendum*, the *European referendum* and the *Brexit referendum*, took place on June 23, 2016 in the UK and Gibraltar to ask the electorate if the country should remain a member of, or leave the EU, under the provisions of the European Union Referendum Act 2015 and also the Political Parties, Elections and Referendums Act 2000. The referendum resulted in 51.9% of votes being in favor of leaving the EU (17,410,742 votes). The government of that time had promised to implement the result, but the country is still in the union after 3 years. Greece had also a referendum on July 5, 2015 and 61.31% vote NO to EU memoranda, but EU made it YES. Greece has to leave the Euro-zone, otherwise the country has no future. https://en.wikipedia.org/wiki/2015_Greek_bailout_referendum . This liberal EU is actually a controlled trap and not a union. See, Kallianiotis (2018).

[110] Unfortunately, lately, globalists' and ecumenists' "religion" is the Ecology (global warming); but last year's winter disappointed them with temperatures -50% F and heavy snow storms all over the north hemisphere. The rest of our "objectives" are all under their control even before the French Revolution (1789). See, https://www.jacobinmag.com/2015/07/french-revolution-bastille-day-guide-jacobins-terror-bonaparte/

[111] See, Kallianiotis (2018)..

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told Congress in an April 2019 letter. [112] (*Sic*). The worst of all is that a former Fed official (ex-president of the N.Y. Fed), William Dudley, said, "central bank should act to thwart Trump's re-election". These liberals are reviling themselves with any audacity and without any shame anymore.[113] Where is this controlled by the dark powers world going?

VII. Conclusion: The Effects of the New Instruments

In response to the financial crisis, the Federal Reserve[114] experimented with new tools (quantitative easing) and introduced new programs and policies to stabilize markets, restore liquidity, and spur economic activity in a conflicting heterogeneous[115] and forcefully interdependence world, which is very difficult and makes the monetary policy questionable. However, a byproduct of these changes was that the fed funds market was dramatically altered, necessitating a new framework for monetary policy implementation. More recently, as the Fed began to unwind some of these programs, it was forced to reassess the long-run size of its balance sheet (and the tools it intended to use for monetary policy implementation) given the current economic and regulatory environment. It has chosen to maintain a balance sheet that is too large for the reserves needed, and to maintain this, it uses the administered (IOR and ON RRP) rates to achieve the target range. This has a negative effect on interest rate on deposits (real

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[112] "Although addressing climate change is a responsibility that Congress has entrusted to other agencies, the Federal Reserve does use its authorities and tools to prepare financial institutions for severe weather events," Mr. Powell wrote in a letter to Sen. Brian Schatz (D., Hawaii), on April 18, 2019. "Over the short term, these events have the potential to inflict serious damage on the lives of individuals and families, devastate local economies (including financial institutions), and even temporarily affect national economic output and employment," Mr. Powell wrote. "As such, these events may affect economic conditions, which we take into account in our assessment of the outlook for the economy," the central bank leader said. Mr. Powell's letter came in response to a January 25, 2019 letter from Mr. Schatz (a Jew from the Democratic Party of Hawaii) in which, according to Mr. Powell, the senator urged the Fed to manage climate-change risks to the financial system and to prepare the banks it supervises for similar contingencies. (*Sic*). See, https://www.wsj.com/articles/fed-readying-financial-system-for-climate-change-shocks-11557247667

[113] See, "Former Fed Official Says Central Bank Should Act to Thwart Trump's Re-Election", William Dudley says Fed must consider politics, sparking blowback from economists. https://www.wsj.com/articles/former-fed-official-says-central-bank-should-act-to-thwart-trumps-re-election-11566926950 . These people are very dangerous for our economy and the entire world. See also, https://en.wikipedia.org/wiki/William_C._Dudley . See more information regarding this liberal-globalist economist,
https://www.bing.com/news/search?q=William+Dudley+Of+The+Fed&qpvt=William+Dudley+of+the+Fed&FORM=EWRE

[114] Investors believe central banks—the last bastion of the technocratic, globalized elite—can use their limited ammunition to stave off recession. Yet central banks may be dragged into the competitive fray. See, "As Global Order Crumbles, Risks of Recession Grow", https://www.wsj.com/articles/as-global-order-crumbles-risks-of-recession-grow-11565784000 . See also, *Hellas, "Σᾶς σφάζουν μπροστά στά μάτια τοῦ Πλανήτη". Ἀνοιχτή Ἐπιστολή στούς Ἕλληνες*, https://ellaniapili.blogspot.com/2017/03/blog-post_517.html?spref=bl

[115] The best for a nation is the homogeneity of its citizens. «Τό Ἑλληνικόν, ἐόν ὅμαιμόν τε καί ὁμόγλωσσον, καί θεῶν ἱδρύματά τε κοινά καί θυσίαι, ἤθεά τε ὁμότροπα.» (Ἡρόδοτος, Herodotus; 484-425 B.C.). But, their plan is to destroy homogeneity in all nations by encouraging, supporting, and imposing illegal migration.

deposit rate is negative for more than eleven years) and all this social cost is transferred to the poor taxpayers and to the risk-averse depositors.

Thus, the ZIRR and the NR are both having very low federal funds rates (0.129%<1.3015%) and (1.324%<4.05175%) compared to these rates calculated above, eq. (8), which do not satisfy the ultimate objective of monetary policy. Their biggest problem is the negative real rate of interest, their closed to zero deposit rates, which has a negative effect on savings,[116] and the enormous bubble in the financial market.[117] These monetary policies from 2008 up to now are unfair (redistribution of wealth), risky (creation of bubbles), ineffective (low growth and high unemployment), and suspicious (creeping inflation, etc.). Lately, this monetary policy had even inverted the yield curve.[118]

The empirical results show that the federal funds rate was and still is very low for eleven years. The latest monetary policy has overturned all the economic theories. It introduces the "new" dread-theories of the 21st century. Table A1 gives the average values and the standard deviations of different variables during the ZIRR and during the current New Regime (NR). We can see the low federal funds rate, the enormous liquidity (the immense money supply),[119] the negative real

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[116] See, Graph 10: Net Saving as a Percentage of Gross National Income.

Source: https://fred.stlouisfed.org/series/W207RC1Q156SBEA
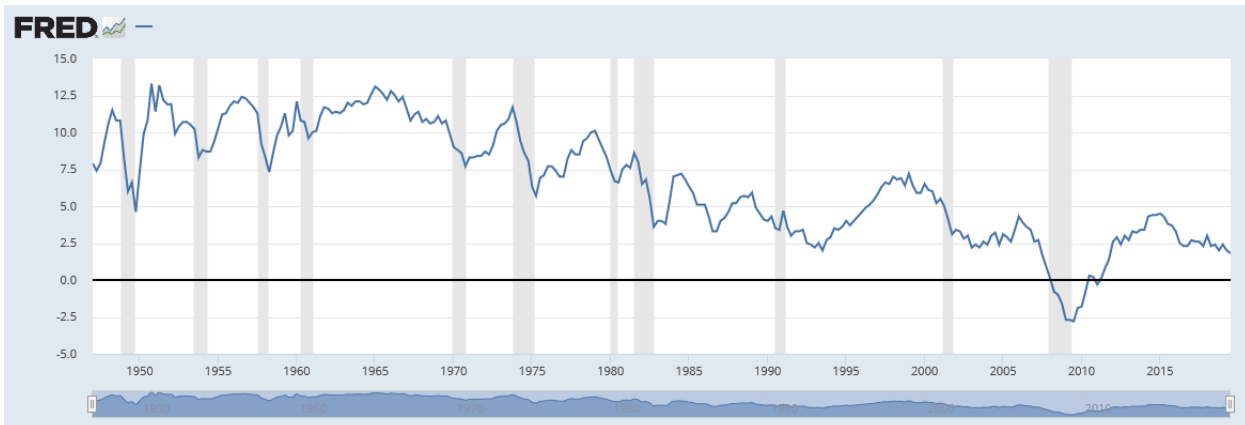
[117] The DJIA was on January 17, 2020: 29,348.10.See, *Yahoo/Finance*. Also, https://www.wsj.com/market-data/stocks

[118] The 3-month T-Bills rate exceeded the 10-year Treasury bonds rate: $i_{3MT-Bill} = 1.900\% > i_{10YTB} = 1.577\%$. See, *The Wall Street Journal*, August 22, 2019, pp. A1 and B9.

[119] With January 6, 2020, the M2 was $15,432.2 billion. See, M2. https://fred.stlouisfed.org/series/M2/29/ . Also, https://www.bing.com/images/search?view=detailV2&id=9DFFEECC3FFB0D825DED843AF15F85CA107EBB4F&thid=OIP.YH-zy5ucv6KvZEADHuZi0wHaFK&mediaurl=https%3A%2F%2Ffred.stlouisfed.org%2Ffredgraph.png%3Fid%3DM2SL%26nsh%3D1%26width%3D600%26height%3D400&exph=418&expw=600&q=fred+m2+money+supply&selectedindex=0&ajaxhist=0&vt=0&eim=1,2,6 . Further, https://tradingeconomics.com/united-states/money-supply-m2 Furthermore, *Economagic.com*

rates of interest, the low economic growth, the high true unemployment, [120] and the "low" official inflation (very strange and odd).[121] The VAR results of eq. (9) are given in the Appendix, Tables A2 and A3, which show that monetary policy (its instruments, i_{FF}, MB, and M^s) have no major significant effects on the ultimate objective variables ($DJIA$, GDP, i_{LT}, P, and u). During 2008:12-2015:11, the decrease of the federal funds rate has reduced the official unemployment, but the growth of monetary base has increased unemployment. Then, during the current NR (2015:12-present), the increase in monetary base and money supply have a drastic significant effect on DJIA (an enormous bubble).[122] Also, the increase in i_{FF} and the reduction of MB have improved the growth of the GDP. The increase in money supply (M2) has a significant effect on prices (prices went up).[123] No effects on long term interest rates and unemployment. Then, monetary policy is ineffective.[124] The impulse response functions for the VARs are given in Graphs A1 and A2.

This monetary policy is responsible for the bubbles in the financial markets and their volatility. Also, this unique public policy can create recessions very easily at any point in time. The recessions are coming from monetary policies and from the speculative financial market, which destroy consumers' and investors' confidence and lead the economy to recessions. The fiscal policy can have drastic effects on the economy, especially, in the long-run. In our economy, fiscal policy is not very effective, too, because the other party (the Democrats, now) do not allow the administration to pursue an expansionary fiscal policy, which will improve aggregate demand (AD) and could help the growth and employment for the country; they want the current President to fail, so they can win next elections. This is the "democracy" of the current century; actually, does not exist. (*Sic*).

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[120] See, **Unemployment Data Series.** Last Updated: January 10, 2020. **The ShadowStats Alternate Unemployment Rate for December 2019 was 20.8%. See,** U.S. Unemployment rate, http://www.shadowstats.com/alternate_data/unemployment-charts

[121] But the data show: $\rho_{M2,CPI} = +0.980$; $CPI \Rightarrow M2(F = 7.153^{***})$. The official inflation rate with July 2019 was 1.8% and the SGS inflation (1980-Based) was 9%. With December 2019, the official inflation was: $\pi = 2.29\%$ and the SGS: $\pi = 10\%$. See, http://www.shadowstats.com/alternate_data/inflation-charts

[122] The DJIA from 6,547.05 (March 9, 2009) reached 17,425.03 (December 2015), a 24.91% p.a. growth during the ZIRR and became 29,348.10 (January 17, 2020), a 17.11% p.a. during the NR. A total growth of 22,801.05 points or an average growth of 32.16% p.a. See, *Yahoo/Finance*

[123] This can be seen from the correlation and the causality of these two variables (m2 and p): $\rho_{m2,cpi} = +0.982$; $cpi \Rightarrow m2(F = 8.547^{***})$.

[124] See, Greg Ip, "The Era of Fed Power Is Over. Prepare for a More Perilous Road Ahead". Central banks have long exercised influence over booms and busts, but their ability is shrinking. *The Wall Street Journal*, January 16, 2020. https://www.wsj.com/articles/shrinking-influence-of-central-banks-ends-decades-of-business-as-usual-11579103829?mod=trending_now_pos3

Lastly, it seems that it is too late to do something to correct this destructive socio-economico-political system, which has a life of 380 years (since the British Revolution). Except, if the citizens (voters) of the world nations will wake up, as it happened in the U.S. with the 2016 elections and in Europe with the 2019 European Parliament elections. This awaking has to be constant and growing among the young people because the risks of our current system exceed its benefits. But who will teach them, what is the best system for their future? Can the Ivy League Universities?[125] Unfortunately, their objective is exactly the opposite (σκοταδισμός)..

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[125] See, https://www.universityreview.org/list-ivy-league-schools/

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APPENDIX

Table A1
U.S. Average Values and Standard Deviations

	Zero Interest Rate Regime (2008:12-2015:11)		New Regime (2015:12-2019:12)	
	$\overline{R}$	σ_R	$\overline{R}$	σ_R
USFFR	0.129%	0.040%	1.324%	0.750%
USRFFR	-1.458%	3.570%	-0.668%	2.315%
USMB	2866.094	833.296	3645.999	234.864
LUSMB	7.918	0.298	8.199	0.066
GUSMB	14.289%	37.538%	-3.969%	22.773%
M2	9987.648	1301.828	13807.66	804.848
LUSM2	9.201	0.130	9.531	0.058
GUSM2	6.163%	6.395%	5.611%	3.813%

USCPI	227.366	8.464	247.772	6.285
LUSCPI	5.426	0.038	5.512	0.025
USINF	1.586%	3.571%	1.992%	2.226%
US10YTB	2.586%	0.628%	2.305%	0.464%
USR10YTB	1.000%	3.493%	0.313%	2.295%
SPREAD1	-2.457%	0.620%	-0.981%	0.648%
STT3M	0.078%	0.058%	1.254%	0.763%
RRFRI	-1.508%	3.561%	-0.739%	2.346%
USPCE	11029.96	817.193	13646.29	684.95
LUSPCE	9.306	0.074	9.520	0.050
GUSPCE	3.407%	3.907%	4.265%	3.237%
GUSRPCE	1.821%	3.788%	2.285%	3.149%
GAP1	-3.279%	3.913%	-2.945%	3.329%
USDJIA	13361.00	3104.75	22810.75	3535.414
LUSDJIA	9.471	0.247	10.023	0.162
GUSDJIA	9.952%	55.692%	11.671	40.998
USRDJIA	5835.631	1166.922	9178.044	1215.552
LUSRDJIA	8.651	0.211	9.116	0.138
GUSRDJIA	8.366%	55.666%	9.679%	40.863%
USRGDP2012	16207.12	709.469	18261.69	530.283
LUSRGDP2012	9.692	0.044	9.812	0.029
GUSRGDP2012	1.857%	4.532%	2.376%	3.642%
USU	7.838%	1.544%	4.212%	0.499%
USPSR	1.583%	2.438%	2.461%	0.414%
RPUS10YTB (Risk)	2.508%	0.606%	1.051%	0.642%

Note: USFFR = U.S. effective federal funds rate, USRFFR = U.S. real effective federal funds rate, USMB = U.S. monetary base, LUSMB = ln of U.S. monetary base, GUSMB = growth of U.S. monetary base, M2 = money supply (M2), LUSM2 = ln of money supply (M2), GUSM2 = growth of money supply (M2), USCPI = U.S. consumer price index, LUSCPI = ln of USCPI, USINF = U.S. inflation rate, US10YTB = U.S. 10-year Treasury bonds rate, USR10YTB = U.S. real 10-year Treasury bonds rate, SPREAD1 = spread between the effective federal funds rate and the yield on 10-year Treasury bonds (normal, positive; flat; inverted yield curve, negative), STT3M= short-term Treasury bill 3-month maturity, RRFRI = real risk-free rate of interest ($i_{RF} - \pi$), USPCE = U.S. personal consumption expenditures, LUSPCE = ln of USPCE, GUSPCE = growth of the USPCE, GUSRPCE = growth of the U.S. real PCE, GAP1 = the gap between the real effective federal funds rate and the growth of the real PCE (=USRFFR-GUSRPCE), USDJIA = the U.S. Dow Jones Industrial Average, LUSDJIA = ln of the DJIA, GUSDJIA = growth of the DJIA, USRDJIA = U.S. real DJIA, LUSRDJIA = ln of the real DJIA, GUSRDJIA = growth of the real DJIA, USRGDP2012 = U.S. real GDP (2012 base year), LUSRGDP2012 = ln of the U.S. real GDP (2012 base year), GUSRGDP2012 = growth of the U.S. real GDP (2012 base year), USU = U.S. unemployment rate, USPSR = U.S. personal

savings rate, RPUS10YTB = risk premium on 10-year Treasury bonds (=US10YTB-STT3M), $\overline{R}$ = the average value of the variable, and σ_R = the standard deviation of the variable.

Source: Economagic.com, Yahoo/Finance, and FRED: Federal Reserve Bank of St. Louis.

Table A2
Vector Autoregression Estimates (2008:12-2015:11)

Variables	$djia_t$	$rgdp_t$	i_{10YTB_t}	p_t	u_t
$djia_{t-1}$	0.666***	-0.003	0.989*	0.016**	0.336
	(0.119)	(0.011)	(0.557)	(0.008)	(0.363)
$djia_{t-2}$	-0.203*	0.001	-0.403	0.002	-0.725**
	(0.117)	(0.010)	(0.546)	(0.007)	(0.356)
$rgdp_{t-1}$	1.469	0.694***	-9.534*	-0.036	-3.156
	(1.334)	(0.118)	(6.228)	(0.085)	(4.060)
$rgdp_{t-2}$	0.353	0.199*	7.523	-0.030	-5.039
	(1.428)	(0.126)	(6.670)	(0.091)	(4.349)
$i_{10YTB_{t-1}}$	0.026	0.002	0.952***	-0.001	-0.252***
	(0.024)	(0.002)	(0.113)	(0.002)	(0.074)
$i_{10YTB_{t-2}}$	-0.010	-0.001	-0.193*	-0.001	0.193**
	(0.026)	(0.002)	(0.121)	(0.002)	(0.079)
p_{t-1}	-1.389	-0.010	-1.761	1.076***	9.594**
	(1.721)	(0.153)	(8.037)	(0.110)	(5.239)
p_{t-2}	2.197	-0.021	-16.935***	-0.332***	-9.434**
	(1.569)	(0.139)	(7.327)	(0.100)	(4.777)
u_{t-1}	0.022	0.001	0.311**	0.001	0.676***
	(0.035)	(0.003)	(0.165)	(0.002)	(0.107)
u_{t-2}	0.015	0.001	-0.217	-0.001	0.118
	(0.032)	(0.003)	(0.148)	(0.002)	(0.096)
c_0	-20.839**	0.831	77.771*	1.526***	88.127***
	(9.615)	(0.851)	(44.905)	(0.614)	(29.276)
$i_{FF_t}^{eff}$	-0.108	0.019	-0.350	-0.006	1.904***
	(0.264)	(0.023)	(1.232)	(0.017)	(0.804)
mb_t	0.112	0.017	0.906	0.012	0.858*
	(0.177)	(0.016)	(0.824)	(0.011)	(0.537)
m_t	0.291	0.026	3.296*	0.026	-1.219
	(0.441)	(0.039)	(2.060)	(0.028)	(1.343)
R^2	0.976	0.994	0.919	0.996	0.994
SEE	0.042	0.004	0.194	0.003	0.127
F	219.791	890.814	61.289	1266.897	943.061
N	84	84	84	84	84

Note: $djia_t$ =USDJIA= U.S. Dow Jones Industrial Average Index, $rgdp_t$ = USRGDP2009= U.S. real GDP, i_{10YTB_t} =US10YTB= U.S 10-Year Treasury Bonds Rate, p_t = LUSCPI = ln of U.S. CPI, u_t = USU = U.S. unemployment rate, c_0 = constant term, $i_{FF_t}^{eff}$ = USFFR = U.S. effective federal funds rate, mb_t =LUSMB = ln of U.S. monetary base, m_t =LUSM2= ln of U.S. money supply (M2), *** = significant at the 1% level, ** = significant at the 5% level, * = significant at the 10% level, R^2 = R-squared, SEE =S.E. equation, F = F-statistic, and N =number of observations.
Source: See, Table A1.

Table A3
Vector Autoregression Estimates (2015:12-2019:12)

Variables	$djia_t$	$rgdp_t$	i_{10YTB_t}	p_t	u_t
$djia_{t-1}$	0.471***	0.022***	1.457*	0.018***	-0.919*
	(0.173)	(0.011)	(0.876)	(0.009)	(0.547)
$djia_{t-2}$	0.015	-0.008	-0.003	0.007	-0.775
	(0.191)	(0.012)	(0.970)	(0.010)	(0.606)
$rgdp_{t-1}$	-2.390	0.148	-13.778	-0.036	-7.443
	(2.035)	(0.126)	(10.329)	(0.104)	(6.454)
$rgdp_{t-2}$	3.931*	-0.205	-10.544	0.040	6.529
	(2.351)	(0.145)	(11.932)	(0.120)	(7.455)
$i_{10YTB_{t-1}}$	-0.011	-0.006***	0.893***	0.003**	0.267***
	(0.038)	(0.002)	(0.192)	(0.002)	(0.120)
$i_{10YTB_{t-2}}$	0.036	-0.001	-0.057	-0.005**	-0.349***
	(0.045)	(0.003)	(0.226)	(0.002)	(0.141)
p_{t-1}	1.918	0.172	21.362	0.777***	-4.440
	(3.701)	(0.228)	(18.784)	(0.189)	(11.737)
p_{t-2}	-3.304	0.210	-15.430	-0.190	5.441
	(3.037)	(0.187)	(15.415)	(0.155)	(9.632)
u_{t-1}	-0.003	0.003	-0.067	0.004	0.429***
	(0.053)	(0.003)	(0.271)	(0.003)	(0.169)
u_{t-2}	0.009	-0.005	0.289	-0.001	-0.318**
	(0.050)	(0.003)	(0.254)	(0.003)	(0.159)
c_0	-24.634	7.892***	173.542	1.416	37.016
	(23.387)	(1.444)	(118.705)	(1.194)	(74.171)
$i_{FF_t}^{eff}$	-0.022	0.021***	0.350	0.005	-0.036
	(0.070)	(0.004)	(0.356)	(0.004)	(0.222)
mb_t	0.493*	-0.035**	-1.055	-0.015	0.266
	(0.276)	(0.017)	(1.401)	(0.014)	(0.875)
m_t	1.910***	0.055	2.670	0.072***	-1.550
	(0.644)	(0.040)	(3.266)	(0.033)	(2.041)

R^2	0.973	0.997	0.919	0.997	0.971
SEE	0.031	0.002	0.155	0.002	0.097
F	88.700	815.037	27.953	809.845	83.524
N	46	46	46	46	46

Note: See, Tables A1 and A2.
Source: See, Table A1.

Graph A1
Impulse Response Function (2008:12-2015:11) of eq. 9, Table A2.

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.
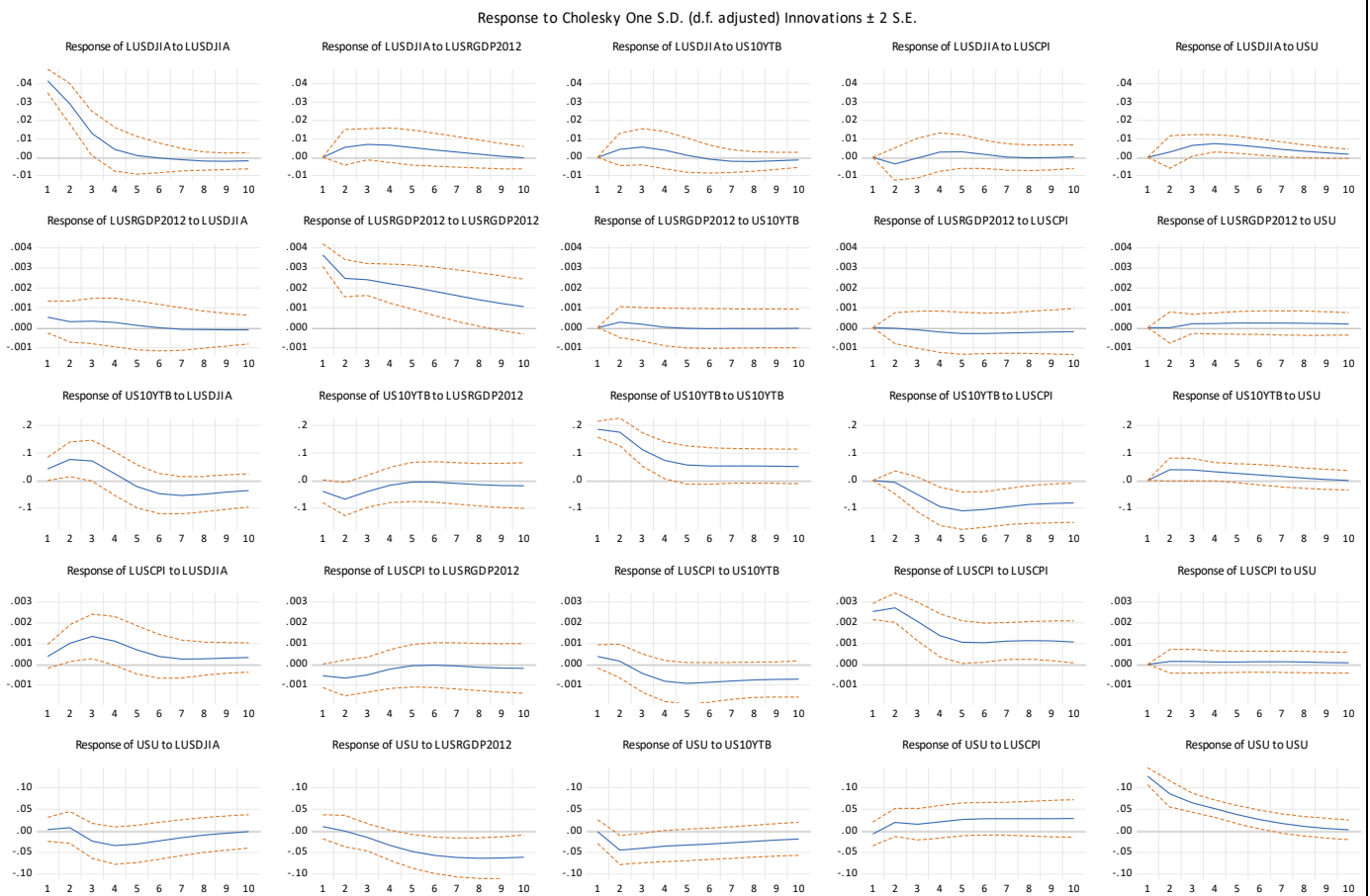
Graph A2
Impulse Response Function (2015:12-2019:12) of eq. 9, Table A3.

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.