Quantitative Easing and Its Long-term Effects on U.S. Credit Market Sustainability: A Neutrosophic Science Perspective

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Abstract

The cyclical nature of credit is a pivotal component of the broader business cycle, with credit expansion serving as a crucial mechanism for economic resurgence post-crisis. This paper delves into the ramifications of stringent financial regulations implemented in the wake of the 2007–2008 financial crisis, which notably decelerated the credit expansion phase, culminating in an anomalously extended period of credit contraction within the non-financial private sector. From a Neutrosophic Science perspective, this study posits that the typical progression of the credit cycle was significantly altered due to the heightened requirements under Basel III and the overhaul of the United States financial system. Distinct from prior crises, the post-2007–2008 period witnessed a more languid recuperation in credit activity, with the credit volume to the non-financial private sector yet to attain pre-crisis levels. This article offers a comparative analysis, scrutinizing the temporal dynamics of credit recovery following various crises. Drawing on Minsky's financial instability hypothesis, Crotty's theory of endogenous credit standard formation, and the Neutrosophic Science framework, the research investigates the phenomenon termed "credit paralysis." It hypothesizes that banking credit standards are intrinsically linked to macroeconomic variables such as GDP levels, interest rates, and loan volumes. Employing a vector autoregressive model, the study examines the alterations in credit activity vis-à-vis shifts in credit standards and explores the genesis of these standards in relation to macroeconomic indicators. The analysis leads to the conclusion that the augmented credit standards, necessitated by Basel III's implementation in crisis response, disrupted the normal trajectory of the credit cycle. The research culminates in the development of a stylized model of the U.S. credit cycle, which incorporates specific factors from the 2007–2008 crisis, including pre-crisis financial innovations, the subsequent intensification of financial regulations, and the principles of Neutrosophic Science.

Keywords: Financial Crisis, Credit Paralysis, Financial Instability Hypothesis, Financial Regulation, Business Cycle, Credit Cycle, Credit Standards, Neutrosophic Science

1. Introduction

The financial crisis of 2007-2008 was preceded by a relaxation of financial regulation that had evolved by the end of the 20th century. A significant milestone in this trajectory was the enactment of the Financial Services Modernization Act, or the Gramm-Leach-Bliley Act in 2000. This Act's primary objective was the deregulation of financial markets and the repeal of certain provisions of the Glass-Steagall Act, particularly those allowing the creation of financial holding companies, aimed at augmenting competition in financial markets [1].

2. Trends in Post-Crisis Financial Regulation in the United States

The regulatory system of the U.S. financial markets before the 2008 financial crisis and the Great Recession is often described as fragmented and convoluted [2]. Researchers have noted a dilution of accountability among a plethora of government agencies, accompanied by a duplication of regulatory responsibilities. Many researchers, as well as government representatives, have acknowledged that one of the causes of the crisis was gaps in financial regulation [3, 4], highlighting the necessity to reform the financial system and enhance financial institutions [5, 6].

In the International Monetary Fund report "Lessons of the Financial Crisis for Future Regulation of Financial Institutions and Markets and for Liquidity Management," published in February 2009, the unreliability of the financial regulatory

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system was declared. "Market failures, emerged as a result of financial innovations, undermine the effectiveness of the existing regulatory model... A reform of both regulatory and supervisory structures is required to reduce regulatory and tax arbitrage while preserving incentives for financial innovations..." [7].

One of the earliest substantial responses to the financial crisis in the U.S. was the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, which consolidated several disparate regulatory norms. Its key aspects included a revision of bankruptcy law, regulation of previously unregulated derivatives markets, and scenarios for the rescue of major financial institutions in case of bankruptcy. The Act also initiated changes in the structure of the U.S. financial regulation and supervision system.

Another response to the crisis was the adoption of Basel III standards, which raised requirements for banking capital, liquidity, leverage, and risk management (Table 1). The reforms conducted, particularly Basel III, significantly influenced banking activities (Table 2). Experts from the Bank for International Settlements note a decrease in banking assets, a decline in the profitability of banking operations, and a shift in business models towards less capital-intensive traditional commercial banking activities [8]. The introduction of a countercyclical buffer also led to a reduction in credit supply [9]. The increased regulatory burden resulting from the Dodd-Frank Act significantly raised costs for small banks, prompting them to reduce their range of mortgage lending products [10].

3. Neutrosophic Science Perspective

Neutrosophic Science, a branch of logic and philosophy introduced by Florentin Smarandache, provides a nuanced framework for analyzing phenomena characterized by indeterminacy, incompleteness, and uncertainty. This paper employs Neutrosophic Science to dissect the long-term effects of quantitative easing and financial regulations on the sustainability of the U.S. credit market. By integrating neutrosophic logic, which accounts for the true, false, and indeterminate components of a proposition, we can gain a deeper understanding of the complex and often ambiguous nature of credit cycles.

The application of Neutrosophic Science in this research is particularly pertinent given the indeterminate outcomes of post-crisis financial interventions. Traditional economic models often fail to capture the full spectrum of uncertainties inherent in the credit market, especially during periods of significant regulatory change and economic instability. By employing a neutrosophic approach, this study addresses the multifaceted impact of Basel III regulations and the financial innovations preceding the 2007–2008 crisis, highlighting the intrinsic uncertainties and varying degrees of influence on the credit market.

Neutrosophic logic enables the examination of "credit paralysis," a condition where elevated credit standards stifle credit expansion, thereby altering the typical credit cycle progression. This perspective facilitates a more comprehensive analysis of how macroeconomic variables such as GDP levels, interest rates, and loan volumes interact with credit standards in an indeterminate environment. The integration of Neutrosophic Science provides a robust methodological framework to model these interactions, offering insights into the genesis and evolution of banking credit standards in response to regulatory measures [21].

By developing a stylized model of the U.S. credit cycle that incorporates Neutrosophic Science principles, this research delineates the indeterminate and uncertain factors influencing credit market sustainability. This model underscores the need for flexible and adaptive financial regulations that can accommodate the inherent uncertainties of economic recovery processes, ultimately contributing to a more resilient and sustainable credit market.

4. The Credit Cycle in the United States

Credit activity is a crucial factor in economic growth during the recovery and expansion phases of any business cycle. "Credit sluggishness" or even "credit paralysis" is often considered one of the reasons for weak economic growth following the 2008-2009 crisis. Given the low interest rate environment, factors both from the supply and demand side of credit are likely to blame for the low credit activity [19].

Restrictions on credit activity can significantly suppress economic activity — the economy misses out on essential investments for recovery. "Credit crunch" or "credit paralysis" is an anomalous reduction in credit supply at a constant real interest rate and quality of potential borrowers, or stagnation of credit at decreasing interest rates.

To describe the role of credit activity and the financial sector in the business cycle, economist Hyman Minsky proposed the financial instability hypothesis [11]. During the upswing of the business cycle, in a situation where the economy is growing and the future appears optimistic, enterprises increase their debt. Price increases during the upswing phase ensure the devaluation of debt, and the growth phase self-perpetuates. Towards the end of the upswing, traditional loans are replaced by loans to finance existing debt. They involve trading futures contracts for raw materials, which are financial instruments and rarely involve physical deliveries (although such deliveries are not excluded) [20]. The problem arises

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when large companies are forced to sell assets to make payments. This leads to a "Minsky moment" - creditors realize that a lot of loans have been issued, but not all borrowers are reliable, and financial difficulties are faced not only by companies with excessive debt burdens. Following this moment, creditors' requirements become much stricter. Crotty described this process as the endogenous formation of standards [12]. In this situation, the risk of systemic reduction in economic activity is very high [13].

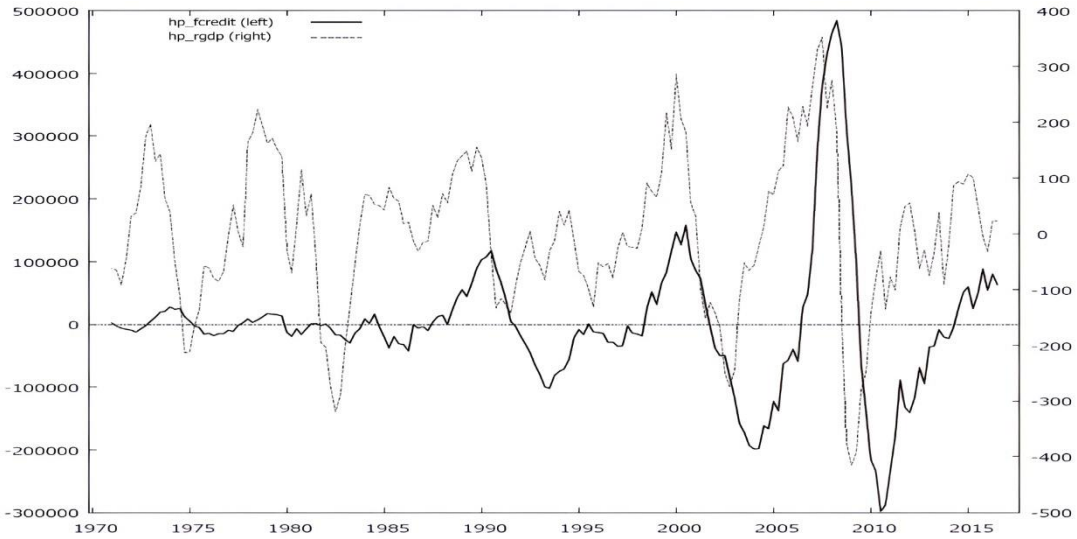

Figure 1. Cyclicality in Business (Dotted Line, Left Axis) and Credit (Solid Line, Right Axis) as Derived Utilizing the Hodrick–Prescott Filter Method

Source: Author's compilation on the basis of FRED database.

Table 1: Comparison of Basel II and Basel III Regulatory Requirements

Requirements	Basel II	Basel III
Capital requirements		
Tier 1 capital (basic capital), %	4 (2)	6 (4,5)
Conservation buffer, %	—	2,5
Countercyclical buffer, %	—	0–2,5
Leverage level, %	—	3 for Tier 1 capital
Liquidity requirements		
Liquidity coverage ratio, %	—	100
Net stable funding ratio, %	—	100

Source: Author's compilation

Table 2: Implications of Financial Regulatory Reforms on Banking Institutions

Changes in financial regulation	Implications for banks
Increasing capital requirements	Decrease in dividend payments, increase in the number of ordinary shares
Debt limit	Decline in lending
Increasing liquidity requirements	Reducing the risk of withdrawal of deposits, increasing the share of liquid low-yielding assets
Dodd–Frank Act	Increased costs of regulatory burden

Source: Author's compilation

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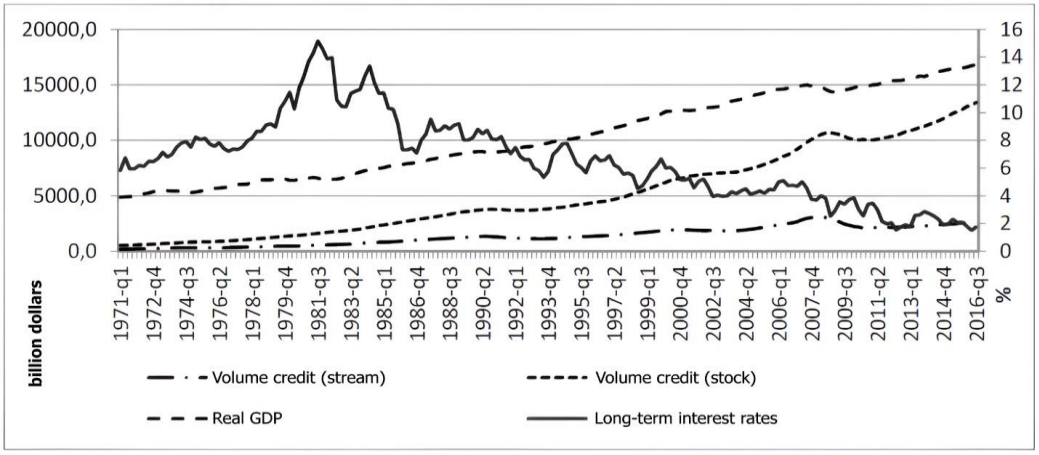

Figure 2. Temporal Evolution of Macroeconomic and Credit Indicators

Source: Author's compilation on the basis of FRED database.

Table 3: Comparative Analysis of Peak, Trough, and Recovery Phases in Credit Cycles across Various Economic Crises

Business cycle peak (NBER)	Business cycle bottom (NBER)	Peak credit to non-financial companies	Loan bottom to non-financial companies	Share of credit from pre-crisis level		
				2 blocks after the bottom	4 blocks after the bottom	8 blocks after the bottom
IV quarter 1973	I quarter 1975	III quarter 1974	IV quarter 1975	0,993	1,047	1,204
I quarter 1980	III quarter 1980	I quarter 1980	II quarter 1980	1,036	1,095	1,248
III quarter 1981	IV quarter 1982	—	—	—	—	—
III quarter 1990	I quarter 1991	IV quarter 1990	II quarter 1993	0,863	0,883	0,967
I quarter 2001	IV quarter 2001	III quarter 2000	II quarter 2003	0,949	0,981	1,095
IV quarter 2007	II quarter 2009	III quarter 2008	IV quarter 2010	0,693	0,728	0,724

Source: Author's compilation on the basis of NBER and FRED databases.

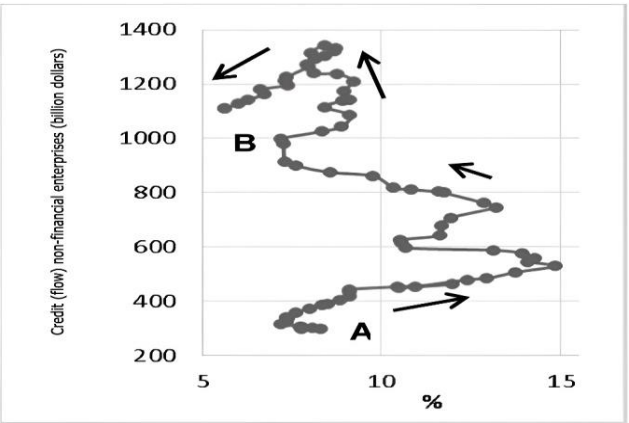

Figure 3. The crisis of 1991 (1975–1993)

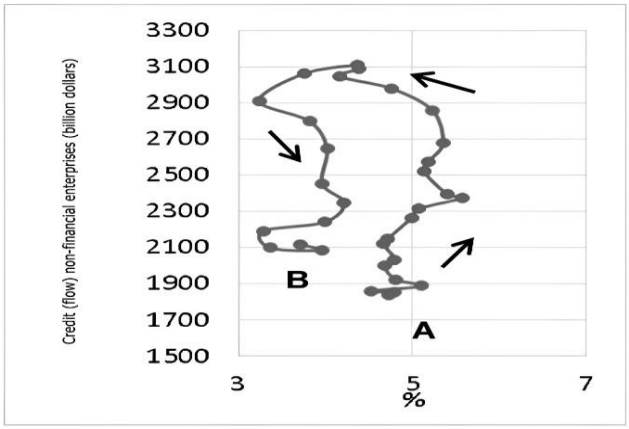

Figure 4. The crisis of 2008 (2003–2011)

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5. The Credit Cycle's Relationship with the Business Cycle in the United States

The credit cycle is intricately linked to the business cycle, with phases of both cycles moving in parallel, albeit the credit cycle lagging slightly behind the business cycle. After the peak of the business cycle, credit activity continues to grow for some time before encountering what is known as a "Minsky moment," where credit activity sharply declines [20]. The upswing of the business cycle commences with a rise in the credit cycle, driven by credit expansion and credit innovations. In Figure 1, representing the cyclical component of the business and credit cycles, one can observe the anomalous nature of the pre-crisis credit boom and the post-crisis "credit crunch." The figure further reaffirms the colossal scale of the business cycle crisis [14].

During the 2008-2009 crisis, the U.S. economy experienced a phase of credit contraction, with the credit behavior towards the non-financial sector being notably anomalous. As of the third quarter of 2016, the volume of credits remained below the pre-crisis level (Figure 2).

Table 5: The variables incorporated into the model

Variable	Meaning	Source
l_t, ld_fcredit	Volume of loans issued to non-financial corporations at the end of the year	FRED (https://fred.stlouisfed.org/series/BUSLOANS)
y_t, ld_rgdp	GDP	FRED (https://fred.stlouisfed.org/series/GDPC 1)
cs_t, standards	Net percentage of respondents reporting tightening of financial standards	Board of Governors of the Federal Reserve System, Senior Officer Opinion Survey on Bank Lending Practices (https://www.federalreserve.gov/boarddocs/snloansurvey/201702/default.htm)
r_t, d_mprime	Base loan rate	FRED (https://fred.stlouisfed.org/series/MPRIME)

Source: Author's compilation

The decline in credit during the 2008 crisis was significantly steeper than the drop in credit activity in previous crises. The recovery of credit in the initial post-crisis quarters was extremely slow compared to previous crises, and the credit level has not yet returned to its pre-crisis state. The phase of credit expansion - the rise of the credit cycle - was absent in the 2008 crisis.

This anomalous behavior of credit can also be observed by analyzing the graphs in the coordinates of "volume of issued credits - interest rate."

Figures 3 and 4 present data on the flow value of credit to non-financial enterprises in relation to the interest rate. Effectively, these graphs represent the trajectory of changes in credit volumes and interest rates within a single credit cycle - from the minimum credit level to the next minimum.

Figure 3 depicts the trajectory of credit volume changes during the 1991 crisis. Point A corresponds to the parameters in the second quarter of 1975, where credit reaches its lowest point and then begins to rise. The increase in credit volumes is accompanied by economic upturn and rising interest rates. However, by late 1981 - early 1982, the growth in issued credit volumes slows down, interest rates decrease, "encouraging" credit. The subsequent increase in credit raises interest rates again, and so on. Eventually, credit volumes peak in early 1991, entering the "credit crunch" phase - a fall in credit volumes despite decreasing interest rates. Point B corresponds to mid-1993, the minimum credit value, after which a new growth begins.

Table 4: Study of Credit Behavior Utilizing Vector Analysis Models

Author, year	Model type	Date	Variables	Using credit standards in the model
Calza, Gartner, Sousa, 2001 [15]	VECM	Euro Area (1980–1999)	log loans (BIS) log real GDP short term interest rates long term interest rates	—
Lown, Morgan, 2006 [16]	VAR-model	US (1968–1984, 1990–2000)	log real GDP log GDP deflator commodity prices	SLO

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			federal funds rate C&I loans	
Ciccarelli, Maddaloni, Peydró, 2010 [17]	VAR (restricted)	US (1992–2009), Euro Area (2002–2009)	real GDP GDP deflator federal funds rate + EONIA loans (excluded)	SLO, BLS (supply + demand)
Hristov, Hülsewig, Wollmershäuser, 2011 [18]	VAR (restricted)	Euro Area (2003–2010)	log real GDP loans to non-financial corporations log price level interest rate EONIA	—

Source: Author's compilation.

Thus, the credit cycle usually behaves, with a boom phase followed by a downturn and "credit crunch." In different historical cycles, the "credit crunch" phase may vary slightly - for example, it may be characterized not by a fall in credit, but by a slow and unstable growth (as in the 2001 crisis).

However, the trajectory of credit volume changes during the 2008 crisis (third quarter of 2008 to the fourth quarter of 2011) appears different. The initial stages of the credit cycle are similar - a growth phase, then a reduction in credit and an "encouraging" decrease in interest rates, with the decline starting in mid-2008. The fall in credit volumes in this cycle was much more severe, and there has been no recovery in credit volumes to date (over 20 quarters). The Minsky model helps explain such credit behavior - post-crisis, there was a strong positive exogenous shock to credit standards, leading to a more significant reduction in credits. Lenders are unable to respond to the reduction in credits with the same degree of lowering of credit standards, thus prolonging the "credit crunch."

Table 6: The Importance of Coefficients in Vector Auto Regression Models of the Credit Cycle in the United States

Index	**Loan Volume Equation**	**Interest rate equation**
Volume of loans	0,633 [0,0000]	–2,468 [0,2391]
Real GDP	0,572 [0,2931]	12,385 [0,0023]
Loan rate	0,001 [0,3933]	0,595 [0,0004]
Credit standards	–0,0003 [0,0507]	–0,003 [0,2035]
	GDP equation	***Credit Standards Equation***
Volume of loans	–0,023 [0,7111]	223,379 [0,0000]
Real GDP	0,446 [0,0034]	–221,656 [0,5350]
Loan rate	–0,0002 [0,7305]	–4,682 [0,0598]
Credit standards	–4,7×10–5 [0,1120]	0,895 [0,0000]

Source: *Author's compilation*

6. Modeling the Credit Cycle

In modeling the credit cycle, it is imperative to consider factors influencing both the demand for and the supply of credit. Typically, Gross Domestic Product (GDP) and the cost of credit, represented by various interest rates, are employed as indicators of demand.

However, there is no consensus regarding the directionality of the relationship between credit demand volume and GDP. Some researchers assert that GDP positively impacts the volume of credit. The world has claimed that further efforts have

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been required for sustainable growth [19]. Sustained economic growth enables borrowers to maintain high levels of consumption and investment. Furthermore, during periods of economic expansion, many small-scale projects become profitable, necessitating additional financing and thereby increasing the demand for credit [15]. It's important to note that GDP is effectively used as a proxy variable for general prosperity, capturing the effect of unobserved factors.

Conversely, other researchers argue that the relationship might be inverse, suggesting that economic growth leads to increased output and profits, enabling economic agents to rely on internal financing sources. Similarly, during economic downturns, firms might resort to borrowing to mitigate the impact of declining revenues.

The interest rate also influences the volume of lending – positively if governed by lenders, and negatively if determined by borrowers. However, it's challenging to assert a definitive scenario, particularly during periods of credit contraction accompanied by low interest rates.

Furthermore, the alternative cost of obtaining borrowed financing, such as on the capital market, should also be considered. The most popular method for modeling the credit cycle in academic discussions is through vector autoregressive models (VAR) or vector error correction models (VECM).

The study "The Credit Cycle and the Business Cycle: New Findings Using Loan Officer Opinion Survey," published by Lown and Morgan [16] in 2006, serves as a foundation for numerous subsequent works analyzing the credit and business cycles using VAR models.

The authors utilize key macroeconomic variables such as real GDP, the deflator, commodity prices, and the federal funds rate. The credit market is modeled using the volume of commercial loans. They also include bank lending standards as one of the variables.

As a proxy for lending standards, the authors use results from the Federal Reserve Board's Senior Loan Officer Opinion Survey [21]. The core of the research comprises responses from loan officers in major U.S. banks. Specifically, they are asked about the changes in their bank's credit standards for approving commercial and industrial loans or lines of credit (excluding loans for mergers and acquisitions) over the past three months:

1. Significantly tightened;
2. Somewhat tightened;
3. Remained essentially unchanged;
4. Eased somewhat;
5. Eased significantly.

The researchers construct a variable reflecting the net percentage of tightening, calculated as the proportion of respondents indicating an increase in standards minus the proportion indicating a decrease.

The model demonstrates a significant negative impact of increased lending standards on the volume of credits and GDP. Additionally, a reverse correlation is observed between lending standards and loan volumes – an increase in loan volumes leads to higher lending standards.

According to the model, both GDP and federal funds rate significantly decrease in response to a modest increase in financial standards [22]. The tightening of standards lasts for about three quarters (where the proportion of respondents reporting tightening exceeds those reporting easing). Standards return to pre-shock levels after nine quarters. At the lowest point, the volume of credits is 3% lower than before the shock, and GDP volume is 0.5% lower. A small increase in the volume of issued credits (1%) leads to a 4% tightening of financial standards, a statistically significant growth. Table 4 also presents other studies utilizing the aforementioned methods to analyze the credit and business cycles.

7. The U.S. Credit Cycle Model

This study analyzes the U.S. credit cycle model based on Hyman Minsky's theoretical framework, incorporating the endogenous formation of credit standards. We hypothesize that a vector autoregression (VAR) model will reveal not only the factors influencing the formation of credit volume (including credit standards) but also demonstrate a feedback loop – the effect of the volume of issued credits and other macroeconomic parameters on credit standards.

Data

Quarterly data from the United States for the period 1991–2016 were utilized in this research. The dependent variable chosen was the volume of loans issued to non-financial corporations at the end of the year. The "flow" variable – the volume of loans issued during the year – is deemed a more accurate definition of the dependent variable. This is because the "stock" variable, the volume of loans at the end of the year, inevitably includes changes from previous years. Table 5 presents information on the variables used in the model – their designation, the value of the variable, and the source.

The VAR Model

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A Vector Autoregression (VAR) model is a dynamic model that captures relationships among multiple time series. It encompasses several equations, each incorporating variables with different lags, allowing for the consideration of interrelationships among variables over various periods.

To model the credit cycle effectively, it is necessary to estimate a system of equations, as the variables are interdependent. Estimating a single equation using the ordinary least squares method would inevitably lead to endogeneity issues. In our case, the model will consist of a system of four equations, one for each variable. For instance, the equation for the variable representing the volume of loans would be structured as follows:

$$l_t = \beta_i^{(0)} + \sum_{i=1}^{2} (\beta_i^{(1)} l_{t-i} + \beta_i^{(2)} y_{t-i} + \beta_i^{(3)} r_{t-i} + \beta_i^{(4)} cs_{t-i}) + \varepsilon_t$$

Where:

- Loan Volume l_t - represents the volume of loans.
- Real GDP Y_t is the real Gross Domestic Product.
- Loan Rate r_t denotes the interest rate on loans.
- Credit Standards cs_t refers to the prevailing credit standards.

8. Results and Discussion

In the VAR model, individual coefficients are not interpreted in isolation, as they do not account for the numerous interconnections through variable lags. Nevertheless, an attempt can be made to estimate the influence of explanatory variables on the dependent variable through the sum of coefficients across all lags of the explanatory variable. Table 6 presents the sum of coefficients across all lags of the explanatory variable and the p-value for the test of joint significance of these lags [in square brackets].

From Table 6, it is evident that for the variable representing the volume of issued loans, the autoregressive component is significant, and there is a notable 10% correlation with financial standards. The GDP variable in the equation is not significant, which likely reflects the dual existing directions of influence: increased credit volume due to the expansion of economic activity with GDP growth and decreased credit volume due to the rise in internal financing using increasing profits from GDP growth [24]. The loan rate is also insignificant: both credit demand and supply, as drivers of the business cycle, affect the volume of issued credits with different signs. The equation for credit standards reveals a significant relationship with the loan volume variable — as loans increase, credit standards rise, as predicted by the theory of endogenous expectations [12]. It's noteworthy that the financial standards in the U.S. change smoothly — the sum of coefficients at the autoregressive components is 0.895.

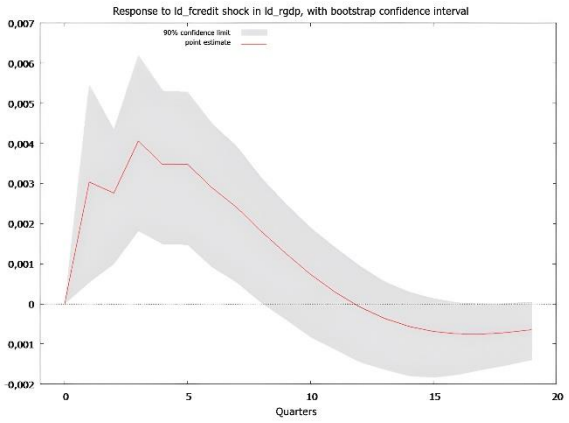

Figure 5. Impulse — GDP response

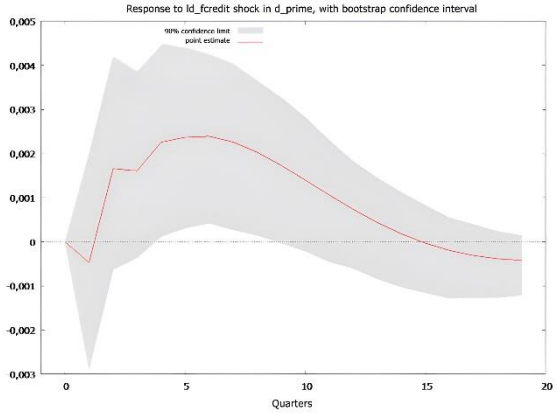

Figure 6. Impulse – interest rate on loans, volume of loans

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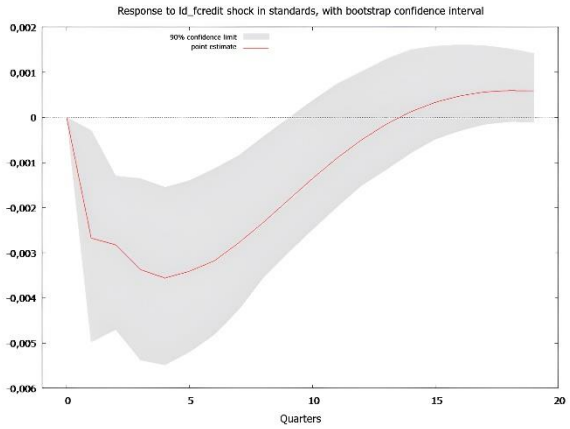

Figure 7. Impulse — standards

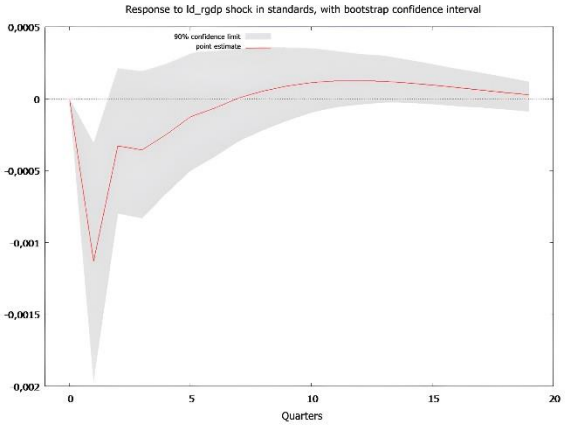

Figure 8. Impulse — standards, response — response – volume of loans GDP

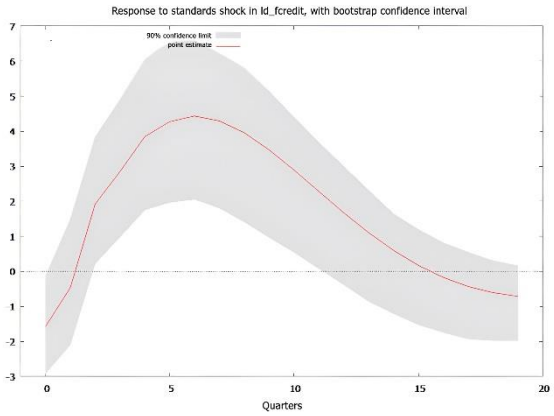

Figure 9. Impulse — volume of loans, response — standards

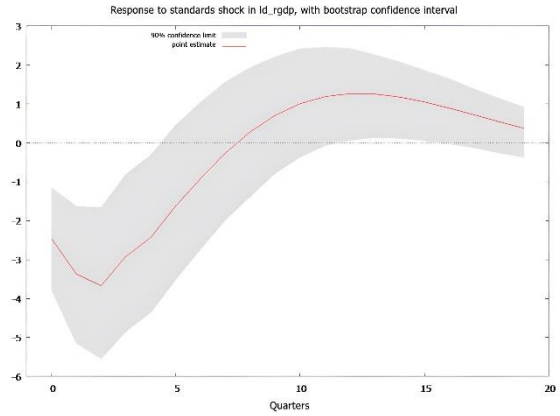

Figure 10. Impulse – GDP, response - standards

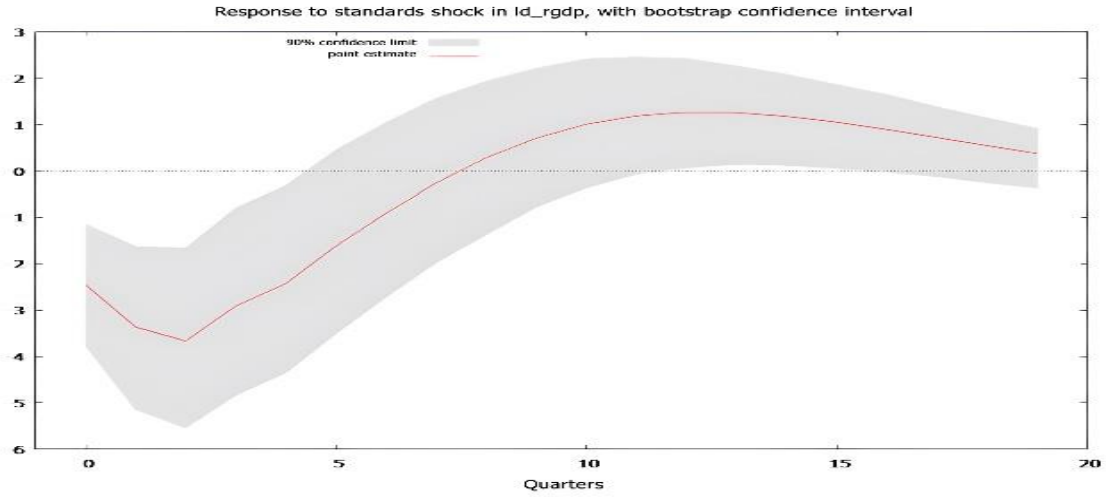

Figure 11. Impulse — rate of interest, response — standards

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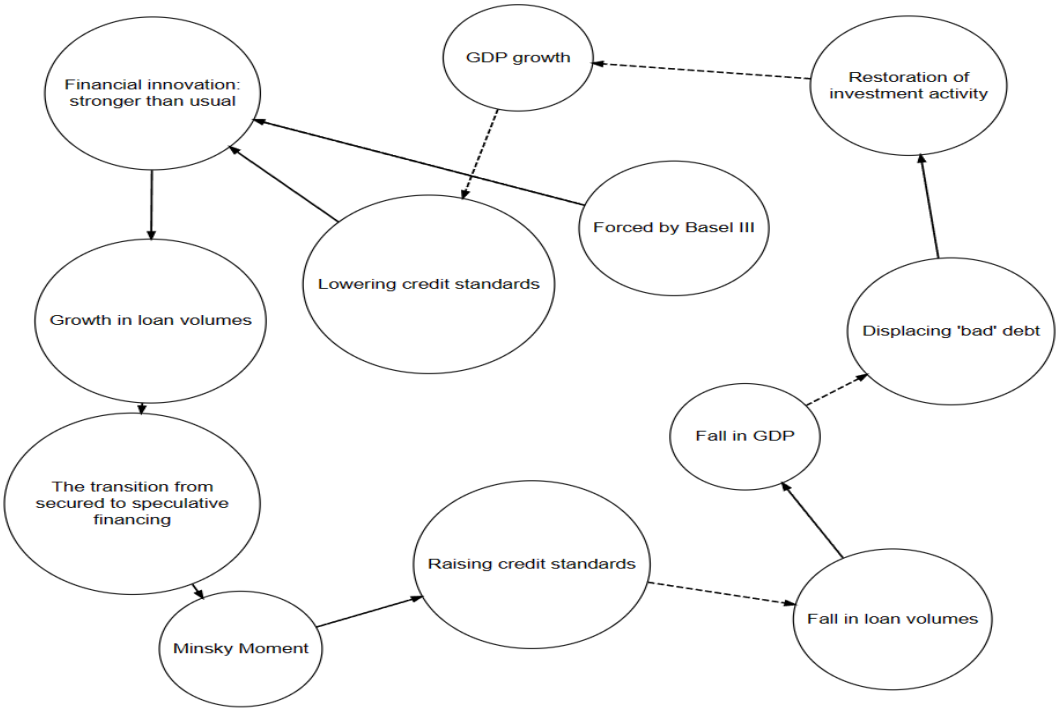

Figure 12. A stylized model of the credit cycle

Source: Author's compilation

* The moment of a sharp drop in asset values and the beginning of deleveraging (Hyman Minsky's Financial Instability Hypothesis)

Further insights into statistically significant interrelationships can be derived by analyzing impulse response functions. An impulse response function shows the current and future changes in one variable in response to a one-time shock in another variable.

An increase in GDP positively influences credit activity [23]. The volume of lending typically increases for an average of 7 quarters following GDP growth (Figure 5). Credit activity is primarily governed by lenders — an increase in loan rates positively impacts the volume of lending. Credit activity rises from the 5th to the 7th quarter after an increase in loan rates (Figure 6). An increase in credit standards negatively impacts credit activity. The volume of lending falls on average for 7 quarters after the tightening of financial standards (Figure 7). Similarly, an increase in credit standards negatively affects real GDP. Figure 8 shows a significant drop in GDP in the 1st quarter following the tightening of financial standards. Credit standards also change in response to shifts in macroeconomic variables. They react with a prolonged (averaging 10 quarters) increase to the growth in lending volumes, in line with the theory of endogenous expectations [12] (Figure 9).

Credit standards decrease with GDP growth (Figure 10) and interest rate increases (Figure 11), which can likely be explained from the creditors' perspective: the better the borrowers are doing (due to GDP growth) and the more they have to pay (due to interest rate increases), the more reliable they appear.

Thus, the stylized model of the American credit cycle of 2008 unfolds as follows (Figure 12). Due to more powerful financial innovations, the growth in credit volumes (primarily speculative) was more pronounced than in previous crises. Furthermore, the phase of increasing credit standards was accelerated by national and supranational tightening of financial regulation, thereby extending the duration of transition to the recovery of investment activity after the displacement of "bad" debt and "bad" borrowers. The current credit contraction is explainable by the inability to move to a phase of decreasing credit standards due to high national and supranational banking requirements.

9. Conclusions

This study provides empirical support for Minsky's model and the endogenous formation of credit standards. Credit activity in different phases of the cycle is influenced by the actions of creditors and borrowers: borrowers increase credit demand with economic improvements, eventually transitioning from secured to speculative financing, while creditors respond by raising credit standards, acting as "sanitizers" of the credit market at the micro level.

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The relaxation of financial regulation in the U.S. at the end of the 20th century and the economic boom of the early 21st century led to an inadequately small increase in standards by creditors in response to the emergence of speculative financing modes, triggering a financial shock in the recession.

Post-crisis (post-2008-2009) financial regulation, intended to enhance the stability of the financial system and reduce the likelihood of a crisis, despite numerous positive outcomes, also has negative consequences. One such outcome is the reduction in credit activity of consumers and non-financial corporations. Tightening financial standards significantly reduced the credit activity of non-financial enterprises, intensifying the phase of increasing credit standards in response to the emergence of speculative financing among companies.

Based on the conducted research, it can be stated that the principles of the credit cycle's behavior change with the modification of the financial regulatory system and the tightening of financial standards. Credit standards are primarily regulated by national and supranational requirements, and creditors cannot fully respond to borrower behavior by adjusting credit supply. This leads to a decrease in credit activity, resulting in distortions of the business cycle.

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