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Interest Rates and the Time-Varying Dynamics of Household Credit Growth

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Abstract

This paper examines the relationship between real interest rate fluctuations and household credit growth by analyzing revolving and non-revolving credit transactions. Using monthly U.S. data from 1990–2025, results show that credit and key macroeconomic variables are integrated of order one and cointegrated, indicating stable long-run equilibrium relationships. Vector Error Correction Model (VECM) estimates show that both credit types adjust gradually toward equilibrium following macroeconomic shocks, though at different speeds of adjustment. Structural break tests, recursive cumulative sum (CUSUM) procedures, and rolling regressions suggest that there is a time variation in the interest rate sensitivity of revolving credit that contrasts the more stable trend observed among non-revolving credit transactions.

JEL classification numbers: E43, E52, G51, C32.
Keywords: Household credit, Interest rates, Monetary policy transmission, Cointegration, VECM, Structural breaks.

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1. Introduction

Household credit plays a major role in stimulating macroeconomic activity, attaining consumption smoothing, and maintaining financial stability. In 2025, the U.S. household consumption comprises 68% of the total Gross Domestic Product (GDP), which makes borrowing conditions an important factor in influencing aggregate demand trends (Bureau of Economic Analysis, 2026). Notably, in 2025 total household credit reached $18.8 trillion, and household debt-service payments comprised 11% of disposable income (Federal Reserve Board, 2026). Previous studies show that fluctuations in credit transactions are associated with business cycles, asset price dynamics, and financial crises (Bernanke, Gertler, & Gilchrist, 1999; Kiyotaki & Moore, 1997). Thus, it is important to understand the determinants and stability of household credit growth, especially focusing on the role of real interest rates, which play a central role in empirical models of monetary transmission.

According to traditional monetary theory, real interest rate volatility influences borrowing and spending decisions through intertemporal substitution (Mishkin, 1996). This suggests that higher real rates, translated into increased borrowing costs, reduce credit demand, while lower rates stimulate borrowing and consumption. The Investment Saving and Liquidity Preference-Money Supply model (IS–LM) emphasizes the impact of real rates on aggregate demand dynamics (Clarida, Galí, & Gertler, 1999). Nonetheless, empirical results on the strength and stability of this mechanism are mixed, especially when focusing on household-level borrowing rather than aggregate output responses.

The credit channels literature highlights how borrowing limits, the availability of collateral, and household financial conditions affect the response of credit to monetary policy (Kiyotaki & Moore, 1997). In this framework, monetary policy can influence credit not only through borrowing costs but also through asset valuation, net worth, and financial premiums. Studies show that monetary tightening can affect financially constrained borrowers (Bernanke & Gertler, 1989; Gertler & Gilchrist, 1994; Kashyap, Stein, & Wilcox, 1993). Moreover, financial intermediaries such as banks have a huge role in transmitting policy shocks to the general economy. This suggests that the impact of interest rate fluctuation may vary and possibly be nonlinear depending on macroeconomic and financial conditions. Recent research further suggests that the effect of monetary policy changes over time as financial markets evolve, regulation changes, and new financial products are introduced in the market (Boivin, Kiley, & Mishkin, 2010). Long-term data show that the credit cycle has been a determinant in driving economic volatility and risk of financial crisis (Schularick & Taylor, 2012; Jordà, Schularick, & Taylor, 2016).

One concept that is not usually highlighted in literature is that borrowing is not homogeneous. Credit accommodations can generally be classified as either revolving or non-revolving credits. Revolving credit, such as credit card borrowing, typically has a short maturity, involves an open-ended credit arrangement, and adopts an adjustable rate mechanism. This allows borrowers to adjust to changing financial conditions. On the other hand, non-revolving credit, such as auto loans, mortgages, and other installment loans, generally has a longer-term and is usually linked to durable consumption decisions. Thus, this credit type cannot be affected only by interest rate fluctuations but also by income expectations, housing market conditions, and consumer confidence (Dynan & Kohn, 2007). Given that the two credit types differ in structure, repayment flexibility, and borrowing motives, it is possible that their response to changes in macroeconomic variables, especially interest rate variables, varies in terms of magnitude and stability.

Despite these glaring differences in the probable factors that influence borrowing decisions under these two credit categories, there is limited research that differentiates between revolving and non-revolving household credit when evaluating the transmission of interest rate changes. The results of such comparative analysis would be beneficial in understanding how monetary policy influences borrowing behavior and financial stability.

This paper fills in such literature gap by investigating the relationship between real interest rates and household credit growth under the revolving and non-revolving credit frameworks. In our analysis, we employ Vector Error Correction modeling and structural break testing techniques to analyze the interaction between credit and certain macroeconomic variables, especially interest rate trends. Our models will validate whether a stable long-run equilibrium relationship exists between the variables of interest.

2. Methodology

2.1 Data

This paper will utilize monthly economic data from the Federal Reserve Economic Data (FRED) database from January 1990 to September 2025. FRED is a database consisting of hundreds of thousands of economic data series from scores of national, international, public, and private sources. This database is created and maintained by the Research Department at the Federal Reserve Bank of St. Louis.

In this research, household credit is divided into revolving credit (REVOL) and non-revolving credit (NONREV). REVOL includes short term credit accommodation, such as credit cards and line of credit, under an adjustable loan pricing scheme rates. NONREV includes longer term loans, such as autoloans, student and installment loans, with fixed repayment schedules.

The key financial variable is the 10-year real interest rate (REAL). This variable captures long-term real borrowing conditions and is highly relevant in our analyses as many household loans in our dataset carry medium to long term repayment schedules. Additionally, this variable is considered a preferred indicator (than short-term policy rates) for capturing expectations of future short-term rates and monetary conditions (Campbell & Shiller, 1991; Mishkin, 1990).

Other macroeconomic variables used in the analysis include the unemployment rate (UNRATE) and the Consumer Price Index (CPI). UNRATE captures prevailing income and labor market conditions while CPI controls for inflation that isolates pure real interest rate effects.

2.2 Empirical Framework

2.2.1 Preliminary Analysis and Stationarity

We analyze first the stationarity properties of the variables using Augmented Dickey–Fuller (ADF) tests (Dickey & Fuller, 1979). The results show that credit levels and real interest rate are non-stationary in levels but stationary in first differences. As such, this suggests that the variables are integrated into order one I(1), which means that cointegration techniques are an appropriate approach to examine long-run equilibrium relationships (Engle & Granger, 1987) (see Table 2).

2.2.2 Johansen Cointegration Test

To assess whether a stable long-run equilibrium relationship exists among credit and macroeconomic variables, we employ the Johansen (1988) cointegration framework.

Let the vector of level variables be defined as:

$$Z_t = [Credit_t, RealRate_t, UNRATE_t, Inflation_t]' \tag{1}$$

The Johansen trace statistics test the null hypothesis of at most r (H_0:rank $\leq r$) cointegrating relationships. The results show that there is cointegration among the variables for both revolving and non-revolving credit, implying that a long-run equilibrium relationship exists (see Table 3).

Now that the cointegrating relationship is established, the appropriate dynamic specification for long-run relationships is a Vector Error Correction Model (VECM).

2.2.3 Vector Error Correction Model (VECM)

The VECM representation of the cointegrated system is:

$$\Delta Z_t = \Pi Z_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Z_{t-i} + u_t \tag{2}$$

where

$\Pi = \alpha\beta'$ captures the long-run equilibrium relationships,

$\beta' Z_{t-1}$ is the cointegration vector,

α measures the speed of adjustment toward equilibrium,

Γ_i captures short-run dynamics,

u_t is a vector of innovations.

Lag length p is selected using the Akaike Information Criterion (AIC).

The VECM approach allows for the simultaneous modeling of long-run equilibrium relationships and short-run dynamic adjustments within one system. The term ΠZ_{t-1}, which can be decomposed as $\alpha\beta' Z_{t-1}$, captures the long-run cointegrating relationships among the variables. The matrix β represents the equilibrium combinations of the variables, while the adjustment coefficients in α measure the speed at which deviations from equilibrium are corrected over time. The short-run dynamics are represented by the Γ_i matrices, which capture the effects of the variables' historical directional and magnitude trends on current changes. This model allows feedback effects and interdependencies among credit growth and macroeconomic variables and allows both equilibrium correction and short-run transmission mechanisms to operate simultaneously in one model.

2.2.4 Long-Run Relationships and Structural Stability

Even though the Johansen test results confirm the presence of long-run equilibrium relationships, cointegration does not imply that the parameters are constant over time. As the sample covers multiple monetary regimes, we evaluate parameter constancy using Bai–Perron multiple structural break tests to analyze whether the interest rate–credit relationship remains stable over time.

The baseline regression with potential breaks can be written as:

$$\Delta Credit_t = X_t \beta_j + \varepsilon_t, \quad t = T_{j-1} + 1, \cdots T_j \tag{3}$$

where β_j denotes regime-specific coefficients and T_j are endogenously determined break dates. This method estimates unknown break dates endogenously by selecting breakpoints that best reduce the overall residual variance (Bai & Perron, 1998).
To complement the Bai–Perron break analysis, we also implement recursive cumulative sum (CUSUM) and rolling regressions. The recursive CUSUM test analyzes whether cumulative residuals remain within confidence bands over time (Brown, Durbin, & Evans, 1975). Additionally, rolling regressions are estimated over fixed-length windows to evaluate the time variation of the real interest rate coefficient:

$$\Delta Credit_t = \alpha_t + \beta_t \Delta RealRate_t + u_l \tag{4}$$

The sequence β_t provides a time-varying estimate of the interest rate effect, which will provide a visualization of whether the effect strengthens or weakens over time, or whether potential sign reversals occur.

3. Results

3.1 Descriptive Statistics

Table 1 provides summary statistics of derived growth rates, credit- and policy-related variables. Monthly percentage approximations are calculated as either 100 × first difference of natural logarithms (Δ ℓREVOL and Δ ℓNONREV) or simple differences [for real interest rate (Δ Real 10Y rate)]. UNRATE and inflation rate are expressed in levels and percentage points [100 × Δlog(CPI)], respectively. The sample consists of 427 monthly observations.

Table 1: Summary Statistics (Monthly Growth Rates and Controls)

Variable	Mean	Std. Dev.	Median	Min	Max	Skewness	Kurtosis
Δ ℓREVOL	0.42	0.82	0.45	-5.55	5.86	-0.44	11.87
Δ ℓNONREV	0.44	0.62	0.45	-3.56	7.31	2.91	41.49
Δ Real 10Y rate	-0.01	0.20	-0.01	-0.66	0.69	0.16	0.96
UNRATE	5.68	1.75	5.40	3.40	14.80	1.26	2.03
Inflation rate	0.22	0.27	0.21	-1.79	1.37	-0.90	9.56

Monthly revolving credit growth (ΔREVOL) averages 0.42% and exhibits moderate volatility (SD = 0.82). It also shows a slightly left-skewed distribution (skewness = −0.44) and high kurtosis (11.87). Meanwhile, non-revolving credit growth (ΔNONREV) averages 0.44% and is less volatile (SD = 0.62).

The change in the real 10-year rate (dREAL) is almost zero on average (−0.01%, SD = 0.20) and roughly symmetric (skewness = 0.16). Unemployment (UNRATE) averages 5.68% (SD = 1.75), with right-skewness (1.26). Monthly inflation (100 × Δlog(CPI)) has an average of 0.22% (SD = 0.27%), with mild left-skewness (−0.90).

Table 2: Augmented Dickey–Fuller (ADF) Unit Root Tests

Variable	Level / First difference	DF statistic	p-value
log(Revolving credit)	Level	-2.248	0.473
log(Non-revolving credit)	Level	-2.024	0.568
Δ ℓRevolving credit	First difference	-3.932***	0.0126
Δ ℓNon-revolving credit	First difference	-4.264***	<0.01
Real 10Y rate	Level	-2.025	0.567
Δ Real 10Y rate (dREAL)	First difference	-7.858***	<0.01
log(CPI)	Level	-1.473	0.8
Inflation	First difference	-6.256***	<0.01
Unemployment rate	Level	-2.552	0.344

Notes: ADF test with constant, 7 lags (as used in output). *** $p < 0.01$.

3.2 Unit Root and Cointegration Tests

Table 2 shows the results of the unit root test for stationarity. Augmented Dickey–Fuller test statistics indicate that log revolving credit, log non-revolving credit, the real 10-year interest rate, and log CPI are non-stationary in levels but stationary in first differences at 1%. This confirms that the variables are integrated of order one, I(1).

As we have confirmed I(1) variables, we employed the Johansen trace test to examine long-run equilibrium relationships as shown in Table 3.

Table 3: Johansen Trace Test for Cointegration

	Revolving	Non-Revolving
Null hypothesis	**Trace statistic**	**Trace statistic**
$r \leq 3$	4.63	1.12
$r \leq 2$	22.61**	13.35
$r \leq 1$	66.56***	62.35***
$r = 0$	203.19***	180.84***

Notes: Trace test with constant (no trend) in the cointegrating equations and 2 lags in differences. ** $p < 0.05$, *** $p < 0.01$. Critical values at 5%: $r \leq 3$: 9.24, $r \leq 2$: 19.96, $r \leq 1$: 34.91, $r = 0$: 53.12.

Results show that for the revolving credit system, the trace statistic rejects the null hypothesis of no cointegration ($r = 0$), as well as $r \leq 1$ and $r \leq 2$ at the 5% level but fails to reject $r \leq 3$. This suggests a cointegration rank of $r = 3$, which indicates that three long-run equilibrium relationships exist among revolving credit, the real interest rate, and other macroeconomic variables.

For the non-revolving credit system, the trace test rejects $r = 0$ and $r \leq 1$ but fails to reject $r \leq 2$, suggesting a cointegration rank of $r = 2$.

3.3 VECM Results

3.3.1 Revolving Credit

The estimated VECM for revolving credit growth is:

$$\Delta \ell REVOL_t = -0.0045\, ECT_{1,t-1} - 0.0010\, ECT_{2,t-1} + 0.0006\, ECT_{3,t-1} + \Gamma_1 \Delta Z_{t-1} + \Gamma_2 \Delta Z_{t-2} + c + \varepsilon_1 \quad (5)$$

where

$$Z_t = [\log(REVOL), REAL10Y, UNRATE, \log(CPI)]. \quad (6)$$

The three long-run equilibrium relationships (error-correction terms) are:

$$\begin{aligned} EC1_{t-1} &= \log(REVOL)_{t-1} - 0.042\, REAL10Y_{t-1} + 0.191\, UNRATE_{t-1} \\ &\quad - 0.842 \log(CPI)_{t-1} - 10.71 \\ EC2_{t-1} &= \log(REVOL)_{t-1} + 0.206\, REAL10Y_{t-1} + 0419\, UNRATE_{t-1} \\ &\quad +1.287 \log(CPI)_{t-1} - 22.75 \\ EC3_{t-1} &= \log(REVOL)_{t-1} + 0.827\, REAL10Y_{t-1} + 0.282\, UNRATE_{t-1} \\ &\quad + 0.745 \log(CPI)_{t-1} - 20.58 \end{aligned} \tag{7}$$

Results show that the revolving credit VECM equation has three long-run equilibrium relationships. The adjustment coefficients on the first two error-correction terms are negative: −0.0045 for $ECT_{1,t-1}$ and −0.0010 for $ECT_{2,t-1}$. These coefficients suggest that when revolving credit deviates above its long-run equilibrium level, the succeeding credit growth declines in order to restore equilibrium. This means that 0.45% of disequilibrium from the primary long-run relation is corrected each month, while the second equilibrium channel adjusts more gradually at about 0.10% per month.

The third error-correction term, meanwhile, is positive but extremely small (+0.0006), which suggests that this equilibrium condition contributes minimally to short-run adjustment dynamics. This means that the adjustment process for revolving credit is gradual, which is in line with the nature of household borrowing. Given these conditions, results show that the long-run, revolving credit is negatively associated with the real interest rate in the primary equilibrium relation, while unemployment enters positively, and the price level enters with a negative coefficient. These suggest that revolving credit tends to be closely tied with the overall economy but adjusts slowly toward equilibrium following shocks.

3.3.2 Non-Revolving Credit

The estimated VECM for non-revolving credit growth is:

$$\begin{aligned} \Delta\ell NONREV_t &= -0.00157\, ECT_{1.t-1} - 0.00952\, ECT_{2.t-1} + \Gamma_1 \Delta Z_{t-1} \\ &\quad + \Gamma_2 \Delta Z_{t-2} + c + \varepsilon_t \end{aligned} \tag{8}$$

where

$$Z_t = [\log(NONREV)\,, REAL10Y, UNRATE, \log(CPI)]. \tag{9}$$

The two long-run relationships are:

$$\begin{aligned} EC1_{t-1} &= \log(NONREV)_{t-1} + 0.302\, REAL10Y_{t-1} + 0.206\, UNRATE_{t-1} \\ &\quad - 0.740 \log(CPI)_{t-1} - 13.84 \\ EC2_{t-1} &= \log(NONREV)_{t-1} + 0.216\, REAL10Y_{t-1} + 0.066\, UNRATE_{t-1} \\ &\quad - 1.661 \log(CPI)_{t-1} - 6.15 \end{aligned} \tag{10}$$

For non-revolving credit, results identify two long-run equilibrium relationships. The adjustment coefficients are −0.00157 on $ECT_{1,t-1}$ and −0.00952 on $ECT_{2,t-1}$, both negative. This suggests that deviations from long-run equilibrium leads to corrective dynamics in non-revolving credit growth. That is, the growth rate automatically slows down (or speeds up) to correct the imbalance.

The first parameter −0.00157 suggests slow correction (approximately 0.16% per month) through the first error correction term, while −0.00952 indicates a stronger adjustment mechanism (about 0.95% per month) through the second relation. Thus, non-revolving credit usually adjusts back to normal mainly along one primary economic channel.

Further, the error correction terms suggest a positive association between non-revolving credit and such macroeconomic factors as real interest rate and unemployment, while a negative relationship with the price level is established. Compared with revolving credit, the non-revolving segment exhibits fewer equilibrium relationships and has a more focused adjustment mechanism.

3.4 Structural Stability and Regime Changes

In order to analyze whether the transmission mechanism remains stable over time, we implement Bai–Perron multiple structural break tests. This procedure identifies potential regime shift by selecting the number and location of breakpoints that minimize the Bayesian Information Criterion (BIC).

Table 4: Structural Break Tests for Revolving Credit

Panel A. Model selection (RSS and BIC)		
Number of breaks (m)	**RSS**	**BIC**
0	219.9	964.8
1	165.8	880.6
2	144.6	858.3
3	137.5	873.2
4	135.5	903.2
5	138.0	947.5
Panel B. Estimated breakpoint dates (selected m = 2)		
Break #	**Break date**	
1	1996-12-01	
2	2019-01-01	

For revolving credit, Table 4 shows that BIC is minimized at m=2, which indicates two structural breaks in the revolving equation. The estimated breakpoint dates are December 1996 and January 2019. These breakpoints suggest significant regime shifts in the transmission mechanism affecting revolving credit.

The first breakpoint in 1996 falls during the structural changes in financial markets as well as shifting credit card usage patterns during the mid-1990s expansion (CEPR, 2009; Herbst-Murphy, 2018). The second breakpoint in 2019, meanwhile, coincided with a time when there were changes in monetary policy and household borrowing behavior (Federal Reserve, 2019).

Table 5: Structural Break Tests for Non-Revolving Credit

Panel A. Model selection (RSS and BIC)		
Number of breaks (m)	**RSS**	**BIC**
0	151.3	805.0
1	136.6	797.8
2	128.7	808.7
3	122.6	824.1
4	119.1	848.3
5	124.9	905.0
Panel B. Estimated breakpoint dates (selected m = 1)		
Break #	**Break date**	
1	2010-06-01	

For non-revolving credit, Table 5 shows that the BIC is minimized at m = 1, suggesting a single structural break, and identifies June 2010 as the breakpoint.
This breakpoint falls within the post-2008 Great Recession recovery period. Notably, during such recovery period, the financial sector experienced significant adjustments to credit conditions and monetary policy. Unlike revolving credit, non-revolving credit only has one statistically selected regime shift, which suggests greater structural stability.

3.5 Stability Diagnostics

3.5.1 CUSUM Stability Tests

Figure 1 presents the recursive CUSUM stability tests for the credit equations. This approach assesses parameter constancy over time by analyzing whether cumulative residuals remain within the 5% confidence bands.
For revolving credit, the empirical fluctuation process clearly crosses the lower confidence boundary and remains outside the stability bands for a substantial portion of the sample.

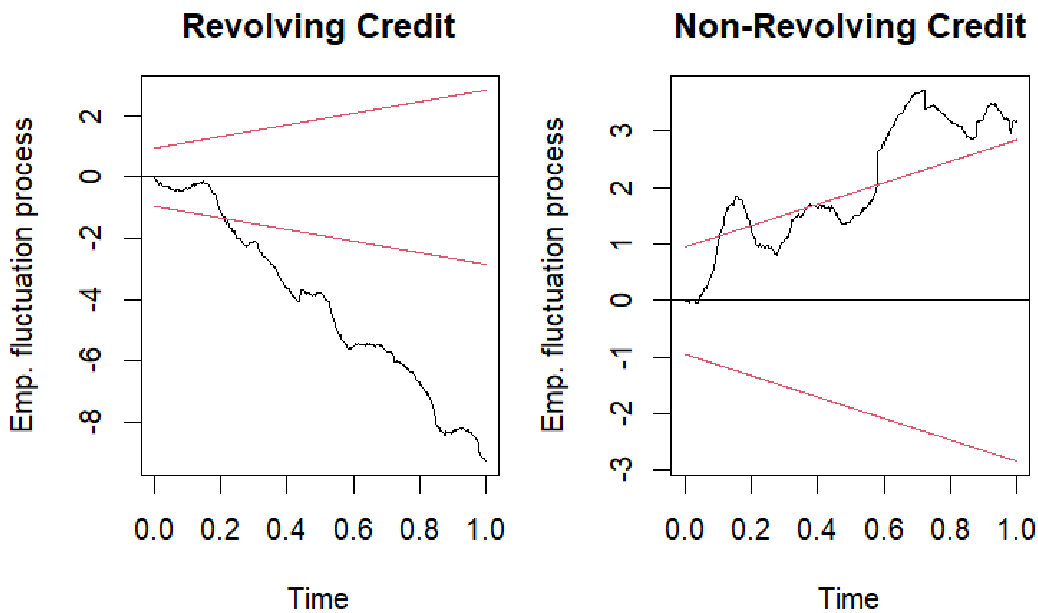

Figure 1: Recursive CUSUM Plots for Revolving and Non-Revolving Credit

This finding shows that the relationship between real interest rate changes and revolving credit growth is not stable over the course of the sample period. This instability is consistent with the Bai–Perron break tests, which identify structural breakpoints in 1996 and 2019.

In contrast, the CUSUM plot for non-revolving credit remains largely within the confidence bands throughout the sample. Even though some fluctuations are observed, the empirical process does not display sustained departures beyond the 5% confidence bands. This suggests that the short-run relationship between macroeconomic variables and non-revolving credit growth is relatively stable over time compared to revolving credit growth.

3.5.2 Rolling Regression Analysis

Figure 2 shows the rolling 10-year OLS estimates of how sensitive household credit growth is to fluctuations in real interest rate levels. The left panel shows the results for revolving credit, while the right panel shows the results for non-revolving credit. The dashed horizontal line at zero serves as the benchmark for no impact. Please note that rolling regressions are expressed as reduced-form estimates and do not identify causal effects of interest rate changes on credit growth.

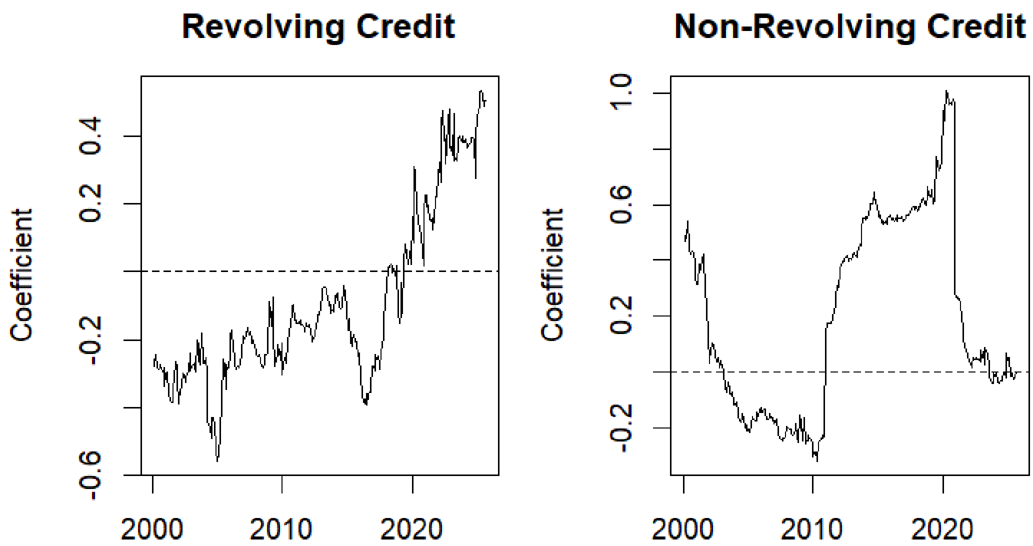

Figure 2: Rolling 10-Year Coefficient of ΔRealRate on Revolving and Non-Revolving Credit Growth

Results show that for revolving credit, the coefficient is predominantly negative from the 2000s through the mid-2010s, ranging between -0.56 (minimum in early 2005) and -0.09. The values are frequently around -0.20 to -0.30. This suggests that during those years, higher real interest rates were generally associated with slower revolving credit growth. However, between 2018–2019, the coefficients shifted when they crossed zero and became positive, rising to +0.16 by the end of 2020 and reaching approximately +0.51 by mid-2025. This shift shows a weakening or reversal of the traditional negative sensitivity from the 2000s to the late 2010s.

For non-revolving credit, a different, contrasting pattern is obtained. The coefficient in the early to mid-2000s is mostly negative, around -0.15 to -0.32, with a low of -0.321 in May 2010. However, there is a reversal in December 2010, which turned the coefficient positive and increased to a peak of +1.01 in April 2020. It remains positive between +0.5 and +0.9 in the 2010s and early 2020s, before declining rapidly toward zero or slightly negative values post-2020. This shows that in recent years, interest rate changes do not seem to push borrowing in either direction.

Overall, the rolling estimates show that the interest rate-credit growth relationship is not stable over time. The magnitude and sign of the transmission vary depending on the subperiod and the credit types. These results support the presence of time-varying monetary transmission effects and the differences between revolving and non-revolving household credit markets.

4. Conclusion

This paper examines the relationship between real interest rate changes and household credit growth under revolving and non-revolving credit models using monthly U.S. data from 1990–2025. The result validates the connection between household credit decisions and long-run macroeconomic equilibrium conditions, but some heterogeneity and instability are evident in such relationship. Our results also establish that in the long run, household borrowing, real interest rates, unemployment rate, and inflation are cointegrated. These findings are in line with the assertions of the intertemporal substitution theory and are consistent with the results reported in studies contending that credit cycles are tied with macroeconomic variables (Hall, 1988; Schularick & Taylor, 2012).

Also, our analyses clarify that the adjustment process toward equilibrium is gradual. Our VECM estimates of relatively small error-correction coefficients suggest that household credit markets do not rebalance immediately following shocks. Credit contracts come with refinancing costs, maturity constraints, and informational gaps (Bernanke & Gertler, 1995; Kiyotaki & Moore, 1997). Thus, this implies that interest rate changes may have some lagged effects, instead of instantaneous influence, on borrowing behavior.

The transmission mechanism differs across credit types. For revolving credit, such as credit card borrowing, results show that there is instability and regime dependence. Its sensitivity to real interest rate fluctuations varies over time, especially during major monetary regime shifts. This type of credit usually carries variable interest rates and short maturities, which makes it more vulnerable to changes in financial conditions and liquidity constraints. Thus, revolving credit transactions tend to have a stronger and more time-varying response to policy changes (Dynan & Kohn, 2007).

On the other hand, non-revolving credit, such as mortgages, auto loans, and other installment loans, shows greater stability. This type of credit is generally accommodated over a longer term, often carrying a fixed rate, and tied to durable consumption decisions. As such, this credit is not only affected by interest rates but also by income expectations, housing market conditions, and consumer sentiment. It is also observed that it has a slower adjustment dynamic, which is consistent with studies establishing that durable consumption and housing decisions respond to macroeconomic conditions more gradually (Mian & Sufi, 2014; Carroll, 2001).

These results highlight multiple implications of monetary transmissions to household credit. First, the impact of the interest rate depends on the credit type. Based on the results, revolving credit reacts more strongly than non-revolving credit. Second, instability in revolving credit suggests that the impact of monetary shocks is noticeable during specific regimes. That is, credit card borrowing and similar flexible debt transactions can magnify the effect of interest rate changes compared to the other types of loans. Lastly, the regime-dependent nature of transmission supports that monetary policy effects possibly change with financial structure and institutional changes (Boivin, Kiley, and Mishkin, 2010).

Overall, monetary transmission to household credit operates through stable long-run relationships but exhibits time-varying short-run effects that differ across credit categories. Future research could examine how some existing innovative financial innovations, such as fintech lending, Buy Now Pay Later (BNPL), and open banking, could affect the sensitivity of households to interest changes, as well as how changes in regulations and shifts in credit supply might further change these transmission channels over time.

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