Assessing the Effects of Trade-Related Exchange Rate Fluctuations on Credit Availability and Financial Stability in China

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Abstract - The recent trade wars between China, the United States, and Australia have significantly impacted global economic dynamics. As China relies heavily on international trade, these conflicts have led to fluctuations in the Chinese yuan (CNY), straining financial stability. This study aims to analyze the influence of this volatility in the exchange rate on China's credit market, focusing on how fluctuations in the CNY against the U.S. dollar and Australian dollar have influenced credit availability, loan demand, and overall financial stability. The study employs a mixed-methods approach, combining an autoregressive distributed lag (ARDL) model. The findings reveal a strong correlation between exchange rate volatility and credit market conditions, with the depreciation of the CNY during trade tensions leading to tighter credit conditions and higher borrowing costs. Chinese banks responded by tightening lending standards and increasing interest rates, which helped mitigate some of the adverse effects. However, the ongoing nature of trade tensions underscores the need for continued vigilance and adaptive strategies, including economic diversification, strengthening financial infrastructure, and enhancing policy coordination to ensure long-term resilience and stability in China's financial system.

Keywords: Trade Wars, Exchange Rate Volatility, Credit Market, Chinese Yuan (CNY), Financial Stability

I. INTRODUCTION

The evolving trade wars between countries represent a significant shift in global economic relations, with farreaching implications for international trade, financial stability, and economic growth. These conflicts, primarily driven by tariffs, trade barriers, and geopolitical tensions, have introduced new challenges for the global financial system, particularly for emerging economies like China. China's economy, the largest exporter in the world, is susceptible to fluctuations in international trade dynamics, making it vulnerable to the adverse effects of trade wars. One of the critical areas where these impacts are most pronounced is exchange rate fluctuations. The value of the Chinese yuan (CNY) has been subject to considerable volatility in its exchange rates against the U.S. dollar (USD) and Australian dollar (AUD) in response to trade tensions. Such volatility affects China's international competitiveness and domestic financial markets, particularly the credit market. This study seeks to uncover the complex link between trade wars, exchange rate pressures, and credit market adjustments in China, specifically focusing on the country's trade conflicts with the U.S. and Australia.

The study's objective is to comprehensively understand the mechanisms through which external economic shocks are transferred to the domestic economy. Trade policies, such as tariffs and quotas, can affect international trade terms, influencing exchange rate movements (Krugman, 1991). Trade policies, including tariffs, quotas, and other protectionist measures, affect exchange rate determination. The traditional view, Mundell-Fleming's model, suggests that trade policies directly affect the trade balance, which determines the exchange rate based on demand and supply in the currency market (Huang, 2021). The imposition of tariffs by the U.S. led to expectations of reduced Chinese exports, thereby decreasing the demand for the CNY and contributing to its depreciation against the USD (Bown, 2020).

Furthermore, trade tensions often increase uncertainty in the foreign exchange market, exacerbating volatility. The "haven" effect occurs when investors flock to currencies perceived as more stable, such as the USD, during periods of global economic uncertainty (Chinn, 2013). This phenomenon was evident during the height of the U.S.-China trade war, where the USD appreciated not only against the CNY but also against a broad basket of currencies, reflecting investor concerns about the global economic impact of the trade conflict. A significant depreciation of the CNY against the USD occurred, particularly following major tariff announcements (Fajgelbaum et al., 2020). Similarly, trade tensions between China and Australia have led to increased volatility in the AUD/CNY exchange rate, reflecting the economic uncertainties surrounding these trade disputes.

Exchange rate volatility has significant implications for firmlevel credit risk, particularly for companies engaged in international trade. Firms with substantial foreign currency exposure face increased risks during exchange rate volatility, which raises borrowing costs and reduces access to credit (Allayannis & Ofek, 2001). In China, many firms engaged in export activities borrow in foreign currencies, making them particularly vulnerable to fluctuations in exchange rates, and this can influence the overall credit risk profile of banks. Banks with significant exposure to foreign currency loans may face increased credit risk during periods of currency depreciation, as the value of their loan portfolios in domestic currency terms declines (Chinn, 2013). This risk is especially severe in developing countries like China, where the banking sector's exposure to foreign currency-denominated debt has grown recently. Fluctuations in exchange rates alter the cost of borrowing, affect firms' balance sheets, and influence investor confidence, thereby impacting the overall credit conditions in the economy (Goldstein & Turner, 2004). Many firms rely on external borrowing and trade finance, and exchange rate movements can significantly influence credit demand and supply. Periods of sharp CNY depreciation have been associated with tighter credit conditions as banks become more cautious in lending due to increased credit risk (Chen & Liu, 2019). Foreign direct investment (FDI) and portfolio investments are very reactive to exchange rates and trade policies. Studies have shown that capital flows decrease during trade uncertainty and exchange rate volatility as investors seek to reduce risk exposure (Calvo et al., 1993). In China, capital flight has been a recurring concern during periods of significant CNY depreciation, as domestic and foreign investors move assets out of the country in search of more stable investment opportunities. This capital outflow can exacerbate liquidity pressures in the banking sector, as banks face reduced deposit bases and increased demand for foreign currency. This situation can lead to tighter credit conditions, higher interest rates, and increased pressure on financial institutions to manage liquidity risks (Broner et al., 2006). The interconnection of credit markets, capital flows, and exchange rates is essential in China's open capital account and integration into global financial markets. Financial markets react swiftly to trade-related news, particularly regarding exchange rate movements. The exchange rate shocks induced by trade policy changes can bring significant adjustments in asset prices, interest rates, and bond returns (Frankel & Schmukler, 1996). In China, the stock market has shown heightened sensitivity to exchange rate movements, with sectors heavily involved in exports, such as manufacturing and technology, experiencing significant price volatility during periods of CNY depreciation. The bond market also responds to exchange rate fluctuations, particularly regarding sovereign bond yields. Exchange rate depreciation leads to higher returns from sovereign bonds because investors expect higher returns to compensate for increased risk. In the case of China, government bond yields have increased during trade tensions, reflecting investor concerns about the potential economic fallout from reduced export revenues and slower growth (Fajgelbaum et al., 2020).

Policy interventions by central banks and governments are critical in managing the impacts of trade wars and exchange rate volatility. The People's Bank of China (PBOC) has deployed multiple tools to stabilize the CNY and support the banking sector during this period. These tools include direct interventions in the foreign exchange market, interest rate adjustments, and targeted liquidity support for critical industries (He *et al.*, 2020). China's policy responses to trade-related economic shocks have been proactive and adaptive. The PBOC has adjusted reserve requirement ratios and provided liquidity support to key industries to ensure credit markets remain functional during economic stress (He *et al.*, 2020).

Additionally, the Chinese government has intervened in the foreign exchange market to manage currency fluctuations and maintain export competitiveness in international trade (Hofmann & Zhu, 2021). While China's central bank interventions have successfully mitigated excessive volatility and stabilized the credit market, some argue that such measures may only provide temporary relief and could lead to longer-term distortions in the financial system (Zhang & Cao, 2021). The literature also highlights the challenges of balancing currency stabilization with the need for more independent monetary policy, particularly given global capital inflows (Mundell, 1963). Although this study focuses on China, it is valuable to consider comparative perspectives from other economies facing similar trade-related challenges. For instance, the trade war between the U.S. and the European Union (EU) offers insights into how developed economies address trade-induced exchange rate pressures with their advanced financial markets. EU countries have employed fiscal policies and financial market interventions to cushion the impact on their credit markets (Bown, 2020).

Similarly, in Australia, the response to trade tensions with China has involved monetary policy adjustments and efforts to diversify trade relationships. The Reserve Bank of Australia (RBA) has been active in managing the AUD's exchange rate volatility, while Australian banks have adjusted their lending practices to account for increased risks in sectors exposed to Chinese markets. These comparative perspectives provide valuable context for understanding the specific challenges faced by China and the strategies it has employed in response to trade wars.

A. Gaps in the Literature

While there are considerable studies on the impact of trade wars on exchange rates and credit markets separately, there is a lack of studies that integrate these two aspects, particularly concerning China's trade relations with the U.S. and Australia. Most existing research focuses on the bilateral trade war between China and the U.S., with limited attention to the triadic relationship involving Australia. Additionally, the mechanisms through which exchange rate pressures impact credit market dynamics in China remain underexplored. This paper addresses these gaps by analyzing how trade wars influence exchange rates and, in turn, how these exchange rate pressures affect credit markets in China.

The study will explore the following research questions:

- 1. How have trade wars with the U.S. and Australia affected the CNY's exchange rates?
- 2. How do exchange rate fluctuations affect credit availability and demand in China?
- 3. How have Chinese financial institutions and policymakers responded to these challenges?

II. OBJECTIVES OF THE STUDY

Based on the literature reviewed, this study aims to: 1. Analyze the consequences of trade wars with the U.S. and Australia on the CNY's exchange rates and how these have influenced China's financial stability.

- 2. Examine the effects of exchange rate volatility on credit availability, credit risk, and overall credit market conditions in China.
- 3. Assess the efficacy of Chinese policy responses in mitigating the adverse effects of trade-induced exchange rate pressures on the credit market.
- 4. Provide a comparative analysis of how similar trade conflicts have impacted credit markets in other major economies, particularly the EU and Australia.

III. METHODOLOGY

This study uses a mixed-methods approach, with quantitative data analysis, to examine the influence of trade wars on exchange rate pressures and credit market adjustments in China. The methodology involves collecting data from reliable sources from 2015 to 2024, such as the People's Bank of China, the International Monetary Fund, and Bloomberg. Credit market data - such as credit availability, loan demand, interest rates, and non-performing loans (NPLs) - are gathered from the People's Bank of China, the China Banking and Insurance Regulatory Commission, and other pertinent organizations, focusing on sectors most impacted by trade tensions. Quantitative analysis employs an autoregressive distributed lag (ARDL) model to assess both stable and unstable exchange rate variations in key credit market variables, controlling for inflation, GDP growth, and global interest rates. Trend analysis and visualization, performed using Python, highlight significant patterns in exchange rates, credit availability, loan demand, and interest rates. The qualitative analysis evaluates China's policy responses, including interest rate adjustments, reserve requirement changes, currency stabilization efforts, and targeted liquidity injections to address trade war-related economic challenges. By synthesizing these analyses, the study provides a comprehensive explanation of how trade wars have influenced China's exchange rate pressures and credit market dynamics, offering valuable insights into the effectiveness of policy interventions and the resilience of China's financial system.

A. Econometric Model: Auto-Regressive Distributed Lag Model

The model assesses the relationship between exchange rate volatility and credit market dynamics in China. It is instrumental in understanding the short-term and long-term consequences of variations in exchange rates on key credit market variables. Below is a detailed formulation and interpretation of the model used in the analysis.

 $Y_t = a + \sum_{i=0}^p \beta_i Y_{t-i} + \sum_{j=0}^q \Upsilon_j X_{t-j} + \sum_{k=0}^r \delta_k Z_{t-k} + \varepsilon_t$ Where:

 Y_t = Dependent Variable at time t, here, Loan Volumes X_{t-j} = The independent variable, representing, exchange rate values at time t - j, especially, exchange rate (CNY/USD) and the exchange rate (CNY/AUD),

 Z_{t-k} = Control Variable at time t - k including, inflation rate, GDP growth, and Global interest rates

a = Constant term,

 β = The lagged dependent variable coefficient,

 $\Upsilon_j \delta_k$ = The coefficients of the lagged independent and control variables.

 \mathcal{E}_t = The error term.

Detailed Model Used in the Study

 $\Upsilon_0 \Upsilon_2$ = Representing the short-term impact of current exchange rate fluctuations on loan volumes.

 $\Upsilon_1 \ \Upsilon_3$ = Capturing the lagged effects of past exchange rate fluctuations, indicating how previous periods' exchange rates influence current loan volumes.

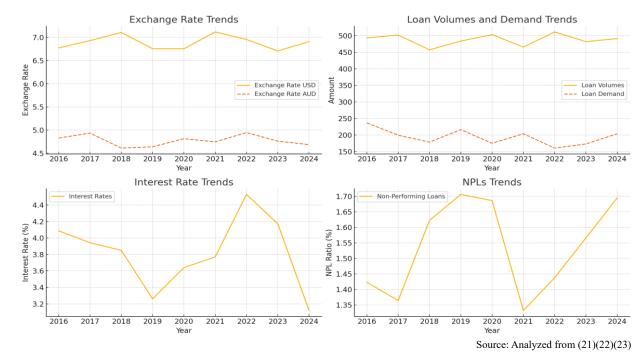
 $\delta_0 \ \delta_1 \ \delta_2$ = Coefficients for the control variables, which account for the influence of inflation, GDP growth, and global interest rates on loan volumes

IV. DISCUSSION

The ARDL model analysis reveals that the model explains approximately 94% of the variance in loan volumes (Rsquared = 0.941). However, the lower adjusted R-squared (0.531) suggests potential overfitting due to the small sample size. The exchange rate coefficients for CNY/USD and CNY/AUD show different signs, indicating varied impacts on loan volumes, but their low statistical significance implies that these relationships may not be robust. The control variables—inflation rate, GDP growth, and global interest rates - also show limited importance, indicating the need for more comprehensive data or refined model specifications.

Visualizations from the study offer valuable insights into the link between exchange rate volatility and credit market dynamics in China from 2015 to 2024. The Exchange Rate Trends diagram highlights fluctuations in the CNY against the USD and AUD, aligning with key trade war events and emphasizing the importance of currency stability in the broader financial landscape.

The Loan Volumes and Demand Trends show that exchange rate fluctuations often correspond with shifts in credit market activity, reflecting the sensitivity of credit demand and supply to currency changes. The Interest Rate Trends depict monetary policy adjustments in response to economic shocks, illustrating how these interventions influence borrowing costs and credit availability. Lastly, the Non-Performing Loans (NPLs) Trends indicate that increased exchange rate pressures correlate with a higher risk of loan defaults, particularly in trade-exposed sectors, underscoring the potential for financial instability during significant currency fluctuations. The diagrams collectively highlight the interconnectedness of exchange rates, credit markets, and economic policy, offering a visual context for the econometric findings. They emphasize the critical role of stable exchange rates in maintaining financial stability within China's credit markets. However, the results also indicate that additional data and refined modeling are necessary to fully understand these complex relationships.



V. CHINA'S POLICY RESPONSES TO ECONOMIC CHALLENGES FROM TRADE WARS

This study evaluates China's monetary and fiscal policy responses to the economic challenges posed by trade wars with the United States and Australia. The analysis, based on policy reviews and case studies, examines the effectiveness of these measures and how Chinese banks and financial institutions have adapted. The People's Bank of China used low interest rates and lowered reserve requirement ratios (RRR) to stimulate the economy and maintain liquidity for small and medium-sized businesses. While these measures provided temporary relief, global uncertainties and capital outflows limited their effectiveness. Additionally, the Central Bank intervened in foreign exchange markets to stabilize the Chinese currency, preventing excessive depreciation that could have led to severe capital outflows and financial instability, though careful management of foreign reserves is needed to sustain these efforts.

The Chinese government also provided targeted liquidity injections and implemented tax cuts and subsidies to support sectors heavily affected by trade wars, such as manufacturing and technology. While these measures effectively maintained employment and prevented bankruptcies, they raised concerns about long-term fiscal sustainability and potential moral hazard. In response to economic uncertainty, Chinese banks tightened credit criteria, particularly for trade-exposed sectors, and enhanced risk management strategies. They also shifted capital allocation toward domestic investments in infrastructure and innovation, aligning with the government's push for a more balanced and sustainable economic model. Despite the effectiveness of these strategies, the analysis highlights potential risks, including long-term fiscal strain and the challenges of maintaining financial stability in a volatile global environment. The findings provide an overview of how trade wars have influenced China's exchange rates and credit markets, emphasizing the importance of adaptive economic strategies and structural reforms to enhance resilience and competitiveness in the face of ongoing global trade challenges.

The integrated analysis reveals the complex interplay between international trade conflicts, currency fluctuations, and financial stability in China. Trade wars disrupted traditional trade routes, creating uncertainty and exerting significant pressure on the Chinese Yuan (CNY), leading to volatility that impacted credit markets. This volatility increased borrowing costs, shifted loan demand, and heightened credit risk, particularly for export-dependent sectors. However, China's financial system, supported by proactive and adaptive policy measures, demonstrated resilience.

The analysis provides a comprehensive view of trade wars' multifaceted impact on China's economy. Exchange rate pressures posed significant challenges, but effective policy interventions and strategic adjustments by financial institutions helped safeguard financial stability. These findings highlight the importance of a well-coordinated policy response and a resilient financial system to mitigate economic risks and support continued growth. Ongoing vigilance and adaptability in economic policy-making will be crucial, particularly in an increasingly interconnected and volatile global economy.

China's experience emphasizes the need for a balanced approach that addresses immediate economic challenges while strengthening long-term financial resilience against future external shocks. During heightened trade tensions, such as the U.S.-China trade war, the CNY depreciated significantly, increasing the cost of servicing foreigndenominated debt for Chinese firms, especially those involved in international trade. This depreciation led to tighter credit conditions as banks became more cautious, raising borrowing costs and reducing loan availability. The ripple effect of these exchange rate pressures extended across various sectors, exacerbating the economic slowdown caused by the trade wars. In response, Chinese banks tightened lending standards, raised interest rates to compensate for heightened risk, and focused on short-term financing solutions to manage cash flow disruptions. These measures, while protective, made borrowing more expensive and constrained credit access. Nevertheless, these interventions were crucial in maintaining financial stability and ensuring that credit markets remained functional, cushioning the broader economy from the worst effects of trade conflicts.

The recent exchange rate volatility during trade tensions has prompted Chinese banks to adjust their lending standards and interest rates to address the risks associated with economic uncertainty. These adjustments can be summarized as follows.

- 1. Chinese banks have become more cautious in approving loans, especially for businesses involved in international trade and export-dependent sectors. They have raised creditworthiness requirements, demanding more robust financial documentation and higher collateral from borrowers to minimize the risk of default. This tightening aims to protect against potential nonperforming loans (NPLs) in an unstable economic environment.
- 2. Banks have prioritized lending to less risky sectors, such as domestic consumption, services, and infrastructure, which are less vulnerable to the effects of currency fluctuations and trade barriers. This shift allows banks to balance their loan portfolios and reduce exposure to industries directly impacted by trade wars and exchange rate volatility.
- 3. Banks have raised loan interest rates to compensate for the increased lending risk in volatile conditions. These rates serve two purposes: maintaining the profitability of lending operations in a higher-risk environment and discouraging borrowing by businesses that may struggle to repay loans if further economic disruptions occur. However, higher rates have also made borrowing more expensive for companies, further limiting access to credit.
- 4. Given the uncertainty caused by trade tensions, Chinese banks have observed a shift in loan demand toward

short-term financing. Businesses, especially those in trade-exposed sectors, have increasingly sought shortterm loans to manage cash flow disruptions and immediate liquidity needs rather than committing to long-term investments. This trend aligns with banks' preference for short-term lending during periods of economic volatility.

These adjustments reflect Chinese banks' efforts to navigate the challenges of exchange rate volatility while maintaining financial stability during heightened trade tensions.

VI. CONCLUSION

The trade wars between China, the United States, and Australia have exerted significant pressure on China's exchange rates, leading to notable adjustments in the country's credit markets. This research highlights how these external economic shocks have impacted China's financial stability, emphasizing the crucial role of timely and effective policy interventions. China's response, including interest rate adjustments, reserve requirement changes, and foreign exchange interventions, has maintained stability amid these challenges. However, the ongoing nature of trade tensions underscores the need for continued vigilance and the development of adaptive policy responses to enhance the resilience of China's financial sector. Diversifying China's economic base by reducing reliance on export-oriented industries and promoting domestic consumption would help insulate the economy from external shocks. Strengthening financial infrastructure through the development of sophisticated financial instruments and risk management tools could further enhance the ability of financial institutions to navigate economic volatility. Additionally, greater coordination between monetary, fiscal, and industrial policies would ensure that policy measures are mutually reinforcing and not counterproductive. Maintaining robust foreign exchange reserves is essential for effective intervention in currency markets during periods of volatility, protecting the economy from severe exchange rate shocks. Encouraging domestic investment, particularly in infrastructure and technology, can mitigate potential declines in foreign direct investment and reduce vulnerability to external pressures. Furthermore, developing regional trade alliances and diversifying exports can reduce dependency on a single trading partner, mitigating the risks of multilateral trade conflicts. While this study has provided valuable insights into the immediate effects of trade wars on China's economy, future research should explore the long-term implications of these adjustments on the broader economic trajectory. A comparative study with other emerging economies facing similar challenges could also offer lessons on best practices for managing external financial shocks. Although China's policy responses have effectively addressed the immediate impacts of trade wars, building long-term resilience through strategic measures will be crucial for maintaining economic stability in an increasingly uncertain global environment.

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