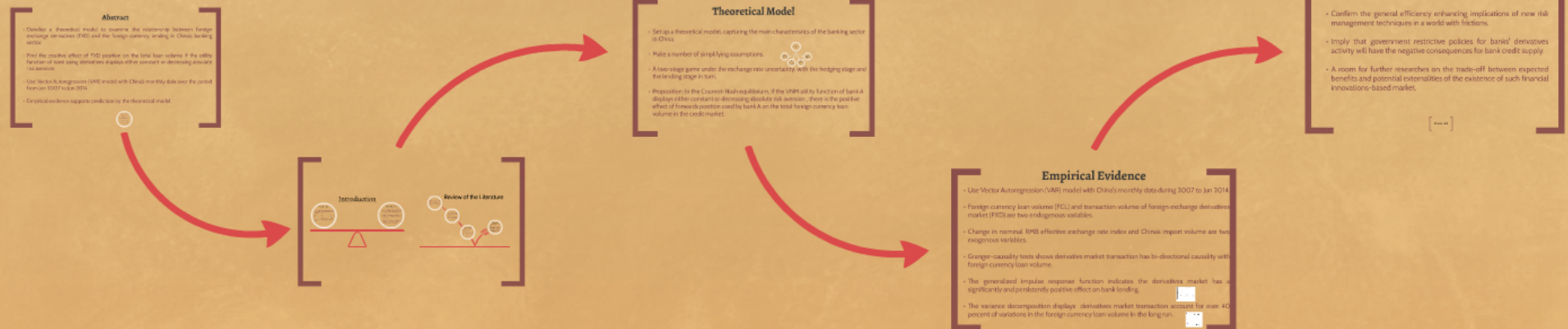


Foreign Exchange Derivatives and Bank Lending in China

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Shanghai Academy of Social Science

Date: Mar 7, 2015

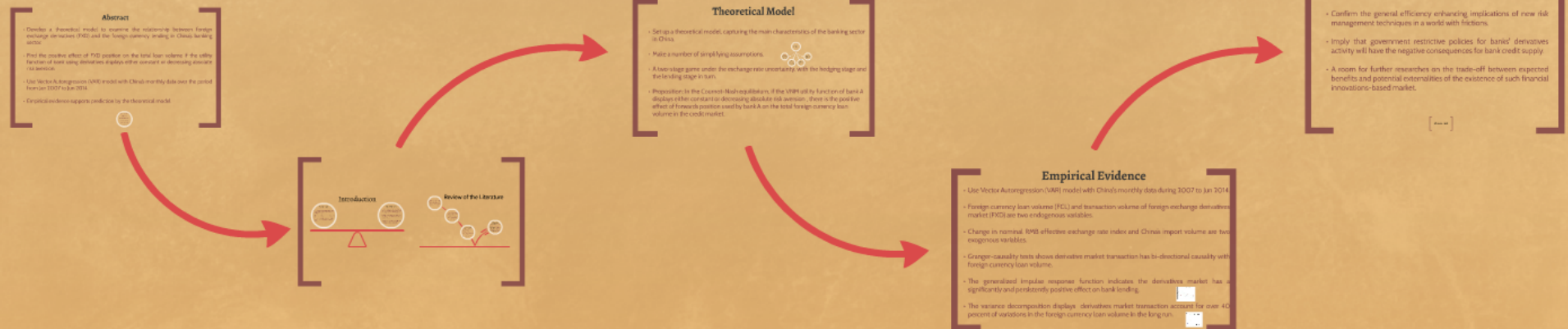


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Abstract

- Develop a theoretical model to examine the relationship between foreign exchange derivatives (FXD) and the foreign currency lending in China's banking sector.
- Find the positive effect of FXD position on the total loan volume if the utility function of bank using derivatives displays either constant or decreasing absolute risk aversion.
- Use Vector Autoregression (VAR) model with China's monthly data over the period from Jan 2007 to Jun 2014.
- Empirical evidence supports prediction by the theoretical model.

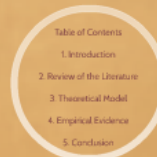


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Introduction

Background

- On July 21, 2005, the People's Bank of China (PBOC) proclaimed that China reformed the exchange rate regime.
- China has a banking-oriented financial system.
- Established the foreign-exchange derivatives market in the Chinese nationwide interbank market.

Contributions

- Firstly examine the relationship between foreign exchange derivatives and foreign currency lending activity.
- Develop a theoretical model capturing the main characteristics of the banking sector in China.
- Present an empirical test with VAR model using China's macro data.

Review of the Literature

According to the classic Modigliani and Miller (1958), prudent risk management is irrelevant to the commercial banks as shareholders can do it on their own more efficiently.

Garbaccio (1965) develops a theory of financial intermediation and offers the diversification service to reduce the borrowing externality costs.

His model also implies that use of derivatives helps to improve in the intermediation efficiency rate to bank provide services for loans to increase their investments.

Interest rate Derivatives and Bank Lending

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- His model also implies that use of derivatives leads to improvement in the intermediation efficiency that, in turn, provide incentives for banks to increase their lending activities.

Interest-rate Derivatives and Bank Lending

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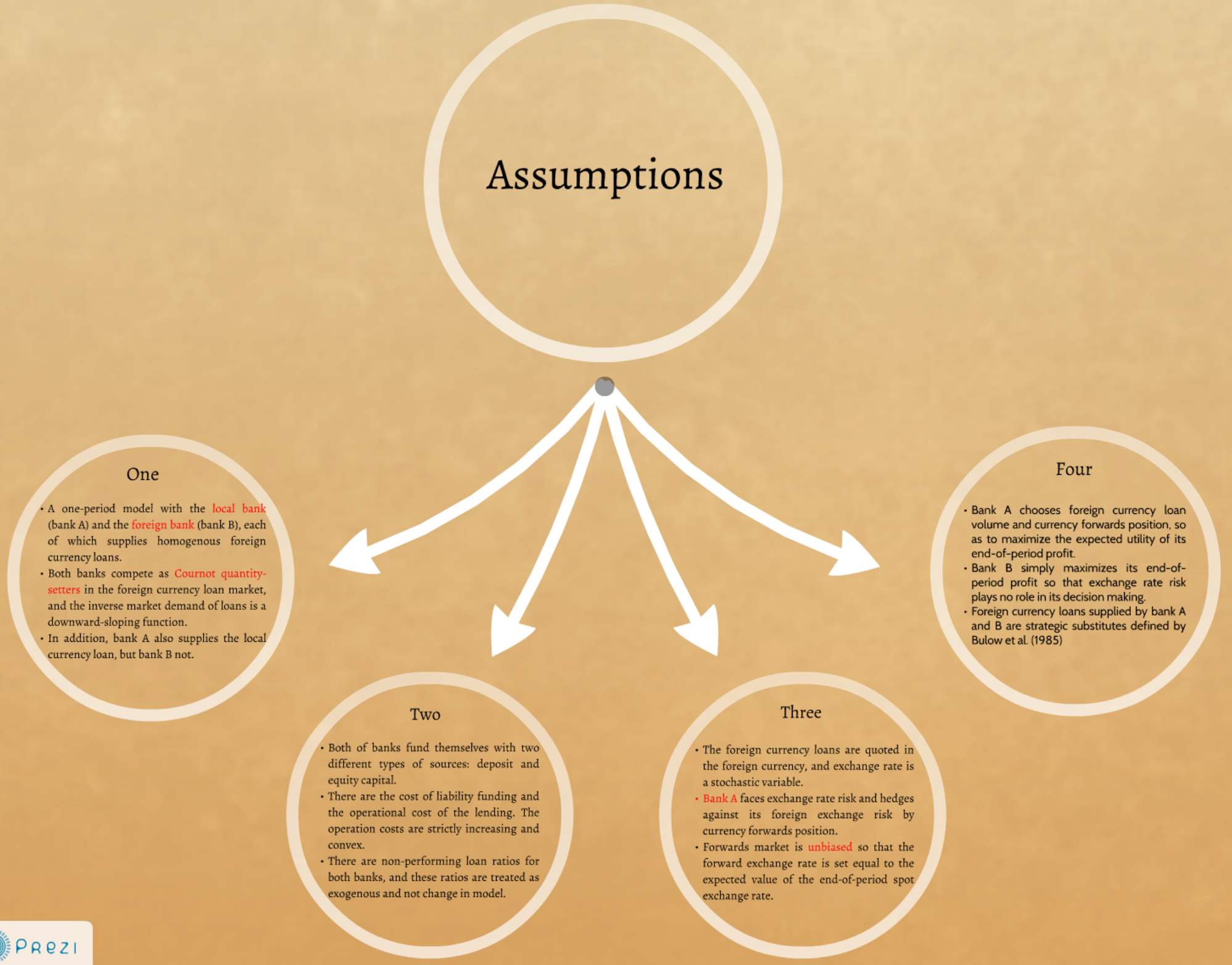
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Theoretical Model

- Set up a theoretical model, capturing the main characteristics of the banking sector in China.
- Make a number of simplifying assumptions.
- A two-stage game under the exchange rate uncertainty, with the hedging stage and the lending stage in turn.
- Proposition: In the Cournot-Nash equilibrium, if the VNM utility function of bank A displays either constant or decreasing absolute risk aversion, there is the positive effect of forwards position used by bank A on the total foreign currency loan volume in the credit market.



Assumptions



One

- A one-period model with the **local bank** (bank A) and the **foreign bank** (bank B), each of which supplies homogenous foreign currency loans.
- Both banks compete as **Cournot quantity-setters** in the foreign currency loan market, and the inverse market demand of loans is a downward-sloping function.
- In addition, bank A also supplies the local currency loan, but bank B not.

Two

- Both of banks fund themselves with two different types of sources: deposit and equity capital.
- There are the cost of liability funding and the operational cost of the lending. The operation costs are strictly increasing and convex.
- There are non-performing loan ratios for both banks, and these ratios are treated as exogenous and not change in model.

Three

- The foreign currency loans are quoted in the foreign currency, and exchange rate is a stochastic variable.
- **Bank A** faces exchange rate risk and hedges against its foreign exchange risk by currency forwards position.
- Forwards market is **unbiased** so that the forward exchange rate is set equal to the expected value of the end-of-period spot exchange rate.

Four

- Bank A chooses foreign currency loan volume and currency forwards position, so as to maximize the expected utility of its end-of-period profit.
- Bank B simply maximizes its end-of-period profit so that exchange rate risk plays no role in its decision making.
- Foreign currency loans supplied by bank A and B are strategic substitutes defined by Bulow et al. (1985)

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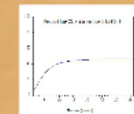
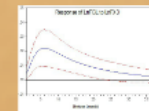
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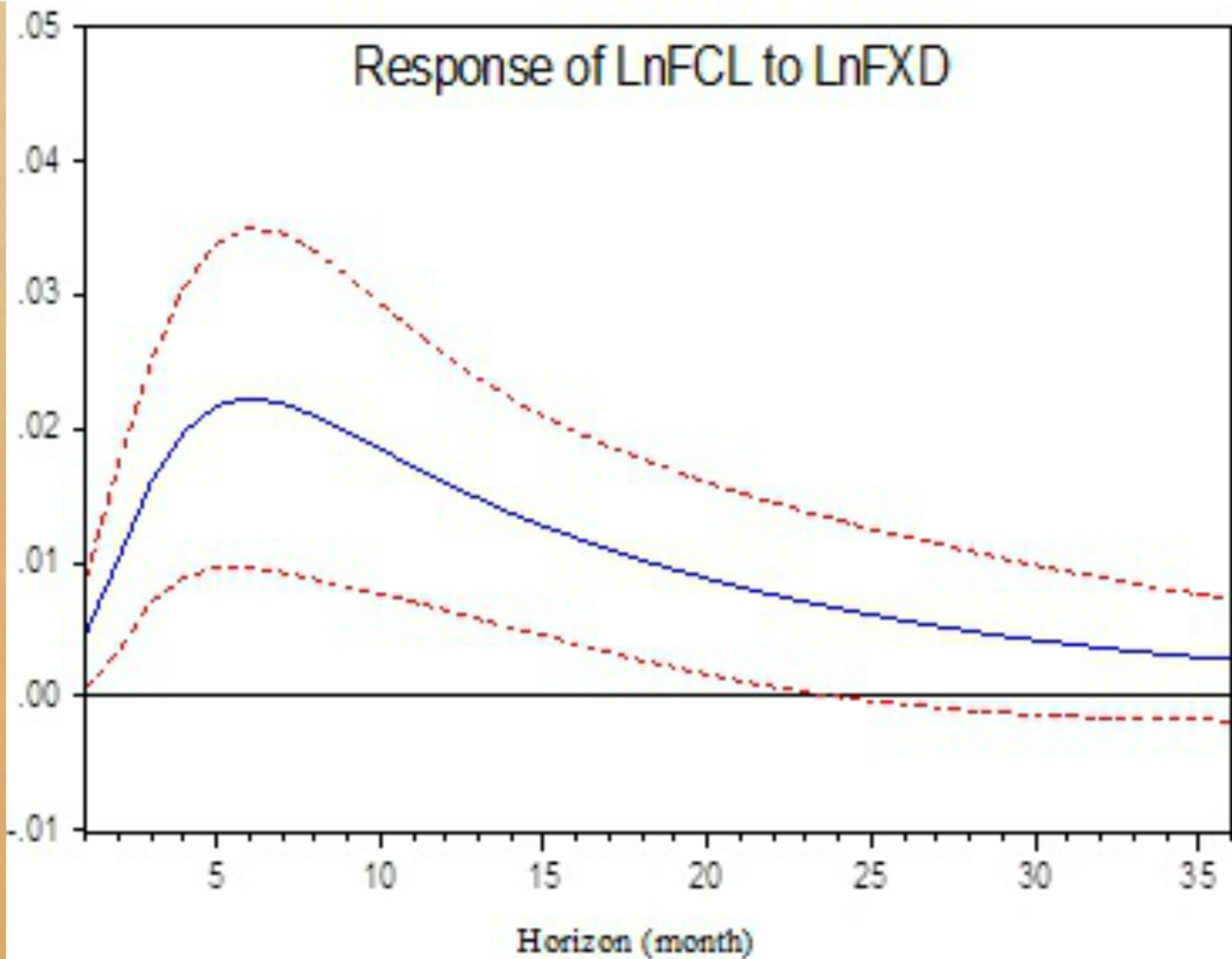
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Empirical Evidence

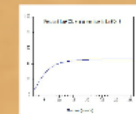
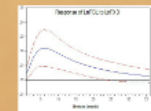
- Use Vector Autoregression (VAR) model with China's monthly data during 2007 to Jun 2014.
- Foreign currency loan volume (FCL) and transaction volume of foreign exchange derivatives market (FXD) are two endogenous variables.
- Change in nominal RMB effective exchange rate index and China's import volume are two exogenous variables.
- Granger-causality tests shows derivative market transaction has bi-directional causality with foreign currency loan volume.
- The generalized impulse response function indicates the derivatives market has a significantly and persistently positive effect on bank lending.
- The variance decomposition displays derivatives market transaction account for over 40 percent of variations in the foreign currency loan volume in the long run.

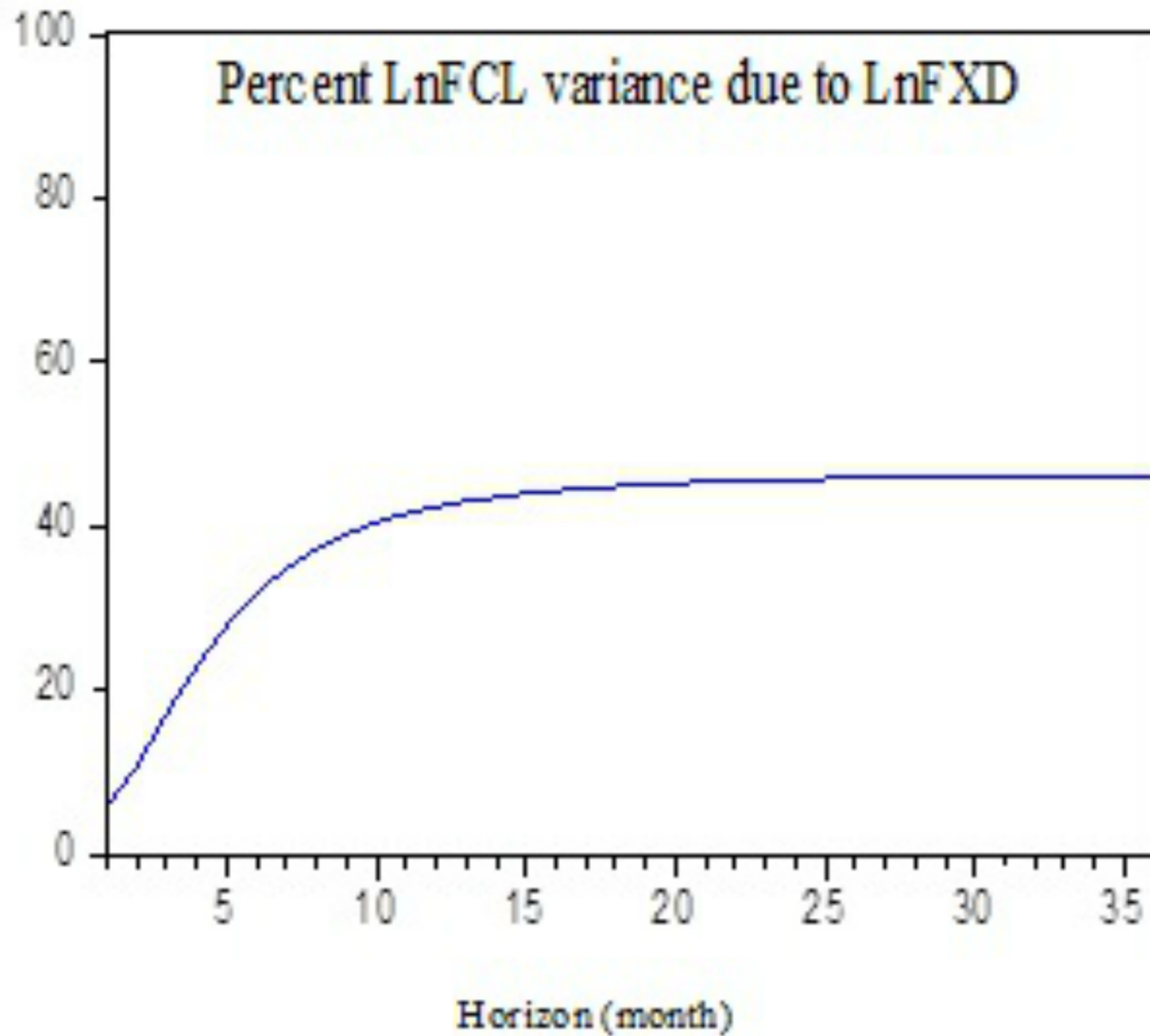




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Conclusion

- Confirm the general efficiency enhancing implications of new risk management techniques in a world with frictions.
- Imply that government restrictive policies for banks' derivatives activity will have the negative consequences for bank credit supply.
- A room for further researches on the trade-off between expected benefits and potential externalities of the existence of such financial innovations-based market.

Thanks a lot!

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