Study on the Impact of Australia's Monetary Policy on the Foreign Exchange Market

Xianming Chen(✉)

University of Sydney, Camperdown, Australia
708914986@qq.com

Abstract. Through a replication analysis, this paper continues to explore the impact of Australia's monetary policy on the foreign exchange market. The data references are drawn from the same financial literacy literature as the Reserve Bank of Australia (RBA) and Datastream by Thomson Reuters/Refinitiv. In addition to the data provided by the financial literacy literature, historical data on the exchange rate of the Australian dollar against major national currencies provided by the RBA are also used. The evidence suggests that, similar to the equity markets, the RBA's monetary policy do not have an information effect on the foreign exchange market. The results support standard economic thinking: a rise in the interest rate leads to a rise in the Australian dollar exchange rate against major countries' currencies. However, central banks are now becoming aware of the nature of expectations management in monetary policy. And the RBA's behavior of increasing policy transparency and openness, and communicating with the market about monetary policy and the economic outlook, can be a good way to stabilize equity and foreign exchange markets. Although the literature on financial literacy is limited, the factors affecting the foreign exchange market do not stop at the single factor of monetary policy. The interest rates and exchange rates present a stronger correlation, with interest rates providing a better explanation of exchange rate movements.

Keywords: Australia · Monetary Policy · Foreign Exchange Market · Currency

1 Introduction

Since its inception, the central bank has been charged with the dual responsibility of maintaining monetary and financial stability. Theoretically, through the central bank's policy communication, reasonable guidance of market participants' monetary policy expectations can improve the effectiveness of monetary policy implementation. However, the real effectiveness of central bank policy communication in practice needs to be rigorously tested and verified through practical analysis. According to the information effect hypothesis, whether or not changes in the cash rate reflect additional economic information is also reflected in the exchange rate, which creates a phenomenon that contradicts standard economic thinking. In order to verify whether the phenomenon exists in the Australian exchange rate market, this paper extends the work of Calvin He [1] to

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determine whether there is an information effect in the Australian dollar exchange rate market through replication analysis. Using the original model and empirical analysis, it is possible to conclude the opposite of the information effect hypothesis prediction: the exchange rate of the Australian dollar against major national currencies rises with the increase in the cash rate. The results suggest that the information effect does not dominate the foreign exchange market response to cash interest. Although the possibility of the existence of an information effect cannot be completely ruled out, in general, the information effect is small enough not to affect our understanding of the standard economic model.

2 Literature Review

His 2021 paper Monetary Policy, Equity Markets, and the Information Effect (hereafter referred to as OP) examines whether the unexpected component of monetary policy has an impact on equity markets by using high-frequency data of OIS. The original paper suggests that standard thinking on how interest rates affect the economy can continue to guide central bank monetary policy. Although these findings do not rule out the occurrence of information effects. Because under certain conditions, when there is no representative sector in the stock market or when the central bank uses other means of communication with the market, the presence of information effects can still be detected. Considering that central bank monetary policy also has a very important role in exchange rate stability, further research is needed to study the impact of the central bank's monetary policy on the exchange rate.

The OP decomposes monetary policy surprises into three components: changes in the policy reaction function, the underlying economic data for the policy responds, and deviations from the reaction function, which is consistent with this paper. Unlike the original paper, which focuses on the equity market, this paper examines the foreign exchange market. According to the hypothesis of the information effect, if there is really an information effect in the Australian financial market, it will be more evident in the foreign exchange market. Using OP's research model and research data for the foreign exchange market, this paper explores whether the information effect exists by studying the exchange rate changes of the Australian dollar against the currencies of major countries during the monetary policy window time. If there is no strong information effect, according to the Mundell-Fleming model, when the central bank conducts a tight monetary policy, raising the interest rate will cause a large inflow of international capital into the country in the short term, at which point the demand for the country in the foreign exchange market will increase and the local currency will appreciate as a result. However, if there is an information effect, a tighter monetary policy by the central bank can be interpreted by foreign exchange investors as the central bank having negative information that is not available in the market, leading to a sell-off and depreciation of the domestic currency. However, this model is very idealistic. In reality the transmission path of interest rate changes to the exchange rate is very complex, and there are various models of correlation.

Therefore, this paper examines whether the Australian foreign exchange market is like the equity market in that there is no significant information effect of monetary

policy. It also seeks to examine the transmission mechanism of interest rate changes on the exchange rate and analyze whether there is a suitable environment for the existence of information effects in this influence path. It is also important to note that all the conclusions of this paper do not undermine the findings of the OP, just use the OP's research methodology to study a new object.

3 Data

Most of the data in this study is taken directly from the raw data processed in the OP, supplemented by historical data from the Australian exchange rate market. Please refer to OP for the criteria for identifying monetary policy surprises.

3.1 Original Dataset

The raw data in this paper involving high-frequency OIS market data that OP uses to calculate monetary policy surprises. He [2] uses OIS rates for the 30-min period before and the 90-min window after all monetary policy announcements from April 2001 through May 2020 to capture the unexpected component of monetary policy. OP uses Gürkaynak's [3] to conduct a principal component analysis of the changes in all OIS contracts before and after monetary policy announcements and concludes that this one factor explains 95.7% of the total change in the contract. Although it is not possible to use the raw data for validation calculations, this result can also reduce the concern about the use of only one factor to explain the results.

3.2 Supplementary Dataset

This paper studies the foreign exchange market. To capture information on the foreign exchange market, historical data on the exchange rate of the Australian dollar against three currencies (the US dollar, the euro and the British pound) is used. The changes in the exchange rate between the Australian dollar and these three currencies is able to exclude as much as possible the influence of other factors on the Australian dollar exchange rate.

4 Results

The estimated response of the Australian dollar against these three currencies to a 100 basis point contractionary monetary policy surprise was calculated. According to standard economic models, with the Australian dollar rising against all three international currencies when the cash rate increases unexpectedly (Detailed calculation results are shown in Appendix C). These results are significant at all conventional levels [Figs. 1, 2 and 3].

Unlike the OP calculation for the ASX200, the absolute value of the effect is not negligibly small when using the cash rate as the dependent variable, although the same upward bias exists when using the cash rate rather than monetary policy surprises, both at

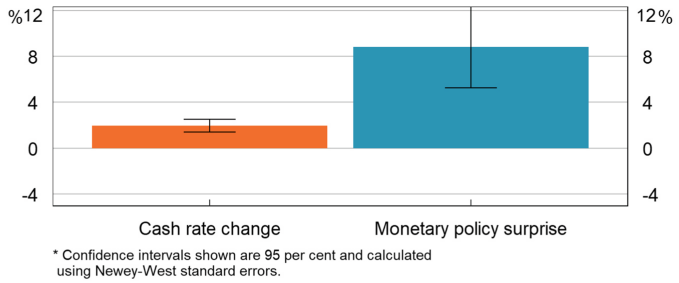

Fig. 1. Response of AUD/USD exchange rate to Monetary Policy

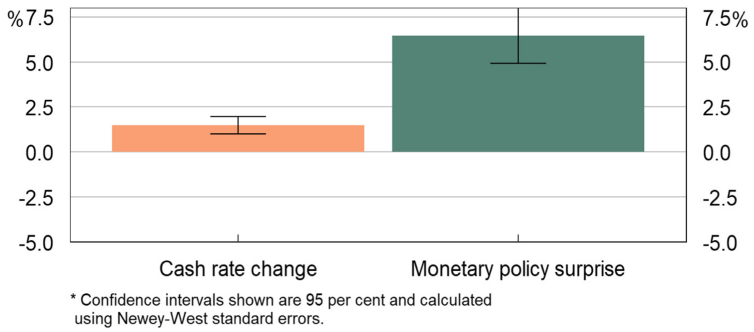

Fig. 2. Response of AUD/EUR exchange rate to Monetary Policy

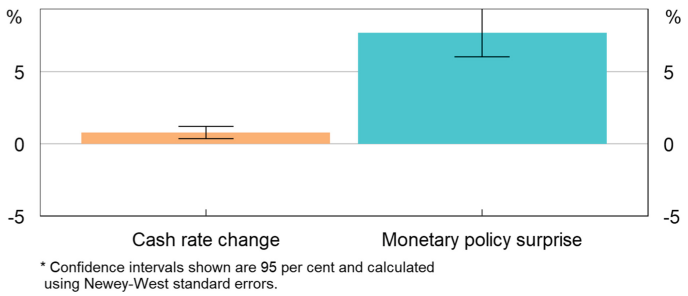

Fig. 3. Response of AUD/GBP exchange rate to Monetary Policy

roughly 1% level. Such results suggest that there is a real-time response of the Australian dollar to changes in the cash rate against these three currencies.

Similar to stock prices, there are various drivers of foreign exchange prices and calculations show that the information effect of monetary policy does not fully dominate the exchange rate response [4]. This means that the unexpected tightening of monetary policy has a standard expansionary effect on the exchange rate Australian dollar exchange rate.

5 Mechanisms and Discussion

There is no doubt that there is a huge difference between the pathway of interest rates to exchange rates and the pathway of interest rates to equity markets. Studying this transmission path can help understand whether there is an environment in which the information effects of monetary policy are generated. At the same time, I am curious about the differences in the extent to which various asset prices respond to central bank monetary policy. And why there is no significant information effect in either the Australian equity market or the exchange rate market. This paper will examine the transmission channels of interest rate changes on the exchange rate and the RBA's communication channels with the market.

5.1 The Transmission Path of Interest Rate Changes to Influence Exchange Rate

In general, changes in interest rates can affect exchange rates in three ways.

Current Account Transmission Pathway
Interest rates affect the exchange rate through the current account and changes in interest rates trigger changes in both consumption and investment, which in turn cause a linked exchange rate reaction. In terms of consumption, if a country's interest rate changes, it will inevitably affect the consumption demand of its residents. In terms of investment, the production costs of domestic companies will be affected. As a result, businesses will have to adjust their product prices for the market. Additionally, changes in production costs will have an impact on export prices volume of exports, thus affecting the exchange rate level. These can be summarized in the following diagram [Fig. 4].

Capital Account Transmission Pathway
Changes in the flow of international capital inevitably affect the level of exchange rates [5]. Large amounts of foreign capital enter the country when the interest rate is raised, causing a change in the state of supply and demand in the foreign exchange market. The supply of foreign currency grows rapidly and so does the demand for the domestic currency. This process is shown in the following diagram [Fig. 5].

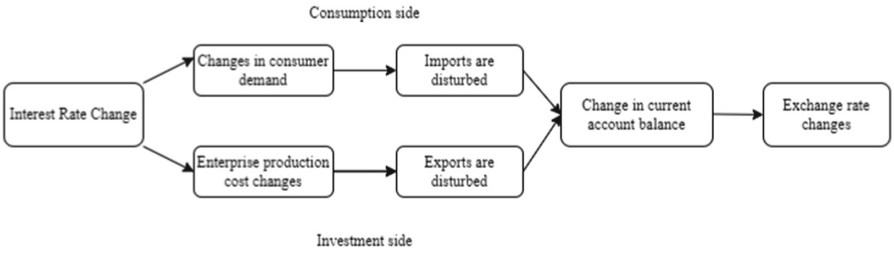

Fig. 4. Interest Rate Affect Exchange Rate through Current Account

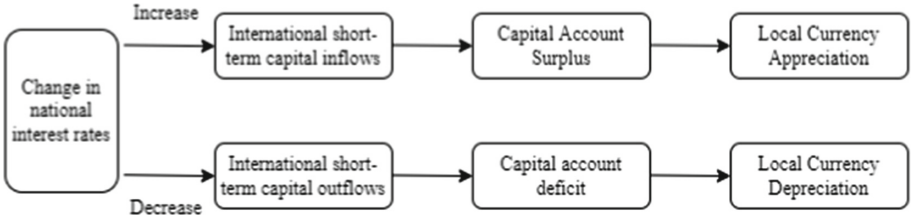

Fig. 5. Interest Rate Affect Exchange Rate through Capital Account

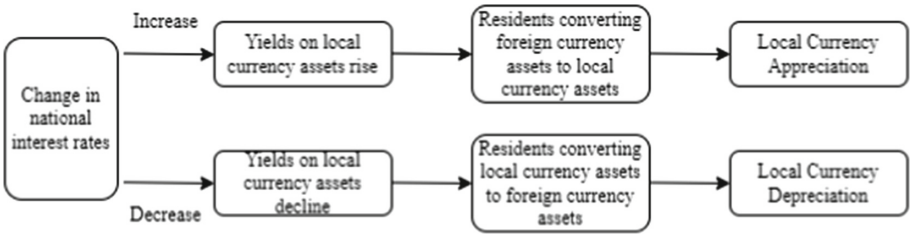

Fig. 6. Interest Rate Affect Exchange Rate through Asset Exchange

This change, however, must ensure that international capital is able to flow freely in the country. Once the level of interest rates changes, international capital under the conditions of free flow will react quickly, such changes on the exchange rate is short term.

Asset Exchange Transmission Pathway

The relative yields of local and foreign currency assets alter as domestic interest rates change. Residents of the home country will typically exchange their foreign currency assets for local currency assets in order to obtain a higher return on their assets if the interest rate in the home country rises. This behavior increases the supply of foreign currency on the foreign exchange market, and foreign currencies depreciate in value relative to the domestic currency and appreciate in value relative to the foreign currency. When interest rates decrease, the same is true. The process is shown in the diagram below [Fig. 6].

5.2 Reasons for the Absence of Information Effects in the RBA's Monetary Policy

Central bank policy communication refers to the announcement of monetary policy objectives, future monetary policy intentions, and economic outlook by the central bank, either orally or in writing [4], and attempts to make the changes understandable and credible to market participants. As can be seen, avoiding information effects to interfere with the effectiveness of monetary policy is itself a central bank effort.

Kohn and Sack [3] found that financial markets reacted significantly to Fed Chairman Greenspan's embarrassing press statements and written statements by the Open Market Committee, but that different communication methods led to differences in the degree of reaction. For the exchange rate market, the study by Siklos and Bohl [2] demonstrates

that the effect on exchange rate volatility is significantly greater when the real interest rate is adjusted than other forms of monetary policy changes. This is similar to the findings of this paper. In summary, the common reason why the information effect of monetary policy does not exist in both the Australian equity and money markets is that the RBA eliminates the information asymmetry between the market and the central bank through effective communication. Despite differences in the depth and breadth, quantity and quality of information between central bank as a regulator of financial markets and market participants by eliminating the parts of the policy through policy communication. Effective policy communication can break this state of affair, thus eliminating the environment in which the information effect exists and improving the effectiveness of monetary policy and the credibility of the central bank.

6 Limitations and Future Research

There are relatively few quantitative studies on the information effects of exchange rate markets. Consider that the price of the Australian dollar against all three currencies involves not only Australia's factors but also many other countries' economic factors. Therefore, this paper argues that it is not a coincidence that the Australian dollar has similar results against all three currencies, especially considering that these three currencies are the three currencies that account for the largest share of international payments. The results obtained in this paper are then more convincing.

The OP points out that there is a widespread decline in earnings forecasts in financial markets following monetary policy tightening. This is supported by the findings of this paper. However, the analysis of the model of the transmission mechanism of interest rates to monetary policy reveals that this effect is complex and requires further validation of the linkage effect and the degree of interaction between interest rates and exchange rates. The results of this paper are not sufficient to prove that there is no information effect generating environment in this transmission pathway, only the results suggest that there is no significant information effect phenomenon.

7 Conclusion

While the results of this study, like 'those of the OP, cannot completely rule out the complete absence of the information effect due to the use of a single factor, and are also endogenously influenced to some extent, concerns about this part of the effect can be eliminated by examining the transmission mechanism of interest rates to exchange rates and the communication channels of monetary policy. Interest rates have a more direct and effective impact on the exchange rate. At the same time, the RBA's diverse policy communication tools can eliminate market concerns about information asymmetries. The RBA has a strong incentive to pursue an open and transparent monetary policy, moving away from the secrecy of central banks that was prevalent before the 1990s, so that no information effect exists in the environment.

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