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An Analysis of the Carry Trade: Historical and Empirical Evidence from the Japanese Yen and Australian Dollar Currency Pair

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An Analysis of the Carry Trade:

Historical and Empirical Evidence from the Japanese Yen and Australian Dollar Currency Pair

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Abstract

Carry trades are a common strategy used to take long positions on high interest rate currencies by financing the investment through low interest rate currencies. Because the practice of carry trading is not supported with economic theory, very little is understood on how carry trades work. The interest rate parity predicts that interest rates, working in conjunction with exchange rates, will equate currencies across national borders. However, this is not always the case. There have been several exceptions to this rule in the past few decades. This paper will attempt to link a change in market expectations to the unwinding of a carry trade. Additionally, market expectations are going to be examined through correlations of the release of economic news and drops in returns on investments. The relationship between the Australian dollar and Japanese yen provides the subject for this analysis.

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Introduction

The carry trade is a term used to describe the deviations from the rules set forth by the interest rate parity. The interest rate parity dictates that a domestic interest rate will be equal to a foreign interest rate plus the depreciation rate of the domestic currency. In general, interests rates and exchange rates should work together to equate currencies across countries. The interest rate parity implies that profiting from currency trades is not possible in the long run (Krugman, 2012). What is not understood is why the deviations, labeled as carry trades, are able to persist and incur profits or losses.

A carry trade depends on the ability to capitalize on differences in interest rates for two countries. The Japanese interest rate has maintained near zero levels for more than a decade. The Australian interest rate has been well above zero for the past decade. Accordingly, the Japanese yen provides the correct environment to provide a funding currency from which investors may borrow. Additionally, the higher-yielding assets of Australia have provided the ideal target for yen investments. In order to conduct this carry trade, an investor would buy in the long position for the Japanese yen and Australian dollar currency pair (Anzuini, 2012). Thus, allowing profitability for the investment.

Of course, investing always come at a risk. In the case of Japanese yen and Australian dollar carry trade, the risk rests in the exchange rates. When buying in the long position, the investor is making the bet that the currency exchange rate will not appreciate for the Japanese yen. If the Japanese yen were to appreciate, then the profits from the investment made in the Australian dollar would be miniscule compared to the loss incurred on the exchange required to pull the investment out of Australia (Anzuini, 2012). The timeline of a carry trade begins with a build-up of investment in the target country's currency, in this case the Australian dollar, from the funding

country's currency, in this case the Japanese yen. The build-up usually takes a period of several years or more. However, the build-up is followed by a sell-off that usually only takes several weeks or a couple of months. The sell-off period, referred to as the unwinding of the carry trade, poses difficulty in determining how or why it began to unwind (Krugman, 2012).

Additional risk is incurred by investors leveraging their investments in the carry trade. By leveraging their investments, they can raise their expected return on their capital. The risk of leveraged investments is great when the lending currency appreciates in value. The currency appreciations result in a loss of collateral put-down by the investor. If the appreciation is large, which is common in carry trades, the collateral will fall dramatically. Without additional collateral set-forth by the investor, the trade will be unwound from a lack of capital in the borrowed currency. On the larger scale, currency appreciation in the funding currency can potentially force many investors to cover their leveraged investment. The risk added by many leveraged investors unwinding their trades adds volatility to an already volatile currency exchange rate (Chaboud, 2007).

The explanation of carry trade build-up, and inevitable unwinding, is met with more questions than answers. One possible explanation behind the motivations of the unwinding of a carry trade rests in the relationship of economic expectations and the release of economic indicators (Hutchison, 2011). Central banks release economic indicators along with their own expectations for the economy. The economic indicators for a country are then interpreted and analyzed by investors and the larger media. Thus, generating a market perception for future economic conditions in the country in question. By exploring the relationship between changes in market perception and the measurable effects on the carry trade, this paper will attempt to explain how the carry trade occurs and unwinds.

Data Collection

Exploring the dynamics of the carry trade requires several economic tools. In order to build a data set to reflect the economic conditions surrounding the carry trade, currency exchanges and interest rates are used to track investment return and currency appreciation. This data will allow analysis for understanding the magnitude and timing of carry trade events, as a function of time. Additionally, economic news is used to correlate investment activity in Australia with the changing expectations of economic conditions in Australia and Japan. The attempt is to compile data on economic news in the time period shortly before an appreciation of the Japanese yen or a decline in investment returns in Australia in order to try to explain how carry trading exists.

Data

Figure 1: Depiction of Japanese/Australian exchange rate, along with interest rate differential, throughout the entire sequence of the carry trade (build-up, unwinding, afterward). Data retrieved from Federal Reserve Economic Data (FRED) website for the St. Louis Federal Reserve Bank.
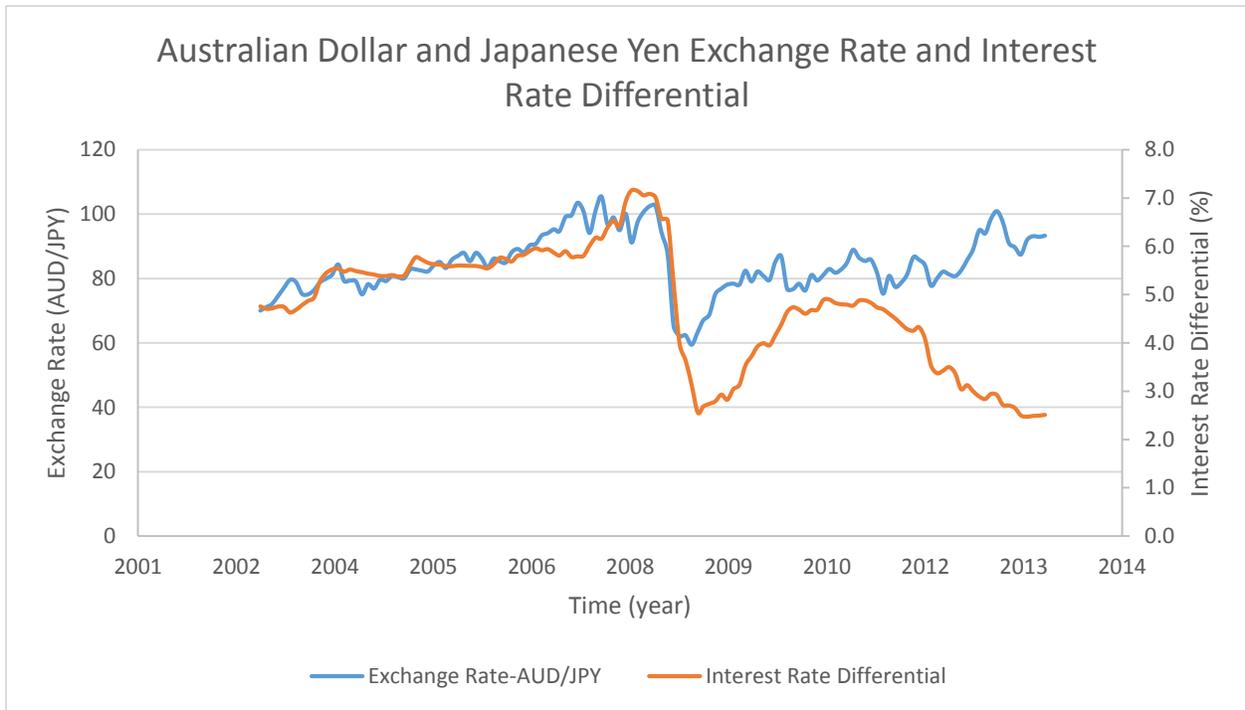
Figure 2: Depiction of Japanese/Australian exchange rate volatility throughout the past decade. Data retrieved from Federal Reserve Economic Data (FRED) website for St. Louis Federal Reserve Bank and transformed using Excel.

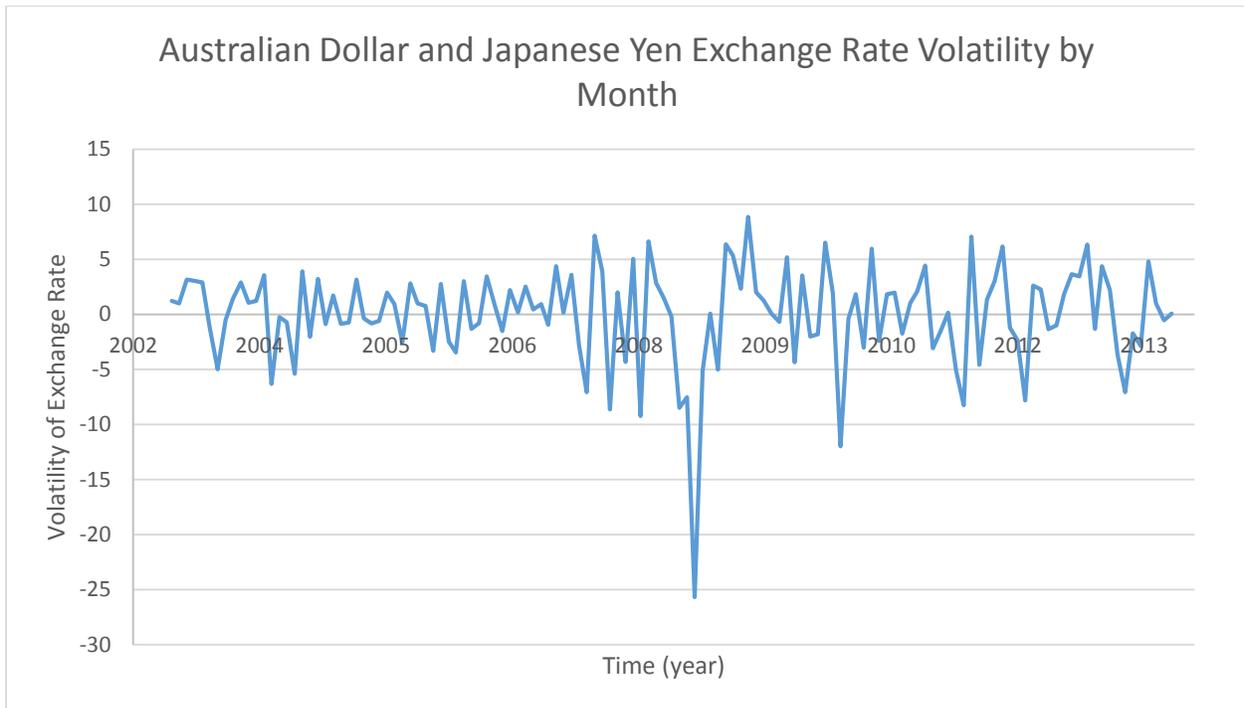Australian Dollar and Japanese Yen Exchange Rate Volatility by Month

Figure 3: Depiction of Japanese/Australian exchange rate in 2008. The unwinding of the carry trade is observed in late 2008.
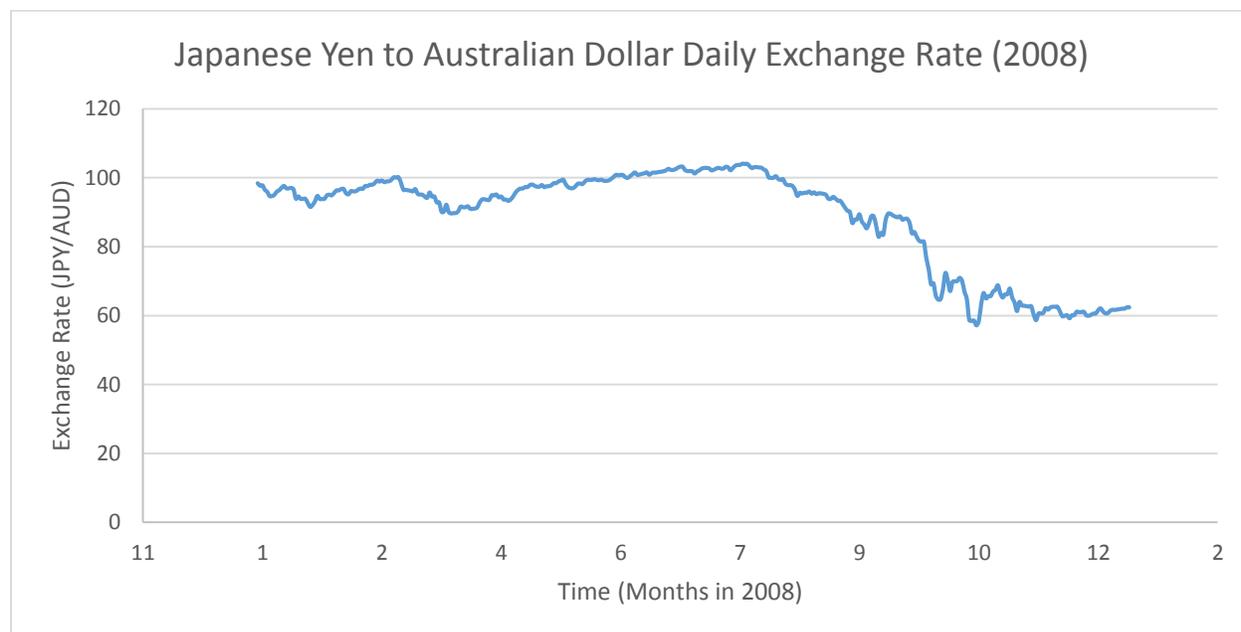

Figure 4: Australian macroeconomic variables of interest for determining changes in economic expectations for investors. Data retrieved from Reserve Bank of Australia website.

End Date	AUD/JPY	CPI	GDP-Income	MPC-New Rate	Balance of Pay	Reserve Bank Assets	Foreign Debt
3/31/2008	95.27	4.3	143141	7.25	1470	93.7	-4878
6/30/2008	98.52	4.4	146796	7.00	761	105.6	-6877
9/30/2008	95.96	5.0	147647	6.00	758	101.5	7058
12/31/2008	64.79	3.7	148080	4.25	2882	158.8	21475

Figure 5: Depiction of net-export values throughout 2008 for Australia.

Net-Exports of Australia by Month in 2008
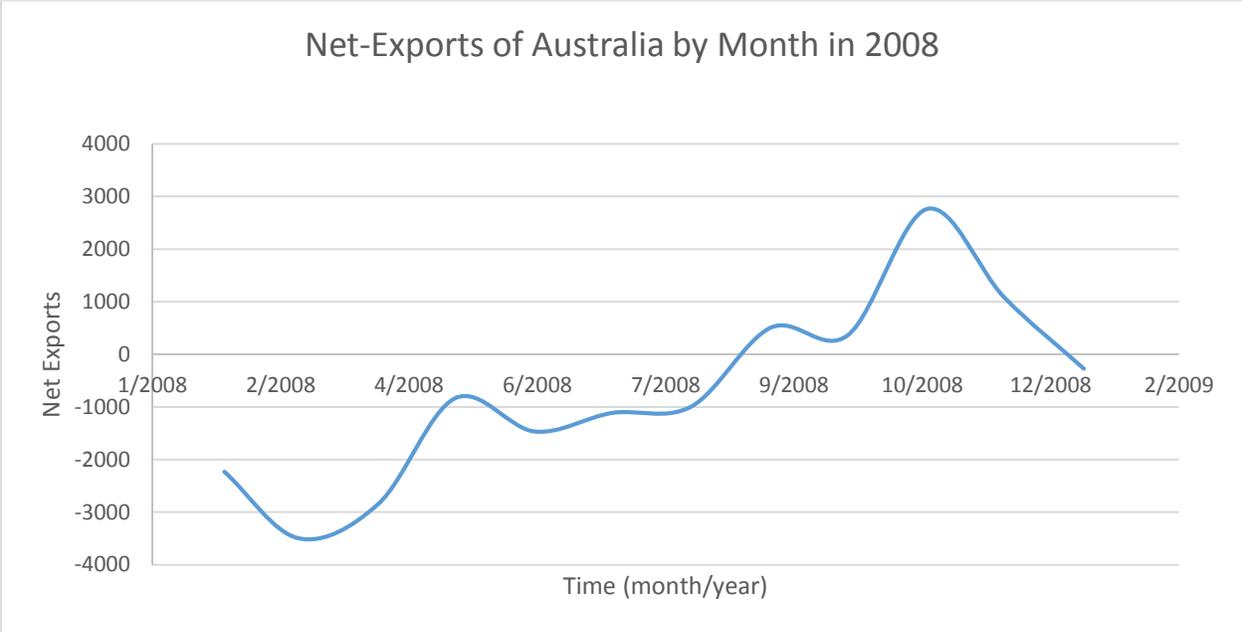
Data Analysis

The carry trade produced by the Australian dollar and Japanese yen currency pair is observed in Figure 1. The interest rate differential between Australia and Japan is consistently high. Because the Australian dollar yields a much higher return on investment compared to the Japanese yen, the situation provides an opportunity for carry trading to occur. The environment continues to exist throughout the early to mid-2000s'. However, in mid-2008, the economic conditions surrounding Australian and Japanese investments changes. The interest rates in Japan drift upward from near zero to slightly above zero; while, the interest rates in Australia fall considerably. In addition to moving interest rates, the Japanese yen is observed to be appreciating against the Australian dollar. Also, Figure 2 demonstrates the volatility of Australian dollar to Japanese yen exchange rates. Throughout the early to mid-2000s', the exchange has only small oscillations around zero; however, in 2008 the exchange rate becomes very volatile. After the volatility spike in 2008 the Australian dollar to Japanese yen exchange rate remains more volatile than before the spike.

The situation regarding a carry trade between Japan and Australia cannot be separated from the financial turmoil that existed in 2008, and in subsequent years, as a result of the United States housing crises. Of course, the effects of the housing crisis are far reaching and continue to be felt several years afterward. However, the principle behind carry trade models still exists, regardless of poor economic conditions. That being said, the difficulty imposed by tumultuous market conditions prevents a clear picture of the carry trade and carry trade determinants.

The Japanese-Australian carry trade that was built while the economy was booming throughout the early to mid-2000s unwinds during the financial crisis of 2008. However, the unwinding of a carry trade typically accompanies or causes a financial crisis. Because the

definition of this particular instance of the carry trade is not being approached from a global perspective, it is appropriate to analyze the unwinding with respect to changing economic expectations in Australian and Japanese markets. Figure 3 depicts the appreciation of the Japanese yen with respect to the Australian dollar throughout the later portion of 2008. The carry trade is in the phase of unwinding in late 2008. Investors who had been engaging in low-interest borrowing from Japan, coupled with high-interest investment in Australia had to remove their capital to prevent losses. Those who had been a part of this investment strategy for most of the previous decade saw large profits, while investors who had entered the carry trade strategy shortly before the unwinding began in 2008 saw massive losses, especially if their investment was leveraged.

Identifying variables that are capable of measuring changes in market expectations is very difficult. There is no consensus among literature as to which macroeconomic variables are most highly correlated with changes in currency exchange markets. Based on limited literature, variables representing changes in financial assets, financial debts, monetary policy, trade levels, and manufacturing levels are capable of correlating with changes in levels of investment and exchange rates. Figures 4 and 5 represent the data that could be used to build an appropriate model for researching the effect of macroeconomic news on carry trade activity.

Conclusion

The research conducted by Hutchison et al. (2011) argues, and proves, that a significant statistical relationship exists between macroeconomic news surprises and carry trade activity. The goal of their paper was to prove economic indicators are a driving force for carry trading throughout the build-up portion of the carry trade. They employed macroeconomic announcements and expectations to find correlations with increases in risk reversals for their measurement of carry trading. This paper sought to accomplish a simpler task through employment of macroeconomic news and changes in currency exchange rates. However, the end result was inconclusive. In order to find a cause, or at the very least a correlation, between economic expectations and carry trades, many more variables would be needed. Additionally, the employment of proxy variables to represent the carry trade, like Hutchison et al. (2011), would prove to be beneficial for statistical analysis.

This paper falls short on statistical analysis of previously mentioned variables. The scale of data collection was insufficient for proper analysis. In order to build an appropriate data-set to examine the relationship between macroeconomic news and carry trade activity, a much larger data series and more complex variables to represent levels of carry trading must be utilized. After beginning background research and attempting to compile data, the scope of this research exceeded time and skills of researcher. The limited amount of research conducted by the larger economics community on this topic proves there is much more to learn from continued efforts to find a causal relationship between macroeconomic news releases and carry trade activity. The work of Hutchison et al. (2011) provides a foundation for further econometric study of the complex relationship between economic expectations and carry trade activity.

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