

Using Indian Rupee in Carry Trade: Is It Worth It?

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ABSTRACT

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This study examines the profitability of using the Indian rupee in carry trade. Carry trade is the mostly used speculation strategy in foreign exchange markets. It has been well documented that such strategy is very rewarding most of the time. Carry traders take advantage of interest rate differential between two currencies to make profit assuming that the exchange rate would not offset this difference. This study examines the profitability of using the Indian rupee against two funding currencies which are the U.S. dollar and the Japanese yen.

KEYWORDS: *Carry trade, Uncovered Interest Rate Parity (UIP), Indian rupee (INR).*

1. Introduction

Carry trade is conducted in a market that has a daily turnover of \$6 trillion (business news, 2016). Out of the total foreign exchange trades, only 10% are associated with international trades while the rest is attributed to speculation activities (BIS, 2010). Carry trade is considered to be the most popular speculation strategy in the foreign exchange market, but there is no clear number of its size. Many researchers such as McGuire and Tarashev (2006), Becker and Clifton (2007) and Garnham (2010) tried to measure the size of carry trade but they could not come up with one. But, despite their claims that it is very difficult to measure the size of carry trade, they all agreed that it is huge.

Carry trade in its plain vanilla form is conducted by borrowing low-interest currencies and investing in high-interest currencies, taking advantage of the interest rate differential. Due to its simplicity, carry trade was labelled as primitive and naïve strategy by many researcher such as

Jorda and Taylor (2009) and Reichenecker (2015). But despite its simplicity, Neely and Weller (2013) showed that there is a growing body of literature indicating that carry trade has statistically and economically significant positive excess returns and a Sharpe ratio about double that of equity markets. Brunnermeier and Pedersen (2009) concluded that carry trade returns are much less variable than stock returns, with an annualized standard deviation of about 5 percent (compared to about 15 percent for stocks); as a result, the Sharpe ratio of the carry trade is double that of stock. Burnside et al. (2006) using British pound against the currencies of 9 developed countries for the period from 1977 to 2005 and found that the realized cumulative return from carry trade was similar to that of the S&P 500, but carry trade produced a Sharpe ratio of 0.20 compared to 0.14 for the S&P 500. Jurek (2014) used the currencies of the G10 countries for the period from 1:1990 to 6:2012 and found that carry trade produced a Sharpe ratio ranging from 0.40 to

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0.55. Bakshi and Panayotov (2013) used the currencies of the G-10 currencies for the period from 1:1985 to 8:2011 and found that the average annualized return was between 1.95% to 2.70% with a Sharpe ratio ranging from 0.25 and 0.50.

Carry trade returns are contributed to the failure of uncovered interest rate parity (UIP) condition. If UIP stands then carry traders would not be able to make any profit from conducting such strategy since high-interest rate currencies would depreciate against low-interest rate currencies by the interest rate differential itself eliminating any profits. For such reason, Baillie and Chang (2011) described carry trade at nothing more than betting against UIP.

The use of emerging market currencies have been proven to be very rewarding when used in carry trade. Bhatti (2012) conducted carry trade using the Pakistani rupee against U.S. dollar, Swiss franc, and the Japanese yen. He found that the annualized average return for the 3 pairs was 14.36% for carry trade compared to an average of 1.90% for the S&P 500, Swiss and Nikkei 225 stock market indices. McKinnon (2012) examined carry trade for the period 2001-2011 using the U.S. dollar as the funding currency against the Brazilian real, Mexican peso, and the Canadian dollar and found that carry trade produced an annual return of 7.9%. AlAli (2016a) used the Omani rial against the currencies of six developed countries for the period 1:2001 to 12:2011 and found that it produced an average mean annual return of 1.79% with a Sharpe ratio of 0.06 compared to 0.034 for the S&P 500.

2. Methodology

Carry traders base their decisions on the interest rate differential as the sole selection criteria. This naïve strategy has proven to be rewarding in most cases despite its simplicity. This operation works as follows:

Carry traders would go long currency y short currency x when $i_y > i_x$ and vice versa. The spot rate S is measured as the rate of one unit of y against x . The percentage change in exchange rate (\dot{S}_{t+1}) is;

$$\dot{S}_{t+1} = \frac{S_{t+1} - S_t}{S_t} \quad (1)$$

So, the return on carry trade in that case would be;

$$\pi = (i_y - i_x) + \dot{S}_{t+1} \quad (2)$$

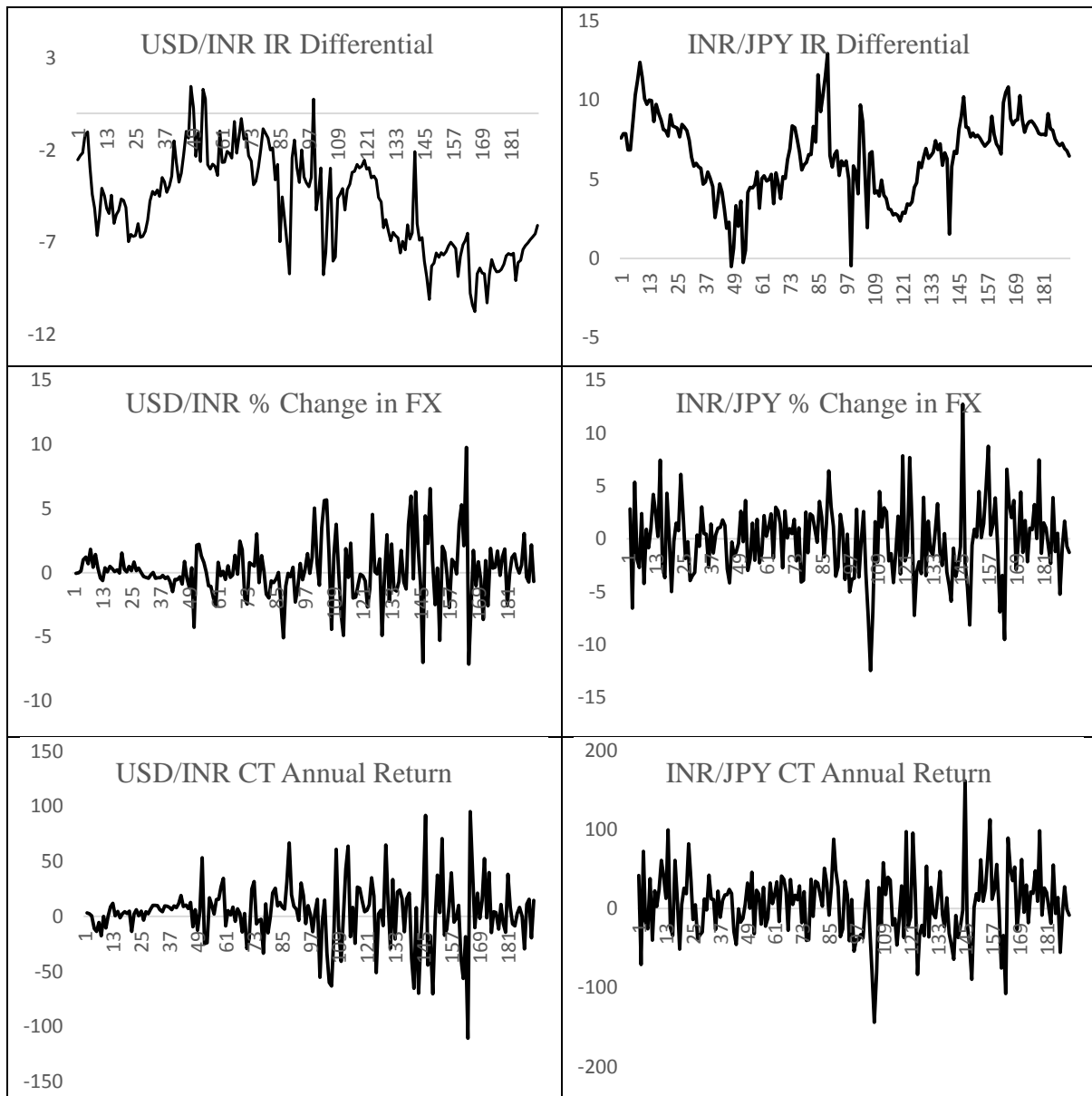
Carry trade would produce a positive return only if $(i_y - i_x) > -\dot{S}_{t+1}$. (That is, as long as the interest rate differential is larger than the depreciation of currency y against currency x). Due to the changes in monetary policies for the countries involved in the study, this might change the role of a currency from an investment currency to funding currency and vice versa. Saying that, a general formula for calculating the rate of return on the carry trade will be as follows;

$$\pi = \begin{cases} (i_y - i_x) + \dot{S}_{t+1} & \text{if } i_y > i_x \\ (i_x - i_y) - \dot{S}_{t+1} & \text{if } i_y < i_x \end{cases} \quad (3)$$

3. Data and Empirical Results

The empirical results obtained in this paper are based on two currency combinations involving Indian rupee against the U.S. dollar, and the Japanese yen. Monthly data were used for the period from 1:2000 to 12:2015. Data were obtained from Reuters DataStream terminal and yahoo finance website.

Figure (1)



As seen from table (1) both pairs produced positive returns which is in line with the literature. USD/INR produced a lowed mean return of 2.94% compared to 5.26% for the INR/JPY. Some researchers would contribute the difference in mean return to the interest rate differential between the two pairs since INR/JPY have an interest rate differential of 6.52% compared to 4.97% for the USD/INR. AlAli (2016b) conducted a research using the United Arab Emirates dirham in carry trade against the currencies of six developed countries. The results were in line with

Moosa (2008) and Moosa and Halteh (2012) that there is no clear cut relation between interest rate differential and mean return. When comparing the returns of carry trade to the stock markets returns, the stock market indices produced returns of 3.56%, 1.83%, and 2.51% for the S&P 500, the Nikkei 225, and the Swiss market index respectively compared to 2.94% for the USD/INR and 5.26% for the INR/JPY. On an average, the three indices under study produced a mean return of 2.63% compared to 4.1% for carry trade.

Table (1) Main Results

	USD /INR	INR/JP Y	S&P 500	Nikke i 225	Swiss Market Index
IR	4.97	6.52%	-	-	-
Differential	%				
Mean	2.94	5.26	3.56	1.83	2.51
Return					
Standard	2.22	3.46	4.36	5.72	3.99
Deviation					
Sharpe	1.32	1.52	0.82	0.32	0.63
Ratio					
VaR 95%	3.54	4.57	7.95	9.40	7.15
VaR 99%	5.82	7.61	10.99	11.88	9.77

The exchange rate expressed as the base-currency is first and the quoted currency is second as conducted in foreign exchange market.

When it comes to risk, it can be seen that the two carry trade pairs that were tested produced a lower volatility than the stock markets. While the standard deviation of the returns of the stock markets ranged from 3.99 to 5.72, carry trade produced a standard deviation of 2.22 for the USD/INR and 3.46 for the INR/JPY. On an average, the volatility on the returns on stock markets was 4.69 compared to 2.84 for carry trade. This result confirms Burnside's (2012) conclusion that the returns on stock markets are more volatile than those of carry trade. The Sharpe ratio is the most popular risk-adjusted-return measure used by investors. The Sharpe ratio for the carry trade pairs ranged from 1.32 to 1.52 with an average of 1.42 compared to an average of 0.59 for the stock markets. The result obtained here confirms that carry trade produces much higher Sharpe ratio. This conclusion confirms Neely and Weller (2013) that carry trade produces a Sharpe ration that is double of that of stock markets. When it comes to Value-at-Risk (VaR) it can be seen that both carry trade pairs had a lower VaR than the stock markets under study. At the 95% confidence level, the average for carry trade was 4.06 compared to 8.17 for the stock markets. While at the 99% confidence level carry trade

generated an average VaR of 6.72 compared to 10.88 for the stock market.

Conclusion

This paper examined to profitability of using the Indian rupee in carry trade. The results showed that using the Indian rupee in such strategy is very rewarding producing a mean return that is higher than that of stock indices, which is in line with Burnside (2006) and others. The results also showed that carry trade produced much better results when it comes to risk and risk-adjusted returns than those of the stock markets. This paper concludes that the use of emerging markets currencies in carry trade is profitable (Darvas, 2009) and is something worth looking at.

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