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Currency Carry Trade and International Financial Markets

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Abstract

Currency carry trade has been widely observed in post Brettonwoods financial markets. Significant interest rate differential between funding and investing currencies make carry trade profitable. However, returns of the carry trade strategies have been found to be negatively skewed and had positive kurtosis. This paper presents the status of research surrounding currency carry trade. The discussion includes economic theory - failure of 'uncovered interest rate parity' leading to carry trade, noticeable incidents of carry trade, detection methods, common strategies adopted by market participants, return and risk characteristics, implication for market participants and macroeconomic policy making, and consequences of reversal of carry trade.

Key words: *carry trade, uncovered interest rate parity, skewedness, kurtosis, Sharpe ratio, VaR*

Introduction

One phenomenon has been widely observed in foreign exchange markets since 1973-the year markets started determining exchange rates. One word referring to that phenomenon has also caught imagination of financial media for last few years. The word for this phenomenon is *'carry trade.'* Learning of the dynamics of foreign exchange market is incomplete without understanding carry trade. So, what exactly is carry trade? Does it impact foreign exchange rates in short or long term? What are its implications for market participants and policy makers? Carry trade is defined as a strategy where the trader borrows (goes short) in a low interest rate currency and simultaneously lends (goes long) in a high interest rate currencies (Plantin & Shin, 2007). Generally low return currencies such as Japanese yen, Swiss franc and recently even US dollar are borrowing (source) currencies and high return currencies like Indian Rupee, Indonesian Rupiah, New Zealand Dollar, Australian Dollar, Brazilian Real or South African Rand are investing (target) currencies. The trader, for example, borrows in Japanese Yen, converts the Yen into New Zealand Dollars and invests New Zealand Dollar for a specific maturity.

At the same time, the trader also sells New Zealand Dollars in forward market so as to pay back the borrowed Japanese Yen. In broader terms, asset shift from low interest currency to high interest currency like emerging market debt, equities, real estate and even commodities in an international portfolio is classified as carry trade (Jorda & Taylor, 2009). Interest rate differential between currencies has to be significant enough to compensate for exchange rate risk (Cavallo, 2006). Hence, carry trade rarely involves major currencies as target currencies but always has emerging market currencies as one. Some studies have found carry trade and reversal of carry trade to be responsible for short term, significant unidirectional movement in foreign exchange rate, and responsible for certain currency crashes also (Burnside, Eichenbaum, Kleshchelski, & Rebelo, 2011). The carry trade in foreign exchange market has been so common in developed countries that retails investors also regularly indulge into this kind of trades and Bloomberg has a page showing daily returns on different pairs of currencies. Adopting standard carry trade strategy as demonstrated above, renowned investment bankers like Credit Suisse First Boston, Deutsche Bank and Barclays, Capital have introduced 'carry trade indices' since 2007.

Carry Trade and Economic Theory

In real world, carry trade is profitable because of significant interest rate differential between currencies. However, according to economic theories, carry trade should not exist or should not be hugely profitable. Foreign exchange markets are said to be operating under a state of "covered interest parity" (Jorda & Taylor, 2009). Interest rate differential between two currencies should be exactly reflected by the gap between spot and forward exchange rate of these currencies. High interest rate currencies are at a discount and low interest rate currencies are at a premium in forward markets. Economic theory also suggests that "uncovered interest parity" operates (Jorda & Taylor, 2009). As per uncovered interest parity, high interest offering currencies should be compensating the investors for the risk of investing and high return currency shall depreciate. In other words, forward market rates should be a good estimate/indicator of the expected future spot rate. However, in real world, uncovered interest parity has failed to hold its ground for last thirty years or so. A number of academic studies have shown that high interest rate currencies tend to appreciate and low interest rate currencies tend to depreciate – the reverse of uncovered interest parity (Jorda & Taylor, 2009). Carry trade, in a way, is a bet against uncovered interest parity. The failure of uncovered interest parity is no secret to participants of currency markets and it is so well accepted that it is termed as 'forward premium puzzle' in academic studies.

Historical Incidents of Significant Carry Trade

Carry trade exists since 1973. However, carry trade in currency market becomes distinctively visible during periods when interest rate differentials between currencies are wide and a large number of market participants are entering into carry trade. One of the earliest incident of currency carry trade occurred between 1981 and 1984. In order to control reining inflation, Paul Volcker led Federal Reserve had set high interest rates in US resulting into large amount of capital flowing from low interest rate countries like Japan to US (Gagnon & Chaboud, 2007). During this period, carry traders made a killing from not only interest rate differential but also strongly appreciating US Dollar.

Also, during formative days of European Monetary integration, at the time of signing of Maestricht Treaty of December, 1991, currency traders believed that a permanent fixing of exchange rate among member countries was coming. Fixing of exchange rate eliminated currency risk and Swedish krona, Italian lira, pound sterling, Finnish markka and Portuguese escudo were still offering substantially higher interest rate than Deutsche mark. This resulted into a common carry trade with Deutsche mark as funding currency and others as target currency (Galati, Heath, & McGuire, 2007).

In the aftermath of Russian debt crisis and LTCM debacle in fall of 1998, US Federal Reserve had set very low interest rates injecting air in the carry trade balloon where US dollar was the funding currency and emerging market currencies – Korean won, Thai baht, New Taiwan dollar, Hong Kong dollars and even Australian dollar were the investing currencies (Galati, Heath, & McGuire, 2007). Subsequently, fast reversal of these carry trades has been blamed for sudden decline in value of the same currencies against US dollar in 1999.

Detecting Carry Trade in a Market

Detecting carry trade from generally available economic data is both difficult and problematic. However, there are a number of data sources providing information related to one or other dimension of carry trade. Information pertaining to capital flow in the international banking system is a good source to detect carry trade in a market. Bank of International Settlements regularly publishes international banking statistics with this information. Banks acting as primary intermediaries provide loan in funding currency and also accept deposits in target currencies. Banks, through their proprietary trading books, may be having their own currency carry trade position, showing liabilities in funding currencies and assets in target currencies.

Off-shore financial centres like Cayman Islands, Bahamas, Caribbean countries and European principalities generally host a large number of hedge funds and other speculative traders (Becker & Clifton, 2006). Banking and financial data originating from these centres is an obvious place to look for carry trade activities.

Also, carry trade activities leave their footprints on foreign exchange markets for apparent reasons. Hence, data on futures positions and Over the Counter transactions in the currency spot forward and swap market is a potentially rich source to detect the carry trade in a market.

Strategies and Participants

Carry trades are implemented in currency spot and derivatives markets with varying degree of complexity by financial institutions and retail investors. One of the simplest strategies of carry trade, particularly relevant for emerging markets, is exchanging borrowed currency for target currency and investing the target currency for short term in bank deposits or government securities till maturity.

A somewhat more complicated approach of this strategy may result into simultaneous position in currency spot, futures, interest rate swaps and options market (Plantin & Shin, 2007). Retail investors also use margin accounts with brokerage houses to take leveraged positions across markets establishing carry trade positions.

Another strategy, favorite of retail investors is to diversify their portfolio by holding high return assets denominated in foreign currencies. Foreign currency/assets portfolio of Japanese retails investors (held through investment trust funds) is a very notable example of this strategy.

Borrowing in lower interest foreign currencies to finance purchase of domestic assets is another approach employed by retail investors. For example, retail investors in eastern and central European countries have borrowed in Swiss francs to finance their real estate assets. Unlike the regular carry trade, this kind of carry trade cannot be reversed quickly.

Investors can also enter into carry trade through some of the carry trade related structured indices available for last three years (Jurek, 2008). Deutsche Bank has floated DB Harvest, Barclays Capital has GEMS Asia Index and Intelligent Carry Trade Index and CSFB has introduced Rolling Optimized Carry Trade Indices.

Risk and Return of Carry Trade

Earning return from carry trade is analogous to "picking coins in front of a steamroller." The trader has a long run of small gains but once in a while he gets squashed. In other words, this means a steady stream of profits from interest rate differential gets wiped out by a large, sudden shift in exchange rate in adverse direction.

An interesting study of risk and return of carry trade involving 10 pairs of currencies (including Indian rupee) was published by Bank of International Settlements in December 2007. The study encompasses a period from January 2001 to September 2007. It found that carry trade returns outperform returns from major equity markets of the world during this period. Carry trade strategies analyzed, yielded average returns that seemed extraordinarily high relative to their risk measured in terms of volatility. The study showed that carry trades have much higher Sharpe Ratios – which expressed return for a unit of risk measured as standard deviation- than equity markets. One of the interesting finding was that the return distribution was negatively skewed (long tail in negative direction) and had positive kurtosis (heavier tail than normal distribution) (Gyantelberg & Remolona, 2007). The negative skew reflects the presence of occasional large losses for traders. However, negative skew was less pronounced for target curriences Indonesian rupiah, Indian rupee and Philippine peso that were under managed float (Jylha, Suominen, & Lyytinen, 2008). Also, because of negatively skewed of return distribution, volatility (standard deviation) underestimates actual risk. For such a distribution of returns, tools like Value at Risk (VaR)- which focuses more on down side risk - is better suitable to measure risk of carry trade returns.

In view of these findings, attractiveness of carry trade among currency players can be very well understood. At the same time, player should not be blind to occasional potential large losses highlighted by the study. Each of the historical examples described above – periods when currency speculators earned handsomely from the carry trade- has ended with rather superfast reversal in fortune of traders. In one week of 1998 (October 4-10), Japanese yen appreciated 16% against US dollar, thereby suddenly reversing years of profitable carry trade from low interest currency to high interest currency. Returns on carry trade rises through stair case but declines through elevator (Brunnermeier, Nagel, & Pedersen, 2009).

Implications for Financial Markets and Monetary Policy

Carry trade has notable implication for both financial markets and monetary policy. Presence of carry trade in currency market explains appreciation of high interest rate currencies and depreciation of low interest rate currencies. Swift reversal of carry trade also explains periodic high volatility in exchange rates. Carry trade also underlines the importance of basic financial tenets like law of one price or exploiting arbitrage opportunities. Carry trade offers returns higher that broad equity markets for comparable risk. This creates a dedicated class of investors who are regularly indulging into carry trade. At the same time, carry trade also highlights speculative dimension of currency market.

Further, implications of carry trade for monetary policy should be seen in the light of role of reference rate in carry trade, efforts by authorities to control capital flows and spill over effect of carry trade in general economy. Short term reference rate set by central bankers (like repo and reverse repo rate in India and Fed funds rate in US) acts as a signal to carry traders. These rates influence the scale of carry trade and duration of investment or asset holding. The effects of

carry trade usually do not remain confined to currency markets and spill over to general economy and have been found to pump air in asset bubbles. According to a study sponsored by Institute of Economic and Monetary Studies, Bank of Japan, in lead up to subprime crisis of 2007-08, buying of mortgaged assets and related derivative securities like CDO, CDS etc by hedge funds and financial institutions were in part financed by money originally borrowed in Japan. This is the reason why, during the early stages of crisis, both asset prices and US dollar were falling together and Japanese yen appreciated substantially (Hattori & Shin, 2009). It would not be ambitious to say that analysis of carry trade can assist predicting currency crashes. Managers of an economy are justified in imposing tax on capital inflows and outflows (Tobin Tax) as this tax curtails returns to speculators including carry traders and controls asset prices and short term, significant appreciation of target currency. Such tax also restricts sudden reversal of carry trade.

Conclusion

Carry trade has been part of global financial landscape for last thirty years. It will remain part of the same for a foreseeable future, whether someone likes it or not. Carry trade has a definite economic role in financial markets. Ease with which the trade can be carried out makes it very attractive to all kinds of investors. However carry traders should not be forgetful that small potential gains are interspersed with large potential losses also. And at the last, carry trade should not be viewed as pure foreign exchange transactions only. Its implications for exchange rate movements and real economy needs to be considered while designing economic policies.

References

Becker, C., & Clifton, K. (2006). Hedge Fund Activity and Carry Trades. *Research on Global Financial Stability: The Use of BIS International Financial Statistics* (pp. 156-175). Basel: Bank for International Settlements Press & Communications.

Brunnermeier, M., Nagel, S., & Pedersen, L. (2009). Carry Trades and Currency Crashes. *Working Paper No. 14473, NBER Macroeconomic Annual 2008* . University of Chicago Press.

Burnside, C., Eichenbaum, M., Kleshchelski, I., & Rebelo, S. (2011). Do Peso Problems Explain the Returns to the Carry Trade? *The Review of Financial Studies , 24* (3), 853-891.

Cavallo, M. (2006). Interest Rates, Carry Trades, and Exchange Rate Movements. *FRBSF Economic Letters* , 1-4.

Clarida, R., Davis, J., & Pedersen, N. (2009). Currency Carry Trade Regimes: Beyond the Fama Regression.

Journal of International Money and Finance , 28 (8), 1375-1389.

Gagnon, J., & Chaboud, A. (2007, July). *What Can the Data Tell Us About Carry Trades in Japanese Yen?* Retrieved March 12, 2012, from www.federalreserve.gov: www.federalreserve.gov/pubs/IFDP/2007/899/ifdp899.pdf

Galati, G., Heath, A., & McGuire, P. (2007). Evidence of Carry Trade Activity. *BIS Quarterly Review , 9* (7), 27-41.

Guillaume Plantin, H. S. (2011, February 9). *Carry Trades, Monetary Policy and Speculative Dynamics.* Retrieved March 12, 2012, from www.ssrn.com: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1758433

Gyntelberg, J., & Remolona, E. (2007). Risk in Carry Trades: A Look at Target Currencies in Asia and the Pacific. *BIS Quarterly Review* , 73-82.

Hattori, M., & Shin, H. S. (2009). Yen Carry Trade and Subprime Crisis. *IMF Staff Papers , 56* (2), 384-409.

Jorda, O., & Taylor, A. (2009, November). *The Carry Trade and Fundamentals: Nothing To Fear But FEER Itself.* Retrieved March 12, 2012, from www.nber.org: http://www.nber.org/papers/w15518

Jurek, J. (2008, August). *Crash-neutral Currency Carry Trades.* Retrieved March 12, 2012, from www.nber.org: www.nber.org/public_html/confer/2008/apf08/jurek.pdf

Jylha, P., Suominen, M., & Lyytinen, J.-P. (2008, November 28). *Arbitrage Capital and Currency Carry Trade Returns.* Retrieved March 12, 2012, from www.ssrn.com: http://papers.ssran.com/sol3/papers.cfm?abstract_id=1107797

Plantin, G., & Shin, H. S. (2007, June). *Carry Trades and Speculative Dynamics.* Retrieved March 12, 2012, from www.nber.org: www.nber.org/public_html/confer/2007/si2007/AP/plantin.pdf

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