Global currency trends through the financial crisis
Zoe Wallis, Financial Markets Department

In this article, we examine trends in the global and NZD foreign exchange (FX) markets over the recent financial crisis period from 2007 to 2010, identifying key changes in the nature of FX trading. These trends are examined using the most recent Bank for International Settlements (BIS) triennial survey as well as other data sources and market intelligence. The survey shows that, overall, the volume of global FX turnover has increased over the last three years. Demand for safe-haven currencies such as the US dollar and Japanese yen have increased through the crisis. The NZD’s share of global turnover has decreased in an environment of increased risk aversion and volatility, and investor interest in trading the NZD has waned. Demand for carry trades, particularly in NZD, has fallen in an environment of increased volatility.

1 Introduction

The recent global financial crisis commencing in 2007 has caused a significant shift in the nature of trading in FX markets. The types of FX-rate instruments traded, the volume of currency market transactions and the types of investors trading have all changed in response to the increased volatility and decreased risk appetite that has been observed over the crisis period.

This paper utilises data from the BIS Triennial FX Turnover survey, which provides comprehensive data on global turnover in the FX market, and the latest survey covers the past three years from April 2007 to April 2010, allowing for pre- and post-crisis comparison. The data is compiled from surveying 1309 individual banks and other dealers, asking questions about turnover in FX and over-the-counter (OTC) derivatives. A total of 53 central banks and monetary authorities collated the data and the results are then reported to the BIS. This survey provides an overarching view of trends in foreign exchange trading over the past three years that is particularly useful for understanding trends in currency trading across this period. The article begins by discussing some of the changing trends seen in global currency markets over the crisis period and the nature of some of the most popular trades. We then turn our attention to the impact of the crisis on trading trends in the NZD market.

The article finds that, while overall global turnover volume has continued to increase through the recent financial crisis, the increase was at a slower pace than that seen over the previous three years from 2004 to 2007. Risk appetite declined over the crisis and volatility in FX markets increased, causing currency traders to prefer relatively more liquid currencies and, overall, take a more cautious approach to trading. Turnover in the NZD as a share of global FX turnover has decreased over the crisis, driven by the decline in risk appetite and lower New Zealand interest rates. This has also seen a paring back in previously popular carry trade positions in the NZD, further reducing trading in the currency.

2 Trends in global foreign exchange markets

The financial crisis began in mid-2007 and then escalated with the collapse of Bear Sterns in May 2008 and Lehman Brothers filing for bankruptcy in September 2008. The recent crisis is commonly viewed as the worst since the Great Depression in the 1930s, and has had a major impact on financial markets. Foreign exchange markets have experienced a period of reduced market liquidity, increased volatility and an increased focus on counterparty risk.

The crisis caused investors to reassess many of the trades that were predicated on a low volatility and low risk environment and were popular over 2004-07. Safe-haven demand for currencies such as the US dollar increased as traders began to take a more cautious approach towards investing. Traders around the world reported a lack of liquidity in FX markets during the height of the crisis and there were often volatile swings in currency rates, which increased the risk of trading even further. Even though the absolute volume of currency transactions has increased and currency markets continued to become more globalised, the crisis has slowed the strong
growth in trading that was seen over 2004-07. There is now the question as to whether markets will return to the same level of risk taking as seen prior to the collapse of Lehman Brothers, or whether we will see a ‘new normal’ where markets settle at a lower level of risk taking compared to pre-crisis.

Markets started to stabilise as confidence began to recover in March 2009. By this stage, central banks had undertaken significant monetary policy easing and provided additional liquidity measures to further support markets and economies.

This period of relative calm continued more or less uninterrupted until financial markets expressed doubts about the sustainability of sovereign debt at the end of 2009 and concern escalated rapidly in early 2010. These doubts led to the European Union and the IMF forming the European Financial Stability Fund (EFSF) as a back-stop for European governments struggling to raise funding and also a separate emergency funding package for Greece. Recently, concerns over European sovereigns have re-emerged, again prompting an increased demand for safe-haven currencies such as the US dollar and Japanese yen.

Moreover, the recovery in the US appeared to stall somewhat during mid-2010 and markets were volatile as participants become nervous about growth prospects. In response to persistently elevated long-term unemployment and the risk of deflation, the Federal Reserve introduced a second round of asset purchases in early November, further easing monetary policy.

Changes in risk sentiment and volatility
During the lead-up to the financial crisis, there was a marked increase in the amount of FX turnover, aided by a period of low volatility and a relatively high appetite for risk. These factors reversed during the recent financial crisis when traders became increasingly risk averse and market volatility spiked higher, particularly at the end of 2008 (see figure 1).

This increase in volatility in the FX market meant that sharp swings in the currency created the potential for both larger gains and losses. Traders tend to pare back the size of their positions during periods of high volatility in order to avoid the sizeable risks on the downside.

Traders also were increasingly constrained by tighter trading limits, due to the technical way risk is monitored at most financial firms. Typically, banks use a measure called ‘Value at Risk’ (VAR), which is assessed using historical data and based on probability of losses over a certain time-frame. As the historical data began to include the crisis period, the increased historical losses heightened the risk associated with most assets. This caused downwards revisions to position limits, further restraining the size of positions and level of risk traders could take. Many investors had to quickly close down positions, which caused greater volatility in markets.

From the end of 2008, traders pared back positions in higher-yielding currencies (yields such as New Zealand and Australia) in a ‘flight-to-safety’. This was in stark contrast to the boom period of 2004-07 when volatility was low and traders were keen to take on additional risk. After many years of prolonged strong risk appetite, the almost simultaneous shift in market positioning exacerbated currency moves and further increased market volatility.

Figure 1
Deutsche Bank FX volatility index

Source: Bloomberg

Counterparty risk and market liquidity
Since the news of Bear Sterns first disclosed sizeable hedge fund losses in mid-2007, traders became somewhat more cautious over the rest of 2007, but over the start of 2008 markets were beginning to return to normal and it was not until the failure of Lehman Brothers that markets experienced a dramatic loss of confidence. Following Lehman Brothers’ bankruptcy, liquidity in financial markets fell substantially. The collapse of Lehman Brothers raised considerable...
concerns about the flow-on effects to other banks and other institutions that may be vulnerable. This increased the perceived counterparty risk, and traders became much more concerned about who was holding their money on the other side of trades. As volatility and counterparty risk increased, the spread between bid and ask quotes widened and market liquidity fell as traders dealt in smaller amounts. Interestingly, the crisis period still saw an increased amount of FX turnover despite smaller trade sizes. Many market participants have attributed this to a ‘hot potato’ effect, where traders were keen to pass on any risk as quickly as possible.

This ‘hot potato’ trading is likely to have been one of the driving factors behind the increase in FX turnover despite the increased risk factors associated with trading over this period. The BIS survey shows the total amount of global currency turnover increased by 20 percent from April 2007 to April 2010, rising to an average daily turnover of US$4.0 trillion (figure 2). However, this increase is well down on the 72 percent increase that was seen between 2004 and 2007.

Figure 2
Daily average global FX turnover (Average daily turnover for April of each reported year)

<table>
<thead>
<tr>
<th>Year</th>
<th>USD billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>1998</td>
<td>1,500</td>
</tr>
<tr>
<td>2001</td>
<td>1,600</td>
</tr>
<tr>
<td>2004</td>
<td>3,000</td>
</tr>
<tr>
<td>2007</td>
<td>3,500</td>
</tr>
<tr>
<td>2010</td>
<td>4,000</td>
</tr>
</tbody>
</table>


Common types of FX transactions
Looking into the types of trades that were conducted over the crisis period, figure 3 shows there was a broad move towards shorter-term currency instruments. Shorter-term instruments typically have a lower level of associated counterparty risk and the likelihood of your counterparty collapsing is reduced the shorter the trading period. Spot FX transactions involve the simple exchange of one currency in return for another at the prevailing (spot) exchange rate at the time of the transaction. While the spot rate is agreed at the time of the transaction, the transaction will be settled (exchange of funds) in two business days under market conventions, hence they are relatively short term and the amount of counterparty risk is typically small. Spot transactions as a share of trading increased from 30 to 37 percent of the market.

FX rate swaps are one of the most commonly traded instruments and involve two transactions, one at initiation where one currency is purchased at the current spot rate and a second where the initial transaction is reversed at a specified future date at an agreed exchange rate. This trade involves a much greater level of counterparty risk, as payments are made at the end of the contract period (often three months or longer). The trade is based on interest rate differentials in different economies and is commonly used to match cash flows with the delivery of imports or exports, or by traders to take a view on relative interest rate movements.¹

Over 2007 to 2010, the percentage of FX swaps declined from 52 to 44 percent. As the financial crisis started to escalate, spreads in the FX swap market widened out considerably and by more than the moves seen in spot rate spreads.²

In December 2007, the US Federal Reserve, European Central Bank (ECB) and the Swiss National Bank (SNB) agreed to establish reciprocal FX swap lines to provide the ECB and SNB with US dollars. The amounts available via these swap lines were then further extended in March 2008 and in May these lines were increased even further to a total of $50 billion for the ECB and $12 billion for the SNB. Following the collapse of Lehman Brothers in 2008, these swap lines with the ECB and SNB were more than doubled and new swap lines with many of the other major central banks, including the Reserve Bank of New Zealand (RBNZ) were introduced.³

A swap line to the RBNZ was established at the end of October 2008 for an amount of up to US$15 billion. These swap arrangements continued until expiry on 1 February 2009.

¹ See Smyth (2005) and Rosborough (2001) for further discussion of traded FX instruments.
² See also Baba and Packer (2009).
2010, but temporary lines were later re-established with some central banks in response to shortages of US dollar funding in May 2010.

Trading of outright forward FX increased marginally over the past three years, rising from 11 to 13 percent of the share of trading activity. Outright forward FX is typically used if traders want to lock in an exchange rate at a future point in time, rather than conducting the transaction in the spot market at the time. The trade occurs in a very similar manner to a spot trade, but the settlement will occur at a set date in the future at a rate agreed upon today. The trades allow a party to lock in a known forward exchange rate and are often used by exporters to hedge their exposure to moves in the currency. As currencies fluctuated violently, forward rates helped reduced some of the volatility for imports and exporters by giving them known exchange rates for a future date; however the spreads on these instruments also widened out significantly following the collapse of Lehman Brothers.

Less frequently traded are FX options and currency swaps and the percentage share of trading in these instruments has remained relatively unchanged at around 7 percent. FX options give the holder of the contract the right, but not the obligation, to buy or sell a currency at a pre-determined rate. Currency swaps are where two parties exchange streams of interest rate payments in different currencies for a set period of time and also transfer the principal at maturity at an agreed exchange rate.

Figure 3
Percentage share of turnover traded in different FX instruments

Source: Bank of International Settlements Triennial Central Bank Survey 2010

Increase in financial market correlation

Also a striking factor of the recent financial crisis has been the high correlations between movements in a wide range of asset classes. Over the past few years, the general flight-to-safety trend has seen equity, commodity, bond and currency market movements remain highly correlated (figure 4). The movements over the crisis period have been predominantly driven by risk appetite and, when this declined, there was a broad sell-off in risky assets, largely indiscriminate of some of the underlying fundamentals for different assets.

Figure 4
Equity and commodity prices and the US dollar

Source: Bloomberg

Increased trading in safe-haven currencies

The flight-to-safety saw increased trading in currencies that were viewed as safe-havens, such as the US dollar and Japanese yen. Trading in the euro also gained through 2008 and 2009 from demand to use the currency as a safe haven and as investors looked to diversify their portfolios. This changed when European sovereign debt concerns emerged at the end of 2009.
The US dollar has remained the most commonly traded currency by far, although across the past nine years the popularity of the US dollar (USD) has decreased slightly and the euro has increased as its popularity as an intermediary currency increases. Table 1 shows that, over the past three years, 28 percent of all trades occurred in the USD/EUR cross and almost 85 percent of all trades in a USD cross of some form (Table 1). Safe-haven demand and the reversal of carry trades have seen the proportion of trading in the Japanese yen increase. The share of FX transactions conducted in the NZD has fallen, while turnover in the Australian dollar has continued to increase. This may be due to the Australian dollar being used as a proxy trade, allowing investors to bet on the outlook for Asian growth (given close ties between Australian and Asian economic prospects), and also a higher level of interest rates in Australia attracting investors back into the currency as financial markets began to improve in 2009.

### Table 1

Percentage of daily average FX turnover divided by currency

<table>
<thead>
<tr>
<th>Currency</th>
<th>2001</th>
<th>2004</th>
<th>2007</th>
<th>2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>US dollar</td>
<td>89.9</td>
<td>88.0</td>
<td>85.6</td>
<td>84.9</td>
</tr>
<tr>
<td>Euro</td>
<td>37.9</td>
<td>37.4</td>
<td>37.0</td>
<td>39.1</td>
</tr>
<tr>
<td>Pound sterling</td>
<td>13.0</td>
<td>16.5</td>
<td>14.9</td>
<td>12.9</td>
</tr>
<tr>
<td>Japanese yen</td>
<td>23.5</td>
<td>20.8</td>
<td>17.2</td>
<td>19.0</td>
</tr>
<tr>
<td>Canadian dollar</td>
<td>4.5</td>
<td>4.2</td>
<td>4.3</td>
<td>5.3</td>
</tr>
<tr>
<td>Australian dollar</td>
<td>4.3</td>
<td>6.0</td>
<td>6.6</td>
<td>7.6</td>
</tr>
<tr>
<td>New Zealand dollar</td>
<td>0.6</td>
<td>1.1</td>
<td>1.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Other</td>
<td>26.3</td>
<td>26.0</td>
<td>32.4</td>
<td>29.8</td>
</tr>
</tbody>
</table>

Source: Bank of International Settlements Triennial FX Turnover Survey

Decline of the carry trade

The carry trade, (where investors borrow in a low-yielding currency and use the funds to buy assets in a high yielding currency) has diminished in popularity in the environment of increased risk and uncertainty. The volatile moves in currency markets seen over the past three years have significantly reduced the appeal of the carry trade investment strategy, given the heightened risk that sharp currency moves could wipe out any interest rate gains.

Starting in August 2007, there was a large-scale unwinding of carry trade positions as investors reduced the amount of risk on their books. This initial unwind was relatively short-lived, but was later followed by a second round of deleveraging later following Lehman Brothers’ collapse in 2008 (see figure 5, which shows long positions held by Japanese margin traders). Since hedge fund trading is often leveraged, as losses started accumulating during the crisis, funds would be called upon to deliver additional cash to the broker or close out their positions. With cash hard to come by, many hedge funds had to close down large positions, exacerbating the moves in currencies and further heightening the risks of the carry trade. However, these liquidations were relatively small scale compared to those seen following the collapse of Lehman Brothers in September 2008.

### Figure 5

Net long positions held by Japanese margin traders

Source: Tokyo Financial Exchange, RBNZ

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* Because two currencies are involved in each transaction, the sum of the percentage shares for individual currencies sums to 200 percent instead of 100 percent.
Carry trade activity was also scaled back by retail investors during the crisis, as can be seen in the levels of margin trading. Margin trading is a popular form of the carry trade, often undertaken by Japanese investors, where investors put down a ‘margin’ with a currency broker in order to trade a leveraged position in foreign currency.\(^5\) During the past year, the overall level of Japanese margin positions has increased almost back to levels last seen in mid-2008, with the record low levels of interest rates in the US, accompanied by the expectation of rates remaining low for an extended period of time, attracting investors back into carry trade positions. Despite this, the level of margin trading in the NZD has remained very subdued.

3 Trends in NZD FX markets

The 2004-07 period was characterised by an increase in investor risk appetite. This saw increasing investment in the NZD as traders searched for yield and showed a strong preference for higher-yielding currencies. The carry trade was a favoured investment with offshore investors, as well as strong demand for NZD-denominated bonds. Trading in these markets subsequently declined during the crisis as increased volatility and declining New Zealand interest rates reduced the appeal of these trades.

NZD levels

In terms of levels, the NZD depreciated from the start of 2008, falling over 15 percent on a trade weighted index (TWI) basis. The NZD continued to decline until March 2009 when financial markets reached a turning point. The US dollar strengthened as global investors flocked to the safe-haven currency and US investors repatriated their assets back into their home currency. Overall, however, the NZD is at similar levels, both against the US dollar and on a TWI basis, to those seen in April 2007 when the last BIS survey was completed.

**NZD turnover**

Total market turnover in the NZD FX market has declined somewhat from a percentage share of around 1.9 percent of total market volume down to around 1.6 percent (see Figure 6). Overall, the level of trading in the NZD has increased marginally. A slight increase in the amount of spot transactions (see figure 7) has offset declines in the trading of other currency instruments such as forward contracts.

**Figure 6**

Percentage of average daily turnover in NZD

The NZD has historically been a high-yielding currency with comparatively high interest rates compared to other developed economies. In the lead-up to the financial crisis, these high returns attracted offshore investors to deposit funds in New Zealand, increasing demand for the NZD. The carry trade was particularly popular but many of these trades were exited when the crisis hit. There has been little evidence of the carry trade returning to anywhere near the same volumes as before the crisis. This was one of the factors driving the decline in turnover in the NZD.

The broad increased level of volatility in markets since the start of the crisis has also driven a broad demand for safe-haven currencies such as the US dollar and Japanese yen. The NZD has received less attention from traders since the start of the crisis, particularly as other commodity-linked countries, such as Australia, began to raise official policy interest rates, attracting investment into the Australian dollar rather than back into the NZD, where the Official Cash Rate (OCR) remained on hold for a longer period of time.

While the level of interest in trading the NZD as a percentage of global foreign exchange trades has declined, the level of

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spot trading in the NZD has increased steadily since 1998 (see figure 7). The aggregate global turnover data shows that, over the past three years, the amount of spot FX transacted has continued to grow, albeit at a slower pace (figure 9). However, the overall level of derivatives traded in NZD markets has fallen in recent years, possibly related to the reduced interest in carry trades.

The exception to this has been an increase in the turnover of currency swaps, which have risen by around 40 percent. This adds to a sizeable increase of 370 percent between 2004 and 2007. The increase over 2004 to 2007 was probably due to a large-scale increase in offshore issuance of Uridashi, Eurokiwi and Kauri bonds, the proceeds of which would then have been swapped back into the local currency. Recently, issuance of these NZD offshore bonds has been very subdued.

The increase in currency swaps between 2007 and 2010 may be due to an increase in the term of bank funding as banks act to lock in longer-term financing. The cash raised in offshore markets is then likely to have been swapped back into NZDs via currency swaps. There may also be somewhat of a timing issue, as in April when the 2010 measure was taken, local banks were relatively active in trying to raise longer-term funding, more so than they may have been over 2007-2009.

The currency swap market is a very small percentage of total trading in NZDs (less than 1 percent) however. The majority of NZD trading is conducted in the FX swaps market, which involves swapping the principal amount of the trade at both the initiation and conclusion of the trade. The volume of NZD FX swaps declined by around 5 percent between 2007 and 2010 as the attractiveness of NZD trades based on interest rate differentials diminished, with interest rates in other developed economies rising above those offered in New Zealand. The preference for banks to issue longer-term funding has also seen a switch in turnover from rolling over a large volume of short-term FX swaps, moving into the currency swap market instead.

**Figure 7**

Turnover of spot transactions in NZD and turnover of currency swap market in NZD

![Graph showing turnover of spot transactions in NZD and turnover of currency swap market in NZD](source)

NZD carry trading remains subdued

Positions in NZD/JPY started to be unwound in August 2008 and the NZD/JPY exchange rate declined over 40 percent to February 2009. Interest in the NZD as a margin trade instrument appears to have substantially dissipated; a factor that is likely adding to a lack of liquidity in the NZD market.

**Figure 8**

Net long NZD positions held by Japanese margin traders

![Graph showing net long NZD positions held by Japanese margin traders](source)
Historically, New Zealand has had relatively elevated levels of interest rates even compared to other high-yielding countries such as Australia (figure 7). This attracted considerable inflows of capital in the lead-up to the financial crisis and made the carry trade very attractive. Since early 2008, New Zealand interest rates have fallen below those in Australia, a phenomenon not seen since the end of 1995. Since 2000, the interest rate spread between New Zealand and the US has also widened, reaching a peak of almost 500 basis points prior to the start of the crisis. This widening encouraged investors to buy NZDs and take advantage of the attractive rates of return offered in New Zealand.

Liquidity in the NZD market
During the crisis, liquidity in the New Zealand dollar market became very thin which caused a sharp widening in the quoted bid-offer spreads (see Figure 10), particularly just following the collapse of Lehman Brothers bank. While the bid-offer spread has narrowed again, the spread remains slightly elevated compared to post-crisis levels and the New Zealand dollar spread remains above those in other major currencies. In an environment of increased volatility, this may remain a disincentive for some investors trading NZD. The spread on the Australian dollar has historically always been below that of the NZD, illustrating the greater relative liquidity of the Australian dollar market.

With interest rates in Australia and other commodity-linked currencies, such as the Brazilian real, now relatively more attractive compared to interest rates in New Zealand, the carry trades that are still being undertaken have tended to focus on these economies rather than in New Zealand. This may have contributed to the decrease in FX turnover in the NZD market, with the percentage share of NZD trades falling to 1.6 percent in 2010 from 1.9 percent in 2007.


4 Summary and conclusions
During the recent financial crisis, an increase in volatility and risk aversion in financial markets has prompted changes in the nature of foreign exchange market trading over the past three years. Overall, daily FX turnover has continued to increase, albeit at a slower rate than seen in previous years. During the crisis, risk appetite waned and increased volatility has seen large positions scaled back with increased demand for relatively more liquid safe-haven currencies.

While the US dollar remains the most commonly traded currency, its popularity has declined in favour of the euro and Japanese yen, particularly as these markets have become more liquid and international markets have diversified. While the US dollar remains the standard transactional and intermediary currency, the euro and Japanese yen have also become increasingly popular, taking some of the US dollar’s
share of market turnover. The NZD share of total trading turnover has declined over the past three years after rising steadily since 1998.

The popularity of the carry trade has decreased as increased volatility reduced the appeal of this strategy and the NZD has become less of a focus for international traders. It remains to be seen whether, as markets gradually return to an environment of lower volatility and increased risk appetite, the popularity of the NZD will return to pre-crisis levels.

References


Appendix

Currency mnemonics

These are the symbols for national currencies that are routinely used by FX traders:

- AUD Australian dollar
- BRL Brazilian real
- CAD Canadian dollar
- CHF Swiss franc
- CZK Czech koruna
- DKK Danish krone
- EUR Euro
- GBP Great British pound
- HKD Hong Kong dollar
- IDR Indonesian Rupiah
- INR Indian rupee
- JPY Japanese yen
- KRW Korean won
- MXN Mexican peso
- NOK Norwegian krone
- NZD New Zealand dollar
- PLZ Polish zloty
- RUR Russian rouble
- SEK Swedish krone
- SGD Singapore dollar
- THB Thai baht
- TWD Taiwanese dollar
- USD United States dollar
- ZAR South African rand