

***Risk Management and Profit-Loss Analysis of Foreign Currency Risks During
Low-Interest-Rate Periods: A Case Study of NTD/NZD***

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Abstract

In recent years, central banks in many countries have adopted quantitative easing monetary policy which induces lower-interest-rates; Take Taiwan as an example, Currently the interest rates for short-term (one year or shorter) time-deposits range from 0.1%~1%. Yet, foreign banks offer short-term deposits with interest rates between 1%~5% which greatly welcome by investors. The drawback for foreign currency deposits is the greatly fluctuated exchange rates. In the past, foreign exchange hedging related literature used the majority of foreign exchange contracts and foreign exchange options for the hedging strategy of the NT dollar against the US dollar, with less research taking financial returns and exchange risk aversion into account. This study aims to explore how enterprises use their short-term funds to buy New Zealand dollar (NZD) time deposits, considering both the possibility of profits and the avoidance of fluctuated exchange rate risks. This result reveals that buying NZD time deposits fixed with USD index futures is an excellent hedging way for enterprises to use their funds in a more flexible way, considering profits and risk avoidance.

Keywords: Quantitative easing, NZD time deposit, foreign exchange hedging, US dollar index futures

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Introduction

This paper explores to buy a higher interest rate New Zealand dollar (NZD) deposits and USD Index futures as a hedge and to analysis enterprises can use their funds in a more flexible way considering profits and risk avoidance.

Since American subprime crisis on 08 years, Federal Reserve Board has continued to adopt the quantitative easing policy (referred QE) three times of buying assets to stabilize the financial market. The size of assets from 90 billion US dollars only expanded to more than 3 trillion dollars, from September 2008 the collapse of Lehman Brothers to January 23 2013 (Central Bank, Taiwan, 2013) (see Figure 1).

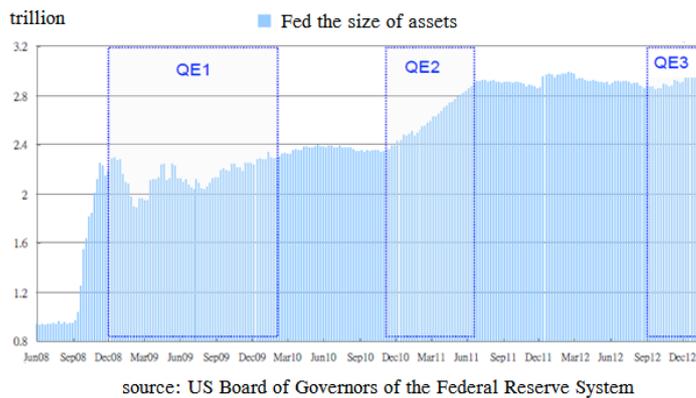


Figure 1: QE policy to expand the size of the Fed assets

Central banks adopt a quantitative easing monetary policy leading to lower interest rates; given Taiwan for example, short-term (one or less) time deposit interest rates for a long time ranges from 0.1% to 1% (see Figure 2).

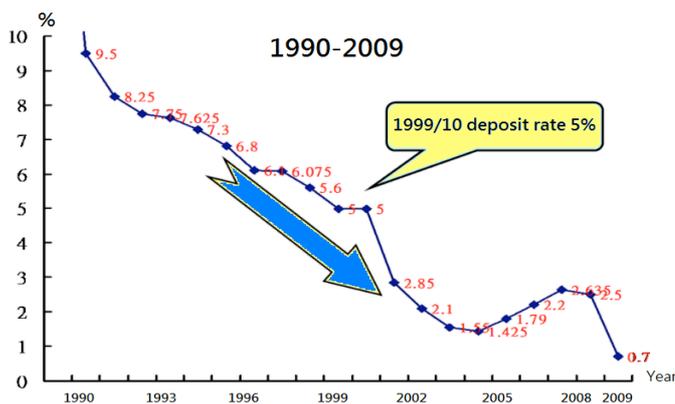


Figure 2: TAIWAN Bank deposit interest rate, Central Bank, Taiwan.

Some foreign banks in Taiwan offer foreign currency short-term deposit rates between 1% and 5%, especially in the NZD and Australian dollar (AUD) interest rates are very popular with investors (see Figure 3).



Figure 3: Foreign exchange deposits interest rates in 2016

USD Index

The USD index includes Euro (EUR) 57.6%, Japanese yen (JPY) 13.6%, Pound sterling (GBP) 11.9%, Canadian dollar (CAD) 9.1%, Swedish krona (SEK) 4.2%, Swiss franc (CHF) 3.6%. This is the formula to calculate USD index (see Figure 4).

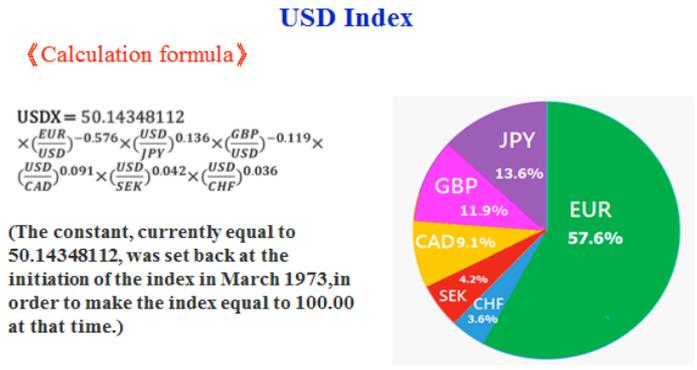


Figure 4: USD Index Calculation formula, wiki.

The US dollar index started in March 1973, soon after the dismantling of the Bretton Woods system. At its start, the value of the US Dollar Index was 100.000. It has since traded as high as 164.7200 in February 1985, and as low as 70.698 on March 16, 2008 (wiki).

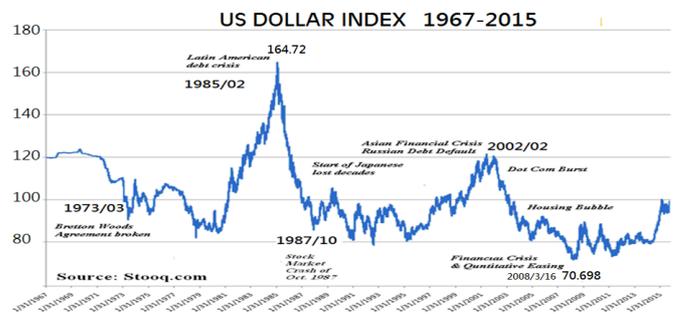


Figure 5: USD Index trend from 1967 to 2015 (wiki).

USD Index futures

The USD index futures are the USD index for the subject matter of the transaction futures, the Exchange for the US New York Board of Trade (NTBOT) (see Table 1).

Table 1: DX contract specifications (CONCORD).

USD Index futures contract specifications and margin

Name of exchange	Product name	Code	Transaction hour (summer/Taipei)	Trading month
NYBOT	USD INDEX (USDIX)	DX	08:00-05:00(Monday) 06:00-05:00	3.6.9.12
Contract specifications	Quotation unit	Mini beating unit The total value of each contract	Original margin	Maintain the margin
USD1,000 *Index	USD1,000 /point	USDX 0.005 USD 5	USD 1,980	USD 1,800

Methods

This study using the traditional 1:1 hedge ("Naïve hedge") and based on the analysis of SPSS correlation, estimates the number of USD index futures contracts and calculates the investment profits and losses of each commodity. We were collected the NZD and US dollar index futures information from 4 January, 2008 to December 31, 2016. The closing price of each commodity for a total of 471 pen (week) to analyze the relevant historical exchange rate (see Table 2).

Table 2: Source and During the Study Period

	USD/NTD	NZD/NTD	USD INDEX FUTURE
Source	http://www.ebc.gov.tw/	CONCORDFUTURES	CONCORDFUTURES
During the study period	2008/1/4-2016/12/31	2008/1/4-2016/12/31	2008/1/4-2016/12/31
Number of samples (week)	471	471	471

Analysis

The biggest risk of holding foreign currency is the exchange rate risk. The NZD is a commodity currency. The so-called commodity currency refers to the country's commodity resources are closely related to the currency. Such as Australia, Canada, New Zealand are rich in coal, iron ore, oil, so when the mineral prices and oil prices rose, the exchange rate will be boosted accordingly. Commodity currencies are generally the first to strengthen in the economic recovery, because the economic recovery means that the demand for goods increased, thus driving the commodity exporting countries economy.

Accordingly we collecting all the necessary data for the study, we used the SPSS analysis methods to analyze the data. The correlation coefficient of NZD for DX is minus 0.337 (see Table 3 & Table 4).

Table 4: NZD & DX Correlation coefficient

Descriptive statistics			
	Average	standard deviation	N.
NZD/NTD	23.04552	1.720164	471
DX	83.8037	7.73813	471

Table 3: NZD & DX Descriptive statistics

Correlation coefficient		
	NZD/NTD	USD INDEX
NZD/NTD	1.0000	-0.337
USD INDEX	-	1.0000

Results and Conclusion

The study is a relatively investment of USD 200,000 to buy NZD time deposit. The interest rate is calculated at 3% of the lower interest rate of the foreign bank. The maximum and minimum average of USD index futures (DX) during the study period was 86.628, using the traditional 1:1 hedge ("Naïve hedge"), and the other buy 6 contract DX as a hedge instrument. The total investment is USD 211,180 (see Figure 6).

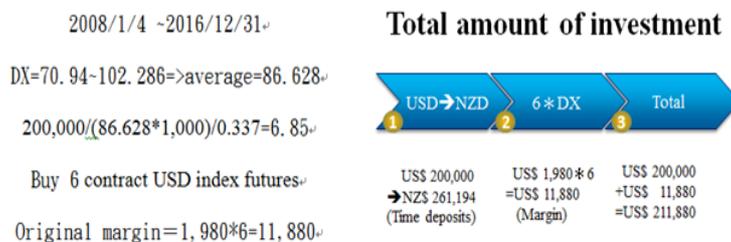


Figure 6: Total amount of investment

Total profit and Rate of return 2008/01~2016/12: The USD Index future profit is US\$158,076 and the rate of return is 74.85%; Interest is US\$51,766 and the rate of return is 24.51%; The NZD loss is US\$ 51,766 and the rate of return is 24.51%; Total profit is US\$191,974 and the rate of return is 90.82% (see Figure 7-9).

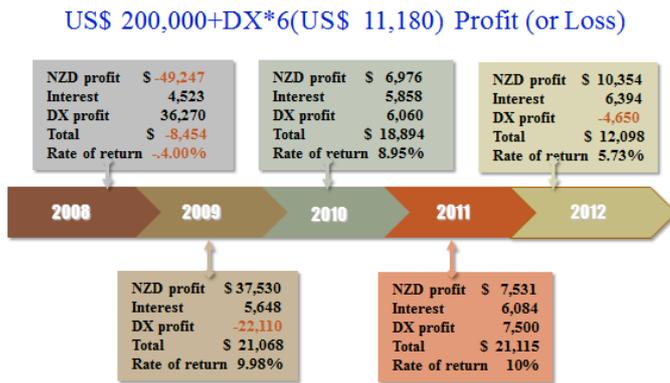


Figure 7: NZD & DX Profit (or Loss) 2008~2012

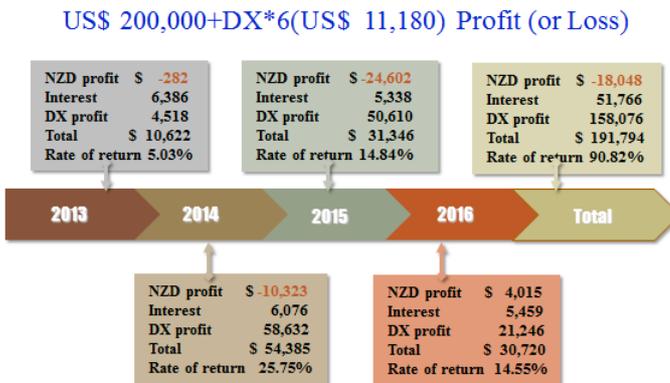


Figure 8: NZD & DX Profit (or Loss) 2013~2016

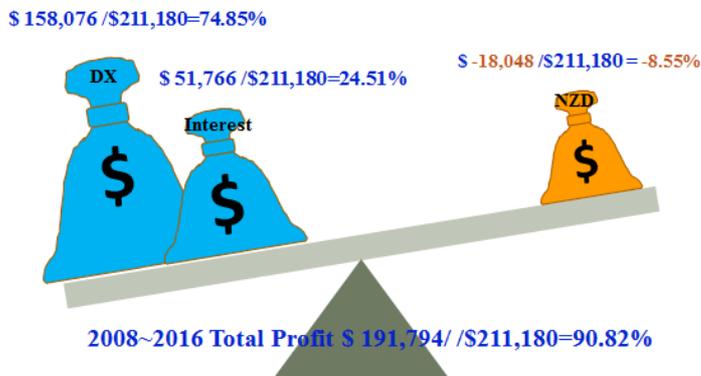


Figure 9: Total Profit

This result reveals that buying NZD time deposits fixed with USD index futures is an excellent hedging decision for enterprises to use their funds in a more flexible way considering profits and risk avoidance.

Suggestions for Future Study

Because our research period is after financial crisis, many central banks have adopted quantitative easing monetary policy leading to long-term low interest rates, the USD index is also in the low-grade areas; therefore, we suggest that the future research

direction can be in different foreign currencies or different periods, with the USD index futures as a research object, observe whether the conclusion is consistent with this study.

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