

# Currency – the impact on returns

- a general discussion

January 2009

The return from an overseas investment is made up of the return from the underlying asset and the change in the currency value i.e. the movement in the exchange rate between NZ and the overseas country.

In this article we look at the recent level of currency movements, the impact on returns, current market practice, currency management options, and the concept of hedging (appendix A). An “economic 101” discussion on currency, is set out in appendix B.

## By way of an example

Suppose you own a US asset worth US\$1,000. If the NZ:US exchange rate is NZ\$1 = US\$0.50 the asset is worth NZ\$2,000.

To make things simple, say the asset will be worth US\$1,050 with certainty, in one year's time (i.e. your current US\$1,000 plus a 5% return). The return in \$NZ terms is unknown because the investor doesn't know what will happen to the exchange rate i.e. how many New Zealand dollars, US\$1,050 will buy in one year's time.

If the exchange rate is unchanged at US\$0.50, US\$1,050 will be worth NZ\$2,100 in one year's time, i.e. a 5% return on the NZ\$2,000 at the start of the year.

However, if the NZ dollar weakens by 10% so that the NZ:US exchange rate becomes NZ\$1 = US\$0.45 (i.e. you now need more NZ dollars to buy one US dollar or one US dollar buys more NZ dollars) the investment in one year's time is worth NZ\$2,333, a 16.7% return.

Alternatively, if the NZ dollar strengthens by 10% so that the NZ:US exchange rate becomes NZ\$1 = US\$0.55 (i.e. you now need fewer NZ dollars to buy one US dollar) the investment in one year's time is worth only NZ\$1,909. Under this scenario the investor has lost NZ\$91, i.e. a negative return of 4.5%, on the original investment.

What starts out therefore, as an investment with a 5% return outlook could end up producing a return ranging from -4.5% (i.e. 9.5% less) to +16.7% (i.e. 11.7% more). This highlights the volatility and short-term risks associated with currency movements. What would otherwise be a positive return might end up negative. Add to this the uncertainty normally associated with the expected return (i.e. the 5%, in the example, is not normally certain) and the short-term risks become higher. Achieving a successful return outcome requires these risks to be “managed”. This is where the concept of “hedging” becomes an important management tool.

## Currency movements

The above example assumed that the currency could move  $\pm 10\%$  in a year. While this may sound a lot, movements of this size have often been the norm – about half the time.

History shows that over long periods of time, currency often adds very little to, or takes very little away, from the average return. In contrast over short periods of time, the impact of currency movements can dominate the return.

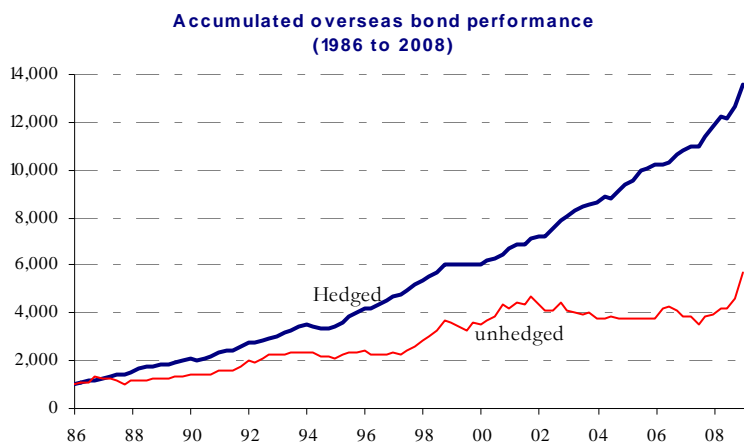
Table 1 – overseas bond performance (NZ\$) (gross)

Returns to 31 December	Hedged overseas bonds	Unhedged overseas bonds	Currency impact if unhedged
2008	15.2%	46.0%	-30.8%
2007	8.9%	1.7%	7.2%
2006	5.5%	2.5%	3.0%
2005	9.1%	-1.2%	10.4%
2004	9.4%	0.3%	9.1%
2003	6.3%	-8.4%	14.7%
2002	12.0%	-5.7%	17.7%
2001	8.2%	4.8%	3.4%
2000	10.3%	19.8%	-9.5%
1999	0.8%	-2.5%	-3.3%
1998	12.4%	26.5%	-14.1%
1997	12.8%	21.9%	9.1%
1996	13.0%	-4.1%	17.1%
1995	21.4%	16.5%	4.9%
1994	-1.8%	-10.6%	8.8%
2004 to 2008	9.6% p.a.	8.6% p.a.	1.0% p.a.
1999 to 2003	7.4% p.a.	1.1% p.a.	6.3% p.a.
1994 to 1998	11.3% p.a.	9.0% p.a.	2.3% p.a.
1994 to 2008	9.4% p.a.	6.2% p.a.	3.2% p.a.
1986 to 2008	12.0% p.a.	7.9% p.a.	4.1% p.a.

Using overseas bond investments as an example (refer table 1), recent experience has been:

- the returns have benefited by being exposed (i.e. unhedged) to currency movements in 4 years and lost in the other 11 years out of the last 15;
- the impact of the currency movement over the short-term (e.g. one year) has been to reduce or increase the annual return by between +17.7% and -30.8% (refer table 1);
- over the 23 year period, 1 January 1986 to 31 December 2008 (i.e. since the NZ dollar was floated) the annualised gross return was approximately 12.0% p.a. with the currency risk hedged and 7.9% p.a. with it unhedged.

The graph below shows the accumulation of \$1,000 since 1 January 1986. This highlights (selectively) the nature and impact of currency returns on the underlying asset, and the short-term variations of those returns.



### The currency choice

In respect of overseas investments, investors have a choice of whether, or not, they are exposed to the risks of currency movements. When the NZ\$ is going up (i.e. strengthening) relative to other countries the ideal, from a return perspective, is to remove the currency movement i.e. to be “hedged” back to NZ dollars. When the NZ\$ is going down (i.e. weakening) the optimal return comes from being “unhedged” i.e. by also receiving the return from the currency movement.

If we knew with certainty the direction of the NZ\$ we could expose ourselves to the currency movement or protect ourselves from it, as appropriate. However, like all investment decisions it is a risk/return trade off. The decision therefore should be driven primarily by long-term strategic and risk management factors and in some cases, short-term tactical considerations.

### Hedging

If investors want to remove or reduce the impact of changes between NZ and overseas exchange rates, they can “hedge” the overseas currency exposure. This is normally done by taking out a forward currency contract, with another party (e.g. a bank) to sell overseas currency at a future date and buy NZ dollars. It is done at an agreed exchange rate at the time the contract is taken out.

A hedging contract agrees upfront what the exchange rate is at some point in the future, and the level of currency that can be bought or sold at that price. By hedging, investors can decide the level of their currency exposure and the time frame for the protection.

The agreed exchange rate depends on the current exchange rate (known as the “spot” rate) and the difference between New Zealand’s and the overseas country’s short-term interest rates. The workings of a forward currency contract are set out in the appendix.

If a hedging contract is taken out then, no matter what happens to the exchange rate over the period, the forward currency contract removes the impact of currency movements. Of course the consequences of removing the effects of adverse currency movement is that advantageous movements are also removed. For this reason investors must be clear on their objectives for a particular currency policy in terms of the level and amount.

The hedging level can be fixed (e.g. fully hedged, fully unhedged or partially hedged/unhedged) or allowed to vary (e.g. the actual hedging level could be delegated to a currency or investment manager from time to time).

While there is no doubt that at times being hedged pays off in terms of returns, it should be remembered that overall risk is not necessarily being reduced, merely changed: foreign currency risk is removed but exposure to the New Zealand economy is increased and therefore the level of diversification of the overall portfolio is reduced. Diversification reduces because the correlation of hedged overseas assets with New Zealand assets is higher than that of unhedged overseas assets. Diversification is a key requirement of the fiduciary responsibilities of an investor who must comply with the Trustee Act.

**Market practice**

While not universal, the general or default approach of managers (and investors) in NZ tends to be:

Overseas sector	Hedging policy
Bonds:	fully hedged with occasional “tactical” unhedged positions when the manager has a strong view
Shares:	Mixed. Historically unhedged with “tactical” hedged positions, though now a few managers adopt a 50% neutral hedged position or a 100% passive hedged position.

As a rule, investors have tended to adopt the manager’s default position or put in place an automatic passive hedge position (e.g. 0%, 50% or 100%) to be fully exposed, partially exposed or not exposed to the risks associated with currency movements. The practice of an automatic passive hedging level (e.g. 50%) for overseas shares has recently been adopted by a few NZ managers. Moving from a zero position has coincided with increases in overseas share allocations and the greater significance unhedged currency movements have on the overall return.

In several cases a 100% passive hedged position has been adopted. The argument for this is that overtime being hedged gives NZ investors an advantage equal to the interest rate differential within the hedging contracts. To see how this works refer to appendix A.

In recent times a few investors have also put in place a separate active currency overlay policy by appointing a separate specialist currency manager. The specialist currency manager tends to be an offshore based manager or the overseas currency team of a global manager with an NZ presence. Few NZ based managers have significant currency team resources.

**Should you hedge your overseas assets?**

For most investors, the hedging issue should be addressed from a strategic or liability perspective at the time the investment policies are set, and before a manager is appointed. Putting specific liability considerations to one side, a key question is: what is the reason for investing overseas?

How does the risk/return characteristics of the asset (hedged or unhedged) compare with the characteristics of the liabilities. The liabilities are normally a stream of payments or cash flows. Separate decisions should be made for bonds and shares and total position should also be analysed.

## Bonds

The purpose of a bond is to generate a reliable stream of income. Typically, the strategic reasons for investing in overseas bonds are to either:

1. Gain excess returns, relative to NZ bonds, on an opportunistic basis.
2. Gain access to longer durations, that are not available in NZ, to be more consistent with the long-term nature of the liabilities.
3. Gain access to higher yielding corporate bonds.
4. Diversify the risks associated with NZ interest rate movements.
5. Diversify risk away from the New Zealand economy.

From a strategic viewpoint, if reasons 1, 2, 3 and 4 are relevant, the starting position is that of being fully hedged. In these cases the overseas markets are treated as a natural extension of the New Zealand market and the currency risk should only be taken on if there is a further risk/return advantage. Reason 5, should lead investors to be strategically unhedged because the objective is to diversify and reduce the dependence on the New Zealand economy. This diversification decision would however, be made by also looking at the exposure to the total overseas assets and not just bonds.

In practice a combination of reasons 1 to 5 will apply and a partial hedge will be theoretically optimal. However for a typical “balanced” strategy, the economic diversification benefits will be dominated by the exposure to overseas shares and it is therefore not unreasonable to allow reasons 1 to 4 to dominate the bond decision and to be fully hedged.

Also, in most cases the reasons bonds form part of the overall strategy is normally to produce predictable income. On this basis being unhedged would compromise the purpose.

## Shares

The strategic reasons for investing in overseas shares are similar to those for bonds:

1. Participate in industry sectors unavailable in New Zealand.
2. Recognise that the markets are “global” and companies have to be internationally competitive and not only local market competitive.
3. Minimise risk by holding a greater number of shares than is available in NZ.
4. Participate in higher growth economies.
5. Diversify risk away from the New Zealand economy.

Theoretically, reasons 1, 2 and 3 should lead to a starting point of being fully hedged because it treats the other markets as alternative opportunities and as an extension of the New Zealand market. Though in each case there are strong arguments that support being either hedged or unhedged. Reasons 4 and 5 should lead to a starting point of being unhedged. The actual level of the strategic hedge will also be influenced by other considerations.

For example, the “purchasing power parity” argument that shares have a natural inbuilt hedge, is often used to justify unhedged overseas shares, even if the reasons for the investment favour reasons 1 to 3.

## Importance

The above discussion focused on principle without regard for “importance” or practical considerations. An investor whose strategic investment strategy had minimal overseas exposure may be indifferent as to whether it is hedged or unhedged. The impact on total return is negligible.

In contrast for an investor where the overseas allocation was 100% of assets, the currency issues are very important and risk management considerations alone would lead to some form of protection for an NZ investor with some short to medium term NZ dollar liabilities.

Overall, we consider that once the overseas exposure exceeds 30% to 40% of the total assets, prudence and risk management considerations will lead an “average” investor to an element of hedging, unless there was a high level of certainty that the NZ dollar would depreciate short-term.

From a strategic point of view, it is important that investors are clear as to their reasons for investing overseas. Only then can they be sure that the hedging policy is appropriate for the liabilities, and that they don't simply adopt a manager's default position for convenience alone, or base the decision purely on expected return considerations.

## Tactical currency positioning

Up to now the focus has been on the appropriate hedging position from a strategic and general policy perspective. Whether or not the NZ dollar is expected to appreciate or depreciate in the immediate future was ignored.

Separate to the strategic position, investors need to decide what to do in respect of the immediate or short-term outlook. In the same way that investors can adopt tactical asset allocation positions they can adopt tactical currency positions.

Tactical considerations are different to strategic considerations though are only practical for larger investors from a cost benefit perspective.

Short-term tactical positions can be taken for risk management opportunities (normally to increase the hedging level to avoid loss) or for return opportunities, based on a view as to direction of the currency movements over the immediate future.

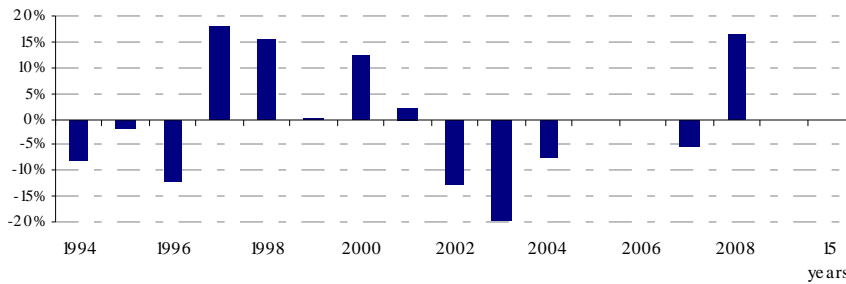
Because of the trending nature of currency and the dynamics of the currency markets, several managers have been successful in forecasting medium term movements and therefore added value from tactical positions.

However, like all active managers, for every one that does, one does not. If tactical management is to be employed, for return enhancement reasons, we believe that a specialist currency manager is the more robust route.

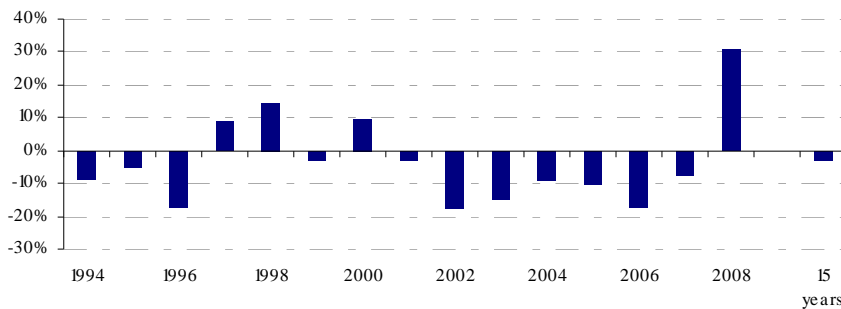
### Historical performance

Details of the performance differential of overseas shares and bonds from being hedged and not unhedged is shown in the graphs below. The performance differential of a portfolio that is 50% hedged and 50% unhedged would be equal to half the differential shown and therefore would remove the extremes associated with being fully hedged or fully unhedged.

**Overseas shares unhedged return minus hedged return  
1994 to 2008**



**Overseas bonds unhedged return minus hedged return  
1994 to 2008**



## Appendix A - How currency hedging works

A hedging contract agrees upfront the exchange rate that will apply at an agreed future date. It also agrees the amount of currency that can be bought or sold at that price. A hedging contract has the objective of removing, for an investor, the uncertainty associated with currency movement from the return outcome.

The price or cost of a hedging contract, ignoring transaction costs, depends on the current exchange rate and the current interest rates in NZ and the overseas country. The following example illustrates the operation of currency hedging.

### A simple example

Returning to the earlier example, let us assume that the investor is happy with the prospect of a 5% return, and therefore wants to hedge against the risk that the NZ currency strengthens i.e. appreciates. The investor wants with certainty NZ\$2,100 in one year's time. Let us also assume that the one-year interest rates in both the US and NZ are currently 4%.

Accordingly, to ensure that in one year's time the NZ investor has NZ\$2,100, the investor could borrow US\$1,010 in the US today (at 4%) and convert it into NZ dollars at the current exchange rate (NZ\$1.00 = US\$0.50) to give NZ\$2,020. If the investor then invests the money in a NZ one year bank deposit, at 4%, the bank deposit will grow to NZ\$2,100 i.e. NZ\$2,020 plus 4% over the year. This is the return required.

Also, in one year's time the debt in respect of the US borrowings of US\$1,010 would have grown to US\$1,050 (i.e. US\$1,010 plus 4% interest) and be due for repayment at that time. This is not a problem as the investor can now sell the US investment, which is also worth US\$1,050, and repay the loan.

The above process achieves the investor's goals and demonstrates the principles behind how an investor removes the currency risk by hedging. It highlights that a hedging contract can be considered to be a combination of the current exchange rate, which is known, and the costs of short-term borrowing/investing in both countries which are also known.

It also shows that, provided you own the overseas investment, the "risks" of buying a hedging contract, and not being able to honour your side of the hedging contract, are small.

The real world is more complicated than the simple example given above, as interest rates are not the same and the future value of the overseas investment is unknown. There is also the risk that the other party (e.g. a bank) defaults on its obligations.

### Differing interest rates

What happens if interest rates are higher in NZ (e.g. 6 %) than in the US (e.g. 4%) as is normally the case.

In this case the NZ\$2,020 borrowed grows to NZ\$2,141 and the investor gets not only his 5% return but a further NZ\$41 (2%). This occurs irrespective of what happens to the actual currency rate over the year.

The total return the New Zealand investor receives therefore, is the US return, i.e. 5%, plus the difference between the NZ and US interest rates, i.e.  $6\% - 4\% = 2\%$  giving a total return of 7%.

While New Zealand interest rates remain higher than those of other countries, hedging will add a premium (greater than the cost) and, unless the NZ\$ weakens, this premium will enhance the return otherwise available from unhedged assets. This is one reason why overseas bond investments are normally hedged and many long term investors adopt a 100% hedging position for shares.

The reverse also applies where interest rates in NZ are lower than overseas. In this case the bank deposit would not grow to the required NZ\$2,100 and the investor would have to pay the difference for hedging the currency risk. In this case hedging has a “cost”.

### Unknown future values

The overseas assets held, are usually bonds or shares and the proceeds from, or value of, these assets is not known in advance, in terms of timing and amount (unless bonds are held to maturity). Accordingly, full hedging is not possible as you do not know exactly how much forward currency to buy. There are therefore risks and hence potential costs of buying too much or too little.

For this reason, managers tend to use short-term contracts (e.g. 1 or 3 month forward currency contracts) and roll them over at the end of each period. This enables them to adjust the level of cover up or down depending on how much currency protection is required.

### Hedging contracts in reality

The simplified example assumed that the exchange rates for converting overseas currency was the current (or spot) rate and the additional return arose from the different interest rates.

In reality, the exchange rate specified in the forward currency contract (the "forward rate") reflects the spot rate adjusted for the interest rate differential. In practice it is determined by the formula (ignoring buy/sell spreads):

$$\text{Forward rate} = \text{Spot rate} \times e^{[\text{interest rate differential}]}$$

where ‘e’ is the base of the natural logarithm.

### Example

If the current NZ:US exchange rate was NZ\$1.00 = US\$0.50 the forward rates at different US interest rates are:

US interest rate = NZ rate	Forward rate
+2%	0.510
+1%	0.505
0%	0.500
-1%	0.495
-2%	0.490

As can be seen, if US rates are lower than NZ rates (e.g. -2%) then in one year’s time, US dollars will be able to be converted to NZ dollars at 0.49 not 0.50 enhancing the return otherwise payable irrespective of what happens to the NZ:US exchange rate in the meantime. If the exchange rate doesn’t fall below 0.49 this would be the right decision.

In terms of the formula, the main thing to note is that if, as is currently the case, New Zealand interest rates are higher than US rates, the forward rate (i.e. the cost of buying US dollars) is lower than the spot rate. This can also be interpreted that the New Zealand dollar is expected to weaken against the US dollar unless it is fully explained by New Zealand's risk premium.

In addition to the buy/sell spread, the investor will also pay a transaction charge for entering into the contract. These charges are similar to the costs of a normal foreign currency transactions of banks. In addition there may be increased investment management charges.

## Costs

*The costs associated with a currency management policy, assuming that the alternative is to be unhedged and exposed to the risks of currency movement, include:*

**Management fee:** typically a management fee of 1 to 5 basis points (i.e. 0.01% to 0.05%) is payable to the manager for implementing the hedge if passive currency management is used and 10 to 25 basis points if a specialist active currency overlay approach is adopted.

**Transaction costs:** bank costs associated with an overseas currency transaction together with the market buy/sell spread are incurred. Currently buy/sell spreads between NZ and overseas markets vary between 5 and 15 basis points depending on the country and term of the currency contract.

The above actual costs are offset by the impact of the interest rate differential. In the current environment, this would provide an additional return in excess of the management fee and transaction costs.

Also associated with hedging is the opportunity cost of being hedged or unhedged. If you are hedged and the NZ dollar weakens the loss of the potential return is an opportunity cost. Likewise if you are unhedged and the NZ dollar strengthens there is the loss associated with not being protected against currency movements.

### Technical terms

#### Exchange rate

The price of one country's currency in terms of another country's currency.

#### Forward rate

The exchange rate that the two parties, to a forward currency contract, agree will apply at the end of the contract period.

#### Spot rate

The current exchange rate between two countries normally for settlement in 2 business days.

#### Interest rate differential

The difference between interest rates in one country and interest rates of an equivalent security in another.

#### Interest rate parity (IRP)

Differences between interest rates between countries should result in investors moving capital to where they can get the best rate. Currencies should adjust to make the total return the same.

**Power purchasing parity (PPP)** The theory behind PPP states that if a product is freely available and traded in different countries, it should sell for the same price in those countries. If it currently does not, either inflation or currency movements should occur so that the prices become the same. The exceptions will relate to local factors such as tax and transportation costs.

## Appendix B - Exchange rate theory, economics 101

To understand what might happen to the exchange rate in the future, it helps to have an appreciation of the economic drivers of exchange rates. The key economic factors that influence the price of a NZ dollar include:

- Interest rate differentials
- Price differentials
- Growth differential
- Trade flows.

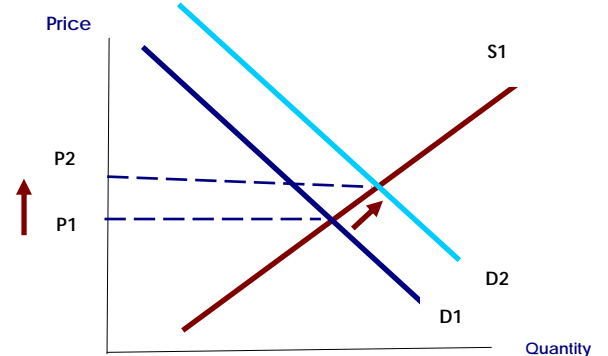
In addition there will always be an element of speculation or sentiment, resulting from the human dynamics of the markets.

### Supply and demand

Under the New Zealand floating exchange rate policy, the exchange rate on a given day is the outcome resulting from the demand-for and supply-of NZ dollars. Each of the economic factors is therefore looked at below in the context of their impact on supply and demand.

In simple terms:

- An increase in the demand for NZ dollars (i.e. more people want to buy NZ dollars) leads to the NZ dollar strengthening (i.e. going up or appreciating) and vice versa.
- A decrease in the supply of the NZ dollars (i.e. less people want to sell NZ dollars) also leads to the NZ dollar strengthening (and vice versa).

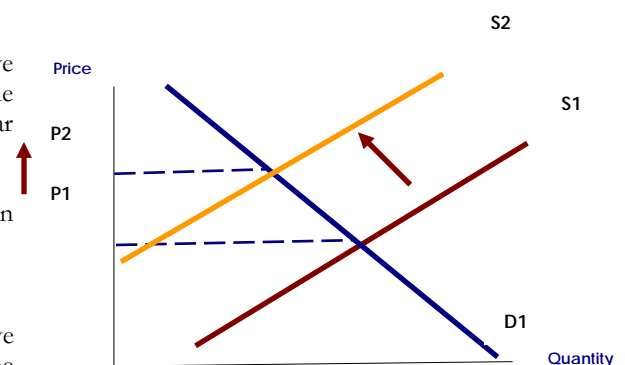


Graphically these are illustrated by traditional supply/demand graphs.

#### The demand for NZ dollars

As demand for the NZ dollar increases, i.e. the demand curve moves from D1 to D2, and the supply stays the same (i.e. S1), the Price of a NZ dollar moves from P1 to P2 i.e. the NZ dollar increases or appreciates.

We therefore need to think about what might lead to a change in the demand.



#### The supply of the NZ dollars

As the supply of the NZ dollar decreases, i.e. the supply curve moves from S1 to S2, and the demand stays the same (i.e. D1), the Price of a NZ dollar moves from P1 to P2 i.e. the NZ dollar increases or appreciates.

We therefore need to think about what might lead to a change in the number of NZ dollars available to be bought.

## Economic factors

### Interest rate differentials

As a general rule, a country with high interest rates, like New Zealand, will attract foreign investors. If the interest rates rise this will increase the demand for NZ dollars and we would expect economic forces to lead to a strengthening NZ dollar.

At the same time, as overseas investors want to invest more in New Zealand, local NZ investors are less willing to sell NZ dollars and invest in lower interest rate countries. This will therefore thereby decrease the supply of NZ dollars and we would expect the NZ dollar to strengthen.

Therefore, all else being equal, when interest rates go higher, the exchange rate should rise short term, as both the supply and demand forces work together.

However, “Interest Rate Parity” theory suggests that investors will respond and, with the free movement of capital around, the world the increased return from higher interest rates will eventually be eliminated through subsequent exchange rate movements.

Whilst the movement of capital is generally free and quick, with today’s technology and financial markets, Interest Rate Parity does not strictly hold in the short term, as interest rate differentials are not the only factor that influences the exchange rate. Interest Rate Parity therefore, is more applicable long term.

### Price differentials

As a general rule a country with lower prices (say New Zealand) will attract foreigner traders to buy goods in their “cheaper countries” and then re-sell them in more expensive countries. This increases the demand for NZ dollars and the NZ dollar should strengthen.

At the same time, local NZ traders are less willing to import goods from the more expensive foreign economies as they are less competitive. This decreases the supply of NZ dollars available to the foreign traders and therefore the NZ dollar strengthens. Therefore, all else being equal, when inflation is lower in one country and prices are staying relatively lower, the exchange rate should rise (strengthen).

However, “Purchasing Price Parity” theory suggests that traders will respond to the relative price environment and the increased profit will eventually be eliminated by exchange rate losses. For this to hold true, there must be “free” movement of goods.

Unlike the movement of capital, goods and services tend not to move freely across countries. Reasons for this include different taxes, tariffs, quotas, transportation costs and the price of non tradable inputs, e.g. labour costs, which can vary significantly between countries. Purchasing Price Parity does not therefore strictly hold in the short term. However, over a longer-term period, empirical evidence does support Purchasing Price Parity.

Overall, given the dominance capital movements have over the physical movements of goods and services, shorter term movements in the exchange rate tend to be more correlated with interest rate differentials as opposed to price differentials.

### Growth differential

As a general rule, a country with higher growth rates will attract foreign investors as they expect the return on shares, bonds, cash etc to be higher, thereby increasing the demand for the currency of the country (i.e. the currency appreciates). So when the NZ has higher economic growth, we expect higher share returns and a strengthening NZ dollar. This is similar to interest rate differentials but focuses more on the longer term return.

At the same time as overseas investors want to buy NZ dollar because of the better growth prospects, local NZ investors are less willing to invest in lower growth countries, thereby decreasing the supply of NZ dollars (NZ dollar appreciates).

**Trade flows**

As a general rule, a country with high exports requires the payments for the goods and services by foreigners in their local currency (e.g. NZ dollars). If NZ creates an environment where exports rise it will increase the demand for NZ dollars (NZ dollar appreciates).

**Combined consideration**

At the same time if NZ has low imports, it needs less NZ dollars to buy foreign currency to pay for its imports. This decreases the supply of NZ dollars (NZ dollar appreciates).

Overall from an economic point of view, higher interest rates, low inflation, and high growth and strong exports leads to a strengthening NZ dollar. The opposite of each of those factors leads to a weakening NZ dollar. When the economic factors are mixed e.g. high interest rates but high inflation or low growth, the direction of the exchange rate movement will be less predictable.

**Speculation/sentiment**

Whilst long-term exchange rates should be based on the economic fundamentals and reflect the relative position of New Zealand in the different cycles, human behaviour will also play a role, particularly short term. Speculation and sentiment will affect the daily exchange rate and may cause substantial deviations from what might be expected economically.

We should also remember:

- NZ is a small economy. We are therefore generally considered to be a “price taker”, i.e. the global market determines our exchange rate. Therefore the economic analysis may be dominated by global decisions (e.g. political or speculation).
- the NZ Reserve Bank has signaled that it is interested in having the capacity to intervene in the foreign exchange market to influence the level of the exchange rate. The intention, application and effectiveness of this proposed policy has not yet become evident.

**Overall**

Being able to calculate/predict with accurate foresight the magnitude of each of the above factors is virtually impossible, this supports the fact that currency movements are random, and that the a currency strategy should be based on “principles” instead of trying to “game” the market unless there is a higher level of due diligence and governance applied.

It is the combined effect of all of the economic and human factors, that results in money flow and it is the money flow which determines the exchange rate at any point in time.

The law of “**demand**” - if all other factors are equal, the higher the price of a good/service the less quantity people will demand.

The law of “**supply**” - if all other factors are equal, the higher the price of a good/service, the higher quantity people will look to supply. However, unlike the demand relationship, the supply relationship is a factor of time. Time is important as suppliers cannot always react quickly to a change in the demand or price.

**Equilibrium.** When supply and demand are equal, the allocation of goods services is at its most efficient as the goods being supplied equal the goods being demanded and everyone is “satisfied” with current economic conditions. In practice this is a theoretical position and the supply and demand will be constantly fluctuating.