Foreign Exchange Risk Exposure

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1. Introduction

Exposure to foreign currency risk implies that a firm's value can be affected by foreign exchange rate (FX) movements. This is precisely why it is important to understand and manage such risk. Exchange rate movements can affect the value of a firm because they may impact on future cash flows. An FX rate is simply the price of one currency in terms of another. Therefore, changing FX rates can change the effective price that a firm pays/receives for goods and services and this is why the FX rate impacts on future cash flow expectations and hence value. Also variability in FX rates can influence the value of a firm by impacting on its risk.

Let us take the types of firm that are affected by changes in the FX rate of the Euro say relative to sterling. The Brexit issue has weakened the value of sterling relative to the euro[1]. To acquire one euro one must pay more sterling. Irish banks quote FX rates in terms of how much foreign currency (sterling) one euro will buy (the price of one euro in sterling), £/€. Whereas previously roughly 76 pence sterling bought a euro (0.76/1), it now costs about 85 pence to buy a euro (.85/1). This is the way Irish and UK banks quote currencies. They use an indirect quote: they quote their own currency in terms of much foreign currency one £1 or €1 will buy. The FX rate in terms of £/€ has risen since it costs more sterling to buy one euro: sterling has devalued relative to the euro. We could just as easily have stated that the €/£ has gone from €1.316 to €1.177 (a pound costs less in euro) which from the euro perspective is a direct quote from the sterling perspective it is an indirect quote.

It is clear that this type of depreciation in the value of Sterling has made things difficult for Irish exporters and UK importers. From an Irish exporter's perspective goods that they were selling to the UK have got more expensive. The change in the FX rate has affected the price competitiveness of Irish exporters: it has made them less competitive relative to producers in the sterling area.

Section 2 of this article details why FX rates matter and outlines some of the types of company affected. The third section explains why exchange rates fluctuate. Section four outlines how fluctuations in contractual cash flows can be hedged. Section five explains how long-term economic exposure can be mitigated.

[1] A euro bought 76.33 pence on 23rd June 2016: the day of the referendum. It buys 85.27 pence as this article is being written having reached 90.46 in the meantime.

2. Many Firms are affected by FX rate changes

There are other types of Irish companies that are also affected by the 12% or so devaluation in sterling relative to the Euro. A list of some of these companies is outlined in Table 1 below.

Table 1	
Irish companies who only sell in Ireland or France and have UK competitors.	These companies can now be undercut in terms of price by UK exporters.
Irish companies who have an Irish competitor but that competitor buys some of its inputs from the UK.	The first Irish company is now less competitive relative to the second Irish company.
Irish companies who have Irish suppliers who in turn import their raw material from the UK	These Irish companies should be advantaged by the depreciation in sterling.
Irish companies with operations in the UK.	The profits of the UK operations are not worth as much in euro terms as formerly.
Irish companies who import goods or raw materials from the UK.	These companies are now better off since the prices for their inputs are lower in euro terms.
Irish companies who have borrowed in sterling but have no sterling inflows.	These companies are better off since they must pay back less in euro.
An Irish company which only trades in Ireland but has a competitor who imports from the UK.	This company will be disadvantaged by the depreciation of sterling.

It is clear from the above table that the value of companies, even those who do not trade internationally, can vary because of changes in the FX rate. In addition, companies which operate exclusively in the non-traded sector can increase in value following an appreciation of the home currency. Fundamentally what is happening here is that changes in the FX rate induce changes the relative prices of goods in different countries (currencies) and alter the price competitiveness of firms operating in those countries (currencies).

For ease of understanding and appropriate management it is best to label exposure to Foreign Exchange (FX) rates as:

- Operating
- Transaction
- Translation

The first two types of exposure can be classified as **Economic** exposure. This can be described as the risk to the present value of future cash flows from the business that arises from currency fluctuations. The distinction between operating and transaction exposure lies in the types of future cash flows affected by each. The affect of foreign currency fluctuations on non-contractual cash flows gives rise to operating exposure. While those that impact on contractual cash flows give rise to transaction exposure. An example of operating exposures is where all UK importers have been suffering from the weakness of sterling. They are suffering increased prices (in sterling terms).

An example of transaction exposure is where an Irish company sells goods to the UK (with 3 month's credit) for £100k when the FX rate is 0.83. The Irish exporter expects to receive €120,482 because when it does the deal the £/€ spot rate is 0.83. However, when the customer pays the £100,000 sterling, 3 months later, the FX rate is 0.89. Thus, the Irish exporter receives only €112,360. Since the present value of future cash flows (Market Value of the firm) can be influenced by both the cash flows themselves and the discount rate (cost capital) any affect that FX rate movements have on the latter will also influence market value.

Translation exposure, is the risk that assets denominated in foreign currency will change in value in the accounts of a company. This can be important also since the value of assets denominated in a foreign currency can fluctuate. However, it is often seen the accountants attempt to measure the impact of changes in the FX rate on the balance sheet of firms. Firms need to manage the effect of FX rates movements on their value on a more timely basis than this. In terms of importance, exposure to FX rates operating exposure is by far the most important; transactions exposure is generally the second most important and translation exposure the least important.

3. Some reasons why FX rates change

Two of the driving forces behind changes in FX rates between two currencies are:

- Changes in relative prices (relative inflation rates) in each country (currency area)
- Changes in relative interest rates in the countries in question.

Let us explain some notation first

- (1+i) is one plus the rate of inflation
- (1+r) is one plus the nominal rate of interest
- US$/£$_0$ is the US dollar to pound spot rate: the amount of dollars per pound for immediate exchange
- US$/£$_1$ is the expected spot rate: the expected amount of dollars per pound in one year's time
- US$/£$_f$ is the US dollar to pound forward rate: the amount of dollars that you can agree on now to exchange for one pound in one year's time.

The theory of purchasing power parity (PPP) is based on the idea that a basket of goods should cost the same regardless of the currency in which it is sold. (The law of one price). This is absolute PPP: relative PPP is that changes in the rate of inflation in one country are balanced out by changes in the FX rate so that the change in the relative prices of goods in each country is unchanged.

We start with absolute PPP

Price of a basket of goods in UK sterling	×	**US$/£ exchange rate**	=	**Price of a basket of goods in USA in dollars**

Consider a basket of goods that costs £10,000 in the UK and $15,000 in the US. Let us suppose that sterling and the US dollar are at PPP equilibrium at the start of the year with the dollar sterling rate at US$1.50/£. The basket of goods costs exactly the same amount in the US and in the UK. If, over the year, the inflation rate in the UK is 15 per cent. The same basket costs £11,500 at the end of the year. That is £10.000 X 1.15 = £11,500.

If US prices rise by 3 per cent the US domestic cost of a basket will be US$15,450 ($15,000 X 1.03).

A UK consumer is faced with a choice of either buying £11,500 of UK produced goods or exchanging £11,500 into dollars and buying US goods. UK consumers will note that £11,500 will buy US$17,250 at US$1.50/£, more than one basket. Therefore, UK consumers will wish to buy the goods in the US. In order to buy in the US they will have to buy $ and sell sterling. Since people will wish to buy the $ and sell the £ the exchange rate will change. Sterling will depreciate and the $ will appreciate until it is no longer profitable to buy the goods in the US rather than in the UK.

The FX rate will change until:

$$\frac{1 + i_{US}}{1 + i_{UK}} = \frac{US\$/£_1}{US\$/£_0}$$

here:

i_{US} = US inflation rate;
i_{UK} = UK inflation rate;

The remaining notation is as outlined above. So in our example sterling will depreciate against the dollar because UK inflation is higher than US inflation sterling. The high inflation makes goods expensive in the UK so people want to buy them in the US and must trade pounds for dollars to do this. This drives down the price of sterling in terms of dollars.

$1.03/1.15 = US\$/£_1/US\$/£_0$
$1.03/1.15 = US\$/£_1/1.50$
$US\$/£_1 = (1.03/1.15)*1.50 = 1.3435$

We have computed that sterling only buys $1.3435 at the end of the year while it bought $1.50 at the beginning.

Thus pure PPP concludes that the country with the higher inflation rate will be subject to a depreciation of its currency, and the extent of that depreciation is proportional to the relative difference in the two countries' inflation rates. The PPP theory has some problems when applied in practice. First, it only applies to goods freely traded internationally at no cost of trade or tariffs. It works in the long run, but that may be

years away. The exact same goods are not bought in each country: Americans buy different baskets of goods than Europeans. Also each good will have its own inflation rate which is likely to be different from the inflation rate of the countries in question: PPP only works on an aggregate economy level. For the above reasons PPP is felt to hold only at an aggregate level at best and not at the level of individual companies.

A second and related reason for exchange rates to change is differences in the interest rate in currencies (countries). This is called interest rate parity.

The interest rate parity (IRP) theory holds true when the difference between spot and forward exchange rates is equal to the differential between interest rates available in the two currencies.

We will employ a simple example to illustrate. One-year US government bonds offer 6 per cent interest. Suppose a US investor is attracted by the 8 per cent interest rate being offered on one-year UK government bonds. The IRP theory says that this investor will not achieve an extra return by investing abroad rather than at home because the one-year forward rate of exchange will reflect a depreciation of the £ to the $ in the forward market.

- A US investor can invest say $1m in one-year US bonds at 6% and in equivalent UK bonds at 8%[2].
- The spot and one-year forward £/$ rates are .8 and 0.81respectively. (The equivalent $/£ rates are 1.25 and 1.2346 respectively)

The US investor could either

- invest directly in US bonds at 6% or
- convert the $1m to £s and invest his £0.8M at 8% which will give £0.8*1.08 = £0.864 and sell the £0.864M forward at 0.81.

The first option yields $1.06m
The second or alternative option yields £0.864/.81 = $1.0667m

Obviously since the second option of investing in UK bonds and selling sterling forward is more attractive every US investor will wish to invest in the UK and sell pounds forward. The pound will appreciate in the spot market and depreciate in the forward market. The £/$ spot rate, $£/\$_0$, will increase relative to the £/$ forward rate, $£/\$_f$,. The pound will depreciate in the forward market until the interest rate and foreign currency markets are in equilibrium.

For the markets to be in equilibrium the following equation must hold

$$\frac{£/\$_f}{£/\$_0} = \frac{1 + r_{uk}}{1 + r_{us}} \; so \; \frac{0.8151}{0.8} = \frac{1.08}{1.06}$$

We could state this as a pound buys 1.25 dollars in the spot market but depreciates so that a pound only buys $1.2268 in the forward market.[3] Thus the pound will tend to

[2] This is a different situation than that used to illustrate PPP but UK inflation is still greater than US inflation here though not by as much as in the previous example. However, we will use this example from this point onwards.

[3]

depreciate in the future relative to the dollar: it costs more pounds to buy a dollar in the future or one dollar buys more pounds in the future.

So we could just as easily write this equation as

$\frac{\$/£_f}{\$/£_0} = \frac{1+r_{us}}{1+r_{uk}}$

$$\frac{\$/£_f}{\$/£_0} = \frac{1+r_{us}}{1+r_{uk}} \; so \; \frac{1.2269}{1.25} = \frac{1.06}{1.08}$$

The important point to remember is that inflation rates and relative interest rates in different currency areas are major determinants of how currencies will appreciate or depreciate relative to one another. Countries which have high inflation and high interest rates will find that their currency will depreciate in the future relative to the currencies of countries with low inflation or interest rates. If relative PPP holds the depreciation of the currency compensates exactly for the relatively high inflation rate in the country.

A third factor in understanding currency fluctuations is the relation between forward rates and expected spot rates. Forward rates are rates that you can trade at now for delivery at some future date. Future spot rates are the rates that you can trade at some point in the future for immediate delivery at that future date. Both these rates are related. The expectations theory states that the current forward exchange $\$/£_F$rate is an unbiased predictor of the spot rate at that point in the future $E(\$/£_1)$. The theory does not say that the forward rate predicts precisely what spot rates will be in the future. (About half the time it underestimates the future spot rate and half of the time it overestimates it.) For the more widely traded currencies it generally works well. This knowledge may be useful to a corporate manager or treasurer.

Finally, the international Fisher Effect claims that the differences in nominal rates of interest across countries is exclusively caused by differences in inflation. The real rate of interest is the same throughout the world.

$$\frac{1+r_{us}}{1+i_{us}} = \frac{1+r_{uk}}{1+i_{uk}}$$

The above equation states that the real rate of interest in the US, the interest rate adjusted for inflation is the same as the real rate of interest in the UK.

Therefore, re-arranging gives

$$£/\$_f = £/\$_0 \frac{1+r_{us}}{1+r_{uk}} \; so \; £/\$_1 = 0.8\frac{1.08}{1.06} = \; 0.8151$$

$\frac{1+r_{us}}{1+r_{uk}} = \frac{1+i_{us}}{1+i_{uk}}$

Therefore, the relative difference in inflation between each country is what determines the differences in the nominal rates of interest.

- If we take the $/£ forward rate at 1.2269 and the spot rate at 1.25 together with the nominal interest rates of 6% in the US and 8% in the UK we can fill in the other corners of the equations if we know what the real rate if interest is.
- Assume the real rate of interest is 3%
- This implies that the UK rate of inflation is 1.08/1.03 -1 = 0.04854 and
- the US rate is 1.06 / 1.03 -1 = 0.0291

The relationships when quoting dollars per pound are outlined below.

$\frac{\text{E(US\$/£}_1)}{\text{US\$/£}_0}$ 1.2269/1.25 = 0.9815	$\frac{1+i_{us}}{1+i_{uk}}$ 1.0291/1.0485 = 0.9815
$\frac{\$/£_f}{\$/£_0}$ 1.2269/1.25 = 0.9815	$\frac{1+r_{us}}{1+r_{uk}}$ 1.06/1.08 = 0.9815

We could do a similar table for quoting the currencies as pounds per one dollar.

$\frac{\text{E(£/US\$)}_1}{\text{£/US\$}_0} = \frac{0.8151}{.8} = 1.0189$	$\frac{1+i_{uk}}{1+i_{us}} = \frac{1.0485}{1.0291} = 1.0189$
£/$f/£/$0 $\frac{\text{£/US\$}_f}{\text{£/US\$}_0} = \frac{0.8151}{.8} = 1.0189$	$\frac{1+r_{uk}}{1+r_{us}} = \frac{1.08}{1.06} = 1.0189$

Other factors that affect the value of a currency include

- The political stability of the country which uses the currency. The more unstable the country the less valuable the currency. You can examine the exchange rate of the Syrian Pound against the euro or any other major currency over the period 2011 to 2016 to see an example of this.
- The terms of trade: if a country is exporting more and getting better prices this will cause an increased demand for the currency and it will appreciate.

- If the country has quite a lot of government debt, particularly foreign debt. This will cause the country to have to repay this debt in the future and buy more foreign (sell home) currency so the currency will depreciate.
- If a country continually runs a trade deficit this will mean that it is importing more than it is exporting. Therefore, there is more demand for foreign currency than for the home currency and the later will depreciate relative to its trading partners.

Before considering hedging FX exposure, it is worth repeating the crux of the issue. There will be no FX rate exposure if relative PPP holds. A company achieving higher prices because of home country inflation finds that this is being counterbalanced by a depreciating currency. But relative PPP is unlikely to hold at the level of the individual firm. Hence the need for hedging strategies.

4. Transactions Exposure

We will first deal with transaction exposure since this is the simplest to understand and to manage. We will then address operating exposure.

Strictly speaking transaction exposure arises when you contract to buy or sell goods at an agreed price with payment in the future. PPP cannot operate since the price is now set and the FX rate is not. So the value of your future payment/receipt is uncertain. The question that the financial manager must address is how to manage this uncertainty.

The first steps involved in managing foreign currency exposures are:

1. Identify the exposure – the amount of foreign currency payable or receivable and dates of settlement
2. Match foreign currency inflows with outflows as much as possible – ideally one will have bank accounts for each foreign currency that one deals in.
3. Decide on the hedging policy for unmatched transactions. This may include not hedging at all.

Point one may not be as easy as it sounds. Essentially one needs to design a system that will alert you when the exposure arises. Most accounting systems record a sale when an invoice is raised. However, the exposure is certainly there when the order is made and I would argue perhaps even when business is quoted for in foreign currency. If the FX rate moves between the time of the order and the time that the invoice is raised then one may have made a currency loss/gain before one even knows of the exposure.

The primary tool for managing foreign currency exposure is a cash forecast outlining all payments and receivables in the different currencies that one deals in. In larger companies this must be done in the head office since there will be netting to be done on the subsidiary accounts. For example, one subsidiary may have sterling receipts and another subsidiary has sterling obligations, it would be pointless and costly to hedge each. You are merely paying unnecessary transactions costs to banks. Accordingly, only the net exposure will have to be hedged. This will obviously reduce hedging costs. There are other benefits in centralising FX risk management. These

include economies of scale: the larger the transactions the better the deal one can do with banks on charges and banking relations can be enhanced. The treasury people doing the job will gain expertise – it is a fairly specialist job so one would not want dozens of people in different locations doing it. A downside of this centralisation may be interference with the autonomy of managers in individual parts of the organisation.

Matching involves shifting around the dates of individual foreign currency transactions so as to minimise the amount to be hedged.

Finally, it must be decided whether to hedge the unmatched exposure and providing it is to be hedged, what instrument to use.

The main techniques for hedging transaction exposure are:

- Forward Contracts
- Money Market Hedges
- Futures
- Currency Options

Forward contracts are custom-made contracts to buy or sell foreign currency at a specified date in the future at an agreed price. The maturity and size of the contract can be determined in each case to achieve the precise hedge desired. A disadvantage is that a bank will regard a Forward contract as part of one's borrowings, thus, one's credit lines are used up.

Let's take the example of an Irish exporter which sells C$4.4m worth of goods to a Canadian importer. Three month's credit is granted. The current C$/€ rate is C$1.5. One euro buys C$1.5. The Irish exporter expects to receive $\frac{C\$4.4}{C\$1.5/€} = €2.9333\ million.$

If the Canadian dollar strengthens against the Euro and the rate is C$1.4/€ in three months' the exporter receives €3.1429 million.

If the Canadian dollar weakens against the Euro. Say it falls to a rate of C$1.6/€ in three months' time the Irish exporter will only get $\frac{C\$4.4}{C\$1.6/€} = €2.75\ million.$

The problem is that we just do not know how much Euro C$4.4 is going to convert to in three months. This creates uncertainty. Essentially we have fixed the price (no inflation) but the FX rate can change so PPP cannot hold.

To avoid such a scenario, the Irish exporter goes to its bank and buys a forward contract to convert the Canadian dollars to be received in 3 months' time for Euro. The contract is agreed to exchange the two currencies at a three months in the future at a predetermined rate. So if the three-month forward rate is C$1.55/€. The Irish exporter could lock in the receipt of €2.8387 in three months by selling forward C$4.4m. The exporter has removed the uncertainty from the transaction.

An alternative to using the forward market is to use a money market hedge.
Money market hedging involves borrowing in the money markets. If we take the example of a company exporting to Canada. The company sells C$2.2 million worth

of goods giving 3 month's credit. At the time of export, borrow in Canadian dollars on the money markets for a three-month period.

The amount borrowed, plus three months' interest, will be equal to the amount to be received from the importer (C$2.2m). The interest rate charged over three months is 2 per cent C$2.2m = C$?* (1 + 0.02)

Therefore, the amount borrowed is C$2.2m/1.02 = C$2,158,863. The Irish firm can exchange this amount of Canadian dollars for Euro immediately and use the payment from the Canadian firm $2.2million to clear off its loan plus interest C$2,158,863*1.02= $2.2 million. If the spot rate of exchange is C$/£ is $C1.45465. The company receives C$2,158,863/C$€1.45465 = €1,484,112 euro. It knows exactly how much euro is it getting: its Canadian dollar liability is covered by the payment it is expecting from its customer.

The process can be summarized as:
1 Invoice customer for C$2.2m.
2 Borrow C$2,156,863.
3 Sell C$2,156,863 at spot to receive Euro now.
4 In three months receive C$2.2m from customer.
5 Pay lender C$2.2m.

You know exactly how much euro the sales is worth so the uncertainty has been removed.

Futures are similar to forwards. The main differences are they are traded on exchanges; they are standardised as to size and maturity date.

Options are good for hedging contingent exposures e.g. if one tenders for a contract. They limit downside risk while allow upward potential. Options appear expensive. But one is buying insurance coupled with an investment opportunity.

Other less widely used techniques that can be used to hedge any type of exposure include:

- Commodity Hedges`

Buy or sell commodity futures denominated in the currency that you will receive or pay out in. This is a cross-hedge (i.e. using an instrument that is correlated, but not perfectly with the value of the asset at risk) and as such it is risky in itself. One does incur the risk of price changes in the commodity.

- Swaps

There are different types of swap but for all intents and purposes they resemble a series a forward contracts. They can be defined as an agreement to exchange one currency for another at specified dates and prices. There are many variants of this method of managing FX risk.

An example of a back to back or parallel loan could involve two parent companies indirectly lending to their foreign subsidiaries. Say an Irish company has a subsidiary in Australia, which needs finance. Rather than lending it Euros which have to be converted to AUS$ it finds an Australian company with a subsidiary in Euroland that also needs finance. The Irish parent lends Euros to the Australia subsidiary and the

Australian parent reciprocates by lending AUS$ to the Irish subsidiary based in Australia. (This also avoids translation exposure.)

A variant of a currency swap could involve an Irish company exporting to South Africa swapping a loan denominated in Euros for one in Rands. This idea here is that a South African company (which wants to set up a subsidiary in Ireland) could probably borrow at a lower relative rate in South Africa than in Ireland. This is because the RSA company would be well known to banks in the RSA so they would lend to it at a better rate than they might to an Irish company that they have no experience of. Similarly, the Irish company could borrow at a lower rate in Ireland.

Each company, the RSA and the Irish, borrows in its own domestic market. A bank then arranges that the Irish company repay the South African company's Rand loan and the South African company repays the Irish company's Euro loan. This is achieved by each depositing the appropriate amount with the bank ahead of each repayment day. Note the loans are **not** swapped – the currency is. Each company remains responsible for its own borrowings.

Swaps are versatile. This allows hedging of complex exposures. The downside of this versatility is that they can be complex, thus, involving time effort and documentation. Banks do charge high fees for this service so it is relatively expensive.

- Leading and lagging

This involves speeding up and slowing down foreign currency receipts and payments. This is sometimes mentioned in textbooks as a hedging technique. If it is done to match receipts and payments is in fact matching which is discussed above. However, it is often done as speculation e.g. payments slowed down if an appreciation of the domestic currency is forecast and vice versa if a depreciation is expected.

5. Operating Exposure

This is without a doubt the most important type of foreign currency exposure. It can affect the competitive position of a company. For example, Brexit has adversely affected the ability of UK companies to access the single European market. However, the relative devaluation of sterling relative to the euro has helped their position. At the same time, the relative devaluation of sterling has adversely affected many Irish companies, particularly those that export to the UK. It may also damage the competitiveness of Irish companies that directly compete with UK companies in markets throughout the world. We need to consider how to control the uncertainty caused by fluctuations in FX rates over the long-term.

Operating exposure is very company specific. It depends crucially on the location of the company's product-markets and suppliers. It also depends on the price elasticity of the company's products. One can try to use the tools outlined for hedging transactions exposure to hedge this type of exposure but these will not really work here. If one uses a forward contract or a money market hedge these techniques have a limited time span. They are designed for hedging transaction exposure. Economic exposure is more long-term. Thus the exposure will outlive the life of the hedge and the latter is of limited use since it will have to be revisited and rolled over at new and unknown FX rates in the future. Thus it provides very limited, if any, shelter from economic exposure. As we shall see below it can even make things worse.

To hedge operating risk one needs to consider

- Operational Hedges
- Financial Hedges – e.g. borrowing in a foreign currency

Operational Hedges

The former involves matching the currency of costs and revenues. An example would be building manufacturing facilities in a currency zone into which one sells or using alternative suppliers. For example, consider two Irish companies that sell goods into the UK. The first Irish company buys only from other Irish and Eurozone suppliers so will be adversely affected by a depreciation of sterling relative to the euro. The second Irish company, as well as having Irish suppliers, also has some UK-based suppliers. It can therefore buy more produce from these companies given the recent decline in the value of sterling. This will partly mitigate the erosion of its competitive position relative to UK competitors. An Irish exporter to the UK may decide to set up a base or a subsidiary in the sterling area in an effort to match the currency of some expenses and revenues.

Foreign Currency Borrowing

This is useful when one has a stream of foreign currency income. The company borrows in foreign currency and uses its income in that currency to pay off its loan. This is in effect creating a match between payables and receivables in the foreign currency. It may be particularly attractive if interest rates in the foreign currency are low relative to domestic rates[4].

It is worth noting that such borrowing can be used to create synthetic forward contracts. This would be useful where the company can borrow for longer periods than forward contracts are available for. Suppose that MacBuild an Irish construction company won a contract to build a holiday complex in the United Arab Emirates. The project would last 5 years and under the terms of the contract MacBuild would receive 100m Emirati Dirhams each year. The forward market for Euro to Emirati Dirhams may not be well developed so MacBuild borrows the PRESENT VALUE of the 5 yr. annuity of 100m Emerati Dirhams, converts the Dirhams to euro and invests the money in Ireland. It then uses the payments from the contract to repay the borrowing. The principle here is exactly the same as the money market hedge. MacBuild has effectively created 5 long-term forward contracts for 1 through to 5 years.

It can be argued that using financial hedges such as forward contracts or futures could actually make operating exposure worse. If relative PPP holds over the long run a long-term forward currency hedge would freeze the nominal FX rate but leave the inflation differential unaffected thus, introducing exposure where none existed. Remember that the currency in the country with the lower inflation rate will appreciate relative to that of the country with the higher inflation rate.

For a short-term hedge both prices (set in the transaction) and FX rates (set by the hedge e.g. forward contract) are constant. A long-term forward contract hedge will set the FX rates for transactions not yet entered into, and therefore not priced. While inflation can affect the prices it cannot now affect the FX rate that the company has

[4] But if interest rates are low one might be concerned that inflation in the country is low and that it will appreciate relative to your currency.

locked itself into. If PPP holds in the long-run this means that the inflation rate could affect both prices and nominal FX rates to maintain the real FX rate. However, the long-term forward contract here causes departures from PPP and hence induces foreign currency exposure.

What is happening here is that relative PPP means that inflation rates and the nominal price of the currency move in opposite directions. This negative correlation is the essence of a true hedge. What the long-term forward contract does it remove this negative correlation by fixing one of the variables.

Assuming your company is exposed to a foreign currency over a long period. Perhaps a better way of putting a long-term hedge in place is to borrow the foreign currency that you are exposed to at a variable rate of interest. Foreign currency receipts are used to repay the loan – thus one has a matching of receipts and payments. Provided the loan has a variable rate, if PPP does hold and the real interest rate is the same in each country then any financing advantages disadvantages balance changes in the nominal FX rate. Foreign currency financing at a variable rate of interest works since it helps match inflows and outflows – at the same time it does not interfere with the counter-balancing influences of the exchange rate and the inflation rate.

In summary, using hedging techniques designed for transactions exposure will not achieve a reduction in long-run economic operating exposure and may even make it worse. Some companies take the view that exposure to FX rates is a diversifiable risk and can be eliminated for multi-nationals by trading in many countries (currencies). Combining this with the knowledge that financial hedges are of little use in hedging economic exposure may entice many multinational companies to be careful in deciding to pay banks for costly financial hedges that will ultimately, not hedge their long-term foreign currency exposure.