

Managing Exchange-Rate Risk

Executive summary

Risk is a part of any company's operation. A firm profits by taking calculated risks in its area of expertise and experience. For example, Washington Corporation can and should take risks in railroads and shipping, and Wal-Mart should take risks in retail distribution. In areas where a company *doesn't* have special knowledge or experience it should minimize or insure against those risks. For most companies, these include interest rate risk, credit risk, commodity risk and foreign exchange risk. This paper describes how foreign exchange (or **FX**) risk can be minimized.

A significant problem for exporters and importers:

Currency volatility has rarely been higher since the gold standard was abandoned in 1971 and currencies began freely-floating. High currency volatility creates great risk for companies involved in international trade. Even large, sophisticated companies sometimes experience losses to currency moves. For example, Google lost \$300M in Q3, 2009; Air Canada \$400M in 2009, and another \$85M in Q1 2010; and NXP Semiconductors lost \$222M on revenues of \$695M in 2009. With multiple unresolved debt crises and potential currency "wars" in 2010, currency volatility and resulting losses will rise even higher. Yet many smaller to mid-sized companies are either unaware of the risks, or simply accept FX losses as the cost of doing business internationally. Those losses are indeed avoidable.

Before discussing how to mitigate FX risk, it's important to understand the mechanisms by which exchange rates impact revenues. There are three mechanisms:

- Translational
- Operational
- Transactional

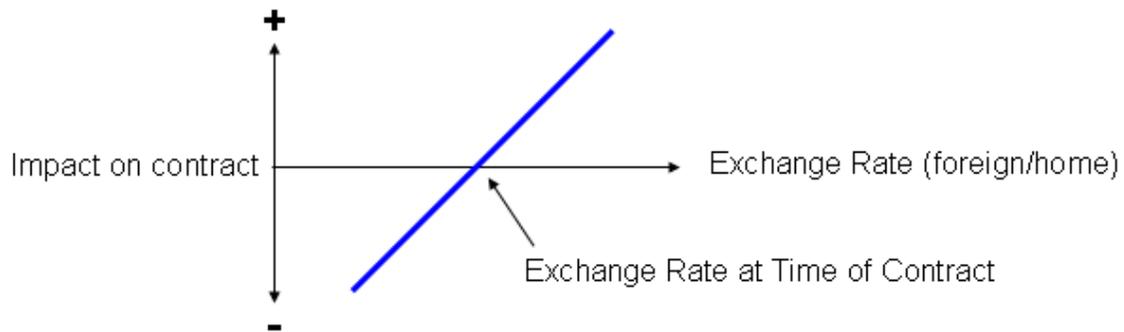
Translational risk is when a company's foreign subsidiary income is restated in the parent company's home currency. If the foreign currency has depreciated against the home currency, income is adjusted downwards. Conversely if it has appreciated, income is adjusted upwards. This type of risk is common to very large multi-nationals, can only be mediated with strategic, long term actions, and will not be addressed in this paper.

Operational risk is when exchange rates have an indirect effect on P&L, as opposed to the direct effects of Transactional risk. A very common example of this is the small exporter who invoices foreign customers in US dollars to "avoid" FX risk. The unintended consequence is that their customers or distributors - who now must bear the FX risk - create unwanted pricing pressure on the company. The company also faces potentially difficult competition from companies who *are* willing to invoice in a customer's home currency.

If a company has expenses in one currency, and sales in another currency, this too creates operational risk. A great example is Airbus. Their manufacturing expenses

are in euros, but their sales are mainly in US dollars. If the euro appreciates against the dollar, expenses rise vis a vis their profits. In fact, Airbus CEO Gallois estimates that for every 10 cents of euro appreciation, Airbus loses €1B. A more local example might be a company which buys goods from China and sells them in several other countries as well as the US. In this case, an appreciating Yuan would not be advantageous to them! Operational risk is difficult to mitigate, but is often easy to change into the last type of risk, *Transactional risk*.

Transactional risk is when a company sells its products to a foreign customer and invoices them in their home currency. Generally, companies are paid on a net 30 or 60 day basis. During the time between invoice and payment the exchange rate may move 5-6% or more. It may move in the favor of the buyer or the seller. If the exchange rate increases, the value of the contract increases; if the exchange rate falls, the value of the contract falls. Graphically, it looks like this:

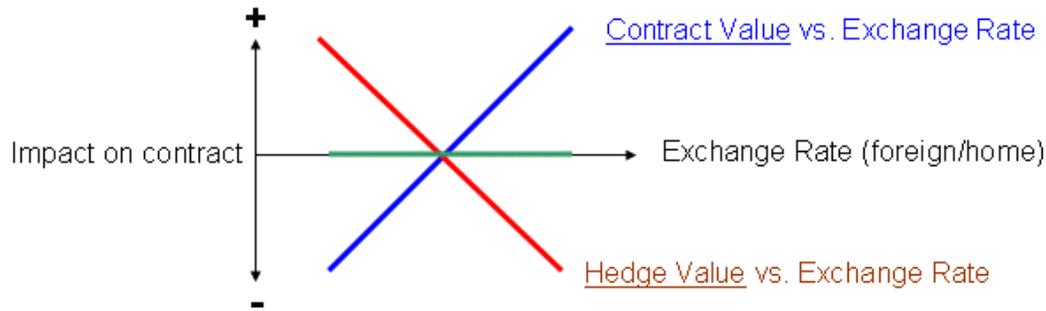


Transactional risk will be the focus of the rest of this white paper, as translational and operational risks must be managed with more strategic, long term initiatives than the tactical approaches that are effective with transactional risk.

A solution

There is a well-known method of mitigating FX risk, and it is called hedging. While hedging may sound like another risky Wall Street tactic, hedging a real-world exposure to risk, whether it is in commodities or currencies, is actually *reducing* risk. Many years ago the market in commodities futures arose so that farmers could guarantee a level of income and make financial plans without being subject to the vagaries of the commodities market. The same principles apply here with currencies.

It is evident that a hedge instrument should move opposite to the exposure, so that when the two are combined, the net effect is zero (or very close to it). Here is a graphic showing the contract value in blue, the hedge value in red, and the net result in green. As you can see, having an effective hedge in place removes the effects of the exchange rate on the contract no matter what.



If the hedge is not well-matched to the exposure, the company is exposed to residual FX losses, so proper hedge design is important. Larger companies with Treasury departments have the expertise required to price forwards, calculate the various “Greeks” of options, or structure an optimum swap based on deposit rates and sovereign CDS rates. Smaller companies should use qualified third-party consultants to participate in the advantages of hedging without having to acquire internal expertise.

Many companies avoid hedging because of a false impression that it is expensive. As long as a company doesn’t try to take a directional position in the market, the net cost of an effective hedge position is usually under 0.3% of the exposure.

Additional benefits of hedging

The main benefit to hedging is vastly-reduced earnings volatility due to currency fluctuations, but there are other benefits as well. Reduced earnings volatility will help boost the credit of a company, whether or not it is publicly held. A company’s capital sources – both debt and equity- become cheaper. Debt becomes cheaper because a company’s interest rate risk premium over the risk-free rate will be lower as its earnings volatility drops. A company’s equity financing (for publicly held companies) will be cheaper because investors desire high Sharpe Ratios ([add sidebar#1](#)).

In addition to reducing cost of capital, it will be easier to deploy that capital. More predictable cash flows make it easier to invest in new strategic ventures.

Finally, several studies have shown ¹ that a one standard deviation decrease in earnings volatility is associated with a 9% increase in a firm’s value.

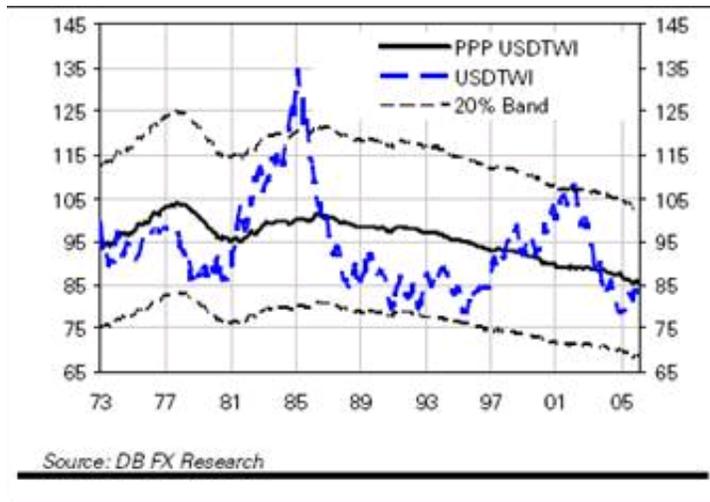
Three common mistakes

Many companies often make simplifying assumptions to justify the lack of a hedging program.

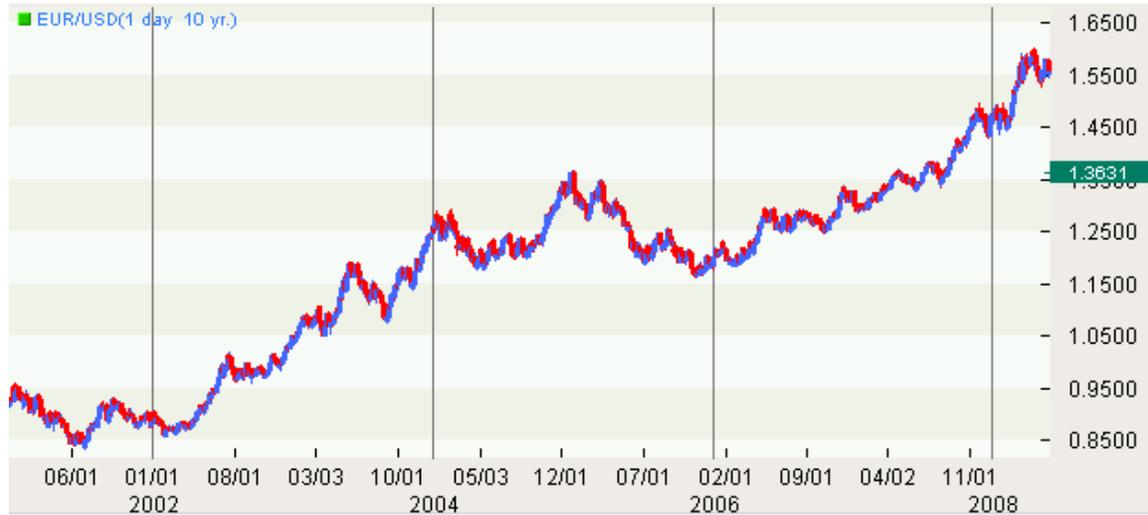
Mistake #1: Assuming that Purchasing Price Parity [[insert sidebar #2](#)] drives exchange rates to equilibrium, and that exchange rates (and thus profits and losses) will “even out” over time. Perhaps - but only if your stockholders average your earnings over years! This graph shows how the US Trade-Weighted Index in blue), a

¹ Allyanis 2006

proxy for the exchange rate of the USD against all other currencies, varies with Purchasing Price Parity (heavy black line).



As you can see, mean reversion is evident only over decades-long periods. And- are we talking simple sums or a net present value of cash flows over those years? We can see a refutation of this fallacy directly in the historical exchange rate of the euro. The euro steadily appreciated against the USD for the majority of the last decade, exhibiting no mean reversion. Similar trends can be seen in the Swiss Franc, Australian dollar and others.



Mistake #2: Assuming that typical volatilities will always prevail, and that extreme events are very rare. In reality those supposedly once-in-the-lifetime-of-the-universe events happen on a regular basis. In 1998 the Asian meltdown and the collapse of the Thai Baht and the other Asian “Tigers” occurred, followed shortly thereafter by the Russian devaluation and default; 9/11; the Lehman Brothers and AIG collapse in 2008, and the Greek and Irish debt crisis in 2010. Each of these events precipitated huge changes in exchange rates as investment banks, sovereign funds and other large financial entities moved funds out of “risky currencies (such as the Euro, Great British Pound or Australian dollar) to “safe haven” currencies (like the Swiss Franc, Japanese Yen and US dollar). If a company doing business internationally

was exposed to the currencies being sold, it would result in very large negative impacts on their contractual profits.

Mistake #3: Assuming you can predict the direction of exchange rates. Many companies new to hedging want to profit when the exchange rate moves in their favor, and also when it moves in the other direction. In other words, they only want to hedge when they believe exchange rates will move against them. This is impractical and unrealistic. After all, the best investment banks in the world, such as Goldman-Sachs and Barclays, with large research departments and the best economic models, do not get it right most of the time². And even when they do, the timing of the moves they predict - based on economic fundamentals - is quite uncertain, and certainly not within the timeframe of a business sales contract. As the saying goes “shoemaker, stick to your shoes”.

Implementing a hedging program

Once a company decides to implement a hedging program to reduce currency risk, what’s next? A company needs to establish policies, strategies, controls, metrics and processes if the hedging program is not to devolve into chaos. What are some of the essential elements of an effective, auditable program? Deciding which exposures will be recognized is a good start. Of course, exposures need to be netted across the company so as not to over-hedge. Will every risk be fully hedged, or is there some level of risk tolerance? One FX management tool which is not uncommon is leading and lagging payments depending on the expectations of future weakening or strengthening of a foreign currency, yet that involves a certain level of speculative risk. Speculative positions or strategies may be allowable if and only if the potential loss will not exceed a pre-set amount.

How will the overall level of risk be assessed? The simplest and most common method is Value at Risk, a statistical measure which is easy to determine, but unfortunately tends to underestimate risk, as daily price distribution is most definitely not Gaussian, but exhibits “fat tails”. This is the danger of using academic measures in the real world! Scenario analysis or Monte Carlo analysis can give a more robust estimate, but the expertise to do it properly is often not present in smaller companies, and is another reason to use a consultant.

Other questions to be answered include what hedging instruments will be authorized, and which are not (such as exotic derivatives), and how active positions will be managed (passive or dynamic)? What is the minimum acceptable credit rating to minimize counterparty risk?

Finally, and perhaps most importantly, hedge performance metrics need to be established. A quick - and wrong - metric would be “how much did the hedge make?” This attitude completely misstates the mission and methodology of risk-reducing hedges. A better metric is to compare the net results of the transaction and hedge together, compared to a fair benchmark; say the FAS 133 effective to ineffective ratio.

Derivative accounting

² The Goldman-Sachs Monthly FX Report for Sept 2010 showed that all their trade recommendations for the year showed a net profit of 0.3%

A hedging program does carry a burden - additional accounting procedures. This wasn't always the case. Derivatives used to be booked at historic cost, which was often zero, and did not reflect the potential change in value. That made it easy and tempting for companies to speculate, leading to several well-known debacles in the 1990s. Since 1998, The Federal Accounting Standards Board (FASB) declared that derivatives are assets and liabilities, and should be recorded as such at their fair value. FASB regulations describe how to report the degree to which the instruments effectively hedge the underlying. Fortunately, currency derivatives are exact analogues of the underlying (unlike say an airline's jet fuel hedge using fuel oil futures), so this is not a significant issue for currency hedgers.

Here are a few sample rules:

- All derivatives must be fair-valued on the balance sheet
- There are three types of hedging relationships:
 - *Fair value* refers to a firm commitment such as a single booked sale, and is commonly referred to as a transactional hedge.
 - *Cash flow* is based on forecasted third party transactions or sales.
 - *Net investment* hedges do not concern us in this context.
- All hedging relationships must be "highly effective", passing a documented test (the HET)..
- If the hedge is a fair value hedge (used in transactional hedging), the effective portion is recognized in current earnings along with the hedged item, thus offsetting the changes.
- If the hedge is a cash flow hedge, then the effective portion is recognized in Other Comprehensive Income.

There are a number of different accounting treatments upon termination of a hedge, depending on the reasons for termination. It's clear that the accounting department must comply with the appropriate rules.

Conclusion

Companies doing business internationally are exposed to exchange-rate or FX risk. FX risk is high and increasing, as countries battle ongoing sovereign debt issues and consider protective trade barriers. The negative impact of FX on earnings can be significant, and do not average out, except over very long periods of time.

Fortunately, transactional exchange rate risk can be easily managed at little cost using currency hedging techniques. Selecting and specifying particular hedging instruments is somewhat complex and should be done by experts in the company's Treasury department, or an outside consultant. Several additional benefits accompany the hedging of transactional exposures, including lower cost of capital and higher company valuation.

For small and mid-sized companies who do not have Treasury departments or the expertise required to accurately match hedges to exposures, outsourcing this function to third party consultants is an excellent alternative.

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Sidebar:

Sidebar #1 Sharpe ratio

The Sharpe ratio is a measure of the excess return (or risk premium) per unit of risk in an investment asset. Sharpe originally called it the “reward to variability” ratio. Excess return is the return of the asset minus the risk free rate of return, and unit risk is defined as the standard deviation (σ) of the asset return.

$$S = \frac{R - R_f}{\sigma}$$

Thus, a higher Sharpe ratio occurs both when the returns have a low variability as well as when the asset returns are higher.

Sidebar #2 Purchasing Price Parity

PPP is a theory of long term equilibrium exchange rates based on relative price levels of two countries. The purchasing power of different currencies should be equal for a given basket of goods. However, they are usually not - there are often large differences, most commonly for services and non-trade goods. One slightly tongue-in-cheek measure of PPP is the Economist magazine’s Big Mac Index, comparing the price of the hamburger in McDonalds around the world.