Money market

Business, Marketing

Explain how to measure the exposure to foreign exchange risk in the above bond portfolio. Discuss various ways in which that currency exposure can be managed through hedging or through insurance. Foreign exchange risk lies in diversified international bond portfolios because of the existence of bonds paying cashflows in foreign currencies. The cashflows are dependent on the exchange rate at the time the payments are received.

The return to investors from investments in bonds that are denominated in a foreign currency consists of two components: the return on the security measured in the currency in which the bond is denominated (local currency return), which results from coupon payments, reinvestment income and capital gains or losses; and changes in the foreign exchange rate. From the perspective of an investor, the cashflows of assets denominated in a foreign currency expose the investor to uncertainty as to the cash flow in home currency.

This uncertainty is in a sense raised by foreign exchange risk. In other words, if the foreign currency depreciates relative to the home currency, the value of the cashflows will be proportionately less. At this point, it should be noted that it is very crucial to distinguish between risk and exposure to risk. In a situation where there are two Sterling-based investors in US dollar assets, whereas they are both subject to the same degree of fluctuations in the dollar/sterling exchange rate i. e. the risk, the exposure to that risk varies depending on the size of their investment.

Another difference between risk and exposure lies on whether the asset or liability that exhibits currency exposure is traded or not. With such

differences in exposure, it is important to be clear about the objectives of any currency risk management transactions. For example, if we wish to remove the uncertainty of currency rates when foreign cash flows are to be transformed into domestic currency, then the foreign currency exposure is measured as the number of currency units that are expected to be transformed.

However, if we wish to trim down the variability of the translated value of a tradable foreign currency asset during the period of investment, a more complex approach to measuring currency exposure is required. Adler and Dumas (1984) and Adler and Simon (1986) have derived the following equation for currency exposure in percentage terms embodied in a foreign currency asset. where: Pt+1/Pt is the price relative of the foreign currency asset in terms of the home currency. St+1/St is the price relative of the exchange rate.

The equation represents a linear regression where b coefficient represents the sensitivity of the home currency returns, Pt+1/Pt of the foreign asset to changes in the exchange rate, St+1/St. It is that part of the random returns in the home currency that is linearly related to the exchange rate returns. The intercept a, and the error term e, represent the non-currency determinants of the home returns. The results given by changing currency exposure highlight problems of establishing and managing mean- variance hedges. This concept of exposure can be applied to our portfolio consisting of both foreign and domestic currency assets.

Multiple regression is used to regress upon the currency returns for each of the currencies embodied in the foreign assets: where: rfx1 represents the returns to the ith currency included in the portfolio. The betas represent the exposure of the whole portfolio, including domestic assets, to the respective currencies. Using multiple regression comes with problems of autocorrelation in the foreign exchange returns data as well as multicollinearity in some of the variables as they are similarly influenced by the strength or weakness of the basis currency.

This currency exposure can be hedged using linear derivatives such as foreign exchange spot, forwards, futures, or insured using options instruments. HEDGING Hedging is the taking up of a position, either financial or operational, that allows offsetting the effects of exchange rate changes. It is defined as offsetting a particular currency exposure by establishing an opposite currency position. In other words, investors match a foreign currency asset (liability) with a foreign currency liability (asset). Hedging incurs costs, and may incur losses.

There are different types of currency exposure hedges: Risk Shifting, Forward market hedging, Money market hedging, Swaps, Futures, Options. Risk Shifting This method involves an invoice in the home currency - shifting the risk to the counterparty. This may make it difficult to get contracts, and a rational counterparty will demand a better price in return for taking on the currency risk. Forward Market Foreign exchange is, of course, the exchange of one currency for another. Trading or " dealing" in each pair of currencies

consists of two parts, the spot market, where payment (delivery) is made right away, and the forward market.

The rate in the forward market is a price for foreign currency set at the time the transaction is agreed to but with the actual exchange, or delivery, taking place at a specified time in the future. While the amount of the transaction, the value date, the payments procedure, and the exchange rate are all determined in advance, no exchange of money takes place until the actual settlement date. This commitment to exchange currencies at a previously agreed exchange rate is usually referred to as a forward contract. Forward contracts are the most common means of hedging transactions in foreign currencies.

Investors may use the forward market to tie down the home currency value of the foreign currency payable or receivable. Contract is entered into immediately, but not fulfilled until time has elapsed. In forward markets 100% hedge is possible. The trouble with forward contracts, however, is that they require future performance, and sometimes one party is unable to perform on the contract. When that happens, the hedge disappears, sometimes at great cost to the hedger. This default risk also means that many companies do not have access to the forward market in sufficient quantity to fully hedge their exchange exposure.

For such situations, futures may be more suitable. Furthermore, forward market contracts may not exist for all countries, or for all time periods (usual limit is one year) and may even be illegal for some currencies. In the money market, investors can match their foreign currency liability (asset) with a

foreign currency asset (liability), by depositing (borrowing) in foreign currency today, borrowing (depositing) in their home currency and doing the currency transaction in the spot market. There are different procedures depending on whether they have a payable or receivable.

Another thing to be taken into account is that interest rates are expressed on a per annum basis. Where different borrowing and deposit rates are given, they borrow at the higher rate and deposit at the lower rate - the difference is the bank's reward for financial intermediation. Currency futures Outside the interbank forward market, the best-developed market for hedging exchange rate risk is the currency futures market. In principle, currency futures are similar to foreign exchange forwards in that they are contracts for delivery of a certain amount of a foreign currency at some future date and at a known price.

In practice, they differ from forward contracts in important ways. One difference between forwards and futures is standardization. Forwards are for any amount, as long as it is big enough to be worth the dealer's time, while futures are for standard amounts, each contract being far smaller that the average forward transaction. Futures are also standardised in terms of delivery date. The normal currency futures delivery dates are March, June, September and December, while forwards are private agreements that can specify any delivery date that the parties choose.

Both of these features allow the futures contract to be tradable. Another difference is that forwards are traded by phone and telex and are completely independent of location or time. Futures, on the other hand, are traded in

organized exchanges such the LIFFE in London, SIMEX in Singapore and the IMM in Chicago. However, the most important feature of the futures contract is not its standardization or trading organization but in the time pattern of the cash flows between parties to the transaction.

In a forward contract, whether it involves full delivery of the two currencies or just compensation of the net value, the transfer of funds takes place once: at maturity. With futures, cash changes hands every day during the life of the contract, or at least every day that has seen a change in the price of the contract. This daily cash compensation feature largely eliminates default risk. Thus, forwards and futures serve similar purposes, and tend to have identical rates, but differ in their applicability.

Most big companies use forwards; futures tend to be used whenever credit risk may be a problem. Debt instead of forwards or futures Debt -- borrowing in the currency to which the firm is exposed or investing in interest-bearing assets to offset a foreign currency payment -- is a widely used hedging tool that serves much the same purpose as forward contracts. Such a tool is termed a money market hedge. According to the interest rate parity theorem, the interest differential equals the forward exchange premium, the percentage by which the forward rate differs from the spot exchange rate.

Therefore, the cost of the money market hedge should be the same as the forward or futures market hedge, unless the firm has some advantage in one market or the other. The money market hedge suits many companies because they have to borrow anyway, so it simply is a matter of denominating the company's debt in the currency to which it is exposed.

However, if a money market hedge is to be done for its own sake, the firm ends up borrowing from one bank and lending to another, thus losing on the spread.

This is costly, so the forward hedge would probably be more advantageous except where the firm had to borrow for ongoing purposes anyway. INSURANCE Currency options Many companies, banks and governments have extensive experience in the use of forward exchange contracts. With a forward contract one can lock in an exchange rate for the future. There are a number of circumstances, however, where it may be desirable to have more flexibility than that which a forward provides. In such a situation, the use of forward or futures would be inappropriate.

What is called for is a foreign exchange option: the right, but not the obligation, to exchange currency at a predetermined rate. A foreign exchange option is a contract for future delivery of a currency in exchange for another, where the holder of the option has the right to buy (or sell) the currency at an agreed price, the strike or exercise price, but is not required to do so. The right to buy is a call; the right to sell, a put. For such a right he pays a price called the option premium. The option seller receives the premium and is obliged to make (or take) delivery at the agreed-upon price if the buyer exercises his option.

In some options, the instrument being delivered is the currency itself; in others, a futures contract on the currency. American options permit the holder to exercise at any time before the expiration date; European options, only on the expiration date. An option, contrary to future and forward

agreements, gives one party the right but not the obligation to buy or sell an asset under specified conditions while the other party assumes an obligation to sell or buy that asset if that option is exercised. Options provide the most convenient means of insurance or positioning " volatility risk.

Related essay: Merton Electronics Corporation Case Solution

" Indeed the price of an option is directly influenced by the outlook for a currency's volatility: the more volatile, the higher the price. A currency call or put option's value is affected by both direction and volatility changes, and the price of such an option will be higher, the more the market's expectations favor exercise and the greater the anticipated volatility. Finally, one can justify the limited use of options by reference to the deleterious effect of financial distress. Unmanaged exchange rate risk can cause significant fluctuations in the earnings and the market value of an international firm.

A very large exchange rate movement may cause special problems for a particular company, perhaps because it brings a competitive threat from a different country. At some level, the currency change may threaten the firm's viability, bringing the costs of bankruptcy to bear. To prevent this, it may be worth buying some low-cost options that would pay off only under unusual circumstances, ones that would particularly hurt the firm. Out-of-the-money options may be a useful and cost-effective way to insure against currency risks that have very low probabilities but which, if they occur, have disproportionately high costs to the company.