

Introduction to Cross Currency Swaps
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- ▶ Cross-currency swaps can be used to transform the currency denomination of assets and liabilities.
- ▶ As such, they are effective tools for managing foreign currency risk. They can create currency match within its portfolio and minimize exposures. Firms can use them to hedge foreign currency debts and foreign net investments.
- ▶ By giving firms the flexibility to fund themselves in a currency different from their currency of need (and/or to invest in assets denominated in a different currency), cross-currency swaps also enable to firms to alter expected funding costs (and/or investment returns).
- ▶ Broadly, therefore, cross currency swaps are effective risk management tools; a tool that firms can also utilize them to enhance the risk and expected return profiles of their asset and liability portfolios. This monograph serves as an introduction to cross currency swaps; it describes their basic structure and presents examples of their use as corporate risk management tool.

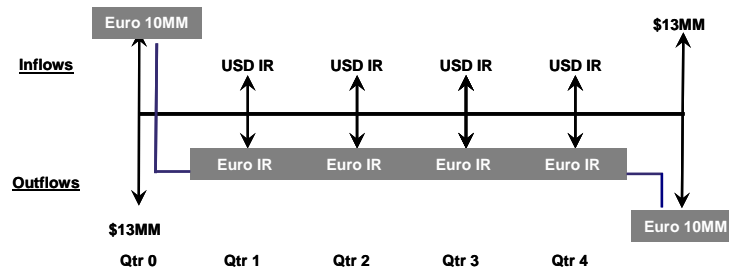
As foreign currency exposures have become ever more complex, so too have the strategies for dealing with them. Cross currency swaps (CCS) are an effective tool for managing and handling foreign currency exposures because they transform the currency nature of an asset or liability. Firms can utilize these instruments for a variety of risk management purposes. This monograph serves as an introduction to cross currency swaps. It describes how they work, details motivations for their use, and presents examples of their use as hedges.

Cross Currency Swap Mechanics

Cross currency swaps are agreements between counterparties to exchange interest and principal payments in different currencies. To understand the mechanics of a cross currency swap, it is helpful to begin with the simplest derivative in the foreign exchange market, the forward contract. A FX forward involves the exchange of one currency for another, on a future date and at a forward price established today. The forward price can be viewed as the sum of the spot rate and the forward points, which indicate the relative premium or discount of the future transaction based on the interest rates of the currencies. As such, a forward transaction can be said to be comprised of two components—an exchange of principal and an exchange of interest payments – both of which occur at expiry. The principal exchange is based on today's spot rate; the interest payments—depending on the yields for the tenor of the contract—are determined at the beginning and paid in a lump sum along with the principal. The ratio of the total currency amounts exchanged at expiry is the forward price.

Like a forward, a cross currency swap consists of the exchange of principal amounts (based on today's spot rate) and interest payments between counterparties. Unlike a forward, however, a cross currency swap involves multiple exchanges of interest (and even principal amounts). The CCS shown in Figure 1, for instance, involves periodic exchanges of interest over the life of the swap (rather than a single exchange of interest at expiry as in a fx forward), as well as the exchange of principal at maturity. Often, the counterparties will exchange principal initially as well, although this exchange is optional. With the initial exchange, the cross currency swap is akin to a FX swap with spot and forward legs.

Figure 1. Generic Cross Currency Swap: A 5-year EUR/USD Example (Spot = 1.30)



Source: Bank of America

Figure 1 illustrates a structure in which the company receives USD interest and pays EUR interest. The front and back exchanges of principal amounts are based on the current spot rate. The grey Euro cash flows are economically equivalent to issuing a Euro bond; the USD cash flows are equivalent to investing in a USD bond. If paired with a USD borrowing, the CCS converts the USD borrowings into a synthetic EUR one; if paired with a EUR investment, the CCS converts the EUR asset into a synthetic USD one.

Fixed vs. Floating Cross Currency Swaps

Many companies favor the use of cross-currency swaps because, as over the counter instruments, they are easy to customize. In addition to the frequency of interest exchanges, the reference interest rates used to determine the interest payments can be customized to reflect the specific needs of the user. Although the interest rates must correspond to the currencies involved in the principal exchange, the actual benchmark rates used are up to the parties entering into the swap. This means that companies can match the reference rates for these instruments to those of their specific liabilities/assets, whose interest flows may be tied rates other than, say, LIBOR rates¹.

Furthermore, these instruments allow the interest rates on either side of the transaction to be fixed or floating rates. For instance, if a company has liabilities with floating interest payments, they can enter into a cross currency swap where they receive the floating interest payments from the counterparty and pay a fixed interest rate in return. Figure 2 illustrates four different combinations of cross currency swaps for a firm wishing to receive foreign currency flows.

Figure 2. Cross Currency Swap Structure

Receive fixed FC – Pay fixed USD	Receive floating FC – Pay fixed USD
Receive fixed FC – Pay floating USD	Receive floating FC – Pay floating

Pricing and Valuation

At inception, the value of a typical, vanilla swap is zero. This implies that the two back-to-back “bonds” (i.e., cash flows in a single currency) being exchanged have equivalent NPVs, when valued in a common currency at the spot exchange rate. Floating-for-floating swaps are akin to a bundle of two floating rate coupon bonds, whereas fix-for-fix swaps are akin to a bundle of two fixed coupon bonds. In terms of quoting convention, whereas the pricing of forwards contracts are expressed in terms of “points,” CCS is expressed in terms of “spreads” to the benchmark rates.

After inception, as the two yield curves shift and the spot exchange rate moves, the value of a CCS will tend to change. The swap’s value is determined by revaluing the remaining contractual cash flows on each side of the swap at current market rates (i.e., discounting future flows to determine net present values) and then converting the NPVs to a common currency (the USD) at the current spot rate). The difference between the NPVs of the legs is the current value of the swap. For a floating-for-floating swap, because the respective-currency NPVs of each side of

¹ Though there may be some accounting implications depending on what rate is chosen.

the swap remain unchanged as yield curves shift, changes in the value of the swap correspond only to changes in the spot exchange rate. For fix-for-fix swaps, since the interest payments are locked-in at initiation, changes in value reflect changes in yields as well as spot rates. As such variable rate structures tend to provide more stable mark-to-market profiles throughout their lives than fix-rate swaps of the same tenor.

Using a Cross Currency Swap to Transform Loans and Assets

Fundamentally, because CCS changes the currency denomination of assets and liabilities, they can be used to alter the expected interest earnings/costs and foreign currency risk associated with those assets and liabilities. For example, suppose that a company has a USD-denominated bond. To reduce its expected borrowing cost (and, for the moment, ignoring risk considerations), the company may wish to access the lower interest rate JPY market. To do this, it can use a CCS to create synthetic JPY-denominated debt. The initial exchange converts the USD bond proceeds to yen, and the subsequent cashflows (i.e., the JPY payments to and USD receipts from the swap counterparty) convert the interest and principal payments from dollars to yen.

Similarly, cross-currency swaps can be used to manage FX risk by, say, transforming the currency of an investment. Instead of moving cash physically across borders, swaps can be used as an overlay instrument to transform an asset's currency denomination synthetically. A company that is currently holding JPY assets, for instance, may have a strong view that JPY will weaken considerably against USD and prefer, therefore, to hold a USD-denominated asset. A CCS involving paying JPY and receiving USD would effectively convert the investment from yen into dollars.

Creating Asset/Liability Currency Matches

Cross currency swaps can also be used strategically to alter, and thereby create more appropriate, currency matches within broad portfolios of assets and liabilities. By using them, companies can adjust the currency denomination of liabilities and cash outflows to match those of assets and cash inflows, creating natural offsets and hedges against currency movements on a strategic and portfolio basis.

As a simple example, imagine a company with a foreign-currency denominated funding but operations mostly in the US and cash flows in USD. If the foreign currency strengthens against the USD, the company will be left with a larger liability position and larger USD cash outflows to service the foreign-currency denominated loan. Instead of leaving itself at risk to a strengthening of the foreign currency, however, the company could swap the loan into US dollars. Changes in the value of the swap will provide a perfect offset to changes in the value of the loan, insulating financial statements from the impact of currency moves. Broadly, the company has converted a foreign liability to match the land, equipments, and properties on the asset side. And on a cash flow basis, the CCS will leave net interest expenses in the same currency as firm revenues.

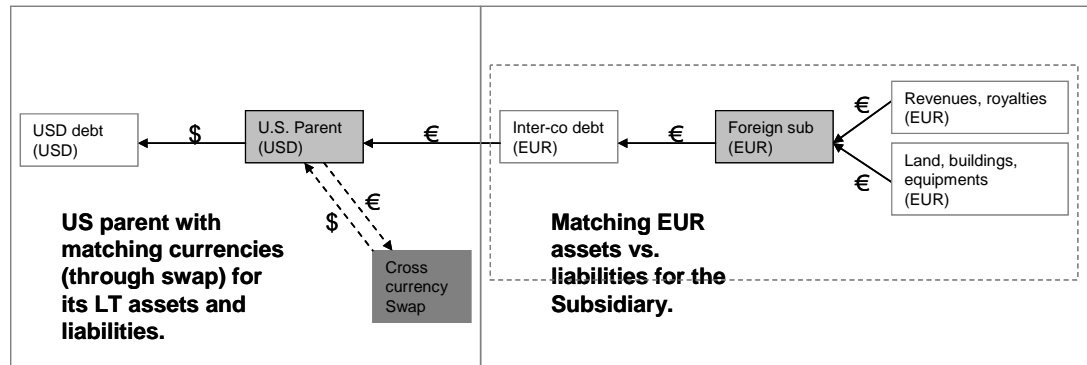
In practice, many US companies have global operations but a majority of their liabilities denominated in USD². And as companies continue expanding globally and investing overseas, foreign revenue growth will lead to a widening currency mismatch if funding of that expansion remains largely in USD. Such a currency mismatch would leave the firm exposed to shortfalls in liquidity, should currency values change significantly. To prevent the emergence of such a mismatch, companies in this situation may wish to swap a portion of their USD debt into foreign currencies (those in which long-term revenue growth is considered the most promising). Such synthetic foreign currency debt will provide a natural hedge for growing non-USD assets, and allow foreign revenues to be used to service interest on the borrowings.

Similarly, for companies whose funding is largely USD-based but whose overseas growth will occur via foreign operating entities in their respective markets, a CCS can be an effective tool for funding the foreign operation in its local currency and managing any subsequent

² 61% of the Bank of America's 2006 Corporate Risk Management Survey respondents indicated that they do not have any foreign currency denominated debts.

intercompany loan. The currency amount received in the initial exchange of the swap can be lent to the foreign entities. Thereafter, inflows from the swap will mirror those from a USD bond, providing a match to the company’s underlying USD-denominated funding. Concomitantly, outflows due to the swap will mimic those of foreign currency debt. With the swap, the US parent transforms the currency denomination of a share of its liabilities from USD to foreign currency, matching that of its growing overseas assets, while the subsidiary is left with an intercompany liability denominated in the currency of its operations and income. Figure 3 above shows such intercompany relationship and a company-wide asset/liability match of currency transactions.

Figure 3. Multi-national Corporate Structure



Source: Bank of America

From a longer-term perspective, if the US parent illustrated in Figure 3 has designated the intercompany loan as long term and therefore one that is re-measured through equity (or the funding of the foreign subsidiary has occurred via equity), then the US parent may choose to designate the cross-currency swap as a hedge of its foreign net investment. Designated as such, the swap would protect the USD value of the parent’s foreign equity investment, as well as future cashflows returned from the business (in the form of dividends and royalties)³.

Ultimately, to minimize currency risk, firms may desire “to localize” their assets and liabilities, i.e., borrow in the markets where is to be used and assets are to be accumulated. In many circumstances, however, this may not be possible or practical. In these cases, companies may find that CCS are an efficient tool for synthetically effecting portfolio adjustments.

Minimizing Interest Costs and Enhancing Interest Earnings

In addition to using CCS to manage FX risk, companies can utilize these flexible and efficient instruments to alter the expected interest costs or earnings of a portfolio.

A firm managing a net debt portfolio, for instance, may find it more efficient to use cross currency swaps to transform the funds raised into the ultimate currencies of need, rather than to raise funds directly in the currencies needed. In the current interest rate environment, with USD interest rates higher than many others (such as EUR, CAD, and JPY), a US company raising capital may find it attractive to consider alternative currencies. While interest rate differentials favor direct issuance in currencies other than the USD, similar (and even superior) funding advantages may be achieved by combining issuance in USD with a CCS. Moreover, the latter may allow the issuer to circumvent some of the additional challenges associated with a foreign issuance, such as limited market size and name recognition/investor appetite. Indeed, in some currencies/countries, a cross currency swap may provide the only means of securing long-term, fixed-rate financing (where borrowing needs may be too small or expensive to fund through capital markets, private placements or local bank lines).

³ Changes in the fair market value of the swap would be recorded in equity to offset changes of the foreign net investment.

By enabling diverse currency requirements to be satisfied by a single, currency borrowing, cross currency swaps also may enable firms to realize borrowing “economies of scale.” For instance, instead of funding its diverse European operations by borrowing in multiple currencies, a firm may be able to secure more favorable pricing by raising its total requirement in a single currency (say the EUR) and then using CCS to swap portions of the borrowing into CHF, GBP, NOK and any other currencies required.

Outside of the immediate capital raising period, changing market conditions can also provide firms with strong incentives to adjust existing capital structures, and cross currency swaps can be an efficient tool for implementing such adjustments. In recent years, when the Fed aggressively lowered its short-term interest rate target, companies sought pay-floating interest rate swaps to participate in the lower rates. More recently, with the Fed reversing its trend, companies may see opportunities to decrease interest expense, as well as debt-servicing costs on a cash basis, by swapping debt into foreign currencies with lower yields (such as JPY). Cross currency swaps transform USD debt into synthetic lower cost foreign currency debt, enabling firms to benefit from lower interest rates. Of course, such swaps may expose firms to FX risk, as changes in swap values due to currency fluctuations are recorded in income; in many instances, however, firms can avoid such risk to income by designating CCSs as net investment hedges.

Like firms managing debt portfolios, companies with investment portfolios may identify opportunities to enhance returns by strategically shifting the currency compositions of portfolios, and CCS can again be used for this purpose. For portfolios of short-term assets, positioning is likely to be more efficiently managed through regular FX forwards and FX swaps. Cross currency swaps, on the other hand, can be used with long-term foreign investments to capture favorable interest rate differentials. Given the current rate environment, US companies with foreign subsidiaries in countries such as Japan and the Euro area, which have lower interest rates than those in the US, can use cross currency swaps to convert these investments into USD⁴. In addition to enhancing earnings on these foreign assets, the swaps eliminate currency risk by synthetically converting the assets into USD.

Summary

As companies expand overseas, they face an increasing variety of foreign currency risks. Cross-currency swaps represent one tool that firms can use to manage, and ultimately enhance, the performance characteristics of their asset and liability holdings. By transforming the currencies of assets and liabilities, cross currency swaps can be used to create appropriate currency matches and minimize risk. Equally, they can be employed to reduce expected funding costs or enhance expected interest earnings. As such, CCSs provide firms with another instrument for adjusting currency allocations to achieve a proper balance of risk and expected cost/return.

⁴ From the results of our 2006 corporate survey, we have seen an increase of net investment hedge activity from 18% in 2005 to 31%. The increase can be attributed to the rise in US interest rates relative to other foreign currencies.

Portfolio and Risk Strategy

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