How Firm Can Hedge from Currency Risk

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Foreign currency hedging provides certainty of cash flow, because it reduces the risk associated with the volatility of currency exchange rate. The hedging has become important element in these last months, given the strong volatility that is undergoing the euro against the dollar, as consequence of the severe financial crisis which is affecting Europe. On this basis, the main objective of the paper is to give an analysis of the principal instruments that firm can use in its strategies of currency hedging, highlighting the most important elements in choosing the hedging policy. Indeed, the managers choose the hedging policies, considering on the characteristics of cash flow exposed to currency risk and given their forecast on the exchange. It is aid that, the paper examines the different effects that the hedging instruments may determine on a given numeral example of firm exposed to foreign exchange risk. In order to demonstrate that, the optimization of the hedging strategies depends on the ability of managers to forecast the future trend of the exchange rate and to adapt the most appropriate hedging instruments to these forecasts.

Keywords: currency hedging, swap, futures, option, foreign currency debt, forward currency

Introduction

The variability of the exchange rate may have important effects on the real economy, particularly on the firms that do business with foreign countries. Firms can handle this variability with mechanisms of hedging that differ in cost and flexibility. This paper analyzes these mechanisms and their possible effects on foreign currency positions of firms. In the light of this, the paper is organized as follow. Section 1 reviews main references about the topic. Section 2 focuses foreign currency debt. Section 3 is devoted to currency swap. Section 4 outlines domestic currency swap. Section 5 examines currency future. Section 6 describes the main elements of currency option. Section 7 contains the conclusions.

Literature

In literature, there are several theories about the reasons that lead companies to resort to different forms of currency hedging. According to some authors, managers resort to hedging currency because it reduces the volatility of cash flow, and consequently, reduces dependence on external sources of investment financing that are more expensive than the funds generated internally (Froot, Scharfstein, & Stein, 1993). Others say the real reason that induces to hedging is represented by managerial reasons, such as a lack of diversity managerial (Smith & Stulz, 1985) or concerns to managerial reputation (DeMarzo & Duffie, 1995; Breeden &
Viswanathan, 1998).

Instead regarding the importance that the instruments cover the exchange risk of the firms would have, the literature agrees. In fact, with the exception of a few authors (Wei, 1999) who claim the substantial ineffectiveness of hedging to reduce currency risk, much of the empirical literature affirms the effectiveness of hedging, as evidenced by the extensive use by businesses. Bonrad, for example, shows that, in the U.S., over 40% of large non-financial firms use financial derivatives, of which about 80% just to cover the exchange risk.

The use of currency hedging is indeed strongly correlated with firm size, given the fixed costs that it entails (Alkebäck, Hagelin, & Pramborg, 2006). On the other hand, large firms, with a wider access to the international capital markets, are more likely to borrow in foreign currencies rather than small firms (Keloharju & Niskanen, 2001).

The importance of hedging is also demonstrated by the increased use of derivatives and forward contracts on currencies for speculative purposes rather than hedging (Alayannis & Ofek, 2001; Lel, 2006). In addition, other authors have investigated the relationship between hedging and debt, and have concluded that access to capital markets currency would facilitate the leverage, as evidenced by the positive relationship established between the foreign currency debt and debt.

Lastly, a part of literature analyzes the possible complementarity between the various hedging techniques and in particularly, if foreign currency derivatives and foreign currency debt are complements or substitutes in the hedging of foreign currency exposure. In this respect, studies show that foreign debt is not an effective substitute of currency swaps, but they are tools that have different characteristics, and respond to different needs of hedging (Judge, 2004; Alayannis & Ofek, 2001).

**Foreign Currency Debt**

For business, the exchange rate risk is the possibility that the amount in national currency, receivable from or payable at maturity, respectively, in relation to a credit or a debt, increases or decreases as a result of any changes in the ratio of exchange rate between the domestic currency and the currency of the credit/debt towards foreign countries.

More specifically, for the importer, who has a debt resulting from a purchase from abroad, the risk is the possible devaluation of their currency, because in this case, at maturity of the debt, it should pay a larger sum in domestic currency for the purchase of foreign currency needed to pay for the foreign supplier.

For the exporter, who has a credit in foreign currency resulting from a sale to foreign customers, the risk is the possible revaluation of the currency, since, in this case, at maturity the debt would receive a lesser amount in national currency.

It follows that there are risks of currency exchange and needs of its hedging, in order to cancel or reduce their impact on management, in all cases of deferred payment in exchanging the foreign currency.

A form of hedging is the supply of foreign currency loans to the domestic operators.

For example, the exporting firm having sold their goods to a foreign customer, has a credit of 1 million USD, it can hedge with a loan in USD and the same maturity of credit. The total amount of the repaid to the bank, including principal and interest, it has to be equal to the sum in dollars that the firm receives from its foreign customer. In this way the firm is able to hedge itself from the possible strengthening of the euro, since it compensates the minor cash inflow of domestic currency linked to the sale with the minor cash outflow of
domestic currency linked to debt repayment.

Assuming an interest rate in dollars for three months maturity of 7%, the amount obtained funding totaled to USD 982,800.98, being such that the amount capitalized at 7% for three months is 1 million dollars.

Once obtained the loan in dollars, the foreign currency is sold on the base of the exchange spot, in our example equal to 1.22, and hence, you obtain an amount equivalent of EUR 805,574.58. In this way, the difference between the equivalents in euro of the interests on loan, equal to EUR 14,097.56, the interests that the firm receives by investing in euro, the amount resulting from the spot sale of currency obtained from the financing, you get the actual cost of hedging the currency risk. So assuming an investment rate of return in euro of 4%, the cost of the hedging is EUR 6,041.81, being the interest earned on the deposit equal to EUR 8,055.75.

In conclusion, as one can see from the example considered, the coverage of exchange rate risk has a cost which depends on the differential in interest rates between the foreign national and foreign currency.

Instead, for an importer, who has a debt expressed in foreign currencies, a form of hedging can be made, by buying at the spot exchange rate the amount of currency are necessary to pay the debt and by investing this amount until the expiration of debt.

The cost of the operation is different in the two following conditions:

(1) if the firm buy foreign currency, which has disinvested some financial assets, the cost is given by the difference between the return on the investment that it would have obtained keeping the assets in euro and the return achieved by investing the foreign currency that it has bought; so, for example, if an importer who has a debt to foreign countries at three months of USD 1,000,000, an exchange rate equal to 1.22, a rate on USD deposits of 2% and a return rate on financial assets equal to 4%, the net cost would amount to EUR 3,196.72, since the interests that it would have made maintaining its financial assets are equal to EUR 8,196.72 and the equivalent in euro of interests made by investing USD 1,000,000.00 are equal to EUR 5,000.00;

(2) if the operator buy foreign currency, has to resort to a loan in euro, the cost is equal to the interests payable on this loan, net of the realized return by investing the foreign currency; and assuming a rate of 10% for the loan in euro, the hedging cost would be equal to EUR 15,491.80.

Therefore, in these conditions, the amount of cost to be incurred to defend the exchange rate uncertainty depends on the differential between interest rates of currencies. Moreover, in case (2), the hedging may be some consequences on the possibility to obtain other credit with likely complications in case of request for new funding, since it produces an increase of its debts.

**Currency Swap**

Another form of hedging of foreign exchange risk is represented by forward contracts in the foreign exchange markets that they allow to fix the price of a purchase or sale of a currency at a future date, which is the delivery date of currency. In fact, with these contracts, the exporter, exposed to risk currency linked to a sale with foreign currency, may fix the equivalent in domestic currency of its sales in foreign currency, and likewise, the importer, who has a debt in foreign countries, may fix the equivalent in domestic currency of its supplies in foreign currency.

Forward foreign exchange contracts, essentially, are purchases and sales of foreign currency with deferred settlement with respect to the stipulation.

With these contracts either the party agrees to buy or the other agrees to sell a specific amount of currency
at a future and specified date, at the exchange rate set at the time of conclusion.

The forward rate is determined by the spot rate, which is added algebraically to the differential between interest rates of the currencies. In particular, in the volume quotation system, the differential is added or subtracted to spot rate, depending on whether the forward interest rate of foreign currency is higher or lower than the forward interest rate of domestic currency. He/she will speak respectively of premium in the first scenario and discount in the latter. For example, assuming the spot exchange rate EUR/USD is equal to 1.22, the forward interest rate of dollar and euro by 2% and 4%, the forward rate would be higher than the spot rate.

The premium or discount is only a reference measure, since in reality the forward rate also depends on the relationship between supply and demand and from the volume of trading on such instruments.

The mechanism of fixed exchange rate is used for the construction of derivatives on currencies, such as the Currency Swap, the Domestic Currency Swap, and the Currency Futures.

Currency Swap is a contract that relates to specific amounts of exchange, assets and liabilities denominated in foreign currencies. In particular, contractors make an initial exchange of currencies at the current exchange rate and a latter exchange of opposite sign in the end. For example, you buy a dollar amount against the sale of euro, on the basis of the spot exchange rate and it fixes immediately the sale, at the date indicated in the contract, of the same amount of dollars against the purchase of euro, at the forward exchange rate.

More concretely, in the beginning the contractors determine the two capitals equivalents, denominated in different monetary units, according to the spot rate. These equivalents form the initial exchange and the basis for the calculation of periodical interest, denominated in two different monetary units. So, depending on the variability or constancy of the interest rate used for the determination of periodic payments, the swap can take on different forms of currency swap fixed/fixed currency swap variable/fixed currency swap variable/variable. In any case at the maturity of the operation, the two parties proceed to an exchange with opposite sign of new capital equivalent, according to the forward exchange fixed at beginning.

The currency swaps can be clearer in the following example.

Suppose that, there are a European firm that wants to borrow dollars and a U.S. firm that wants to borrow euro. The European firm can borrow in the market of the euro at a rate of 6%, since its better notoriety among European banks, as opposed to the American firm, that for a borrow in euro has to sustain a rate of 7%. The American firm can borrow in the dollar market at a rate of 4%, since its better notoriety among American banks, as opposed to the European firm, that for a borrow in dollars has to sustain a rate of 4.5%. In such conditions, there is the opportunity to enter into a currency swap with the following characteristics.

In fact, the American firm borrows in dollars and offers this currency to the European firm at the rate of 4%. In turn, the European firm borrows in euro and offers this currency to the American firm at the rate of 6%, given the exchange rate EUR/USD of 1.22. At maturity of the swap, of course, there is a return flow of capital, in dollars and euro, with opposite sign between the firms.

With the currency swap, the American firm sustains the interest rate of 4% instead of 4.5% that would bear in the absence of the swap as well as European that sustains the interest rate of 6% instead of 7%. Meanwhile, the capital flow enables them to hedge the currency risk.

**Domestic Currency Swap**

A particular form of currency swap is the Domestic Currency Swap (DCS), which is the derivative
contract by which two parties agree to settle between them the difference between the strike price and the exchange rate at the expiration date, so that they can hedge their positions from the volatility of the currency exchange.

The main element of the contract is the rate at which the commitments made mutually by the parties they will be settled. More specifically, at the expiry date, if the spot rate will be greater than that fixed in the contract, the exporter will settle the difference to the importer. Instead, the spot rate at maturity is less than the exchange fixed in contract, the importer will pay to the exporter the difference.

However, between the two operators, there is a bank that signs separate contracts for each of the two parties, as in the following example.

It is assumed that the firm Alfa, compared with an export, has a claim to three months of USD 1,000,000. At the same date, the firm Beta, compared with an import, must pay a debt of USD 1,000,000. The firms are customers of the same bank which ask to make the hedging of their exchange risk. The DCS contract, proposed by the bank, provides, in addition to the premium, a notional equal to USD 1,000,000, a maturity of three months and strike exchange to 1.22.

In particular, the bank agrees to pay Alfa the difference between the spot rate and the contractual rate if at maturity the first is lower than the latter, on the contrary, the firm Alfa agrees to pay the difference between the two rates if the spot rate will be higher than the contractual rate. In addition, the bank agrees to pay to Beta the difference if the spot exchange is greater than the contractual rate while Beta agrees to pay bank the difference if the spot exchange is lower than the contractual rate.

It is assumed that, upon expiry of the contract, the spot rate is equal to 1.30.

Alfa cashes from its customer, according to the new exchange, the equivalent of USD 1,000,000 that it is equal to EUR 1,300,000, and therefore, higher than the equivalent at the time of sale that it was EUR 1,220,000. However, according to the DCS, the firm must pay the bank the difference between the exchange rate, multiplied by the notional principal, i.e. EUR \( (1.30 - 1.22) \times 1,000,000 = EUR 80,000 \), that it is equal to the profit on exchange, arising from the difference between the equivalents of USD 1,000,000. Beta must pay USD 1,000,000 to its suppliers and has a loss on exchange, because it has an outlay of 1,300,000 rather than 1,220,000 that it should have sustained if the exchange rate had remained to 1.22. However, thanks to the DCS receives EUR 80,000 that, thus, cancels the loss on exchange. In short, through the operation of DCS, both firms have fixed the exchange rate and the bank receives a gain equal to the premium paid by both parties.

As already mentioned, the operators prefer to use the DCS rather than the exchange forwards. This is mainly due to the greater flexibility of DCS that give the possibility to demand the early or delayed closure of contract, and it can to provide for longer maturities than the forward exchange.

As regards the exchange contractual, this is determined similarly to what was seen for the exchange forwards, taking into account the differential between the rates of interest of currency.

**Currency Future**

The futures on currencies are financial instruments that specify the price at which a predefined amount of currency can be bought or sold a future date. Thanks to these characteristics, they can be used to hedge against exchange risk, since the main element is represented by the fixing of the exchange rate.
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This operation may bring about an advantage or a disadvantage for the buyer of the future and, by reflex, a disadvantage or an advantage for the seller, according to the forecast, to be proved correct or mistaken. The size of the advantage or the disadvantage is determined by the difference between the exchange rate predefined upon stipulation on the contact and the current rate upon expiry.

You may hypothesize that European firm A, for effect of a purchase from a US supplier, has a debt of 1 million dollars in three months. It wants to hedge this currency position. If the dollar exchange is 1.22 and if it forecasts its rise in the next three months, it may buy 8 Futures (trading unit equal to USD 125,000) to rate of 1.22, to avoid supporting a greater payment in euro.

Similarly, you may hypothesize that European firm A, for effect of a sale to a US customer, has a credit of 1 million dollars in three months. It wants hedge to this currency position. If it forecasts a decrease of exchange dollar in the next three months, it may sell 8 Futures (trading unit equal to USD 125,000) to rate of 1.22, to avoid having a lower cashing in euro.

Therefore, you consider the effects arising from the Future in three following cases of exchange at maturity.

If the exchange rate remains at 1.22, the positions of the two companies remain unchanged and the Future has not effects.

If the dollar values and exchange rate becomes 1.20, firm A, having bought the Future, may buy, at maturity, USD 1,000,000.00 at a rate of 1.22 (EUR 819,672.13) instead of 1.20 (EUR 833,333.33), while firm B, having sold the Future, has to sell USD 1,000,000.00, that it has received from its foreign customer, the exchange rate of 1.22 instead of 1.20, and thereby giving up the profit from currency exchange that it would have realized if it had not sold the future.

If the dollar devalues and the exchange rate becomes 1.24, firm A, having bought the Future, has to buy USD 1,000,000.00 at the exchange rate of 1.22 (EUR 819,672.13) even if the current rate is 1.24 (EUR 806,451.61), so that, having mistaken forecast, it must renounce to the profit it would have made if it had not purchased the future, while firm B is able to sell, having sold the Future, may sell USD 1,000,000.00, that it receives from its customer, at the exchange rate of 1.22 instead of 1.24, avoiding the losses of currency exchange that it would have incurred if it had not sold the future.

As it can verify from the above example, the Future, like the other currency forward contracts, allows to fix a determined exchange rate level, and thus, it protects itself against possible unfavourable fluctuations. It differentiates from the forward contract because of its standardization, which confers to the Future a greater ease of transfer.

Currency Future that are negotiated on the same market present standard characteristics such as method of payment and delivery, expiry date, place of negotiation, and size of underlying currency.

In particular, with regards to expiry, there are four kinds of Future contracts that have three-monthly expiry dates, respectively, in March, June, September, December; and an exchange rate different for each expiry date.

The position may remain open until two business days before the third Wednesday of the contract month. This means that, for example, all contracts that expire in March may remain open and, therefore, may be negotiated, up to two banking days before the third Wednesday of March. In every case, at the delivery date there is the delivery of the contractual currencies.
The standardization also concerns the minimum price, which represents the minimum fluctuation of the Future.

Currency Future, as other futures typologies, has the Daily Price Limit that is the maximum daily fluctuation. Consequently, if the price drops in the same measure as the fixed limit and the contract is called limited down or the price increases in the same measure as maximum fluctuation and the contract is called limit up, then the trading is normally interrupted for the whole day, except in the case that the Trading Commission does not consider it necessary to intervene to modify the daily price limit.

In the above mentioned circumstances, the suspension of trading is finalized in order to avoid strong fluctuations provoked by speculative excesses. Consequently, if the price drops in the same measure as the fixed limit (in the contract called limit down), or the price increases in the same measure as maximum fluctuation (called limit up), then the negotiations are normally interrupted for the whole day, except in the case that the Stock Exchange do not consider it necessary to intervene to modify the daily price limit.

While above mentioned conditions remain unchanged, the price of the Future changes day by day, since it is determined by the market. In this sense, it may see that the currency exchange rate of the Future is substantially similar to those of the forward market.

In both types of contract, the forward exchange rate is strictly correlated to the differential between the interest rates of the two currencies. Consequently, the currency is quoted, in the forward market, at premium or at discount, depending on whether the interest rate of currency is lower or higher than interest rate of other currency.

It should point out that these rules are valid only within the vastest exchange markets or within monetary areas that are stable from the economical point of view. In reality, however, it may be that there are some deviations from the theory given the differences that exist among the markets of the Future.

Finally, the last element of the Future is represented by the margin that it must be paid when it opens a position. The percentage of this margin is fixed and modifiable only in particular cases. Its amount is determined daily in correlation with the variations of the currency exchange.

**Currency Option**

Another particularly common form of derivative, often used by companies in their strategies to hedge currency risk is the option, the contract that entitles the purchaser (holder) the right to buy (call) or sell (put a) a specified amount of currency at a predetermined rate (strike), to a certain date, in the case of European options, or at any time between the conclusion and termination of the contract in the case of American options.

Unlike other derivatives used in hedging currency risk, the currency options allow companies to protect themselves from adverse changes in the currency market, while maintaining the ability to make a profit in the event of favorable foreign exchange trends.

While in short-term contracts, preclude any possibility of profit on exchange rates since they lock the exchange rate, options leave open that possibility, since they do not entail an obligation but they give a right that, of course, it may be exercised if it implies a lesser cost than the purchase or direct on the market.

In essence, these agreements allow you to use a more flexible strategy for hedging against the risk of exchange rate, since they leave virtually unchanged the profit potential involved in the maintenance of the open position in foreign currencies.
Moreover, in the options, unlike the other derivatives used in hedging currency risk, the positions of the two parties to the contract are different: the buyer holds an active position, represented exclusively by the option to buy or sell, exercisable or non-exercisable depending on the current exchange rate at maturity, while the seller assumes, however, a passive position since it is subject to the decisions of the buyer, given the obligation to respond to the right exercised by holder. In essence, the positions of the parties are asymmetrical, since the seller is exposed to have substantial losses, while the buyer bears the sole risk of loss of the premium, paid at the stipulation of the contract.

The options, thanks to their flexibility, allow companies to hedge against exchange rate risk by structuring the transaction according to the specific needs of hedging and considering its cost. In fact, each structure has its cost, given that the premium varies according to the value of which in turn depends on the strike rate, the duration, the type of underlying. More precisely, it can be argued that part of the premium is the so-called intrinsic value, corresponding to the difference between the strike rate and the spot exchange market. In the call (put) options such value decreases as the spot exchange rate of the market falls (rises) to the strike rate, until it reaches zero at the point where the two changes coincide, that is:

\[
V^c_t = S_t - X \quad \text{(option call)}
\]

\[
V^p_t = X - S_t \quad \text{(option put)}
\]

Given that \(V_t\) is the intrinsic value at time \(t\), and \(S_t\) is the spot currency exchange at time \(t\) and \(X\).

It follows that the higher is the spot exchange rate with respect to the strike exchange the more the buyer of the call option is likely to make a profit from the transaction.

In call options, in order that the right is exercised, it is necessary that the change reaches, at maturity, a lower level (1.20) of the strike exchange rate (1.22), net of the premium paid at purchase. Only under such conditions, the option holder, in exercising the right to buy, makes a profit, equal to the difference between the strike price net of the premium and the spot exchange rate of market.

Similarly, in put options, the condition in order that the owner makes a profit, it is that, when the contract reaches maturity, the exchange rate is at a higher level of the exchange strike rate plus the premium. If, in fact, this does not occur, the option is abandoned, making it more advantageous to sell the underlying currency on the open market.

Consequently, according to its intrinsic value, the currency option can be in the money, at the money, and out the money.

Thus, for a call option, quoted in terms of the U.S. dollar per unit of foreign currency, the option is:

- in the money when the spot rate is lower than the exchange strike rate considering that for example if the spot rate is 1.20 while the strike rate is 1.24, the holder exercises the option, buys a dollar at 1.24 (0.81) and sells it on the market at 1.20 (EUR 0.83), thus realizing a profit of 0.02;
- at the money when the spot rate coincides with the strike exchange considered that in this case given the coincidence between the two rates, the possible exercise of the option does not produce results;
- out of the money when the spot rate is higher than the exchange strike rate, considering that for example if the spot rate is 1.24 while the strike exchange rate is 1.20, if the holder exercises the option and, therefore, buys a dollar at 1.20 (EUR 0.83) on the market and sells it at 1.24 (0.81), he/she would have a loss of 0.02.

Opposite conditions apply, of course, for the buyer of the put option that it is in the money (out of the money) if the spot rate is higher (lower) than the strike exchange rate.
But the prize, as said, it is influenced not only by the gap between contract price and current price, but also influenced by the time value of the option, that, in turn, it is the result of the exchange rate volatility, the residual maturity of the option and the spread between the interest rates. So, for example, an option with a greater residual maturity entails higher probability that the exchange rate of market reaches a level such that it is convenient for the holder in order that he/she exercises his/her option.

Therefore, the firm that intends to hedge against the currency risk it has to choose the most appropriate combination and balanced between the cost of the operation and size of hedging: if it buys an option that it is too much cheap, it may risk taking an instrument which in fact leaves reduced margins of hedging, as well as if it exaggerates in the size of hedging and it with an option to buys too much expensive, it is exposes the firm to find very disadvantageous solutions from the economic point of view.

Under a more operational profile, the firm that typically uses the options it trades with foreign countries, chooses a foreign currency for this trading and agrees on the deferred settlement of the credit or debt, incurred as a result of the commercial or financial transaction.

So, for example, the call option on currency hedging is suited to the needs of an firm, who having purchased from a foreign supplier for a total of 1 million dollars and having agreed on payment at 90 days, wants hedge against the risk that the dollar values, by buying a currency option with the following features: notional principal amount of USD 1 million; expiry at 90 days; strike price of 1.35 (equal to the spot exchange rate); premium equal to 5% of the spot exchange rate.

In fact, if on the expiry of 90 days the exchange rate changes to 1.30, the firm exercises the option. In this way the firm can buy the currency that it is necessary to pay its suppliers, by an exchange equivalent of EUR 740,740.74 rather than of an exchange equivalent of EUR 769,230.77 if instead it buys the dollars directly in the market. If, on the contrary, the exchange rate at 1.40, the option is not exercised, given an exercise price (1.35) less convenient than the current price (1.40).

Hence, the firm has pre-defined the maximum loss at the premium level of 0.07 and has maintained the opportunity to profit on exchange rates, which it is greater the larger is the strengthening of the euro against the dollar.

Likewise, the put option is consistent with the hedging requirements of a firm that has sold to a foreign customer for 1 million dollars and wants hedge against the risk that the euro values, by buying a put option with the following features: notional principal amount of USD 1 million; expiry at 90 days; strike price of 1.35 (equal to the spot exchange rate); and premium equal to 5% of the spot exchange rate.

If, in fact, on the expiry of 90 days the exchange rate changes to 1.40, the firm exercises the option. In this way the firm can sell the currency that it cashes from its customer, by an exchange equivalent of EUR 740,740.74 rather than of an exchange equivalent of EUR 714,285.71 if instead it sells the dollars directly in the market. If, on the contrary, the exchange rate at 1.30, the option is not exercised, given an exercise price (1.35) less convenient than the current price (1.30).

Hence, the firm has pre-defined the maximum loss at the premium level of 0.07 and has maintained the opportunity to profit on exchange rates, which it is greater the larger is the strengthening of the dollar against the euro.

Clearly the decision to buy an option of the type described is the result of a complex evaluation process that is based primarily on forecasts. So, as it appears in the example, the choice of buying the call option is
stake if the firm expects that dollar devalues, reaching exchange rates higher than the strike price of 1.35. However for values above 1.35 and below 1.42, the firm, even if it exercises the option, has a loss, resulting from the premium paid for buying the option.

Likewise, the firm buys a put option if it forecasts that dollar values, reaching exchange rates lower than the strike price of 1.35, and, however, for values between 1.28 and 1.35 it has a loss resulting from the premium paid for buying the option.

Therefore it can represent the cash flow of the call option and the put option for the different values which they may occur in the foreign exchange market. From the profile of the cash flow of a call option, as shown in Figure 1, it is clear that the purchase of this option is convenient if the firm forecast an increase in the exchange rate beyond the level corresponding to the strike exchange increased for the premium paid to purchase the option.

Instead from the profile of cash flow of the option put, as shown in Figure 2, it is clear that the buy of the option is convenient if the firm forecasts a decrease in the exchange rate below the level corresponding to the strike price net the premium.
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