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Simulation of Colombian Exchange Rate to Cover the Exchange Risk Using Financial Options Like Hedge Strategy

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Abstract : Imperfections in the capital market are used to argue the relevance of the corporate risk management function. With corporate hedge, the value of the company is increased by reducing the volatility of the expected cash flow and making it possible to face a lower bankruptcy costs and financial difficulties, without sacrificing tax advantages for debt financing. With the propose to avoid exchange rate troubles over cash flows of Colombian exporting firms, this dissertation uses financial options, over exchange rate between Peso and Dollar, for realizing a financial hedge. In this study, a strategy of hedge is designed for an exporting company in Colombia with the objective of preventing fluctuations because, if the exchange rate down, the number of Colombian pesos that obtains the company by exports, is less than agreed. The exchange rate of Colombia is measured by the TRM (Representative Market Rate), representing the number of Colombian pesos for an American dollar. First, the TMR is modelled through the Geometric Brownian Motion, with this, the project price is simulated using Montecarlo simulations and finding the mean of TRM for three, six and twelve months. For financial hedging, currency options were used. The 6-month projection was covered with financial options on European-type currency with a strike price of $ 2,780.47 for each month; this value corresponds to the last value of the historical TRM. In the compensation of the options in each month, the price paid for the premium, calculated with the Black-Scholes method for currency options, was considered. Finally, with the modeling of prices and the Monte Carlo simulation, the effect of the exchange hedging with options on the exporting company was determined, this by means of the unit price estimate to which the dollars in the scenario without coverage were changed and scenario with coverage. After using the scenarios: is determinate that the TRM will have a bull trend and the exporting firm will be affected positively because they will get more pesos for each dollar. The results show that the financial options manage to reduce the exchange risk. The expected value with coverage is approximate to the expected value without coverage, but the 5% percentile with coverage is greater than without coverage. The foregoing indicates that in the worst scenarios the exporting companies will obtain better prices for the sale of the currencies if they cover.

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