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Hedging Your U.S. Dollar Investments with Currency Options

Hedging with USX Options

- Many Canadian investors hold U.S. securities in their portfolio.

- Exposure to two types of risk:
  - Market
  - Currency

What is a Currency Option?

- Based on a currency pair value.
- Reflects an exchange rate.
- USX reflects USD/CAD.
- The value of US$1.00 in Canadian dollars.
- U.S. dollar is considered the base currency.

Currency Risk

- The value of a U.S. dollar equity portfolio will drop as the USD/CAD depreciates.

- Purchase of a put option as a hedging strategy.

- As the USD/CAD decreases, the put should increase in value.

How Many USX Options To Buy?

- Formula

$$\text{Number of option contracts} = \frac{\left\{\dfrac{\text{U.S. dollar amount to hedge}}{\text{Contract size of the option}}\right\}}{\text{Delta of the option}}$$

Portfolio Hedging Example

- Investors wishes to hedge US$50,000.00.
- USD/CAD is at 1.0600.
- USX value is 1.0600 X 100 = 106.00.
- 2-month at-the-money 106-strike put option has a delta of 0.50.

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Portfolio Hedging Example

$$\text{Number of put contracts} = \frac{\left\{\dfrac{50{,}000}{10{,}000}\right\}}{0.50}$$

$$= \frac{5}{0.50}$$

$$= 10 \text{ contracts}$$

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Portfolio Hedging Example

- Investor would buy 10 2-month 106 strike put.
- 2-month 106-strike put is trading at $2.10 per contract.
- Cost of one contract is $2.10 X 100 = $210.00
- Investor pays $210 X 10 = $2,100.00

Consider a U.S. Dollar Drop

- Starting value of portfolio is US$50,000.00, which corresponds to C$53,000.00.
  - US$50,000.00 X 1.06
- If the exchange rate drops to 1.01, the portfolio would be worth C$50,500.00.
  - US$50,000.00 X 1.01
- The loss is C$2,500.00.

USX Put Option Settlement Value

- Difference between the strike price and the BoC noon rate at expiration, multiplied by the trading unit of the contract.

Settlement Value

$$= \frac{\text{(Strike price - BoC noon rate)}}{\text{1 USD}} \times \text{10,000 USD} \times \frac{\text{1 CAD}}{\text{100 cents CAN}}$$

= (Strike price - BoC noon rate) x 100

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USX Put Option Settlement Value

Settlement Value

= (Strike price - BoC noon rate) X 100

= (106 - 101) x 100

= $500.00

- $500.00 X 10 contracts = $5,000.00
- $5,000.00 - $2,100.00 = $2,900.00
- The position is cash settled in Canadian dollars.

Result of the Hedge

- Initial portfolio value was US$50,000.00 or C$53,000.00.
- The drop in the exchange rate causes the portfolio to decrease by an amount of C$2,500.00.
- Portfolio is now worth C$50,500.00.
- Profit on USX put options is C$2,900.00.
- Portfolio net value is C$53,400.00.

Consider a U.S. Dollar Increase

- Starting value of portfolio US$50,000.00, which corresponds to C$53,000.00
  - US$50,000.00 X 1.06
- If the exchange rate increases to 1.12, the portfolio would be worth C$56,000.00
  - US$50,000.00 X 1.12
- The profit is C$3,000.00

Results of the Hedge

- Initial portfolio value was US$50,000.00 or C$53,000.00.
- The increase in the exchange rate causes the portfolio to increase by an amount of C$3,000.00.
- Portfolio is now worth C$56,000.00.
- Put options expire worthless and create a loss corresponding to the premium paid of $2,100.00.
- Portfolio is now worth C$53,900.00.

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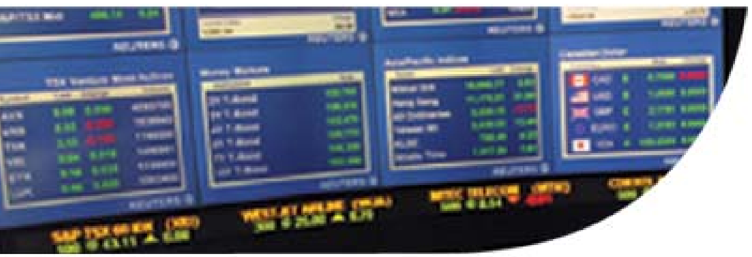

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