PNC Advisory Series

Managing Currency Risk with Foreign Exchange Options
Options

Option = A right (but not an obligation) to transact at a certain price OR exchange currency at a given rate. - also called the Strike Rate.

Provides:
- Protection
- Upside
- Flexibility
- Customization
Why Consider Options?

• Offers protection against adverse moves in exchange rates
  • *Insurance against a worst case rate*

• Provides some opportunity to benefit from favorable moves in exchange rates
  • *Potential upside can be defined or unlimited*

• Are highly customizable
  • *Can define strikes, barriers and &/or premiums (some with zero premium)*

• Can be sold prior to maturity
  • *Capture residual or remaining value of the option*
  • *Transferability provides flexibility*
When to Consider Options?

When.....

Situation

Options provide...
When to Consider Options?

When.....

Situation

Options provide...

1. Exposure is uncertain
When to Consider Options?

When.....

Situation

Options provide...

Exposure is uncertain

Protection in contingency situations
When to Consider Options?

When.....

Situation

Options provide...

2. You need to hedge, but there may be a better rate

Exposure is uncertain

Protection in contingency situations
When to Consider Options?

When.....

Situation

Options provide...

Risk mitigation, and you will be able to participate in anticipated gains

Protection in contingency situations

Exposure is uncertain

You need to hedge, but there may be a better rate
When to Consider Options?

When.....

Situation

3. You are unwilling to lock in a hedge at worse than your budget rate

You need to hedge, but there may be a better rate

Exposure is uncertain

Options provide...

Risk mitigation, and you will be able to participate in anticipated gains

Protection in contingency situations
When to Consider Options?

Situation

- You are unwilling to lock in a hedge at worse than your budget rate
- You need to hedge, but there may be a better rate
- Exposure is uncertain

Options provide...

- Protection with a chance for recovery
  - Risk will be mitigation, and you will be able to participate in anticipated gains
  - Protection in contingency situations
When to Consider Options?

When.....

Situation

4. Forward rates are in your favor
   - You are unwilling to lock in a hedge at worse than your budget rate
   - You need to hedge, but there may be a better rate
   - Exposure is uncertain

Options provide...

- Protection with a chance for recovery
- Risk mitigation, and you will be able to participate in anticipated gains
- Protection in contingency situations
When to Consider Options?

When:

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Options

Vanilla option: The right but not the obligation to buy or sell a specified amount of currency at a specified rate and date.

Vanilla options are sold for a premium and function similar to an insurance policy.

Option pricing is sensitive to tenor, strike rate, volatility in the market, value of underlying currency and notional amount of exposure.
## Optional Pricing

<table>
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<th><strong>Notional</strong></th>
<th>The amount of currency, or US dollar equivalent, being hedged.</th>
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<td><strong>Tenor</strong></td>
<td>The amount of time until maturity of the option&lt;br&gt;The longer the maturity the higher the price of an option&lt;br&gt;The relationship between time and price is not linear, does not increase equally for increases in time</td>
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<td><strong>Strike Rate</strong></td>
<td>The exchange rate or price where the option contract can be exercised</td>
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<td><strong>Volatility</strong></td>
<td>Variability in exchange rates over a period of time</td>
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Vanilla Call and Put Examples

Situation One

Company ABC needs to buy or sell 1MM EUR in 6 months

Company wishes to protect against an adverse move in the EUR but would like to be able to fully participate in a favorable move in EUR.

Need to Buy EUR

Buy a Vanilla Call Option

• Protection against rising exchange rate

Need to Sell EUR

Buy a Vanilla Put Option

• Protection against a decreasing exchange rate
**Vanilla Call and Put Examples**

### Situation Two

Company ABC needs to buy or sell 1MM EUR in 6 months

Company wishes to protect against an adverse move in the EUR but would like to be able to participate in a favorable move in the currency without paying premium.

#### Need to Buy EUR

- **Buy a Vanilla Call Option**
  - While Simultaneously Selling a Put Option

#### Need to Sell EUR

- **Buy a Vanilla Put Option**
  - While Simultaneously Selling a Call Option
Collar Example

**Situation Three**

Forward Rate is 1.3750

Buy a 1.4100 EUR Call on 1MM EUR Maturing in 6 Months

Sell a 1.3300 EUR Put on 1MM EUR Maturing in 6 Months

If the market is between 1.4100 and 1.3300

you can **buy at the market rate**
When it makes sense to pay premium

**Contingent situation**
Plain vanilla calls or puts provide the right but not an obligation, if the foreign exchange risk does not materialize you can let the option expire or sell it.

**Need for flexibility**
Ability to sell options if currency moves in your favor and lock into forwards.

**Desire unlimited upside potential**
Purchasing a vanilla call or put provides protection but full participation in a favorable move in the currency; ideal if you have a strong view on currency.

**Desire increased upside potential**
Paying some premium can allow you to improve barriers or strike prices.

**When volatility is low**
Cost of protection goes down.
Case Study One

Source: Bloomberg

In a 1 month period of time in early 2014 the Canadian dollar depreciated by over 5%

Many corporates wish to hedge against further Canadian dollar weakness but do not want to lock in the forward rate at a worse level than their budget rate

Selling Canadian dollars forward is at a worse rate than the current market or spot rate

Canadian dollar’s rapid depreciation
Case Study One

**Participating Forward**

Forward Rate of 1.0950

Buy a 1.1100 CAD Put on 1MM CAD Maturing in 6 Months

Sell a 1.1100 CAD Call on 500,000 CAD Maturing in 6 Months

Put Strike 1.1100 – Right to sell 1MM CAD at 1.1100

Call Strike on 500,000 CAD at 1.1100 – Obligation at 1.1100

Unlimited on 500,000 CAD
Case Study Two

Based on 5 years of historical returns the Mexican peso has the experienced annualized volatility of over 10% - one of the highest among major currencies.

Interest rates in Mexico are high compared to rates in the US.

Currently, purchasing the peso forward is cheaper than at the market or spot rate.
Case Study Two

Enhanced Collar Structure

- Buy a 12.5000 MXN Call on 1MM USDMXN Maturing in 6 Months
- Sell a 13.2500 MXN Put with a European Style Knock-In Trigger/Barrier at 14.0000 on 1MM USDMXN Maturing in 6 Months

Call Strike 12.5000 – Right to buy at 12.5000

If the market is between 12.5000 and 14.0000 you can buy at the market rate

Knock-back rate 13.2500 – client is knocked back into the put strike of 13.2500

Put Trigger 14.000- Activates the Put and the client is obligated to buy at the Put Strike
Case Study Two

Incorporating a Barrier into an Option

- Incorporating a barrier into an option structure can give you the opportunity for further upside while eliminating or reducing the premium.
- We will compare using a collar strategy versus an enhanced collar strategy in the Mexican peso for a client purchasing pesos.

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Worst Case</th>
<th>Best Case</th>
<th>Knock-Back</th>
<th>Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forward</td>
<td>12.9500</td>
<td>12.9500</td>
<td>N/A</td>
<td>$0.00</td>
</tr>
<tr>
<td>Collar</td>
<td>12.5000</td>
<td>13.5000</td>
<td>N/A</td>
<td>$0.00</td>
</tr>
<tr>
<td>Enhanced Collar</td>
<td>12.5000</td>
<td>13.9999</td>
<td>13.2500</td>
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For more information, please contact a PNC Relationship Manager or a PNC foreign exchange representative at 1-800-723-9106 or visit pnc.com/fx
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