FpML - Bond Options Component Definitions

Version: 4.3

This Version:

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Latest Version:

http://www.fpml.org/spec/fpml-4-3-13-rec-2

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Errata For This Version:

http://www.fpml.org/spec/fpml-4-3-13-rec-2/html/fpml-4-3-errata.html

Document built

Table Of Contents

1 Global Complex Types

1.1 BondOption

1.1.1 Description:

A Bond Option

1.1.2 Contents:

Inherited element(s): (This definition inherits the content defined by the type OptionBaseExtended)

- Base type for options starting with the 4-3 release, until we refactor the schema as part of the 5-0 release series

strike (exactly one occurrence; of the type BondOptionStrike) Strike of the the Bond Option.
Either
bond (exactly one occurrence; of the type Bond) Defines the underlying asset when it is a bond.
Or
convertibleBond (exactly one occurrence; of the type ConvertibleBond) Defines the underlying asset when it is a convertible bond.

1.1.3 Used by:

- Element: bondOption

1.1.4 Derived Types:

1.1.5 Figure:

1.1.6 Schema Fragment:

```
<xsd:complexType name="BondOption">
  <xsd:annotation>
    <xsd:documentation xml:lang="en">
      A Bond Option
    </xsd:documentation>
  </xsd:annotation>
  <xsd:complexContent>
    <xsd:extension base="OptionBaseExtended">
      <xsd:sequence>
        <xsd:element name="strike" type="BondOptionStrike">
          <xsd:annotation>
            <xsd:documentation xml:lang="en">
              Strike of the the Bond Option.
            </xsd:documentation>
          </xsd:annotation>
        </xsd:element>
        <xsd:group ref="BondChoice.model"/>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```

1.2 BondOptionStrike

1.2.1 Description:

A complex type to specify the strike of a bond or convertible bond option.

1.2.2 Contents:

Either

referenceSwapCurve (exactly one occurrence; of the type ReferenceSwapCurve) The strike of an option when expressed by reference to a swap curve. (Typically the case for a convertible bond option.)

Or

price (exactly one occurrence; of the type OptionStrike)

1.2.3 Used by:

- Complex type: BondOption

1.2.4 Derived Types:

1.2.5 Figure:

1.2.6 Schema Fragment:

```xsd
<xsd:complexType name="BondOptionStrike">
  <xsd:annotation>
    <xsd:documentation xml:lang="en">
      A complex type to specify the strike of a bond or convertible
      bond option.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:choice>
    <xsd:element name="referenceSwapCurve" type="ReferenceSwapCurve">
      <xsd:annotation>
        <xsd:documentation xml:lang="en">
          The strike of an option when expressed by reference to a swap
          curve. (Typically the case for a convertible bond option.)
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="price" type="OptionStrike"/>
  </xsd:choice>
</xsd:complexType>
```

1.3 MakeWholeAmount

1.3.1 Description:

A complex type to specify the amount to be paid by the buyer of the option if the option is exercised prior to the Early Call Date (Typically applicable to the convertible bond options).

1.3.2 Contents:

Inherited element(s): (This definition inherits the content defined by the type SwapCurveValuation)

- A complex type to specify a valuation swap curve, which is used as part of the strike construct for the bond and convertible bond options.

interpolationMethod (zero or one occurrence; of the type InterpolationMethod) The type of interpolation method that the calculation agent reserves the right to use.

earlyCallDate (exactly one occurrence; of the type IdentifiedDate) Date prior to which the option buyer will have to pay a Make Whole Amount to the option seller if he/she exercises the option.

1.3.3 Used by:

- Complex type: ReferenceSwapCurve

1.3.4 Derived Types:

1.3.5 Figure:

1.3.6 Schema Fragment:

```
<xsd:complexType name="MakeWholeAmount">
  <xsd:annotation>
    <xsd:documentation xml:lang="en">
      A complex type to specify the amount to be paid by the buyer of
      the option if the option is exercised prior to the Early Call
      Date (Typically applicable to the convertible bond options).
    </xsd:documentation>
  </xsd:annotation>
  <xsd:complexContent>
    <xsd:extension base="SwapCurveValuation">
      <xsd:sequence>
        <xsd:element name="interpolationMethod" type="InterpolationMethod" minOccurs="0">
          <xsd:annotation>
            <xsd:documentation xml:lang="en">
              The type of interpolation method that the calculation
              agent reserves the right to use.
            </xsd:documentation>
          </xsd:annotation>
        </xsd:element>
        <xsd:element name="earlyCallDate" type="IdentifiedDate">
          <xsd:annotation>
            <xsd:documentation xml:lang="en">
              Date prior to which the option buyer will have to pay a
              Make Whole Amount to the option seller if he/she
              exercises the option.
            </xsd:documentation>
          </xsd:annotation>
        </xsd:element>
      </xsd:sequence>
    </xsd:extension>
  </xsd:complexContent>
</xsd:complexType>
```

1.4 ReferenceSwapCurve

1.4.1 Description:

A complex type used to specify the option and convertible bond option strike when expressed in reference to a swap curve.

1.4.2 Contents:

swapUnwindValue (exactly one occurrence; of the type SwapCurveValuation)

makeWholeAmount (zero or one occurrence; of the type MakeWholeAmount) Amount to be paid by the buyer of the option if the option is exercised prior to the Early Call Date. (The market practice in the convertible bond option space being that the buyer should be penalized if he/she exercises the option early on.)

1.4.3 Used by:

- Complex type: BondOptionStrike

1.4.4 Derived Types:

1.4.5 Figure:

1.4.6 Schema Fragment:

```xml
<xsd:complexType name="ReferenceSwapCurve">
  <xsd:annotation>
    <xsd:documentation xml:lang="en">
      A complex type used to specify the option and convertible bond
      option strike when expressed in reference to a swap curve.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence>
    <xsd:element name="swapUnwindValue" type="SwapCurveValuation"/>
    <xsd:element name="makeWholeAmount" type="MakeWholeAmount" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation xml:lang="en">
          Amount to be paid by the buyer of the option if the option is
          exercised prior to the Early Call Date. (The market practice
          in the convertible bond option space being that the buyer
          should be penalized if he/she exercises the option early on.)
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

1.5 SwapCurveValuation

1.5.1 Description:

A complex type to specify a valuation swap curve, which is used as part of the strike construct for the bond and convertible bond options.

1.5.2 Contents:

floatingRateIndex (exactly one occurrence; of the type FloatingRateIndex) The ISDA Floating Rate Option, i.e. the name of the floating rate.

indexTenor (zero or one occurrence; of the type Interval) The ISDA Designated Maturity, i.e. the tenor of the floating rate.

spread (exactly one occurrence; of the type xsd:decimal) Spread in basis points over the floating rate index.

side (zero or one occurrence; of the type QuotationSideEnum) The side (bid/mid/ask) of the measure.

1.5.3 Used by:

- Complex type: MakeWholeAmount
- Complex type: ReferenceSwapCurve

1.5.4 Derived Types:

- Complex type: MakeWholeAmount

1.5.5 Figure:

1.5.6 Schema Fragment:

```
<xsd:complexType name="SwapCurveValuation">
  <xsd:annotation>
    <xsd:documentation xml:lang="en">
      A complex type to specify a valuation swap curve, which is used
      as part of the strike construct for the bond and convertible bond
      options.
    </xsd:documentation>
  </xsd:annotation>
  <xsd:sequence>
    <xsd:group ref="FloatingRateIndex.model">
      <xsd:annotation>
        <xsd:documentation xml:lang="en">
          Defines the benchmark floating rate index and the ISDA
          Designated Maturity, i.e. the tenor of the floating rate.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:group>
    <xsd:element name="spread" type="xsd:decimal">
      <xsd:annotation>
        <xsd:documentation xml:lang="en">
          Spread in basis points over the floating rate index.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
    <xsd:element name="side" type="QuotationSideEnum" minOccurs="0">
      <xsd:annotation>
        <xsd:documentation xml:lang="en">
          The side (bid/mid/ask) of the measure.
        </xsd:documentation>
      </xsd:annotation>
    </xsd:element>
  </xsd:sequence>
</xsd:complexType>
```

2 Global Elements

2.1 bondOption

2.1.1 Description:

A component describing a Bond Option product.

2.1.2 Contents:

Element bondOption is defined by the complex type BondOption

2.1.3 Used by:

2.1.4 Substituted by:

2.1.5 Figure:

2.1.6 Schema Fragment:

```
<xsd:element name="bondOption" type="BondOption" substitutionGroup="product">
  <xsd:annotation>
    <xsd:documentation xml:lang="en">
      A component describing a Bond Option product.
    </xsd:documentation>
  </xsd:annotation>
</xsd:element>
```

3 Schema listing

```xsd
<xsd:schema ecore:nsPrefix="fpml" ecore:package="org.fpml" ecore:documentRoot="FpML" targetName
  <xsd:include schemaLocation="fpml-option-shared-4-3.xsd"/>
  <xsd:include schemaLocation="fpml-mktenv-4-3.xsd"/>
  <xsd:complexType name="BondOption">
    <xsd:annotation>
      <xsd:documentation xml:lang="en">
        A Bond Option
      </xsd:documentation>
    </xsd:annotation>
    <xsd:complexContent>
      <xsd:extension base="OptionBaseExtended">
        <xsd:sequence>
          <xsd:element name="strike" type="BondOptionStrike">
            <xsd:annotation>
              <xsd:documentation xml:lang="en">
                Strike of the the Bond Option.
              </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
          <xsd:group ref="BondChoice.model"/>
        </xsd:sequence>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="BondOptionStrike">
    <xsd:annotation>
      <xsd:documentation xml:lang="en">
        A complex type to specify the strike of a bond or convertible
        bond option.
      </xsd:documentation>
    </xsd:annotation>
    <xsd:choice>
      <xsd:element name="referenceSwapCurve" type="ReferenceSwapCurve">
        <xsd:annotation>
          <xsd:documentation xml:lang="en">
            The strike of an option when expressed by reference to a
            swap curve. (Typically the case for a convertible bond
            option.)
          </xsd:documentation>
        </xsd:annotation>
      </xsd:element>
      <xsd:element name="price" type="OptionStrike"/>
    </xsd:choice>
  </xsd:complexType>
  <xsd:complexType name="MakeWholeAmount">
    <xsd:annotation>
      <xsd:documentation xml:lang="en">
        A complex type to specify the amount to be paid by the buyer of
        the option if the option is exercised prior to the Early Call
        Date (Typically applicable to the convertible bond options).
      </xsd:documentation>
    </xsd:annotation>
    <xsd:complexContent>
      <xsd:extension base="SwapCurveValuation">
        <xsd:sequence>
          <xsd:element name="interpolationMethod" type="InterpolationMethod" minOccurs="0">
            <xsd:annotation>
              <xsd:documentation xml:lang="en">
                The type of interpolation method that the calculation
                agent reserves the right to use.
              </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
          <xsd:element name="earlyCallDate" type="IdentifiedDate">
            <xsd:annotation>
              <xsd:documentation xml:lang="en">
                Date prior to which the option buyer will have to pay a
                Make Whole Amount to the option seller if he/she
                exercises the option.
              </xsd:documentation>
            </xsd:annotation>
          </xsd:element>
        </xsd:sequence>
      </xsd:extension>
    </xsd:complexContent>
  </xsd:complexType>
  <xsd:complexType name="ReferenceSwapCurve">
    <xsd:annotation>
      <xsd:documentation xml:lang="en">
```

```
            A complex type used to specify the option and convertible bond
            option strike when expressed in reference to a swap curve.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:sequence>
         <xsd:element name="swapUnwindValue" type="SwapCurveValuation"/>
         <xsd:element name="makeWholeAmount" type="MakeWholeAmount" minOccurs="0">
            <xsd:annotation>
               <xsd:documentation xml:lang="en">
                  Amount to be paid by the buyer of the option if the option
                  is exercised prior to the Early Call Date. (The market
                  practice in the convertible bond option space being that
                  the buyer should be penalized if he/she exercises the
                  option early on.)
               </xsd:documentation>
            </xsd:annotation>
         </xsd:element>
      </xsd:sequence>
   </xsd:complexType>
   <xsd:complexType name="SwapCurveValuation">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            A complex type to specify a valuation swap curve, which is used
            as part of the strike construct for the bond and convertible
            bond options.
         </xsd:documentation>
      </xsd:annotation>
      <xsd:sequence>
         <xsd:group ref="FloatingRateIndex.model">
            <xsd:annotation>
               <xsd:documentation xml:lang="en">
                  Defines the benchmark floating rate index and the ISDA
                  Designated Maturity, i.e. the tenor of the floating rate.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:group>
         <xsd:element name="spread" type="xsd:decimal">
            <xsd:annotation>
               <xsd:documentation xml:lang="en">
                  Spread in basis points over the floating rate index.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:element>
         <xsd:element name="side" type="QuotationSideEnum" minOccurs="0">
            <xsd:annotation>
               <xsd:documentation xml:lang="en">
                  The side (bid/mid/ask) of the measure.
               </xsd:documentation>
            </xsd:annotation>
         </xsd:element>
      </xsd:sequence>
   </xsd:complexType>
   <xsd:element name="bondOption" type="BondOption" substitutionGroup="product">
      <xsd:annotation>
         <xsd:documentation xml:lang="en">
            A component describing a Bond Option product.
         </xsd:documentation>
      </xsd:annotation>
   </xsd:element>
</xsd:schema>
```