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OIOUBL Guideline

UBL 2.0 Currency Exchange Rates

OIOUBL Valutakurser og -koder

G18

Version 1.1



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1. Preface

These guidelines form of a series describing the purpose and use of the business documents that comprise the Danish localization of UBL 2.0, known as OIOUBL.

As well as guidelines describing the use of commonly used elements, a separate guideline has been prepared for each business document.

1.1 Purpose of this document

This guideline defines the purpose and use of currency codes and exchange rates.

1.2 General Points

If an alternative currency is required for taxes and/or charges, such a currency should always be specified at document level. Accordingly it will apply to all taxes or charges in the document.

When working with customs tariff rates the *ExchangeMarketID* may be set to either "Tax" or "Customs rate".

The *CalculationRate* should be defined to four (4) decimals places.

2. Relevant UBL Classes and Elements

Exchange rates and currency codes are included in the following document types:

- Invoice
- Credit Note
- Reminder
- Statement

Note that, in the following descriptions, a distinction is made between specifying the exchange rate and the currency code.

In general, **exchange rates** may be specified at both document and line level. The exceptions are described in Table 1, below.

Document type:	Document level:	Line level:
Invoice	Yes	No
CreditNote	Yes	No
Reminder	Yes	Yes
Statement	No	Yes

Table 1. Exchange rates defined at document and line level.

At document level, exchange rates are available in the following four classes:

- *TaxExchangeRate*
- *PricingExchangeRate*
- *PaymentExchangeRate*
- *PaymentAlternativeExchangeRate*

At line level, exchange rate is available in the following class:

- *ExchangeRate*

Note that all uses are inherited from the exact same class, namely *ExchangeRate*.

Currency codes must be specified for all amount elements, using the "currencyID" attribute. The following elements are also used for defining currency codes:

- *TaxCurrencyCode* (document level)
- *PricingCurrencyCode* (document level)
- *PaymentCurrencyCode* (document level)
- *PaymentAlternativeCurrencyCode* (document level)
- *TaxScheme/CurrencyCode* (document and line level)

2.1 DK field names and cardinality

The tables below list the elements and their names in Danish, as well as the cardinality.

2.1.1 The ExchangeRate class

UK-name	DK-name	Use
SourceCurrencyCode	KildeValutaKode	1
SourceCurrencyBaseRate	KildeValutaKurs	0..1
TargetCurrencyCode	ModtagerValutaKode	1
TargetCurrencyBaseRate	ModtagerValutaKurs	0..1
ExchangeMarketID	ValutaMarkedID	0..1
CalculationRate	BeregningsKurs	0..1
OperatorCode	OperaterKode	0..1
Date	Dato	0..1
ForeignExchangeContract	ValutaBørsKontrakt	0..1

2.1.2 TheForeignExchangeContract class

UK-name	DK-name	Use
ID	ID	1
ContractTypeCode	KontraktTypeKode	0..1
ContractType	KontraktType	0..1
ContractDocumentReference	KontraktDokumentReference	0..1

2.1.3 The ContractDocumentReference class

This class is a general OIOUBL document reference, as described in the OIOUBL Guideline Document Reference (Ref. G21).

2.1.4 The TaxScheme and TaxSubtotal classes

For a description of these classes see the OIOUBL Guideline Party (Ref. G21). The following elements are significant when specifying currency codes and exchange rates:

- *TaxScheme/CurrencyCode*
- *TaxSubtotal/TransactionCurrencyTaxAmount*

3. Description

The following sections contain further descriptions of the use of relevant classes and elements.

3.1 Exchange rate and currency code formats

Within the *ExchangeRate* class the *CalculationRate* and *CurrencyBaseRate* elements must be specified to four (4) decimal places. An exchange rate cannot be zero or negative. Table 2 shows a few examples:

Exchange rate:	OIOUBL format:
10	10.0000
0.006	0.0060
746.1	746.1000
10000.25	10000.2500

Table 2. Examples of how to enter exchange rates.

An exchange rate currency code is entered as a 3-letter ISO 4217 code (such as EUR).

3.2 Different types of exchange rates

Table 3 below shows a list of different types of exchange rates.

Exchange rate type:	Explanation
Rate quoted	For the influential currencies, the Danish Central Bank (Danmarks Nationalbank) quotes a daily exchange rate, and this is therefore the Rate quoted (DK: Noteret kurs). Danmarks Nationalbank also establishes a monthly exchange rate (see Customs rate).
Non-quoted rate	The rate for currencies that are not quoted daily by the Danmarks Nationalbank. When establishing the exchange rate for a non-quoted currency, it is the user's own responsibility to find reliable sources that can provide the exchange rate. These rates are called non-quoted rates (DK: Ikke-noteret kurs). An example of a non-quoted rate is the Cyprus Pound (CYP).
Real-time rate	A real-time rate is a current rate that is guaranteed, for example, by a bank.
Customs rate	Companies that run their accounts in a foreign currency must still settle taxes and duties to the public authorities in Danish Kroner (DKK). The company is obligated to secure that their conversion from the accounting currency to DKK is documented, and can be checked to confirm the conversion rules are being applied correctly. They must specify which rate (daily rate or customs rate) has been used, and the exchange rate for every transaction shown. To assist companies, Danmarks Nationalbank fixes a 'customs' rate, which applies for one month at a time. The Tax and Customs Authorities (SKAT) provide these customs rates via their website.

Table 3. Different types of exchange rates

3.3 Use of exchange rates and currency codes

UBL 2.0 supports international trade, and therefore contains a number of options for specifying currency codes and exchange rates. When working with domestic trade in Denmark, only few of these options are required.

For any OIOUBL document that contains amounts a 'document' currency must be specified. This is the default currency for all amounts specified in the document. This document currency is defined at document level, as shown in figure 1:

```
<cbc:DocumentCurrencyCode>DKK</cbc:DocumentCurrencyCode>
```

Figure 1. Declaration of document currency.

All amounts must be specified with a currency code using the currencyID attribute and conforming to the relevant code list, as shown in Figure 2.

```
<cbc:LineExtensionTotalAmount currencyID="DKK">720.00</cbc:LineExtensionTotalAmount>
```

Figure 2. Example of how to specify the currency code for an amount field.

As mentioned earlier, a series of currency codes may also be specified at document and line level.

The *ExchangeRate* class must specify two currency codes as described in further detail below.

3.4 Use of the *ExchangeRate* class

The *ExchangeRate* class is used to defines any exchange rates in OIOUBL. Table 4 below is a short explanation of its elements and sub-classes.

UK-name	DK-name	Use	Explanation
SourceCurrencyCode	KildeValutaKode	1	The currency converted from.
SourceCurrencyBaseRate	KildeValutaKurs	0..1	When working with a non-quoted exchange rate, the base rate of the currency being converted from should be specified in this element
TargetCurrencyCode	ModtagerValutaKode	1	The currency converted to.
TargetCurrencyBaseRate	ModtagerValutaKurs	0..1	When working with a non-quoted exchange rate, the base rate of the currency being converted to should be specified in this element.
ExchangeMarketID	ValutaMarkedID	0..1	The identifier for the market that provided the exchange rate. For example, Danmarks Nationalbank.
CalculationRate	BeregningsKurs	0..1	The factor that is used to convert one currency to the other. Please note that the factor may be applied either by multiplication or by division.
OperatorCode	OperaterKode	0..1	The code that specifies whether CalculationRate should multiplied by the amount or used to divide the amount. The code should be specified as either "Divide" or "Multiply", as per the recommended code list.
Date	Dato	0..1	The date for the fixing of the exchange rate.
ForeignExchangeContract	ValutaBørsKontrakt	0..1	A reference to any contract that the exchange rate may be based on. For example, with a bank.

Table 4. Use of the *ExchangeRate* class.

Figure 3 contains an example of how to use the *ExchangeRate* class. It shows that when converting from EUR to DKK, the amount is multiplied with the factor "7.4600", and the exchange rate was established on November 20th, 2006.

```
<cac:ExchangeRate>
  <cbc:SourceCurrencyCode>EUR</cbc:SourceCurrencyCode>
  <cbc:TargetCurrencyCode>DKK</cbc:TargetCurrencyCode>
  <cbc:CalculationRate>7.4600</cbc:CalculationRate>
  <cbc:OperatorCode>multiply</cbc:OperatorCode>
  <cbc>Date>2006-11-20</cbc>Date>
</cac:ExchangeRate>
```

Figure 3. Example of how to fill out *ExchangeRate* class.

When working with a quoted rate there will usually be no need to specify the *ExchangeMarketID*, but for non-quoted exchange rates both *ExchangeMarketID* and *CurrencyBaseRate* should be specified.

The *ForeignExchangeContract* class is used when there is a need to reference a underlying contract such as with a bank. This is demonstrated in Figure 4.

```

<cac:ExchangeRate>
  <cbc:SourceCurrencyCode>EUR</cbc:SourceCurrencyCode>
  <cbc:TargetCurrencyCode>DKK</cbc:TargetCurrencyCode>
  <cbc:ExchangeMarketID>DenStoreBank</cbc:ExchangeMarketID>
  <cbc:CalculationRate>7.4600</cbc:CalculationRate>
  <cbc:OperatorCode>multiply</cbc:OperatorCode>
  <cbc:Date>2006-11-20</cbc:Date>
  <cac:ForeignExchangeContract>
    <cbc:ID>700345</cbc:ID>
    <cbc:ContractType>Valuta aftale</cbc:ContractType>
    ... A document reference can be specified here ...
  </cac:ForeignExchangeContract>
</cac:ExchangeRate>

```

Figur 4. Example of how to fill out an ExchangeRate class with a reference to a contract.

3.5 TaxExchangeRate

The exchange rate for taxes (*TaxExchangeRate*) is specified if taxes (such as VAT) are paid to the public authorities in a currency other than the default document currency. A *TaxExchangeRate* can be specified at document level in the Invoice, CreditNote, and Reminder documents.

The actual taxes payable to public authorities are specified in the *TaxTotal* class and *TaxSubTotal* classes. Taxes may be further divided into a number of tax types specified in the *TaxScheme* class by a number and a name. A reference is also specified between a given tax type and the trading party's registration with SKAT (using the *PartyTaxScheme*). For a more detailed description, see the OIOUBL Guideline Tax (Ref. G21).

There are two options for specifying the **currency code** with taxes. The currency code may be specified at document level, in which case it applies to all tax types in the document. It may also be specified for a given tax type. It is recommended that the currency code for taxes is always specified at document level.

Whichever method is used, the **exchange rate** should be specified using the *TaxExchangeRate*. In Figure 5 there are the two different options for specifying currency codes.

```

...
<cbc:DocumentCurrencyCode>SEK</cbc:DocumentCurrencyCode>
...
Mulighed 1 (anbefales):
...
<cbc:TaxCurrencyCode>DKK</cbc:TaxCurrencyCode>
...
Mulighed 2:
...
<cac:TaxScheme>
  ...
  <cbc:CurrencyCode>DKK</cbc:CurrencyCode>
  ...
</cac:TaxScheme >

```

Figure 5. Two alternatives for specifying the CurrencyCode for use with Tax.

It is possible to specify a currency other than the document currency, either for a given tax type or for all tax schemes. These define which currency the tax type has been calculated in, and which will be used when reporting taxes to SKAT.

The currency is defined in the *TaxExchangeRate* class, and the tax amounts are specified in this currency. This means in the *TaxSubtotal/TransactionCurrencyTaxAmount* element, the value is given in the document currency.

Figure 6 shows an example of an invoice with the document currency="SEK", and settlement of a tax subtotal in "DKK".

```

...
<cbc:DocumentCurrencyCode>SEK</cbc:DocumentCurrencyCode>
...
<cbc:TaxCurrencyCode>DKK</cbc:TaxCurrencyCode>
...
<cac:TaxExchangeRate>
  <cbc:SourceCurrencyCode>SEK</cbc:SourceCurrencyCode>
  <cbc:TargetCurrencyCode>DKK</cbc:TargetCurrencyCode>
  <cbc:CalculationRate>0.8070</cbc:CalculationRate>
  <cbc:OperatorCode>multiply</cbc:OperatorCode>
  <cbc>Date>2006-11-20</cbc>Date>
</cac:TaxExchangeRate>
...
<cac:TaxTotal>
  <cbc:TaxAmount currencyID="DKK">581.04</cbc:TaxAmount>
  ...
  <cac:TaxSubtotal>
    ...
    <cbc:TaxAmount currencyID="DKK">581.04</cbc:TaxAmount>
    <cbc:TransactionCurrencyTaxAmount currencyID="SEK">720.00
      </cbc:TransactionCurrencyTaxAmount>
  </cac:TaxSubtotal>
</cac:TaxTotal>

```

Figure 6: Example of the use of TaxExchangeRate.

3.6 PricingExchangeRate

The exchange rate for pricing information (*PricingExchangeRate*) is used when the pricing information is defined in a currency other than the document currency. It can be specified at document level in the Invoice, CreditNote, and Reminder documents.

Figure 7 shows an example of an invoice with the document currency = "DKK", but the item price is specified in "USD". Note that if *PricingExchangeRate* is used, a *PricingCurrencyCode* must also be specified.

```

...
<cbc:DocumentCurrencyCode>DKK</cbc:DocumentCurrencyCode>
...
<cbc:PricingCurrencyCode>USD</cbc:PricingCurrencyCode>
...
<cac:PricingExchangeRate>
  <cbc:SourceCurrencyCode>USD</cbc:SourceCurrencyCode>
  <cbc:TargetCurrencyCode>DKK</cbc:TargetCurrencyCode>
  <cbc:CalculationRate>0.5928</cbc:CalculationRate>
  <cbc:OperatorCode>multiply</cbc:OperatorCode>
  <cbc>Date>2006-11-20</cbc>Date>
</cac:PricingExchangeRate>
...
<cac:InvoiceLine>
  ...
  <cbc:LineExtensionAmount currencyID="DKK">59.28</cbc:LineExtensionAmount>
  ...
  <cac:Price>
    <cbc:PriceAmount currencyID="USD">10.00</cbc:PriceAmount>
    ...
  </cac:Price>
</cac:InvoiceLine>

```

Figur 7. Example of the use of PricingExchangeRate.

3.7 PaymentExchangeRate and PaymentAlternativeExchangeRate

If *PaymentExchangeRate* and/or *PaymentAlternativeExchangeRate* is specified, then it is not possible to settle an invoice in its document currency. The invoice should instead be settled in the

specified currency and according to the specified exchange rate. Two alternative currencies may also be specified for payments. Note that if either *PaymentExchangeRate* or *PaymentAlternativeExchangeRate* are specified, then the corresponding *CurrencyCodes* must also be specified (*PaymentCurrencyCode* and *PaymentAlternativeCurrencyCode*).

Figure 8 shows an example where a Danish invoice is only payable in Euros. The Euro amount is not actually specified, only the *PaymentExchangeRate*. So, in the example the invoice payment may also be as EUR11,440 (calculated from 88000 multiplied by 0.13).

```

...
<cbc:DocumentCurrencyCode>DKK</cbc:DocumentCurrencyCode>
...
<cbc:PaymentCurrencyCode>EUR</cbc:PaymentCurrencyCode>
...
<cac:PaymentExchangeRate>
  <cbc:SourceCurrencyCode>DKK</cbc:SourceCurrencyCode>
  <cbc:TargetCurrencyCode>EUR</cbc:TargetCurrencyCode>
  <cbc:CalculationRate>0.1300</cbc:CalculationRate>
  <cbc:OperatorCode>multiply</cbc:OperatorCode>
  <cbc:Date>2006-11-20</cbc:Date>
</cac:PaymentExchangeRate>
...
<cac:LegalMonetaryTotal>
  ...
  <cbc:PayableAmount currencyID="DKK">88000.00</cbc:PayableAmount>
</cac:LegalMonetaryTotal>

```

Figure 8. Example of the use of PaymentExchangeRate.

3.8 Exchange rates at line level

Both the Reminder and Statement documents allow the exchange rate to be specified at a line level, as shown in Table 5.

Document type:	Class:
Reminder	ReminderLine/ExchangeRate
Statement	StatementLine/ExchangeRate

Table 5. Specifying exchange rates at line level.

The following rules apply to Reminder and Statement:

- The four possible exchange rates at document level in the Reminder document (*TaxExchangeRate*, *PricingExchangeRate*, *PaymentExchangeRate*, and *PaymentAlternativeExchangeRate*) reflect the conditions of the related invoice, and will therefore not be in conflict with a possible exchange rate specified at line level for the given Reminder.
- Specifying the exchange rate at line level of Reminder and Statement makes it possible to define the line amount for every single line in a different currency than the document currency. The exchange rate at line level therefore specifies the rate that is used for the calculations.

4.Examples

The example below is a typical use of ExchangeRate class.

4.1 Invoice with use of PaymentExchangeRate

```
...
<cbc:DocumentCurrencyCode>DKK</cbc:DocumentCurrencyCode>
...
<cbc:PaymentCurrencyCode>EUR</cbc:PaymentCurrencyCode>
...
<cac:PaymentExchangeRate>
  <cbc:SourceCurrencyCode>DKK</cbc:SourceCurrencyCode>
  <cbc:TargetCurrencyCode>EUR</cbc:TargetCurrencyCode>
  <cbc:CalculationRate>0.1300</cbc:CalculationRate>
  <cbc:OperatorCode>multiply</cbc:OperatorCode>
  <cbc:Date>2006-11-20</cbc:Date>
</cac:PaymentExchangeRate>
...
<cac:LegalMonetaryTotal>
  ...
  <cbc:PayableAmount currencyID="DKK">88000.00</cbc: PayableAmount>
</cac:LegalMonetaryTotal>
```

5. Relevant code lists

Code list:	Agency:	Urn:	Example value:
Currency codes	6	ISO 4217 alpha3. (http://www.iso.org/iso/en/prods-services/popstds/currencycodeslist.html)	DKK
ExchangeRate/ OperatorCode		urn:oasis:names:specification: ubl:schema:xsd:OperatorCode	Multiply

6. Terms and abbreviations

Listed below are the most important terms and abbreviations:

Term:	Explanation:
Document level	Elements at document level are found directly under the root element (the top element) in the XML structure. elements at the document level apply to the whole document.
Line level	Elements at line level, unlike elements at the document level, only apply to a specific transaction line
Class	A class is a collection of elements. For example, the Price class contains elements such as PriceAmount, BaseQuantity, etc.
Element	An element is an information entity in an XML structure. For example, the PriceAmount is the element containing the price in an invoice line.
Attributes	In an XML element, it is possible to specify a property as an attribute, e. g. the attribute unitCode in which the unit for a quantity may be specified, as in the example: <code data-bbox="544 853 1102 880"><cbc:BaseQuantity unitCode="BO">1</cbc:BaseQuantity></code>
Tax type	A Tax type is the lowest level for specifying a tax. One example could be "Gasoline tax". In Denmark these tax types are also called "pligtkoder". The tax types are often shown in a list based upon a particular tax scheme.
Document currency	The default currency of an OIOUBL document.