# The methodology for calculating ACI and current yield

Determination of the number of days from one date to date:

In all formulas for calculating ACI and profitability it is necessary to calculate the number of days from one date to another, or the length of time determined by the two dates.

**Basis 365 (366)**
The primary basis used in the trading system. The number of days (as well as the duration of the period) from the date of T1 to T2 is defined as the date difference date: T2 - T1. For example, on January 5, 2001 to January 6, 2001 - one day (duration of the period - one day), and on March 10, 2002 to March 20, 2002 - ten days (the duration of the period - ten days).

**Bases 30/360**
The difference in N days between two dates T1 and T2 is calculated as an expression:
N = D2 - D1 + 30 (M2 - M1) + 360 (Y2 - Y1), where
D1 / M1 / Y1 - the date of T1 (first date)
D2 / M2 / Y2 - the date of T2 (second date)
There are three options of the basis 30/360.

30/360
If D1 falls on 31st day, D1 is changed to 30.
If D2 falls on 31st, D2 changes to 30 only if D1 falls on 30 or 31st day.

30E / 360
If D1 falls on 31st, D1 is changed to 30.
If D2 falls on 3st, D2 is changed to 30.

30E + / 360
If D1 falls on 31st , D1 is changed to 30.
If D2 falls on 3st , D2 changes to 1, and M2 is increase on 1.

**Function for calculating the yield of zero-coupon bonds**

Y – the yield to maturity, in percent per annum
P – bond price as a percentage of the nominal value
t – the number of days from the current date to the date of maturity

**Functions for calculating the ACI for coupon bonds**

**Calculation of ACI (option 1)**

C – coupon rate in rubles per coupon period

tС – the number of days prior to the date of payment of the coupon

TС – coupon payment date

T0 – the date of the coupon period

**Calculation of ACI (option 2)**

C – the coupon rate percent per annum

N – nominal value of securities in rubles

TР – the date on which ACY is calculated

T0 – the date of the coupon period

YearBasis – year basis (the number of days in a year)

**The function of calculating the yield to maturity for coupon bonds**

P - bond price in rubles
A - accumulated coupon yield
m - the current coupon period
n - number of coupon periods

 i – the size of the i-th coupon in rubles
t i – the number of days prior to the payment of i-th coupon
t – the number of days to maturity bonds
N – nominal value of bonds in rubles
Y – Efficient yield to maturity
YearBasis – year basis (the number of days in a year)
C – the coupon rate in rubles per coupon period
t С – the number of days prior to the date of payment of the coupon
T С – coupon payment date
T 0 – the start date of the coupon period

**Functions for calculating yield to put for coupon bonds**
(Option 1)

P – bond price in rubles
A – ACI in rubles
R – price of the offer in the near rubles
C – the next coupon payment in rubles
t - the number of days before the date of the nearest offer
YearBasis - the base year (the number of days in a year)
t С – the number of days prior to the date of payment of the coupon
T С – coupon payment date
T 0 – the start date of the coupon period

**(option 2)**

**Note:** this function is only suitable for the yield when the date of the offer comes sometime after the end date of the current coupon period and the value of the coupon payment for the coupon period for which the date of the offer, the same as the current one.

P – bond price in rubles
P O – the offer price in rubles
A – ACI in rubles
m - the current coupon period
n - number of coupon periods before and including the date of the offer
С i – the size of the i-th coupon in rubles
t i – the number of days prior to the payment of i-th coupon
t - the number of days prior to the date of the offer
Y - Efficient yield to maturity
YearBasis - year basis (the number of days in a year)
C - the coupon rate in rubles per coupon period
t С – the number of days prior to the date of payment of the coupon
T С – coupon payment date
T 0 – the start date of the coupon period

If the formula that calculates the ACI specified by the issuer in the decision to issue, does not coincide with one of the above formulas, the Exchange uses the calculated values of ACI for every day of the coupon period in numeric format and as a percentage of the nominal value received from the issuer.

**Features of ACI calculation in accordance with the letter of the Ministry of Finance of the Russian Federation on specific issues of government bonds of external bonds of the Russian Federation**

The size of of ACI is defined by the following formula:

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where A - the size of ACI
 N - nominal value of the security;
 C - coupon rate;
 T - the period for calculating of ACI,

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where - year preceding the coupon payment;

- year of the current date;

 - previous month of coupon payment;

 - month of the current date;

D1 – day preceding the coupon payment;

D2 – day of the current date.

When determining the coupon yield 30/360 Basis is used for calculating, according to which the calendar year consists of 12 full months of 30 days each. Thus, if data D1 (or D2) is 31, the D1 (or D2) is set to 30). The coupon yield is determined with an accuracy of two decimal places (up to US cents) after multiplying the number of securities.

**ACI calculation on deals settled in a currency other than the currency of denomination**

ACI calculation on deals settled in a currency other than the currency of denomination of such securities, carried out at the Bank of Russia on the date of the transaction. At the same time the unrounded value of ACI in the nominal currency , calculated according to the formula above, multiplied by the number of securities in the order / deal, rounded to two decimal places, are translated at the Bank of Russia, and once again rounded to two decimal point.

The evaluation rule of ACI is defined in the issue documents for a specific paper, including the base, the order of rounding and conversion.