

[Help](#)

```
#include "
href../../../../mod/vasicek1d/vasicek1d_stdi/vasicek1d_stdi_h_src.pdfvasicek1d_stdi

/*Zero Coupon Bond*/
static int zcb_vasicek1d(double r0, double k, double t, double sigma, double theta)
{
    double A, B;

    /*A,B coefficient*/
    B = (1. / k) * (1. - exp(-k * (T - t)));
    A = exp((theta - SQR(sigma) / (2.*SQR(k))) * (B - T + t) - (SQR(sigma) / (4.*k) * B));

    /*Price*/
    *price = A * exp(-B * r0);

    return OK;
}

int CALC(CF_ZCBond)(void *Opt, void *Mod, PricingMethod *Met)
{
    TYPEOPT *ptOpt = (TYPEOPT *)Opt;
    TYPEMOD *ptMod = (TYPEMOD *)Mod;

    return zcb_vasicek1d(ptMod->r0.Val.V_PDDOUBLE, ptMod->k.Val.V_DOUBLE, ptMod->T.Val.V_DOUBLE, ptMod->sigma.Val.V_DOUBLE, ptMod->theta.Val.V_DOUBLE);
}

static int CHK_OPT(CF_ZCBond)(void *Opt, void *Mod)
{
    return strcmp(((Option *)Opt)->Name, "ZeroCouponBond");
}

static int MET(Init)(PricingMethod *Met, Option *Opt)
{
    if (Met->init == 0)
    {
        Met->init = 1;
    }
}
```

```

    return OK;
}

PricingMethod MET(CF_ZCBond) =
{
    "CF_Vasicek1d_ZCBond",
    {{" ", PREMIA_NULLTYPE, {0}, FORBID}},
    CALC(CF_ZCBond),
    {{"Price", DOUBLE, {100}, FORBID}, {" ", PREMIA_NULLTYPE, {0}, FORBID}},
    CHK_OPT(CF_ZCBond),
    CHK_ok,
    MET(Init)
} ;

```