Ministry of Economy and Finance

"Which Government bond for what kind of investor?"

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Introduction

The aim of this lecture is that of illustrating the opportunities of investment that Government bonds offer to the investor. These comprise of a wide range of instruments, which are not always properly presented by the banks or post offices where one goes to buy them.

Apart from the description of the technical aspects of each bond, we will present some concrete examples on how auctions are carried out and how effective yield is calculated, something that is not always immediately understood by the public.

Often, in fact, by using a simple calculation, who buys bonds risks overlooking the important factor of "time" in evaluating an instrument's return, or ignores some universally accepted basic theories of yield calculation, which however may not correspond to the final return that is realized for each separate case.

WHAT ARE GOVERNMENT BONDS?

The Ministry of Economy and Finance regularly issues **five types of Government bonds** on the Italian market, that may be purchased by private citizens:

• **Treasury Bills (BOTs)** are short term bonds – that is with a maturity that does not exceed one year – without coupons; yield is in fact entirely given by the bond discount, in other words the difference between 100 and the bond's issuance price.

• **Zero Coupon Bonds (CTZs)** are bonds with 24 months maturity without coupons.

• **Treasury Bonds (BTPs)** are bonds with fixed six month coupons and offer the possibility of choosing between the following maturities: 3, 5, 10, 15 and 30 years.

• **Treasury Bonds Indexed to Eurozone Inflation (BTP€is)** are bonds with 5, 10, 15[1] and 30 year maturities that guarantee a protection against price rises in Europe. In fact, both the capital reimbursed on maturity, and these bonds' six month coupons are **written up according to the European inflation rate**, as measured by the Harmonized Index of Consumer Prices (HICP) of the Euro area, with the exclusion of tobacco.

• **Treasury Certificates (CCTs)** have 7 year maturities and six month variable coupons, linked to six month BOT yields plus a surcharge.

1. During the month of June 2007 the Treasury has for the first time issued a 15 year BTP€i.

Summary of Government Bonds

Bond	Maturity	Remuneration	Minimum denomi-nation	Auction type	Tax rate	Redemption
BOT	3, 6, 12 months	Bond discount	€ 1000	Competitive	12,50% of bond discount applied at purchase	Single payment at maturity
CTZ	24 months	Bond discount	€ 1000	Marginal	12,50% of bond discount applied at redemption	Single payment at maturity
BTP	3, 5, 10, 15 and 30 years	Fixed 6 month coupons, bond discount	€ 1000	Marginal or, for the first 15 and 30 year BTP tranches, by placement syndicate	12,50% of coupons and possible bond discount at redemption	Single payment at maturity
BTP€i	5, 10, 15 and 30 years	Real 6 month coupons, bond discount and capital valuation at maturity	€ 1000	Marginal or by placement syndicate	12,50% of coupons and possible bond discount at redemption	Single payment at maturity
CCT	7 years	Variable 6 month coupons, bond discount	€ 1000	Marginal	12,50% of coupons and possible bond discount at redemption	Single payment at maturity

How and where can one purchase Government bonds?

Government securities can be purchased by auction (primary market) , that is at their issue, and also on the **secondary market**, where they are exchanged on a daily basis. They are **all negotiable**.

In those instances, it is necessary to operate through either bank or certified broker. Since bonds have been dematerialized, savers need to have a bank or a post office account: in other words the bonds are represented only by completely automated accounting registrations. This avoids any inconveniences linked to paper bonds. In fact, if they weren't collected within a certain period after the deadline, they could go into prescription and lose their value.

The Treasury pays great attention to the efficiency of the Government bond secondary market, ensuring that it is always possible to easily sell one's bonds at the best present market conditions.

To reach the aim of the so-called liquidity, the outstanding amount of each single bond needs to be sufficiently high. It is for this reason that bonds are offered again, after their first issue, in subsequent tranches, until the outstanding amount has reached an ideal size.

In order to buy and sell Government bonds on the secondary market, commissions are agreed upon with the intermediary (mainly a bank or a post office). Buying on the primary market is regulated by ministerial decrees.

Treasury Bills (BOTs)

- BOTs are short-term bonds with maturities not exceeding one year, precisely 3, 6 and 12 months. The Treasury also has the possibility of issuing BOTs with non-standard maturities, yet in an identical manner to the one used with the other kinds of BOTs.

- They are zero-coupon bonds, that is, their remuneration is entirely determined by the bond discount, i.e. the difference between 100, the nominal value, and the security's issue price. They are thus bonds without coupons. Tax is paid by the single investors upon subscription.

- Thanks to their being zero-coupon bonds, BOTs have undoubted advantages in terms of management since the financial outgo is less than the value of the bond's reimbursement and there is no need to reinvest periodical interest flows, seeing as the return is given entirely by the bond discount.

- BOTs may be booked for subscription in auctions at banks or postal offices within the working day preceding the auction. The Ministry of Economy and Finance's Decree known as the "transparency decree" sets the maximum commission that may be asked of the investor at the moment of the auction subscription.

  It is therefore possible to negotiate with the bank a lower commission than that indicated in the decree.

  However, in the examples, we use the maximum commission, which remains the most frequently applied, insomuch as the public often ignores the possibility of its negotiation.

Summary of BOT features

Currency	€uro
Maturity	3, 6, 12 months or any other maturity within one year (flexible BOTs)
Remuneration	Difference between redemption value and issue price
Taxation	Rate applied to bond discount upon subscription (presently 12,5%)
Auction type	Competitive
Auction frequency	Monthly (at mid-month for 3 and 12 months BOTs, at the end of the month for 6 month BOTs); flexible BOTs are issued according to the Treasury's liquidity management needs
Settlement dates	Three value days on the primary market, two days on the secondary
Market conventions	Actual/360
Redemption	At par, single payment at maturity

BOT auction and gross and net yield calculation

- BOTs can be subscribed by investors for a minimum amount of 1,000 € or multiples thereof and are placed through **competitive auction**, which implies that any bid is satisfied at the price offered. Every dealer can submit a maximum of three bids. The first bids to be accepted are those with the highest price and then all the others are allocated in descending order until the amount of accepted bids reaches the amount tendered by the Treasury. The auction's *average weighted price* is determined to the benefit of the public – this is what the intermediaries must guarantee to the subscribers.

- Yields are published – in official communications and by all means of communication – on a yearly basis.

- They are called simple or compound according to which capitalization law is used. The simple capitalization law, when a bond has a maturity of less than one year, relates returns in annual terms with a simple linear proportion commensurate to the duration. Compound capitalization assumes investment of the interest credited in another instrument of equivalent profitability.

- *Gross interest* is the difference between redemption value (100) and the average weighted price.

- The *net award price* is given by the average weighted price plus the lieu tax of 12,5% which is applied to gross interest.

- The *commissions* paid to the financial intermediaries, whose maximum values are established in the "transparency decree", are proportionate to the duration and are equivalent to 5, 10, 20 and 30 cents according to BOTs that last, respectively, less than or equal to 80 days, between 81 and 170 days, between 171 and 330 days, equal to or more than 331 days.

- Using the price net of taxation and of commissions it is possible to calculate the *simple and compound net yield* that the investor earns.

3 MONTH BOT WITH MATURITY ON 16/07/2007

Average weighted price   **99,037**

Bond discount   100 - 99,037 = 0,963
Settlement date   16/04/2007
Maturity Date   16/07/2007
Duration   **91 days**

AUCTION YIELDS
Simple gross yield (360 days)   (0,963/99,037) * (360/91) =   **3,847 %**
Compound gross yield (360 days)   (0,963/99,037 + 1) ^ (360/91) - 1 =   **3,902 %**

12,50% lieu tax on bond discount   0,963 * 12,5% =   0,120375

Net award price (without rounding)   99,037 + 0,120375 =   99,157375
Rounded net award price   **99,157**
Bond discount net of tax   100 - 99,157 =   0,843
Simple net award yield (360 days)   (0,843/99,157) * (360/91) =   **3,363 %**
Compound net award yield (360 days)   (0,843/99,157 +1) ^ (360/91) - 1 =   **3,406 %**

YIELDS CALCULATED NET OF COMMISSIONS

Net price + commissions (0,10)   99,157 + 0,10 =   **99,257**
Net bond discount   100 - 99,257 =   0,743
Final simple net yield (360 days)   (0,743/99,257) * (360/91) =   **2,961 %**
Final compound net yield (360 days)   (0,743/99,257 + 1) ^ (360/91) - 1 =   **2,994%**

6 MONTH BOT WITH MATURITY ON 31/10/2007

Average weighted price   **98,005**

Bond discount   100 - 98,005 = 1,995
Settlement date   30/04/2007
Maturity date   31/10/2007
Duration   **184 days**

AUCTION YIELDS

Simple gross yield (360 days)   (1,995/98,005) * 360/184 =   **3,983 %**
Compound gross yield (360 days)   (1,995/98,005 + 1) ^ (360/184)-1 =   **4,022 %**

12,50% lieu tax on bond discount   1,995 * 12,5% =   0,249375

Net award price (without rounding)   98,005 + 0,249375 =   98,254375
Rounded net award price   **98,254**
Bond discount net of tax   100 - 98,254 =   1,746
Simple net award yield (360 days)   (1,746/98,254) * (360/184) =   **3,477 %**
Compound net award yield (360 days)   (1,746/98,254 + 1) ^ (360/184) -1 =   **3,506 %**

YIELDS CALCULATED NET OF COMMISSIONS

Net price + commissions (0,20)   98,254 + 0,20 =   **98,454**
Net bond discount   100 - 98,454 =   1,546
Final simple net yield (360 days)   (1,546/98,454) * (360/184) =   **3,072 %**
Final compound net yield (360 days)   (1,546/98,454 +1) ^ (360/184)-1 =   **3,095%**

12 MONTH BOT WITH MATURITY ON 15/04/2008

Average weighted price	**96,015**	
Bond discount	100 - 96,015 = 3,985	
Settlement date	16/04/2007	
Maturity date	15/04/2008	
Duration	**365 days**	

AUCTION YIELDS

Simple gross yield (360 days)	(3,985/96,015) * (360/365) =	**4,094 %**
Compound gross yield (360 days)	(3,985/96,015 + 1) ^ (360/365)-1 =	**4,092 %**
12,50% lieu tax on bond discount	3,985 * 12,5% =	0,49813
Net award price (without rounding)	96,015 + 0,49813 =	96,51313
Rounded net award price	**96,513**	
Bond discount net of tax	100 - 96,513 =	3,487
Simple net award yield (360 days)	(3,487/96,513) * (360/365) =	**3,563 %**
Compound net award yield (360 days)	(3,487/96,513 + 1) ^ (360/365) -1 =	**3,563 %**

YIELDS CALCULATED NET OF COMMISSIONS

Net price + commissions (0,30)	**96,513 + 0,30 =**	**96,813**
Net bond discount	100 - 96,813 =	3,187
Final simple net yield (360 days)	**(3,187/96,813) * (360/365) =**	**3,247 %**
Final compound net yield (360 days)	**(3,187/96,813 + 1) ^ (360/365) -1 =**	**3,246 %**

Auctions and subscription rules
of medium to long-term bonds

All bonds with maturities that exceed one year are considered medium to long-term and are placed on auction with a price determination mechanism defined "marginal".

The **marginal auction** settles that all the requests are auctioned at the same price. The marginal price is determined by satisfying bids starting from the highest price until the total amount of bids accepted equals the amount offered. The price of the last successful bid is the **marginal price**.

Proposals bid posted at the marginal price, in case they exceed the quantity put up for auction, are satisfied with a pro-quota allocation.

In order to avoid speculative requests an exclusion price is calculated, below which subscription requests are not considered.

The "transparency decree" imposes that banks that receive auction subscription orders must meet the client's request at the award price of the auction itself, which is the marginal price, the same for everybody.

Zero Coupon Bonds (CTZs)

- CTZs are issued with an initial 24 month maturity. These bonds – like all medium and long-term bonds – are repeatedly offered in different tranches, so as to produce an outstanding volume sufficient to ensure liquidity after each issue. Therefore, their maturity may in fact be less if bought in actions after the first.
- CTZs are zero coupon, that is to say without coupons, so their remuneration is entirely determined by the bond discount, equivalent to the difference between nominal value and the issue paid.

  Like BOTs, they are advantageous in terms of management since the cash flow needed for this investment is less than the reimbursement value and, lacking coupons, there is no need to reinvest periodical interest flows.

- Unlike BOTs, tax is applied at maturity.
- BOTs and CTZs are also similar for the limited duration of the investment.

Summary of CTZ features

Currency	€uro
Maturity	24 months
Remuneration	Difference between nominal value and issue price
Taxation	Rate applied to bond discount at maturity (presently 12,5%)
Auction type	Marginal referred to price
Auction frequency	Monthly together with BOT auctions
Settlement dates	3 value days, both on primary and secondary markets
Market conventions	Actual/365
Redemption	At par, single payment at maturity net of tax

CTZ auction and gross and net yield calculation

- There is a complication in the calculation of the net yield of CTZs respect to that of BOTs: who buys bonds in auctions following the first one, has the right to discount the tax on the matured margin of the elapsed period, since at maturity he will pay tax for the entire period, there thus must be a compensation mechanism in the sale.

- CTZs are discount bonds redeemable at par. Their interest derives from the difference between redemption value and issue price. The issue takes place through a marginal auction referred to the price, without any indication of the minimum price, as explained in the special section. There is also a mechanism of speculative bid exclusion.

- It is therefore necessary to calculate the ***theoretic price***, obtained on the basis of the award price and the yield of the first tranche. In this way one gets the ***matured margin***, given by the difference between the theoretic price and the award price of the first tranche. The 12,5% lieu tax is applied to this and the resulting amount is taken away from the award price of the auction in question, handing up with the ***net price*** which is what is communicated in press releases.

CTZ YIELD EXAMPLE CALCULATION

AUCTION YIELDS 1st TRANCHE

Award price	92,771
Bond discount	100 - 92,771 = 7,229
Settlement date	02/01/2007
Maturity date	31/12/2008
Duration	729 days
Compound gross yield (365 days)	$(7{,}229/92{,}771 + 1)\,\hat{}\,(365/729) - 1 =$ **3,828%**

AUCTION YIELDS OF 24 APRIL 2007

Auction date	24/04/2007
Settlement date	30/04/2007
Maturity date	31/12/2008
Remaining maturity (days)	611
Elapsed maturity (days)	729 - 611 = 118
Award price	93,551
Bond discount	100 - 93,551 = 6,449
Compound gross yield (365 days)	$(6{,}449/93{,}551 + 1)\,\hat{}\,(365/611) - 1 =$ **4,063 %**
Theoretic price for tax calculation	$92{,}771 * (1 + 3{,}828417\%)\,\hat{}\,(118/365) = 93{,}90464$
Pro rata bond discount	93,90464 - 92,771 = 1,13364
12,50% lieu tax on pro rata bond discount	1,13364 * 12,5% = 0,141705
Net price	93,551 - 0,141705 = **93,409295**
Net redemption price	100 - (100-92,771) * 12,5% = **99,096375**
Net auction yield	$(99{,}096375/93{,}409295)\,\hat{}\,(365/611) - 1 =$ **3,594 %**

Treasury Bonds (BTPs)

- BTPs are medium to long-term securities with fixed coupons paid every six months. They are issued with 3, 5, 10, 15 and 30 year maturities.
- They are particularly suitable for investors that prefer constant cash flows during the life of the bond. The price on the secondary market may of course vary according to current market yields.
- In order to calculate the yield offered by these bonds, there is a more complex procedure than that seen for BOTs and CTZs, since for the latter return is given only by the bond discount.
- For BTPs, instead, one must also consider the coupon payments received every 6 months.
- BTPs can be subscribed for a minimum amount of 1000 Euros or multiples thereof.
- They are offered through a marginal auction referred to the price, without any indication of the minimum price, as explained in the special section. There is also a mechanism of speculative bid exclusion.
- The execution of the operations concerning BTP auction is responsibility of Bank of Italy.

Summary of BTP features

Currency	€uro
Maturity	3, 5, 10, 15 and 30 years, the annual coupon is paid every 6 months
Remuneration	Coupon rate and possible premium or discount at issuance
Taxation	Rate applied to coupons and possible bond discount at maturity (presently 12,5%)
Auction type	Marginal referred to price
Auction frequency	Monthly for BTPs with maturities up to 10 years (BTPs with 3 and 10 year maturities at the end of the month, 5 year BTPs at mid-month); BTPs of 15 and 30 years are less regular, they are offered at the mid-month auction alternatively
Settlement dates	Two value days on the primary market, three on the secondary
Market conventions	In order to calculate the accrual period in case of supplementary placements and negotiation on the secondary market: actual/actual
Redemption	Single payment at maturity net of tax

BTP yield calculation

- In order to calculate BTP yield one must first state that there are some basic assumptions, that may not reflect the effective final profitability of the investment, because they are referred to the different possibilities of investment of the bi-annual interest flows that are credited.

- BTP yield is defined by the *internal rate of return (IRR),* which is that rate that makes the purchase price equal to present values of incoming cash flows (coupons plus redemption capital).

- The formula to calculate the IRR is the following:

    $$Price = [F_1*(1+IRR)^{T-t1} + F_2*(1+IRR)^{T-t2} +\ldots+F_n(1+IRR)^{T-tn}] / (1+IRR)^T$$

    F $\rightarrow$ are cash flows

    T $\rightarrow$ is the period of investment (the time in years between the purchase date and the redemption date)

    t1, t2,…, tn $\rightarrow$ are the moments in which cash flows mature (coupon dates of payment)

. Often the following formula is used to calculate the IRR:

$$Price = F_1*(1+IRR)^{-t1} + F_2*(1+IRR)^{-t2}+\ldots+F_n*(1+IRR)^{-tn}$$

from which, by means of simple mathematic transitions, one obtains the formula used in the text.

BTP yield calculation

- In the following example we use a revised formula, in order to highlight the investor's effective yield by calculating the amount due when the bond matures. The reinvestment of coupons at various conditions is taken into consideration.

- The formula used is → price $* (1+IRR)^T = F_1*(1+IRR)^{T-t1} + F_2*(1+IRR)^{T-t2} +..+ F_n(1+IRR)^{T-tn}$

- Some basic concepts:

  accrual period: days between the accrual starting date and the payment date

  accrued interest: quota of matured interest calculated according to the accrual period

  gross tel quel price: is equal to the award price plus the accrued interest

  net tel quel price: is equal to the gross tel quel price minus the tax calculated on the accrued interest (the same logic as for CTZs)

BTP 15-04-2007/15-04-2012 4% annual coupon

Coupon period	15 April – 15 October
Auction settlement date	17/04/2007
Maturity	15/04/2012
Total life of BTP (days)	1827
Residual life of BTP (days)	1825
Annual coupon	4%
6-month coupon	2%

Award price   **99,40**

Accrued interest calculation

Accrual starting date	15/04/2007	
Payment date	15/10/2007	
Accrued days	2	
Total days in the coupon period	183	
Accrued interest	2% * (2/183) =	0,02186

Gross tel quel price   99,40 + 0,02186 =   **99,42186**

Tax on accrued interest (A)	0,02186 * 12,5% =	0,0027322
Tax on total bond discount	(100 - 99,4) * 12,5% =	0,07500
Tax on pro rata margin (B)	0,075 * (1827 - 1825) / 1827 =	0,0000821
Total tax (A + B)	0,0000821 + 0,0027322 =	0,00281

Net price without accrual	99,40 - 0,0000821 =	99,399918
Net tel quel price	99,399918 + 0,02186 - 0,002732 =	**99,419044**

Gross and net Internal Rate of Return (IRR) calculation assuming that coupons are reinvested at the effective gross and net yield rate

gross IRR = 4,17%   net IRR = 3,65%

payment dates	flows	actual days/365	capitalized flows	payment dates	flows	actual days/365	capitalized flows
17/04/2007		5		17/04/2007		5	
15/10/2007	2	4,50411	2,40427	15/10/2007	1,75	4,50411	2,05640
15/04/2008	2	4,00274	2,35550	15/04/2008	1,75	4,00411	2,01980
15/10/2008	2	3,50137	2.3550	15/10/2008	1,75	3,50137	1,98385
15/04/2009	2	3,00274	2,30772	15/04/2009	1,75	3,00274	1,94873
15/08/2009	2	2,50137	2,26116	15/08/2009	1,75	2,50137	1,91404
15/04/2010	2	2,00274	2,21530	15/04/2010	1,75	2,00274	1,88016
15/10/2010	2	1,50137	2,17060	15/10/2010	1,75	1,50137	1,84669
15/04/2011	2	1,00274	2,12658	15/04/2011	1,75	1,00274	1,81400
15/10/2011	2	0,50137	2,08367	15/10/2011	1,75	0,50137	1,78171
15/04/2012	102	0,0	2,04141	15/04/2012	101,675	0,0	101,675

capital at maturity			121,96620	capital at maturity			118,92037
gross price			99,42186	net price			99,41904
IRR	(121,9662/99,42186) ^ (1/5) - 1 =		**4,17 %**	IRR	(118,92037/99,41904) ^ (1/5) - 1 =		**3,65 %**

The flows for each period are capitalized at the IRR for the period between accrual starting date and maturity. This period, in years, is measured in the column "days/365". In order to obtain the capitalized flow this formula → flow * (1 + IRR) ^ (actual days/365) is used. Capital at maturity is derived from summing up the capitalized flows.

Yield calculated without reinvesting coupons (1st case), and with reinvestment at hypothetical current account rate of 1,5 % which, net of 27% tax, is equivalent to 1,095% (2nd case).

net IRR without reinvestment = 3,39%   net IRR with reinvestment at current account rate = 3,46%

payment dates	flows	actual days/365	capitalized flows	payment dates	flows	actual days/365	capitalized flows
17/04/2007		5	-	17/04/2007		5	-
15/10/2007	1,75	4,50411	1,75	15/10/2007	1,75	4,50411	1
15/04/2008	1,75	4,00274	1,75	15/04/2008	1,75	4,00411	2,01980
15/10/2008	1,75	3,50137	1,75	15/10/2008	1,75	3,50137	1,98385
15/04/2009	1,75	3,00274	1,75	15/04/2009	1,75	3,00274	1,94873
15/08/2009	1,75	2,50137	1,75	15/08/2009	1,75	2,50137	1,91404
15/04/2010	1,75	2,00274	1,75	15/04/2010	1,75	2,00274	1,88016
15/10/2010	1,75	1,50137	1,75	15/10/2010	1,75	1,50137	1,84669
15/04/2011	1,75	1,00274	1,75	15/04/2011	1,75	1,00274	1,81400
15/10/2011	1,75	0,50137	1,75	15/10/2011	1,75	0,50137	1,78171
15/04/2012	101,675	0,0	101,675	15/04/2012	101,675	0,0	101,675

capital at maturity			117,425	capital at maturity			117,86171
net price			99,41904	net price			99,41904
IRR	(117,42186/99,41904) ^ (1/5) - 1 =		**3,39 %**	IRR	(117,86171/99,41904) ^ (1/5) - 1 =		**3,46 %**

Treasury Bonds Indexed to Eurozone Inflation (BTP€is)

- A BTP€i is a medium to long-term floating bond (5, 10, 15 and 30 years), insomuch as the coupon's fixed rate is applied to a varying capital with reference to the trend of European inflation.

- A BTP€i is a Government bond that gives the investor protection against price increases; both the capital reimbursed at maturity and the coupons paid every six months are revaluated according to inflation in the Euro area, as measured by the Harmonized Index of Consumer Prices (HICP) excluding tobacco.

- The coupons paid are of varying amounts, yet they guarantee a steady amount in real terms, which is to say in purchasing power. In fact each coupon's amount is calculated by multiplying the fixed interest rate, determined at issuance, by the subscribed capital revaluated to inflation of the referral period. The recovery of the loss of purchasing power is also recognized for capital; indeed the nominal value is revaluated according to inflation. In the extreme case of negative inflation, the amount redeemed at maturity will never be less than 100.

- One uses the same method to calculate yield as for nominal BTPs (non indexed), only real yield is determined, to which only ex-post one may add the part of inflation already paid.

Summary of BTP€i features

Currency	€uro
Maturity	5, 10, 15 and 30 years, the yearly coupon is paid every six months
Remuneration	Variable coupon rate indexed to European inflation (excluding tobacco); possible premium or discount at issuance; capital revaluation at maturity
Taxation	Rate applied at maturity to coupons and to a possible bond discount (presently 12,5%)
Auction type	Marginal referred to price with discretional decision of the nominal amount issued up to a maximum amount communicated before the auction itself
Settlement dates	Two value days on the primary market, three on the secondary
Market conventions	In order to calculate the accrual period in case of supplementary placements and negotiation on the secondary market: actual/actual
Redemption	Single payment at maturity, determined by multiplying the bond's nominal value by the indexation coefficient relative to the expiry date. In any case, capital redemption cannot be less than nominal value

Treasury Certificates (CCTs)

- CCTs are floating bonds with 7 year maturities, much appreciated for their coupon adjustment to market rates; therefore they are likely to guarantee, in case of negotiation before maturity, a principal value very close to that originally invested.

- Interest is paid with bi-annual coupons in arrears indexed to the 6 month BOT yield plus a 0.15% margin. Specifically, this is the simple annual gross 6-month-BOT yield of the last auction held before the accrual starting date. It is divided by 2 and the spread is added (as stated before 0.15%). The result is rounded to the nearest cent.

- For example, for the CCT 1/3/2007-1/03/2014, with accrual starting date on 1 March and 1 September, the current coupon is of 2.07%. This is given by taking the annual simple gross yield of the 6 month BOT issued at the end of February, dividing it by 2 and adding the 0.15% spread.

- In fact: 3.83/2= 1.915 $\rightarrow$ +0.15 = 2.065 which, after rounding up, ends up into 2.07%.

- Since CCTs are variable rate, the calculation of IRR uses the same method as for BTPs, except that one needs to estimate future semi-annual coupons. One usually uses the rate of the last known coupon and assumes that the following ones will be the same, believing that they will be reinvested in an instrument of the same profitability.

Summary of CCT features

Currency	€uro
Maturity	7 years, the annual coupon is paid every six months
Remuneration	Variable coupon rate indexed to 6 month BOT plus spread and possible premium or discount at issuance
Taxation	Rate applied to coupons and possible bond discount at maturity (presently 12,5%)
Auction type	Marginal referred to price
Auction frequency	Monthly
Settlement dates	Two value days on the primary market, three on the secondary
Market conventions	Actual/Actual for coupon payment Actual/Actual for the calculation of the accrued interests on the secondary market for the payment of accrued interest in case of reopening previous issue in following tranches
Redemption	At par, single payment at maturity net of tax

Income tax regimes for domestic Government bonds

The present taxation system provides for two regimes, according to whether the tax-payer is a <u>trading business</u> or an <u>individual</u>. In the first case, capital income goes to form the total taxable base and, therefore, is subject to income tax for legal entities (for resident firms there are no deductions or withholdings at source). Instead, in case investors are individuals, there are 3 distinct regimes:

–1. **Declaration regime**: the investor decides to include income from Government bonds in the income tax return. When this is so, the intermediary applies the 12,5% lieu tax on the interest received, while the capital gains or losses are included in the tax return but are still subject to the 12,50% lieu tax.

–2. **Administered savings regime**: the investor, that has the bonds in custody with or administered by a bank, securities investment firm and other bodies indicated in the relative ministerial decrees, can opt for having the 12,5% lieu tax applied on every capital gain realized, just as what always happens with interest. Any capital loss may be used to reduce the gains in the investor's portfolio, in order to meet the relative fiscal compensation, up to four years after that in which the capital loss was generated.

–3. **Managed savings regime**: investors that have given mandate of their individual management to qualified bodies (e.g. Savings Management Company) are able to opt for the application of the 12,50% lieu tax on the matured annual operating results.