Financial Functions course book

Free University of Bolzano Bozen – Prof. Paolo Coletti – Version 2.0 (20 March 2013)

Introduction

This book contains computer science's lessons held at the School of Economics and Management of the Free University of Bolzano Bozen. It contains only the part of the course on Microsoft Excel financial functions.

This book is under continuous development, please take a look at the version date.

Disclaimers

This book is designed for users already expert with Microsoft Excel but completely new to financial tools and functions. It often contains oversimplifications of reality and every technical detail is purposely omitted. Experts of finance will find this book useless and, for certain aspects, partially wrong.

This book supposes that the user is using English Microsoft Windows Vista operative system with English Microsoft Excel 2007. However, most of the book is perfectly readable with other Windows or Excel versions. However, if the user is using a different language, all the functions' names will be different. This book uses the European continental form of dates: day/month/year.

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1.   Finance

This chapter presents a brief description of important financial concepts, which are necessary to understand the use and meaning of many financial functions. Users already expert in finance may skip it entirely.

1.1.   Money and time

To every investor time means money: an amount of money received in the future is lower than the same amount received now, which is lower than the same amount received in the past. This is due to several reasons:

- the earlier the investor gets the money, the earlier and for a longer time he can use it,
- the later the investor receives the money, the less confident he is to actually receive the money,
- money usually tends to reduce its real value with time due to inflation.

1.1.1. Bank's interest

To compensate the effect of time, every time someone else is using the investor's money, an interest is usually paid. The typical bank's interest is the <u>simple interest</u>, which is the amount $C \cdot i$ paid yearly by a bank that is using the investor's amount of money C. Therefore, after one year, the amount becomes $C \cdot (1+i)$. The next year, the interest paid is obviously $C \cdot (1+i) \cdot i$ and so on. After t years the amount becomes $C \cdot (1+i)^t$; this is called <u>compound interest</u>. i is the yearly interest rate, a percentage which measures how much one year of time is worth for the bank. In Europe in 2007 this number ranges from 0% to 4%, according to the bank and to the customer.

If the money is kept for a shorter amount of time, the formula can be generalized using a fractional value of t (for example 0.3 for 4 months), or using a daily or a monthly interest rate (exact values are complex to calculate, however approximated values are $i/365$ and $i/12$).

1.1.2. Present value

Investors use another, yet equivalent, system to take into account the effect of time on money. If money is received in the past, its <u>present value</u> is evaluated multiplying it by $(1+i)^t$, where t is the time in years passed from that event until now, and i is called discount rate, a rate which indicates how much one year of time is worth (it can be taken equal to the inflation rate, for example, or to the official central bank's discount rate). When money is received in the future, its present value is evaluated dividing it by $(1+i)^t$.

Therefore the present value is a way to compare cash flows at different time, reducing the value of money got in the future and increasing the value of money got in the past. The same multiplications are applied to money which must be paid, and has therefore a negative value: its absolute value is increased when it must be paid in the past and decreased when it must be paid in the future.

Using this approach, the bank's "compound interest" system is perfectly equivalent to the "present value" system, since the compound interest exactly compensates the value's reduction for receiving our own money in the future, i.e. the present value of the future cash flow of $C \cdot (1+i)^t$ is exactly C.

1.1.3. Cash flows

When several amounts of money are paid and received at different times, a <u>cash flows table</u> can be built with the first column containing the dates of the flows and the second column containing the amount of money, with a negative sign when it is paid. For example, receiving 1000 € on the 1st January 2006, paying 500 € on the 7th July 2006 and paying 600 € on the 5th May 2007 produce the following cash flows table:

| Date	Amount
1/1/2006	+ 1000 €
7/7/2006	- 500 €
5/5/2007	- 600 €

Using this table, and fixing a discount rate i, we can evaluate the <u>net present value NPV</u> as the algebraic sum of the n present values of the cash flows. Its generic formula is $\sum_{j=1}^{n} \dfrac{C_j}{(1+i)^{t_j}}$, where t_j is the number of years from now to the date (thus being negative when the event is in the past and positive when the event is in the future).

As it seems reasonable, the NPV changes according to the chosen discount rate. This table contains various possible discount rates and the corresponding NPV of the previous table's cash flows.

| Discount rate	NPV
8,0 %	- 21,89 €
8,5 %	- 17,41 €
9,0 %	- 12,98 €
9,5 %	- 8,59 €
10,0 %	- 4,25 €
10,5 %	+ 0,06 €
11,0%	+ 4,32 €
11,5%	+ 8,54 €
12,0 %	+ 12,72 €
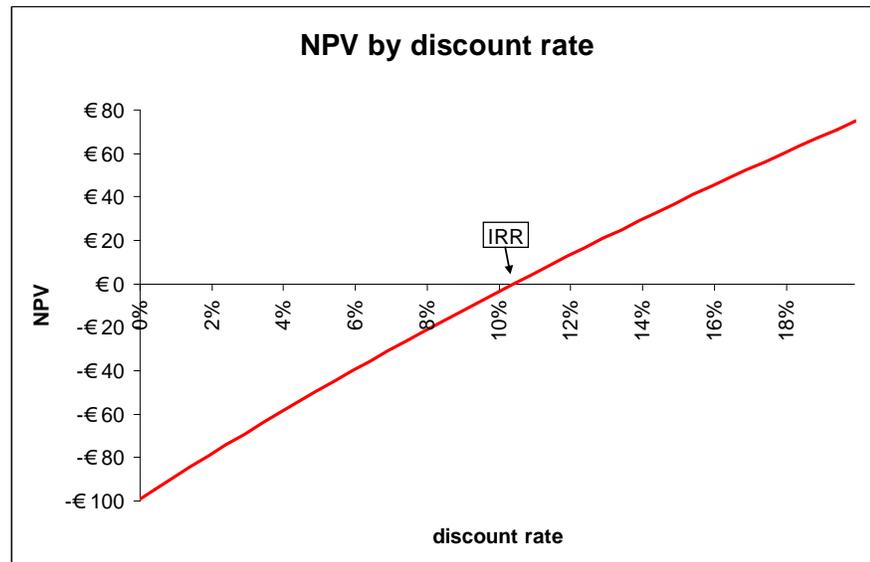
For approximately 10,5 % the NPV becomes zero: this discount rate is called internal rate of return IRR and it is the rate value for which the present values of the positive cash flows exactly compensate the negative ones. When the discount rate is the IRR, the investment is perfectly indifferent, i.e. the investor is neither gaining nor losing money. The IRR means that this investment is exactly equivalent to a bank compound interest equal to IRR.

Since the IRR practically represents the cost of time for that investment, if it exists and is unique, it can be used as a tool to choose the best investment among several possibilities. If the first cash flow is negative, i.e. the investor has the money and wants to invest, the higher the IRR the better (because it represents the interest rate the investor is receiving). If the first cash flow is positive (as in our example, i.e. the investor needs money and is looking for a loan), the lower the better (because it represents the interest rate the investor is paying).

However, there are situations when the IRR does not exist or it is not unique: in these cases the investor must look directly at the NPV graphs to choose the best investment. Here two examples:

Date	Cash flow
1/1/2006	+ 1000 €
7/7/2006	- 500 €
5/5/2007	- 400 €
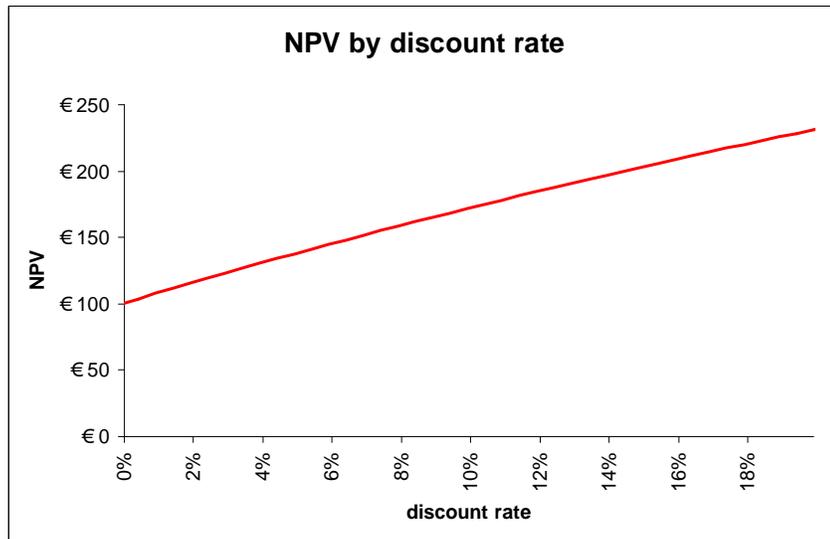
Date	Cash flow
1/1/2006	+ 1020 €
7/7/2008	- 2000 €
5/5/2012	+ 1000 €
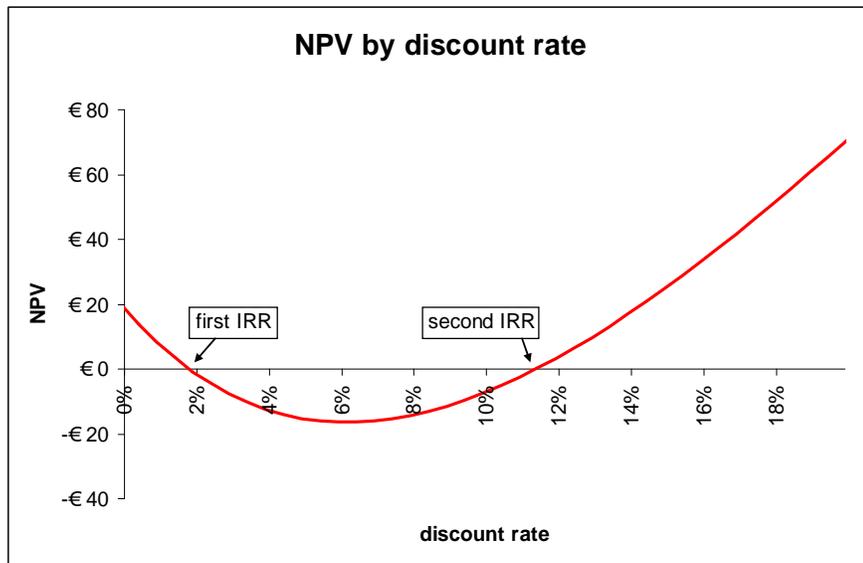
1.2. Loans

When an investor receives a loan, the bank gives him the initial amount of money and every year asks him for a part of the debt back, while the total debt is increased by the interest the investor must pay. This interest depends on the interest rate fixed by the bank (according to Italian law, this rate is called TAN Tasso Annuale Netto, net yearly rate). The loan table is therefore built in this way, supposing a debt of 10000 €, 10% TAN and a constant 4000 € yearly payment:

Date	Cash flow	Debt	Comment
1/1/2006	+ 10000 €	10000 €	Loan is established
1/1/2007		11000 €	Plus interest
1/1/2007	- 4000 €	7000 €	Payment
1/1/2008		7700 €	Plus interest
1/1/2008	- 4000 €	3700 €	Payment
1/1/2009		4070 €	Plus interest
1/1/2009	- 4000 €	70 €	Payment
1/1/2010		77 €	Plus interest
1/1/2010	- 77 €	0 €	Payment

The debt column is obtained adding algebraically the payment's cash flow or, when an interest is considered, multiplying the previous year's value by $(1 + TAN)$. The IRR of these cash flows obviously is 10%.

If the loan has some extra expenses, usually at the beginning or at the end, these must be considered when evaluating which is the best loan (the one which has a lower IRR). The resulting IRR is called TAEG Tasso Annuale Effettivo Globale, yearly effective global rate, and according to Italian law it must be written in every loan's advertisement.

However, many banks prefer to have only constant payments, disliking the last 77 € payment. Finding the exact amount (3154,71 €) which pays back the 10000 € loan with exactly four equal payments and exactly a 10% TAN is a very complex task and requires a computer.

Date	Cash flow	Debt	Comment
1/1/2006	+ 10000,00 €	10000,00 €	Loan is established
1/1/2007		11000,00 €	Plus interest
1/1/2007	- 3154,71 €	7845,29 €	Payment
1/1/2008		8629,82 €	Plus interest
1/1/2008	- 3154,71 €	5475,11 €	Payment
1/1/2009		6022,62 €	Plus interest
1/1/2009	- 3154,71 €	2867,92 €	Payment
1/1/2010		3154,71 €	Plus interest
1/1/2010	- 3154,71 €	0,00 €	Payment

1.3. Mortgage loans

A mortgage loan is a large amount loan usually opened to buy a house, which is typically paid back within several years. Even though the payment is usually monthly, for simplicity we assume here that it is yearly and that it starts on 1st January. To sum up the financial situation we build a mortgage loan table. For example, a mortgage loan of 200000 € with interest rate of 6%, payment 30000€ and duration 9 years:

| Year | At beginning of the year (1st January) | | | At year's end |
	Debt	Money paid	Remaining debt	Interest
2016	200.000,00 €	0,00 €	200.000,00 €	12.000,00 €
2017	212.000,00 €	30.000,00 €	182.000,00 €	10.920,00 €
2018	192.920,00 €	30.000,00 €	162.920,00 €	9.775,20 €
2019	172.695,20 €	30.000,00 €	142.695,20 €	8.561,71 €
2020	151.256,91 €	30.000,00 €	121.256,91 €	7.275,41 €
2021	128.532,33 €	30.000,00 €	98.532,33 €	5.911,94 €
2022	104.444,27 €	30.000,00 €	74.444,27 €	4.466,66 €
2023	78.910,92 €	30.000,00 €	48.910,92 €	2.934,66 €
2024	51.845,58 €	30.000,00 €	21.845,58 €	1.310,73 €
2025	23.156,31 €	23.156,31 €	0,00 €	

where

- the Debt column represents the debt at the beginning of the year, after the interest has been charged,
- the Remaining debt column represents the debt on the 2nd of January, after the customer has paid the yearly payment,
- the Interest column represents the interest that the bank charges to the customer on the 31st December, in this example 6% of the remaining debt.

As can be seen, paying a constant 30000 € yields to a year 2025 payment which is smaller, since the debt at 1st January 2025 is less than 30000 €. Many customers and banks prefer to have a constant payment which does not change in the last year, which in this case is 29404,45 €.

| Year | At beginning of the year (1st January) | | | At year's end |
	Debt	Money paid	Remaining debt	Interest
2016	200.000,00 €	0,00 €	200.000,00 €	12.000,00 €
2017	212.000,00 €	29.404,45 €	182.595,55 €	10.955,73 €
2018	193.551,29 €	29.404,45 €	164.146,84 €	9.848,81 €
2019	173.995,65 €	29.404,45 €	144.591,20 €	8.675,47 €
2020	153.266,67 €	29.404,45 €	123.862,23 €	7.431,73 €
2021	131.293,96 €	29.404,45 €	101.889,51 €	6.113,37 €
2022	108.002,89 €	29.404,45 €	78.598,44 €	4.715,91 €
2023	83.314,34 €	29.404,45 €	53.909,90 €	3.234,59 €
2024	57.144,49 €	29.404,45 €	27.740,04 €	1.664,40 €
2025	29.404,45 €	29.404,45 €	0,00 €	

In case the interest rate is variables, an appropriate column must be inserted into the table

| Year | At beginning of the year (1st January) | | | At year's end | |
	Debt	Money paid	Remaining debt	Rate	Interest
2016	200.000,00 €	0,00 €	200.000,00 €	6,00%	12.000,00 €
2017	212.000,00 €	29.404,45 €	182.595,55 €	6,00%	10.955,73 €
2018	193.551,29 €	29.404,45 €	164.146,84 €	6,00%	9.848,81 €
2019	173.995,65 €	29.404,45 €	144.591,20 €	6,00%	8.675,47 €
2020	153.266,67 €	29.404,45 €	123.862,23 €	8,00%	9.908,98 €
2021	133.771,21 €	31.022,09 €	102.749,11 €	8,00%	8.219,93 €

	At beginning of the year (1st January)			At year's end	
Year	Debt	Money paid	Remaining debt	Rate	Interest
2022	110.969,04 €	31.022,09 €	79.946,95 €	8,00%	6.395,76 €
2023	86.342,70 €	31.022,09 €	55.320,61 €	5,00%	2.766,03 €
2024	58.086,64 €	29.751,69 €	28.334,95 €	5,00%	1.416,75 €
2025	29.751,69 €	29.751,69 €	0,00 €		

which influences the calculation of the last column. As it can be seen, if we want to keep the duration constant we must adjust the payment of the next year according to the new interest rate (obviously larger interest rate means a larger payment, smaller rate a smaller payment).

An alternative solution is to keep the payment constant and adjust the duration:

	At beginning of the year (1st January)			At year's end	
Year	Debt	Money paid	Remaining debt	Rate	Interest
2016	200.000,00 €	0,00 €	200.000,00 €	6,00%	12.000,00 €
2017	212.000,00 €	29.404,45 €	182.595,55 €	6,00%	10.955,73 €
2018	193.551,29 €	29.404,45 €	164.146,84 €	6,00%	9.848,81 €
2019	173.995,65 €	29.404,45 €	144.591,20 €	6,00%	8.675,47 €
2020	153.266,67 €	29.404,45 €	123.862,23 €	8,00%	9.908,98 €
2021	133.771,21 €	29.404,45 €	104.366,76 €	8,00%	8.349,34 €
2022	112.716,10 €	29.404,45 €	83.311,65 €	8,00%	6.664,93 €
2023	89.976,58 €	29.404,45 €	60.572,14 €	5,00%	3.028,61 €
2024	63.600,74 €	29.404,45 €	34.196,30 €	5,00%	1.709,81 €
2025	35.906,11 €	29.404,45 €	6.501,67 €	5,00%	325,08 €
2026	6.826,75 €	6.826,75 €	0,00 €		

which obviously leads to a different payment for the last year.

1.4. Bonds

Warning: this entire section has been removed from ISDM5 course starting from A.Y. 2011/2012.

A bond is a loan made by a company or a national government, which receives money, pays back regularly some money for a certain period of time, and then pays back a final sum of money. Bonds use a special terminology:

- issuer: the company or national government which receives the money;
- settlement: the act of paying the issuer, thus starting the bond;
- buying: the act of paying another owner of the bond and receiving his bond;
- maturity or redemption: the act being paid back by the issuer; this act extinguishes the bond;
- coupon: the amount of money regularly received by the issuer;
- face or nominal value: the amount of bond owned; it is the amount used to calculate the coupon and in examples it is considered to be 100;
- coupon rate: the percentage of the face value which is paid back every year;
- settlement/buy/maturity price: the money paid/paid/received for every 100 of face value;
- currency: the currency used for the coupon nominal value.

Coupon's payment may be yearly, every 6 months, every 4 months, or quarterly. Bond can have a zero coupon rate, a variable coupon rate usually linked to some economic indicators, a variable but predetermined coupon rate, or a fixed coupon rate.

For example, here are some bonds with their 2nd June 2007 prices:

Issuer	Currency	Settlement date	Settlement price	Buy price	Maturity date	Maturity price	Coupon type	Coupon yearly rate	IRR
Kfw Bankengruppe	EUR	15/6/2007	100,79	not yet settled	15/6/2010	100	fixed, yearly	3,5%	3,22%
Landwirthschaftliche Rentenbank	USD	15/6/2007	99,98	not yet settled	15/6/2012	100	fixed, yearly	5,25%	5,26%
Republic of Brazil	EUR	24/1/2005	already settled	117,97	24/1/2012	100	fixed, yearly	9,5%	5,05%
Banca Intesa	GBP	16/4/2003	already settled	101,19	16/4/2010	100	variable, yearly		
Republic of Italy (CTZ)	EUR	30/5/2007	already settled	93,53	30/5/2009	100	zero coupon	0%	3,41%
Republic of Italy (BOT)	EUR	15/7/2008	99,24	not yet settled	15/10/2008	100	zero coupon	0%	3,06%
Republic of Italy (BTP)	EUR	1/5/2002	already settled	120,4	1/5/2032	100	fixed, every 6 months	6%	4,61%

The price (settlement or buy, according whether the bond is already settled or not) of the bond varies according to current market conditions (inflation and national banks' discount rates), to issuer's reliability, to currency, to bond duration and especially to the coupon rate.

If a bond is bought at a date which does not coincide exactly with the settlement's date or a coupon's date, the buyer must pay the seller an extra payment for the fraction of coupon matured during the time from the previous coupon's date to the buy date.

Its IRR can be easily determined writing the cash flows table. For example, for the Republic of Brazil's bond and a 100 € face value it is:

Date	Amount	
2/6/2016	- 117,97	initial payment
2/6/2016	- 3,36	accrued coupon[1]
24/1/2017	+ 9,50	coupon
24/1/2018	+ 9,50	coupon
24/1/2019	+ 9,50	coupon
24/1/2020	+ 9,50	coupon
24/1/2021	+ 9,50	coupon

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[1] Taking into consideration the accrued coupon is only a technical issue which goes beyond the scope of this book. When the bond is bought after its original settlement date, the previous owner has the legal right to a fraction of the next coupon, proportional to the amount of the coupon period for which he owned the bond, that the buyer must anticipate to him. In this case it is 129/365 of 9,5. This slightly changes the IRR, and therefore it must be taken into account. Clearly, if the bond is bought at its original settlement date or exactly at the coupon date, the accrued coupon is zero.

24/1/2021	+ 100,00	final maturity price

Obviously, writing the cash flows' table using any other face value yields to the same IRR of 5.05%.

2. Excel's financial functions

Microsoft Excel provides a lot of financial functions to solve many numerical and dates' problems related to finance. In this section, the functions used to solve the previously presented problems are described.

To correctly use these functions the user is supposed to be already familiar with Microsoft Excel and with the general formulas' and functions' use. For Excel 2003, some advanced functions require the user to install the Analysis Tookpak from Excel's menus: Tools → Add ins… → Analysis ToolPak.

2.2. Date and time

Date and time functions are very useful when dealing with dates, since they take correctly into account every irregularity of the Gregorian calendar (28, 30 and 31 days per month and leap years).

2.2.1. Serial time format

Microsoft Excel uses the serial time format: it stores dates as numbers, starting from 1st January 1900 which is day 1 and increasing by 1 for every day after. So 1st January 1901 is day 366 and 3rd July 2006 is day 38901. In this way, to obtain the number of days between two dates, it is enough to make the subtraction of the two cells containing the dates. On the other hand, to advance/go back of 200 days it is simply necessary to add/subtract 200 to the date.

	A	B	C
1	24/1/2017		
2	29/4/2017		
3	=A2-A1	=A1+200	=A1-200

For example, cell A3 returns 95 (provided that the user tells Excel that this cell contains a number and not a date), cell B3 returns 12th August 2017 and cell C3 returns 8th July 2016.

Time uses the same system, but it takes the fractional part of the day, starting from midnight which is 0.0 and advancing of 1/24 every hour. For example, 3rd July 2016 at 6 a.m. is 42554,25, 4th July 2016 at 11:30 p.m. is about 42555,979. Time can be added and subtracted exactly in the same way as dates.

Two useful functions are provided to automatically return the current date (at midnight) and the current time (of today): TODAY and NOW.

2.2.2. Automatic modifications to date

There are several functions to automatically extract information from a date. They are DAY, MONTH, YEAR and their use is very straightforward. Moreover, the function WEEKDAY returns the number of day of the week starting from Sunday which is 1; to force it to consider Sunday as day 7 and Monday as day 1, the second optional argument must be put equal to 2.

To modify a date adding some days or a fraction of a day, it is very simple to use the feature of the serial time format as shown before. But to automatically modify a date adding years or months, making a simple addition will not consider exactly months of different length. Therefore Excel provides the *DATE* function, which may be used in conjunction with the previously illustrated functions to automatically and correctly modify a date. For example:

A	B	C

1	24/11/2017	Correct	Approximate
2	plus 3 months	=DATE(YEAR(A1),MONTH(A1)+3,DAY(A1))	=A1+90
3	plus 10 years	=DATE(YEAR(A1)+10,MONTH(A1),DAY(A1))	=A1+365*10

Cells B2 and B3 return correctly 24/2/2008 and 24/11/2017, while cells C2 and C3 return wrongly 22/2/2008 and 21/11/2008. Note that, for cell B2, DATE function does not return 24/14/2007 but correctly understands that month 14 is February of the next year.

2.2.3. The undocumented *DATEDIF* function

Excel has a useful function which is not documented, i.e. there is no help available nor any indication of its existence. The function is *DATEDIF(start date, end date, interval)* which calculate the difference in days, months or years between start date and end date. Interval must be text *"Y"* for years, *"M"* for months and *"D"* for days, quotations must also be written as it is text. For example:

	A	B	C	C
1	From	To	Distance in	
2	25/12/2013	23/8/2027	months	=DATEDIF(A2;B2;"M")
3	Today	23/8/2037	years	=DATEDIF(TODAY();B2;"Y")

2.2.4. Dates written inside function

Take care that no date may never be written directly inside any function! If you ever have to write a date directly into a function you must either use DATE() function, or write the date into a cell and make a reference to it. For example:

	A	B	C	C
1	Task	Wrong	Correct 1	Correct 2
2	Calculate year of 25/7/2015	=YEAR(25/7/2015)	=YEAR(C3)	=YEAR(DATE(2015;7;25))
3			25/7/2013	

2.3. Cash flows

The core functions to evaluate cash flows are the XNPV and XIRR functions. These functions need an array of cash flows and an array of dates, and a discount rate for the XNPV function, and automatically evaluate the NPV and the IRR of the investment[2].

	A	B	C	D
1	02/06/2016	-117,97		=XNPV(3%;B1:B8;A1:A8)
2	02/06/2016	-3,36		=XNPV(10%;B1:B8;A1:A8)
3	24/01/2017	9,50		
4	24/01/2018	9,50		=XIRR(B1:B8;A1:A8)
5	24/01/2019	9,50		
6	24/01/2020	9,50		
7	24/01/2021	9,50		
8	24/01/2021	100,00		

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[2] Two simplified functions, NPV and IRR which do not require the dates' array, may be used when cash flows' dates are exactly one each year. Moreover, the even more simplified function PV may be used to evaluate the NPV of an investment with a series of yearly equal payments.

In this example, cell D1 returns +9.79 (the NPV with 3% discount rate), cell D2 -19.88 (the NPV with 10% discount rate), and cell D4 5.05% (the IRR of the cash flows).

The XIRR function returns the #NUM error when the investment has no IRR. Moreover, when more than one IRR is present, the XIRR function usually returns the one closer to zero; to obtain another IRR, the third optional argument of the function must be used.

2.4. Mortgage loans

Excel provides functions to automatically evaluate all the quantities involved in a mortgage loan with constant interest rate. They are:

- PMT, to obtain the yearly payment. To determine the payment for table on page 6 function PMT(200000; 9; 6%) can be used; it is interesting to note that Excel returns a negative amount, since it is a value that must be paid;
- RATE, to obtain the TAN of the loan. To determine the interest rate for table on page 6 function RATE(9; -29404,45; 200000) can be used, with the attention to put a negative payment as second argument;
- NPER, to obtain the duration in years of the loan. If the result is not an integer, it means that the payment is not exact and there will be an extra year with a reduced payment. To determine the number of payments for table on page 6 function NPER(6%; -29404,45; 200000) can be used;
- IPMT, to obtain, for a specific year, the amount of charged interest. To determine the interest rate column function IPMT(6%; N; 9; 200000) can be used, where N is the payment number (1 for 2016, 2 for 2017, etc.); it is not necessary to specify the payment since it can be automatically calculated by Excel from the rate, duration and debt value.

In case the mortgage loan has an adjustable interest rate and an adjustable payment, as in table on page 6, the payment needs to be determined again in the year after each change of interest rate (not in the year when the rate changes because the payment has already been done). In this case, function PMT can be used paying special attention that the duration is clearly the number of missing payments, the interest rate is the new interest rate and the debt value is the remaining debt after the previous year's payment has been done. Therefore, in table on page 6, the 31022,09 € payment is determined with PMT(8%; 5; 123862,23).

2.5. Bonds

Warning: this entire section has been removed from ISDM5 course starting from A.Y. 2011/2012.

To obtain the IRR of a bond (given its price) or the price (given the desired IRR), the bond's cash flows table may be built and its IRR may be easily calculated, or its price may be found using the Excel's menu Goal Seek. However, while this is very easy for zero coupon bonds which have only two cash flows, it may become quite long for bonds with many coupons (long duration or frequent coupons) and it is complicated by the presence of the extra payment for the previously matured coupon; for example, the BTP in the previous table has 63 cash flows.

To obtain automatically the IRR and the price of fixed coupon bonds, Excel provides the *YIELD* and *PRICE* functions.

	A	B	C	D
1	Buy date	02/06/2006		=YIELD(B1;B2;B3;B4;B5;B6)
2	Maturity date	24/01/2011		
3	Coupon yearly rate	9,5%		=PRICE(B1;B2;B3;12%;B5;B6)

4	Buy price	117,97	
5	Maturity price	100	
6	Coupons each year	1	

For example, cell D1 returns 5,05% (the IRR of the bond) and cell D3 returns 91,35 (the price to pay to get a 12% IRR).

Note that these functions always use the yearly coupon rate, even when the coupon has a different frequency. The different frequency is automatically taken into account by the last mandatory argument, which is respectively 1, 2, 3 and 4 for yearly, six months', quarterly and three months' coupon. For example in the BTP case (a coupon every 6 months), even through every coupon is approximately 3% of the face value, the functions must be used in this way:

	A	B	C	D
1	Buy date	02/06/2006		=YIELD(B1;B2;B3;B4;B5;B6)
2	Maturity date	01/05/2031		
3	Coupon yearly rate	6%		=PRICE(B1;B2;B3;12%;B5;B6)
4	Buy price	120,4		
5	Maturity price	100		
6	Coupons each year	2		