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DIRECTORATE-GENERAL FOR FINANCIAL STABILITY, FINANCIAL SERVICES AND CAPITAL MARKETS UNION

EXAMPLES FOR THE CALCULATION OF THE ANNUAL PERCENTAGE RATE OF CHARGE FOR CREDIT AGREEMENTS FOR CONSUMERS RELATING TO RESIDENTIAL IMMOVABLE PROPERTY

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COUNTRY CODES

Country name	Country code	Currency code
Austria	AT	EUR
Belgium	BE	EUR
Bulgaria	BG	BGN
Croatia	HR	HRK
Cyprus	CY	EUR
Czech Republic	CZ	CZK
Denmark	DK	DKK
Estonia	EE	EUR
Finland	FI	EUR
France	FR	EUR
Germany	DE	EUR
Greece	GR	EUR
Hungary	HU	HUF
Ireland	IE	EUR
Italy	IT	EUR
Latvia	LV	EUR
Lithuania	LT	LTL
Luxembourg	LU	EUR
Malta	MT	EUR
Netherlands	NL	EUR
Poland	PL	PLN
Portugal	PT	EUR
Romania	RO	RON
Slovakia	SK	EUR
Slovenia	SI	EUR
Spain	ES	EUR
Sweden	SE	SEK
United Kingdom	GB	GBP

ACRONYMS

APR(C)	Annual percentage rate (of charge)
EU	European Union
MS	Member States(s)
ECB	European Central Bank
TCC	Total cost of the credit (to the consumer)

LEGAL ACTS AND RELATED DOCUMENTS

Directive 2008/48/EC	Directive 2008/48/EC of the European Parliament and of the Council of 23 April 2008 on credit agreements for consumers and repealing Council Directive 87/102/EEC, OJ L 133, 22 May 2008.
Directive 2011/90/EU	Commission Directive 2011/90/EU of 14 November 2011 amending Part II of Annex I to Directive 2008/48/EC of the European Parliament and of the Council providing additional assumptions for the calculation of the annual percentage rate of charge, OJ L 296, 15 November 2011.
Guidelines on the application of Directive 2008/48/EC	Guidelines on the application of Directive 2008/48/EC (Consumer Credit Directive) in relation to costs and the Annual Percentage Rate of Charge, Brussels, 8.5.2012, SWD(2012) 128 final.
Directive 2014/17/EU	Directive 2014/17/EU of the European Parliament and of the Council of 4 February 2014 on credit agreements for consumers relating to residential immovable property and amending Directives 2008/48/EC and 2013/36/EU and Regulation (EU) No 1093/2010, OJ L 60, 28 February 2014.

1. INTRODUCTION

This report presents the work carried out under contract number MARKT/2014/107/H3/TA/LV, aimed at the provision of a tool enabling the calculation of the Annual Percentage Rate of Charge (APR) of credits falling under the scope of Directive 2014/17/EU ('Mortgage Credit Directive', MCD), the instructions on how to use it and examples for the calculation of the APR.

As stated in Article 3(1) of the MCD, the scope of this Directive covers two types of credit. These include those credits whose purpose is to acquire or retain property rights in land or an existing or projected building and those credits which are secured either by a mortgage or by another comparable security commonly used in a Member State (MS) on residential immovable property or secured by a right related to residential immovable property. Both features can appear together and in the majority of MS the typical credit aimed at funding the purchase of a property is secured on that property, is described as a mortgage. However, the term 'secured credit' is rarely used to refer to credits with such a purpose. For this reason, and following previous works in this area[1], this report uses the term 'mortgage credit' to refer to the first type of credits (credits to purchase a property and that are either secured or not by the property) and 'secured credit' for other types of credits that are secured.

The APR is an essential element of transparency in credit products. Recital (49) refers to it in these terms: *"In order to promote the establishment and functioning of the internal market and to ensure a high degree of protection for consumers throughout the Union, it is necessary to uniformly ensure the comparability of information relating to the APRC throughout the Union."* It is for this reason that that the provisions in relation to the calculation of the APR are subject to maximum harmonisation (Article 2).

The APR provides a numerical and comparable representation of the cost of the credit to the consumer. Specifically, APR is defined in Article 4(15) of the MCD as "*the total cost of the credit to the consumer, expressed as an annual percentage of the total amount of credit, where applicable, including the costs referred to in Article 17(2) and equates, on an annual basis, to the present value of all future or existing commitments (drawdowns, repayments and charges) agreed by the creditor and the consumer*".

Article 17 gathers the main aspects for the calculation of the APR. Firstly, it refers to Annex I of the MCD for the mathematical formula that should be used for obtaining the APR. Secondly, it states the specific cost that should be included in the total cost of the credit (TCC) to the consumer under given circumstances and contextualise the calculation of the APR in a situation where the creditor and the consumer fulfill their contractual duties, thereby completing the definition of the TCC provided in Article 4(13). Thirdly, it states the cases where an additional illustrative APR should be provided to the consumer for credit where the

[1] See page 1 of the report 'The Costs and Benefits of Integration of EU Mortgage Markets', elaborated for the European Commission by London Economics in 2005.

borrowing rate changes. And finally, it refers to the additional assumptions set out in Annex I for the calculation of the APR.

Apart from the novelty of the additional illustrative APR introduced by the MCD, the elements of the APR article resemble those of Directive 2008/48/EC ('Consumer Credit Directive', CCD). Moreover, the mathematical formula is the same, and the remarks on the formula and the assumptions for the calculation of the APR are generally consistent with those of the CCD. In this respect, assumptions from Commission Directive 2011/90/EU amending Part II of Annex I to Directive 2008/48/EC are incorporated in the MCD with only minor changes and new assumptions have been included for specific credit products covered by the Directive.

This common basis is aimed to ensure consistency between the calculation of the APR for different types of credit (recital (54)), thus providing a consistent framework for consumers in the area of credit, at the same time that administrative burden for creditors and credit intermediaries is minimized (recital (20)), once they have adapted in the last years to regulatory framework introduced by the CCD.

In this context, previous work in relation to the calculation of the APR in consumer credit agreements subject to the CCD[2] is valuable for the MCD, but need to be adapted to the scope, changes and novel features introduced by the latter. That task is done in this document for two elements: the set of examples illustrating the calculation of the APR and the Excel simulator that allows replicating the examples, obtaining new examples and analysing the effect of different characteristics of credit agreements on the APR.

The adaption of the examples has consisted of:

- Retaining those examples that are relevant for the area of credit agreements for consumers relating to residential immovable property (i.e. mortgage credit and secured credit using the terminology stated above), tailoring them to the typical characteristics of this type of credit (e.g. the longer terms, higher amount or lower rates in relation to unsecured credits for consumption),

- Adapting these examples to the changes and novel features introducing by the MCD (e.g. to the minor changes in the assumptions and the requirement of disclosing an illustrative APR in certain credits),

- Deleting the examples which are unrealistic in this area (e.g. credit without set up costs, hire-purchase agreements or credit with a few number of repayments), and

- Creating new examples that illustrate the new assumptions, requirements and credit products relevant for the MCD (e.g. the assumptions related to bridging loans, shared equity loans, contingent liabilities or guarantees, or renegotiable credit with a long initial fixed rate period and foreign currency loans) while also reflecting the relevant

[2] These materials are available on the website of the Directorate General Health and Consumers at http://ec.europa.eu/consumers/rights/fin_serv_en.htm#credit.

features found in credit relating to residential immovable property (e.g. interest-only mortgage credits, multi-part credits and credits with exit costs).

The simulator has been adapted in relation to:

- The examples embedded, so they correspond to those described above.
- The texts, including explanatory texts, excerpts, comments and warnings, as they are tailored to the MCD.
- The information to be entered by the user, including additional data needed to obtain the illustrative APR, foreign currency data, and other features typical in credits relating to residential immovable property.
- The results provided by the simulator, increasing the maximum number of periods until repayment due to the longer term of the credits, providing the illustrative APR, and showing a summary table with annual and overall totals for the items included in the amortisation table.

The simulator is accompanied by a document of instructions which has been also adapted to the aforementioned changes.

All these working materials constitute a suitable companion of the MCD for all the parties involved, including regulators, consumers, creditors and credit intermediaries and other stakeholders, in respect to the technical task of calculating the APR.

The structure of this document is as follows. Section 2 discusses the explanation of the examples, shows the set of examples and provides amortisation tables together with step-by-step explanations on how to enter the characteristics of the credits in the simulator to obtain them. Section 3 provides general instructions on how to use the simulator. The simulator itself constitutes a separate Excel file.

2. EXAMPLES FOR THE CALCULATION OF THE APR

This section presents the set of examples for the calculation of the APR tailored to the MCD. As stated before, taking as a starting point the set of examples related to the CCD, we have deleted, changed and introduced new examples in order to adapt them to the regulatory framework established by the MCD as regards the scope, the formula, remarks and assumptions for the calculation of the APR and the disclosure of illustrative APRs for certain credits.

In this respect, it should be noted that the set of examples covers all the assumptions of the MCD by including examples of:

- credits with an unknown date of payments of capital, interest or other costs (ex_16, ex_19, ex_36, ex_37, ex_39),
- credits with flexibility in the repayments of capital (ex_17),

- credits where the length of the interval to the first repayment is unknown (ex_18),
- credits with indexed (ex_21, ex_22 includes a capped rate, ex_30 to ex_33) and renegotiable borrowing rates (ex_23, ex_24, ex_25),
- credits for an amount of credit not specified (ex_27, ex_34, ex_37),
- credits with drawdown limits (ex_32),
- credits with different ways of drawdown with different charges and borrowing rates (ex_36),
- credits with different borrowing rates and charges for a limited period (ex_36, ex_37),
- open-ended credits other than overdrafts and bridging loans (ex_31 to ex_37),
- overdrafts (ex_38, ex_39),
- bridging loans (ex_40, ex_41, ex_42),
- contingent liabilities or guarantees (ex_43),
- and shared equity credits (ex_44).

Also, one example (ex_2) is devoted to illustrating the application of remark (c). Interest-only credits (ex_8), multi-part credits (ex_26), and foreign currency loans (ex_28, ex_29) are also included in the set of examples because they are mentioned in the MCD, the latter in reference to the provision of information on the change of the amount of credit and the instalments due to exchange rate risk. And, finally, illustrative APRs are shown for the relevant credits (ex_21 to ex_26, ex_30 to ex_33).

As mentioned in recital (54) of the MCD, there might be assumptions brought from the CCD which are not of application to existing credit products relating to immovable property, but the inclusion of such assumptions in the MCD anticipating product innovation in this area, justify the inclusion of examples illustrating the application of such assumptions. The examples of secured credit cards (ex_36, ex_37), secured deferred debit card (ex_35) and secured overdrafts (ex_38, ex_39) should be, in fact, considered as examples of non-typical products in the EU markets nowadays, although their existence in certain countries indicates the direction of future innovation.

The diversity of EU credit markets has been taken into account in designing the characteristics, apart from those which derive from the assumptions, of the credit agreements described in the examples[3]. In this regard it is worth noting that the examples should be general enough to

[3] For an overview of the trends, products and costs of credit agreements relating to residential immovable property see, for example, European Central Bank (2009): Housing Finance in the Euro Area, Structural Issues Report, and Lea, M. (2010): International Comparison of Mortgage Product Offering, Research Institute for Housing America. Other sources of information used have been the websites of credit providers, price comparison websites, and the MFI (Monetary financial institutions) interest rate

avoid losing suitability in a context where credit markets show remarkable national differences and are evolving continuously, but also specific enough to be able to reflect the main types of credit agreement and the different elements which might appear in them and have an effect on the APR. These include different drawdown and repayment mechanisms and fees and charges which spread differently along time.

In this regard, we have considered different types of costs, including costs which are paid as a single sum (we have included them in all the examples because credits relating to residential immovable property are typically subjected to e.g. high arrangement fees or costs of valuation of property); charges paid at regular intervals (e.g. we have considered home insurance in ex_3 and payment protection insurance in ex_4 and ex_5 where such insurance is obligatory in order to get the credit), costs which are financed with the credit thus increasing the amount owed (ex_5), and costs charged when the credit is paid off (these costs, known as exit costs, completion fee, deeds release fee or exit administration fee appear in ex_6). Also, in addition to the schemes of repayment considered in the assumptions and the typical repayment in equal monthly instalments which conforms the default example (ex_1), we have covered other schemes and features such as balloon payments (ex_7), increasing and decreasing instalments (ex_9 and ex_10), payment of a fixed amount of capital (ex_12) or of capital and interest (ex_11), repayment of capital in equal amounts (ex_13, ex_16, ex_19), payments given as a percentage of the balance outstanding of capital (ex_14 and ex_17) or of capital and interest (ex_15), possibility of postponing payments (ex_16) and the existence of a drawdown period followed by an amortization period (ex_30). With these additions, the set of examples covers a large variety of payment structures and charges which, either in isolation or in combination, are able to reproduce the main products available in the market.

Taking into account the reality of the market, we have chosen the amounts, durations, repayments and the level of charges considered in the examples. We have tried to find an equilibrium position between the use of reasonable levels and the gains in simplicity and comparability of the examples if round and similar but coherent figures are used throughout the examples, an approach which is possible given that the examples are expressed in general terms and refer to basic structures, as indicated above. This is also coherent with the diversity that can be found across EU credit markets in the EU. From this analysis we have adopted the following decisions:

- Amount: In mortgage credits, bridging loans and shared equity credits we assume an amount of credit of €200000, reflecting the high amounts usually provided in this type of credits, whose purpose is to acquire or retain property rights in land or a building. This amount takes into account the value of residential properties in the EU as a whole, and the fact that the typical loan-to-value (LTV) for a first-time house buyer is around 80% in the majority of MS. A much lower amount of €30000 have been used

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statistics of the European Central Bank. As noted in the report 'The Costs and Benefits of Integration of EU Mortgage Markets' (op.cit.), the range of products available and their characteristics differ substantially across EU markets, being UK the country that has the most developed mortgage market at present.

for secured lines of credit (in the set of examples these are represented by credits with freedom of drawdown up to a certain ceiling where the credit may be used repeatedly as the borrower uses the sum used and which are not overdraft facilities, credit cards or deferred debit cards) because their purpose is typically different and of a lower amount (e.g. consumption, renovation of immovable property, or debt consolidation) and the fact that they are usually secured by the *equity* in the consumer's residential property and not by the full value of the property[4]. We have also used this amount for contingent liabilities, whose purpose is to act as a guarantee of another separate transactions (e.g. of a guarantor loan, where the borrower needs of a third-party guarantor who should be a homeowner and who promise to make the borrower's repayment if the borrower does not pay). Finally, we have used a lower amount of €3000 for secured credit cards, secured deferred debit cards and secured overdrafts, due to their typical usage as a temporal financing solution and the fact that accession to these credits in their secured form might be due to a poor credit history or a low income of the consumer. Note, however, that in all cases the amount are higher than those considered in the CCD examples for similar credits (€1000 for open-ended credits, including cards, and overdraft facilities and €6000 for fixed term credits), which is justified by the purpose (for mortgage credit) or the existence of a guarantee (for secured credit) in the credit agreements falling under the MCD.

- Terms: Our aim to show the corresponding amortisation tables for the examples have led us to choose, for mortgage credits, a duration of the repayment period of 20 years, a term which is on the lower part of the range of typical terms, which extends from 20 to 30 years[5]. For secured credits other than overdrafts, in line with the lower amounts and higher risk for creditors, we have considered repayment periods of 10 years, sometimes in the form of a maximum term until full repayment, or we have not fixed the duration at all (in these two latter cases, the credit becomes open-ended, according to assumption (k)). An intermediate maturity of 15 years have been chosen for specific credit agreements, such as the multi-part credit (because credits with a fixed rate have typically a lower duration, and this credit is part fixed rate and part variable rate), the credit with flexibility in the amounts of the repayment of capital, the balloon-payment mortgage (where we have used the scheme 30 due in 15, meaning that the monthly payments are based on a 30-year amortization period but the balance should be cleared in year 15th by a high amount payment, the balloon payment, which provides full repayment of the credit), and the shared equity credit (where a lower fixed rate is offered in exchange for a share of the appreciated value of

[4] The equity is the difference between the property fair market value and the outstanding balance of all liens on the property (e.g. a mortgage credit). The property's equity increases when the property value appreciates and/or as the debtor makes payments against the mortgage outstanding balance.

[5] Following the ESIS instructions, our amortisation tables show for the first repayment year the information for each instalment (they are monthly in our examples), for the following years the annual totals and conclude with a final row with the overall total. Additionally, we include the annual total for the first year. As a result and adding a row for separation, the number of rows to be shown is 35.

the property). The assumption applicable to overdraft facilities contemplates the case of an unknown duration of the credit, for which reason we provide an example of an overdraft facility with a fixed duration and another example of an overdraft with unknown duration. Due to the temporary nature of the financing this product provides, we have chosen a short period, 6 months, as the fixed duration and a maximum duration of 2 years for the overdraft with an unknown duration (the duration is unknown because the credit can last more or less depending on the consumer's choice). The assumption applicable to bridging loans also contemplates the case of a no fixed duration, which even appears as a possibility in the definition the MCD provides for this type of credits, which are also of a transitory nature. Therefore, we also provide three examples of bridging loans with similar durations: two examples of duration of 6 months and one example of a maximum duration of 2 years[6]. Finally, for the contingent liability we have considered rolling periods of 1 year and a repayment period of 10 years from the date of drawdown, in line with secured credits. Apart from these explicit durations, it should be noted that there are cases where the duration is obtained implicitly from the scheme of repayments (i.e. in credits whose repayments are given as a percentage of the balance outstanding or as a constant amount known in advance). In these cases, we have limited the duration to a convenient number of periods by a sensible choice of the amount of the repayments (e.g. in mortgage credits, the amounts and percentages considered lead to repayment periods which range between 18 years and 5 months and 19 years and 5 months, thus being around the 20 years mentioned above). As regards the frequency of payments, we have used monthly payments.

- Borrowing rates: We have established three different levels of borrowing rates to which the credits have been assigned according to their risk. The lowest level corresponds to 6% of fixed borrowing rate or Euribor-360 plus a spread of 1.5% if the borrowing rate is variable. The second level is 7.5% fixed or Euribor-360 plus a spread of 3% if variable. And the third level is 9% fixed or Euribor-360 plus a spread of 4.5% if variable. Mortgage credits are assumed to have the lowest rates[7], lines of credit, bridging loans and contingent liabilities have the intermediate rates, and secured credit cards and overdrafts are assigned the highest rates. As special cases, for the mortgage with a discount in the borrowing rate for the first period we have chosen a

[6] Article 4(23) defines bridging loans as credit agreements either of no fixed duration or repayable within 12 months. In the examples the duration of 6 months was chosen for a credit repayable within 12 months; the length of no fixed duration credit is not determined but for the purpose of this exercise a maximum duration of 2 years was chosen (the consumer being able to terminate the credit without additional expenses before the expiration of the maximal length). Note that loans that are of a fixed duration longer than 12 months cannot be considered as 'bridging loans' under the MCD. This has two implications: first such loan would not fall under the possible exemption foreseen under Article 3 and second, the calculation of the APRC for such loan would not use assumption (j).

[7] The spread of 1.5% over the Euribor is highly realistic for this type of credits in the long run, as noted in the report on mortgage markets integration in the EU elaborated by London Economics (op.cit.).

discount of 1%, for the foreign currency mortgage credit the borrowing rate is assumed to be 5% (also 1% less than mortgage credits in general, being this lower rate the benefit of borrowing in a foreign currency), the secured deferred debit card is interest-free (as is typical in this type of products), and the shared equity credit is interest-free for a initial period of 5 years and afterwards it is charged with a borrowing rate of 4% (being the lower rates the benefit in costs for the consumer in exchange of giving the creditor a share in the value of the property). As to the type of borrowing rate, fixed or variable, firstly it should be noted that whole-of-term fixed rate mortgages are not common in EU markets. Variable rate mortgage credits (sometimes with a short initial period of fixed rate) or credits carrying an initial fixed rate period of several years (after which the rate is renegotiated or revert to a variable rate) are prevalent, but only one of this types dominates in each MS[8]. However, for secured credits the borrowing rate is usually variable. As can be inferred from the definition of our three levels, when the borrowing rate is variable, it is usually indexed to the Euribor, although differences appear again among MS[9], and also among products. For example, for credit cards and overdrafts the borrowing rate is usually determined by the creditor, while for lines of credit the indexation to market rates (normally to Euribor) is the usual practice. Given this diversity, in an attempt to simplify the examples, we have opted for considering variable borrowing rates only for lines of credit and for those credits where the focus is in the change from a fixed rate to a variable rate, being the variable rate always expressed as the Euribor-360 plus the corresponding spread. The initial fixed rate in the latter case is assumed to be always a 5%, and the Euribor-360 is assumed to be at a level of 4% in all the cases at the time the credits are concluded.

For obtaining the illustrative APRs in credits allowing for variations in the borrowing rate, except for the specific case of Article 17(5), the MCD requires using the highest borrowing rate in at the least the last 20 years (or the longest period for which such data is available), '*based on the highest value of any external reference used in calculating the borrowing rate where applicable or the highest value of a benchmark rate specified by a competent authority or EBA where the creditor does not use an external reference rate*'[10].According to this, for variable borrowing rates the maximum level of the Euribor-360 has been taken, being 5.39% reached in July 2008, and for fixed rates to be negotiated after a period of less than 5 years, we have assumed that

[8] For example, in Belgium, Germany, France and Netherlands, mortgage credits with large fixation periods prevail. In fact, according to the ECB (op.cit.), less than 20% of new mortgages are 'pure' variable rate credits. Quite the opposite, in countries like Spain, Luxemburg, Portugal or Finland the percentage of variable rate loans is 90% or more. Factors related to the demand and supply of credit and institutional factors explain the differences among MS.

[9] For example, within the group of MS with a prevalence of fixed rates in mortgage credits, in Germany and Netherlands variable rates are usually indexed to long-term market rates, while in France they are indexed to Euribor-360.

[10] Quoted from the instructions to complete section 4 of the ESIS, point 2.

the benchmark rate is the agreed rate on new loans with initial rate fixation over five and up to ten years applied by monetary and financial institutions to euro area households loans for house purchase; the highest level of this rate was reached in October 2000 and is 7.30%[11]. As regards adjustment periods, we have chosen an intermediate frequency of 6 months. Finally, it should be noted that we include an example of a mortgage credit where there is a cap that limits the deviation of the borrowing rate from its initial level; we have considered two different levels of the cap, given as a maximum deviation of 1% and 2%.

- Other charges: Mortgage and secured credits are subject to rather high charges because of e.g. the higher administrative burden in comparison to non secured credits, or some additional requirements, such as the valuation of the property or contracting insurance. For this reason, in all the examples we have considered the existence of initial costs (to be considered within the total cost of credit to the consumer, as defined in Article 4(13)) given as 2% of the amount of credit. The only exception comes from the contingent liability, where the initial cost is assumed to be 0.5% of the amount of credit and the remaining 1.5% is charged at the time of the event of drawdown. Some examples include additional cost to these initial costs in order to illustrate the effect of costs with different payment schemes or which have an effect on other relevant elements of the credit. For example, the caps on the borrowing rate mentioned above are assumed to have an annual cost of €360 and €240 spread over the monthly repayments. Also there is an example of a foreign currency loan with a cap which limits the variation of the exchange rate; the cost of the cap is also €360 each year. Other additional costs included in the examples are home insurance of €200 each year also spread over the monthly repayments, payment protection insurance of 1% of the amount of the credit per year spread over the monthly repayments, a single-sum payment protection insurance premium which is financed with the credit and given as 4% of the amount of credit for 4 years, an exit cost to be paid for closing the mortgage account after full repayment of €100, exchange rate conversion fees of 0.2% of the amount converted in the foreign mortgage credit, an annual fee of €100 in the secured deferred debit card, annual costs of €25 in secured credit cards and administrative charges of €2.5% per month in one of the secured overdrafts. It should be noted that also in this matter, the differences between MS are large, but that the amounts and schemes chosen are in line with what can be found in the market[12]. Also

[11] We have chosen the rate for house purchases because all the examples where we have needed this rate are of mortgage credits. As regards the term, the period where the new fixed rate is applied in our examples is longer than 10 years. However, we have used the 5 to 10-year rate because the series for this rate is longer. It starts in 2000 while the series for the more than 10-year rate starts in 2003 and thus, it does not register the highest levels reached at the end of 2000, The series can be found in the Statistical Data Warehouse of the European Central Bank (Navigation path: Home > Economic Concepts > Monetary and financial statistics > MFI interest rates > MFI interest rates > Loans) and the ECB Monthly Bulletin (MFI interest rates on euro-denominated deposits and loans by euro area residents).

[12] For example, the ECB (op.cit.) reports that the costs for taking out a mortgage credit can vary from 3.5% of the amount of credit in Belgium to close to zero in Finland.

note that the insurance costs are included on the basis of the Member State having exercised the discretion provided by Article 12(4)

A last guideline we have followed during the elaboration of the examples has been the provision of instructive examples. In this regard we have used two tactics:

- Introduce changes in a progressive way throughout the examples, trying to go from the basics to the most complicated agreements and avoiding the simultaneous appearance of multiple variations which might hinder a simple and proper identification and valuation of them.

- Provide self-contained examples, in the sense that any information needed to calculate the examples is supplied. This feature should be considered a requirement because it is desirable for the reader to be able to replicate all the examples manually or using the Excel simulator. Moreover, for completeness and better comprehension, the amortisation table of each example calculated by the simulator is provided in section 2.2, together with step-by-step explanations on how to obtain it[13].

The examples introduced following these guidelines make up the set of examples, which includes the forty-four examples[14] shown in Table 1. The table includes a brief description of the examples, their most distinguishing features, their relationship with the examples of the CCD (if any)[15], and the assumptions used. The requirement of additional illustrative APRs is also mentioned in the last column by referring to points (5) and (6) of Article 17 of the MCD and in the third column.

TABLE 1. SET OF EXAMPLES

Number	Description	Feature	Relation to CCD examples	Assumptions used
1	Mortgage credit with monthly instalments and single sum cost	Default example in the Excel simulator	5	
2	Mortgage credit with non regular periods of repayment	Non regular periods of payment	4	

[13] It should be noted that calculations using the precision of the numbers as shown in the examples might lead to small differences in the results. For example, a handmade sum of the present value of cash flows using the amounts with two decimals showed in the amortisation table might give several euro cents instead of zero, but it is only due to the number of decimal places displayed. In fact, the sum of the values in the Excel simulator gives zero, as required by the APR.

[14] The number of examples tailored to the CCD is similar, 41.

[15] The examples of the CCD are included in the 'Study on the calculation of the Annual Percentage Rate of Charge for consumer credit agreements', revised version October 2013, available at: http://ec.europa.eu/consumers/documents/study_apr_2013_final.pdf

Number	Description	Feature	Relation to CCD examples	Assumptions used
3	Mortgage credit with regular charges	Regular charges	6	
4	Mortgage credit with regular payment protection insurance premiums	Regular insurance premiums	7	
5	Mortgage credit with single sum payment protection insurance premium which is financed	Financed cost	8	
6	Mortgage credit with exit costs	Exit costs	-	
7	Balloon-type mortgage credit	Balloon payment	11	
8	Interest-only mortgage credit	Regular payment of interest and repayment of capital at the end Includes additional illustrative APR due to variations in the borrowing rate	18	17(4) and 17(6)
9	Mortgage credit with increasing instalments	Increasing instalments	14	
10	Mortgage credit with decreasing instalments	Decreasing instalments	15	
11	Mortgage credit with regular payment of a fixed amount known in advance	Regular payment of a fixed amount known in advance	16	
12	Mortgage credit with regular payment of interest and a fixed amount known in advance	Regular payment of interest and a fixed amount known in advance	17	
13	Mortgage credit with regular payment of interest plus equal amounts of capital	Regular payment of interest and equal amounts of capital	20	
14	Mortgage credit with regular payment of interest plus a percentage of the balance outstanding of capital	Regular payment of interest plus a percentage of the balance outstanding of capital	21	
15	Mortgage credit with regular repayment of a percentage	Regular payment of a percentage of the	22	

Number	Description	Feature	Relation to CCD examples	Assumptions used
	of the balance outstanding of capital plus interest	balance outstanding of capital plus interest		
16	Mortgage credit with regular payment of interest plus equal amounts of capital and with the possibility to postpone the payments within certain limits	Flexibility in the dates of payment of capital and interest	25	g(i), h(i)
17	Mortgage credit with regular payment of interest plus a minimum percentage of the balance outstanding of capital and a final payment	Flexibility in the amounts of the repayments of capital	26	(g)(i)
18	Mortgage credit with equal instalments, where the length of the interval to the first repayment depends on the date the agreement is concluded	Unknown length of the interval to the first repayment	27	(g)(ii)
19	Mortgage credit with equal repayments of capital and with costs whose date of payment is unknown	Unknown date of payment of charges	28	(h)
20	Mortgage credit with different borrowing rates	Different borrowing rates	29	
21	Mortgage credit where the borrowing rate is fixed for an initial period and subsequently it is periodically adjusted according to an agreed indicator	Fixed borrowing rate period followed by a variable rate period Includes additional illustrative APR due to variations in the borrowing rate	30	17(6) and (e)
22	Mortgage credit where the borrowing rate is fixed for an initial period and subsequently it is periodically adjusted according to an agreed indicator for which there is a cap	Cap on the variable borrowing rate Includes 2 examples with additional illustrative APR due to variations in the borrowing rate, including one example based on the cap rate	-	17(6) and (e)
23	Mortgage credit where the borrowing rate is fixed for an	Fixed borrowing rate period which might be	31	17(4) and

Number	Description	Feature	Relation to CCD examples	Assumptions used
	initial period after which a new fixed rate may be agreed instead of proceed with a variable rate	followed by a period with a variable rate or a new fixed rate Includes additional illustrative APR due to variations in the borrowing rate		17(6)
24	Mortgage credit where the borrowing rate is fixed for an initial period of at least 5 years after which a new fixed rate will be agreed	Fixed borrowing rate period of at least 5 years followed by a period with a negotiated and new fixed rate Includes additional illustrative APR which assumes full repayment of the credit at the end of the fixed rate period	-	17(4) and 17(5)
25	Mortgage credit where the borrowing rate is fixed for an initial period shorter than 5 years after which a new fixed rate will be agreed	Fixed borrowing rate period shorter than 5 years followed by a period with a negotiated and new fixed rate Includes additional illustrative APR due to variations in the borrowing rate	-	17(4) and 17(6)
26	Multi-part mortgage credit	Part fixed borrowing rate and part variable rate Includes additional illustrative APR due to variations in the borrowing rate	-	17(4) and 17(6)
27	Mortgage credit for an amount not specified	Ceiling of the credit not specified	-	(f)
28	Foreign currency mortgage credit	Foreign currency Includes additional	-	

Number	Description	Feature	Relation to CCD examples	Assumptions used
		information due to variations in the exchange rate		
29	Foreign currency mortgage credit with a cap on the exchange rate	Cap on the exchange rate Includes additional information due to variations in the exchange rate	-	
30	Secured credit with a variable borrowing rate, a drawdown period and an amortization schedule	Drawdown period followed by an amortization period Includes additional illustrative APR due to variations in the borrowing rate	-	17(4), 17(6) and (c)
31	Open-ended secured credit with a variable borrowing rate, freedom of drawdown and regular repayment of a minimum percentage of the balance outstanding of capital plus interest	Open-ended credit Includes additional illustrative APR due to variations in the borrowing rate	33	17(4), 17(6), (a) and(k)
32	Open-ended secured credit with a variable borrowing rate, drawdown limits and regular repayment of a minimum percentage of the balance outstanding of capital plus interest	Drawdown limits with regard to the amount of credit and the period of time Includes additional illustrative APR due to variations in the borrowing rate	36	17(4), 17(6), (c) and (k)
33	Open-ended secured credit with freedom of drawdown, where the borrowing rate is fixed for an initial period and subsequently it is periodically adjusted according to an agreed indicator	Fixed borrowing rate period followed by a variable rate period Includes additional illustrative APR due to variations in the borrowing rate	37	17(6), (a), (d), (e) and (k)
34	Open-ended secured credit for an amount not specified with freedom of drawdown and repayment but with	Ceiling of the credit not specified, maximum periods until full repayment and	34	(a), (f), (h)(i) and (k)

Number	Description	Feature	Relation to CCD examples	Assumptions used
	maximum periods until full repayment	unknown dates and amounts of interest charges		
35	Open-ended secured credit without interest costs and with freedom of drawdown where the capital must be repaid only in full in respect of each payment period (charge/deferred debit card)	Capital repayable only in full in respect of each payment period	35	(a) and (k)
36	Secured credit card with annual costs, different ways of drawdown with different charges and borrowing rates and regular repayment of a minimum percentage of the balance outstanding of capital plus interest	Freedom of drawdown, different ways of drawdown with different charges and borrowing rates and unknown date of payment of annual costs	38	(a), (b), (k) and (h)(iii)
37	Secured credit card for an amount not specified and with annual costs, an initial interest-free period and regular repayment of a minimum percentage of the balance outstanding of capital plus interest	Ceiling of the credit not specified, initial interest-free period and unknown date of payment of annual costs	39	(a), (k), (h)(iii), (f), and (d)
38	Secured overdraft with an unknown duration and regular payment of costs of the credit	Overdraft facility with an unknown duration	40	(i)
39	Secured overdraft with a fixed duration and unknown date of payment of interest charges	Unknown date of payment of interest charges	41	(i) and (h)(i)
40	Bridging loan with a known duration and payment of capital and interest at the end	Bridging loan with payment of capital and interest at the end	19	(j)
41	Bridging loan with a known duration, retained interest and payment of capital at the end	Bridging loan with retained interest and payment of capital at the end	-	(j)
42	Bridging loan with an unknown duration and regular payment of interest	Bridging loan with an unknown duration	-	(j)

Number	Description	Feature	Relation to CCD examples	Assumptions used
43	Contingent liability or guarantee	Contingent liability or guarantee	-	(l)
44	Shared equity credit	Shared equity credit	-	(m)

2.1. SET OF EXAMPLES

The following examples illustrate the calculation of the APR on credit agreements regulated by the MCD. Therefore, the MCD constitutes the regulatory framework for assessing these examples. For the application of the assumptions which are consistent with the CCD (namely, assumptions (a) to (d), (g) to (i) and partly assumptions (e), (k) and (f)), the Guidelines on the application of Directive 2008/48/EC are also relevant.

The examples cover a wide range of elements and characteristics found in these products. They should be interpreted as notional examples in the sense that the amounts, charges or interest rates assumed are only illustrative of the market, and market products might combine the elements of different examples.

As stated above, in the examples we use 'mortgage credit' to refer to a credit whose purpose is to acquire or retain properties rights in land or an existing or projected building (secured or not by the property) and 'secured credit' for the rest of credits that are secured.

As regards borrowing rates, the examples of mortgage credits, bridging loans, contingent liabilities, and shared equity credits (examples 1 to 29 and 40 to 44), unless otherwise stated, use nominal annual rates which are charged periodically using a proportional conversion method. The examples of secured lines of credit, credit cards, deferred debit cards and overdraft facilities (examples 30 to 39), unless otherwise stated, use effective annual rates which are charged periodically using the corresponding compounding frequency. For example, a nominal rate of 6% implies monthly interest charges of 6/12=0.50% on capital, and an effective rate of 7.5% implies monthly interest charges of (1+0.075)^(1/12)-1=0.604% on capital. In general, if *n* is the number of periods of payment in a year, the periodic rate is given by *i*/*n* or (1+*r*)^(1/*n*)-1, where *i* and *r* are the nominal and effective rate, respectively. The use of these rates and methods is only hypothetical.

Finally, it should be noted that whenever possible the basic equation which establishes the APR formula of Annex I of the MCD is simplified using the formula for a geometric series (i.e., the sum of the numbers in a geometric progression). A geometric series of scale factor *s* and common ratio *c* is given as:

$$sc^k + sc^{k+1} + \ldots + sc^{k+n} = s\frac{c^k - c^{k+n}c}{1-c}$$

This is very convenient in credits payable in equal instalments because the sum of the present value of *N* equal instalments of amount *A* payable at a frequency of *f* instalments per year can be given as:

$$A\frac{1}{(1+X)^{1/f}}+A\frac{1}{(1+X)^{2/f}}+\ldots+A\frac{1}{(1+X)^{N/f}}=A\frac{1-\frac{1}{(1+X)^{N/f}}}{(1+X)^{1/f}-1}$$

EXAMPLE 1

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 equal monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement[16].

The monthly instalment which provides full repayment of the credit is €1432.86.

The equation becomes:

$$200000=4000+1432.86\frac{1}{(1+X)^{1/12}}+1432.86\frac{1}{(1+X)^{2/12}}+\ldots+1432.86\frac{1}{(1+X)^{240/12}}$$

or:

$$200000=4000+1432.86\frac{1-\frac{1}{(1+X)^{20}}}{(1+X)^{1/12}-1}$$

giving X= 6.434412%, i.e. an APR of 6.4%.

EXAMPLE 2

Mortgage credit agreement is for a total amount of credit of €200000 repayable in equal instalments over a period of 20 years, where the intervals between dates cannot be expressed as a whole number of weeks, months or years. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

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[16] All references to the conclusion of the agreement are references to the date the agreement is executed. This is usually the date when the agreement is signed by the parties involved (and not when it comes to an end).

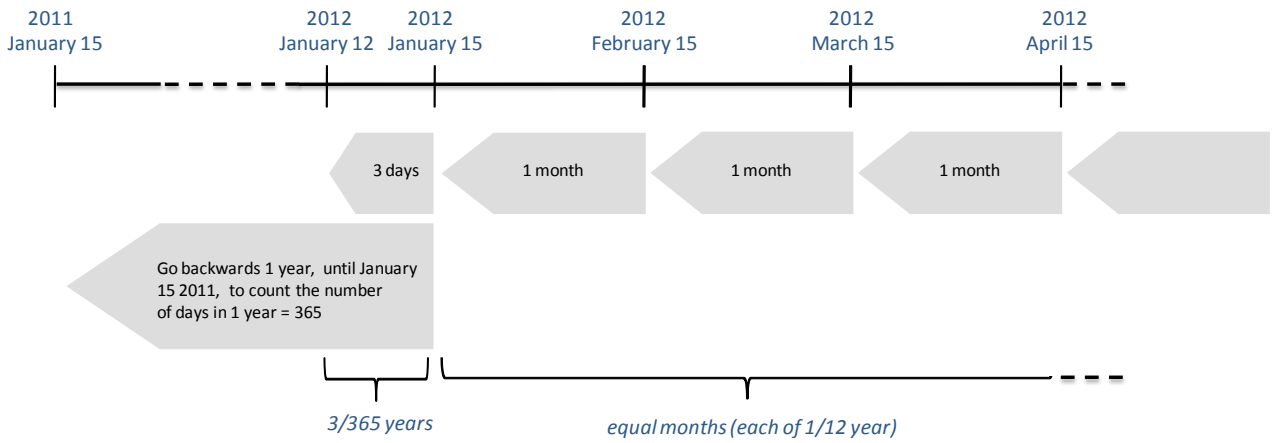
This example illustrates the application of remark (c) when the intervals between dates cannot be expressed as a whole number of regular periods (weeks, months or years). Remark (c) provides a precise method to obtain the intervals between dates using regular periods in combination with a number of days. Three different cases are exemplified in the following.

Case 1. The agreement is signed on January 12 2012 and payments are to be made on the 15th of each of the 240 succeeding months, from February 2012 to January 2032.

For this agreement, as the frequency of repayments is monthly, regular periods are given as months, and the intervals between the date of the first drawdown and the successive payments are expressed as a combination of months and days:

- Payment on February 15 2012: the interval is expressed as 3/365+1/12 (1 month from February 15 2012 to January 15 2012 plus 3 days from January 15 2012 to January 12 2012 within a year from January 15 2012 to January 15 2011 with 365 days).
- Payment on March 15 2012: 3/365+2/12 (2 months from March 15 2012 to January 15 2012 plus 3 days from January 15 2012 to January 12 2012 within a year from January 15 2012 to January 15 2011 with 365 days; equivalently, it can be obtained adding 1 month to the interval of the previous payment to obtain March 15 2012).
- Payment on April 15 2012: 3/365+3/12 (add 1 month to the interval of the previous payment to obtain April 15 2012)
- And so on, until the payment on January 2032.

These intervals are shown in the following scheme:



The monthly instalment which provides full repayment of the credit is €1433.57, and the equation becomes:

$$200000 = 4000 + 1433.57\frac{1}{(1+X)^{3/365+1/12}} + 1433.57\frac{1}{(1+X)^{3/365+2/12}} + \cdots + 1433.57\frac{1}{(1+X)^{3/365+240/12}} =$$

$$= 4000 + \frac{1}{(1+X)^{3/365}}\left[1433.57\frac{1}{(1+X)^{1/12}} + 1433.57\frac{1}{(1+X)^{2/12}} + \cdots + 1433.57\frac{1}{(1+X)^{240/12}}\right]$$

or:

$$200000 = 4000 + 1433.57 \times \frac{1}{(1+X)^{3/365}} \times \frac{1 - \frac{1}{(1+X)^{20}}}{(1+X)^{1/12} - 1}$$

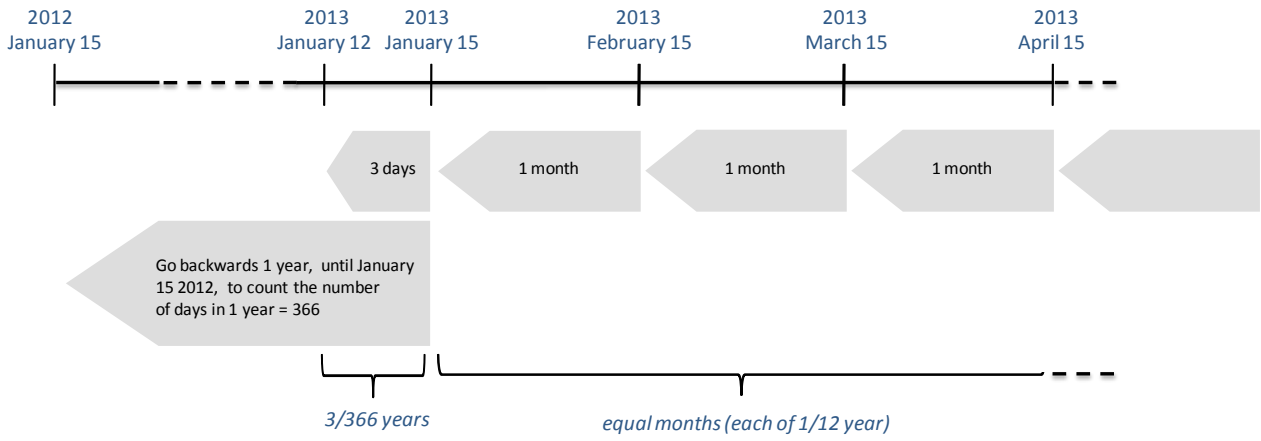
giving X= 6.434185%, i.e. an APR of 6.4%.

Case 2. The agreement is signed one year later, on January 12 2013 and payments are to be made again on the 15th of each of the 240 succeeding months, from February 2013 to January 2033.

In this case, the period of days belongs to a leap year. Specifically, the intervals between the date of the first drawdown and the successive payments are:

- Payment on February 15 2013: the interval is expressed as 3/366+1/12 (1 month from February 15 2013 to January 15 2013 plus 3 days from January 15 2013 to January 12 2013 within a year from January 15 2013 to January 15 2012 with 366 days).
- Payment on March 15 2013: 3/366+2/12 (add 1 month to the interval of the previous payment to obtain March 15 2013).
- Payment on April 15 2013: 3/366+3/12 (add 1 month to the interval of the previous payment to obtain April 15 2013).
- And so on, until the payment on January 2033.

These intervals are shown in the following scheme:



The monthly instalment becomes 1 cent lower, and amounts to €1433.56. The new equation becomes:

$$200000 = 4000 + 1433.56\frac{1}{(1+X)^{3/366+1/12}} + 1433.56\frac{1}{(1+X)^{3/366+2/12}} + \cdots + 1433.56\frac{1}{(1+X)^{3/366+240/12}} =$$

$$= 4000 + \frac{1}{(1+X)^{3/366}}\left[1433.56\frac{1}{(1+X)^{1/12}} + 1433.56\frac{1}{(1+X)^{2/12}} + \cdots + 1433.56\frac{1}{(1+X)^{240/12}}\right]$$

or:

$$200000 = 4000 + 1433.56 \times \frac{1}{(1+X)^{3/366}} \times \frac{1-\frac{1}{(1+X)^{20}}}{(1+X)^{1/12}-1}$$

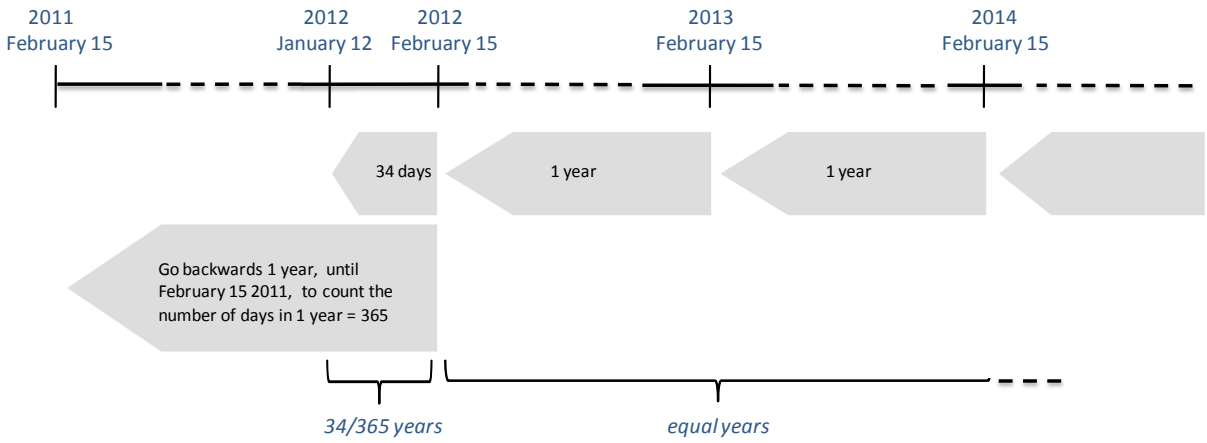
giving X= 6.434111%, i.e. an APR of 6.4%.

Case 3. The agreement is signed on January 12 2012, as in case 1, but payments are to be made now yearly, being due on the 15th of February of each year from 2012 to 2031.

For this agreement, as the frequency of repayments is yearly, regular periods are given as years, and the intervals between the date of the first drawdown and the successive payments are expressed as a combination of years and days:

- Payment on February 15 2012: the interval is expressed as 34/365 (34 days from February 15 2012 to January 12 2012 within a year from February 15 2012 to February 15 2011 with 365 days).
- Payment on February 15 2013: 34/365+1 (add 1 year to the interval of the previous payment to obtain February 15 2013).
- Payment on February 15 2014: 34/365+2 (add 1 year to the interval of the previous payment to obtain February 15 2014).
- And so on, until the payment on February 2031.

These intervals are shown in the following scheme:



The annual instalment which provides full repayment of the credit is €16541.86, and the equation becomes:

$$200000 = 4000 + 16541.86\frac{1}{(1+X)^{34/365}} + 16541.86\frac{1}{(1+X)^{34/365+1}} + \cdots + 16541.86\frac{1}{(1+X)^{34/365+19}} =$$

$$= 4000 + \frac{1}{(1+X)^{34/365-1}}\left[16541.86\frac{1}{(1+X)} + 16541.86\frac{1}{(1+X)^2} + \cdots + 16541.86\frac{1}{(1+X)^{20}}\right]$$

or:

$$200000 = 4000 + 16541.86 \times \frac{1}{(1+X)^{34/365-1}} \times \frac{1-\frac{1}{(1+X)^{20}}}{X} = 16541.86 \times \frac{1-\frac{1}{(1+X)^{20}}}{X(1+X)^{34/365-1}}$$

giving X= 6.282070%, i.e. an APR of 6.3%.

EXAMPLE 3

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 equal monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement plus home insurance costs of €200 per year spread over the monthly repayments.

The costs associated with home insurance must be included in the total cost of the credit if this insurance is compulsory in order to obtain the credit or to obtain it on the terms and conditions marketed. It is assumed this is the case.

The monthly instalment which provides full repayment of the credit is €1432.86, and the monthly payment including home insurance costs becomes:

$$A = 1432.86 + \frac{200}{12} = 1432.86 + 16.67 = €1449.53$$

The equation becomes:

$$200000 = 4000 + 1449.53\frac{1}{(1+X)^{1/12}} + 1449.53\frac{1}{(1+X)^{2/12}} + \ldots + 1449.53\frac{1}{(1+X)^{240/12}}$$

or:

$$200000 = 4000 + 1449.53\frac{1-\frac{1}{(1+X)^{20}}}{(1+X)^{1/12}-1}$$

giving X= 6.588554%, i.e. an APR of 6.6%.

Compared to example 1, the APR increases as a result of the additional costs.

EXAMPLE 4

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 equal monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement plus payment protection insurance costs of 1% of the total amount of credit per year spread over the repayments.

The costs associated with payment protection insurance premiums must be included in the total cost of the credit if this insurance is compulsory in order to obtain the credit or to obtain it on the terms and conditions marketed. It is assumed this is the case.

The monthly instalment which provides full repayment of the credit is €1432.86, and the monthly payment including insurance costs becomes:

$$A = 1432.86 + \frac{1\% \times 200000}{12} = 1432.86 + 0.0833333\% \times 200000 = €1599.53$$

The equation becomes:

$$200000 = 4000 + 1599.53\frac{1}{(1+X)^{1/12}} + 1599.53\frac{1}{(1+X)^{2/12}} + \ldots + 1599.53\frac{1}{(1+X)^{240/12}}$$

or:

$$200000 = 4000 + 1599.53\frac{1-\frac{1}{(1+X)^{20}}}{(1+X)^{1/12}-1}$$

giving X= 7.946625%, i.e. an APR of 7.9%.

Compared to example 1, the APR increases as a result of the additional costs.

EXAMPLE 5

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 equal monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement plus single-sum payment protection insurance

costs of 4% of the total amount of credit which are financed. The insurance provides protection during the first 4 years.

The costs associated with payment protection insurance premiums must be included in the total cost of the credit if this insurance is compulsory in order to obtain the credit or to obtain it on the terms and conditions marketed. It is assumed this is the case.

The amount owed is given by the sum of the amount of the credit and the insurance costs:

$$200000 + 4\% \times 200000 = €208000$$

This amount increased by the financed cost should not be confused with the total amount of credit because in coherence with Article 4 points (12), (13) and (14), the total amount of credit does not include the amounts devoted to the payment of charges. In fact, these amounts are costs of the credit by virtue of Article 4(13). Also, Article 4(14), by referring to Article 3(h) of Directive 2008/48/EC, defines the total amount payable by the consumer as total amount of the credit plus total cost of the credit; thus these amounts cannot be included in both terms otherwise they would be counted twice to obtain the amount payable by the consumer (i.e., the consumer would have to pay them twice). And finally, these amounts are not available to the consumer, and hence are not included in the total amount of credit as defined by Article 4(12), which refers to Article 3(l) of Directive 2008/48/EC.

The monthly instalment which provides full repayment of the amount financed is €1490.18.

The equation becomes:

$$200000 = 4000 + 1490.18\frac{1}{(1+X)^{1/12}} + 1490.18\frac{1}{(1+X)^{2/12}} + \ldots + 1490.18\frac{1}{(1+X)^{240/12}}$$

or:

$$200000 = 4000 + 1490.18\frac{1-\frac{1}{(1+X)^{20}}}{(1+X)^{1/12}-1}$$

giving X= 6.961575%, i.e. an APR of 7.0%.

Compared to example 1, the APR increases as a result of the additional costs.

EXAMPLE 6

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 equal monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit

payable at the conclusion of the agreement plus exit cost to be paid for closing the mortgage account after full repayment of €100.

The monthly instalment which provides full repayment of the credit is €1432.86.

The equation becomes:

$$200000 = 4000 + 1432.86\frac{1}{(1+X)^{1/12}} + 1432.86\frac{1}{(1+X)^{2/12}} + \ldots + (1432.86 + 100)\frac{1}{(1+X)^{240/12}}$$

or:

$$200000 = 4000 + 100\frac{1}{(1+X)^{20}} + 1432.86\frac{1-\frac{1}{(1+X)^{20}}}{(1+X)^{1/12}-1}$$

giving X= 6.436359%, i.e. an APR of 6.4%.

Compared to example 1, the increase in the APR due to the additional cost, the exit cost, is only noticed using an accuracy of at least three decimal places. This is because the amount of the cost is very low compared to the total amount of credit and also because it is charged at a very distant time, in 20 years. Notwithstanding, the total cost of credit clearly reflects the increase of €100 in the costs, now amounting to 147886.40+100=€147986.40.

EXAMPLE 7

Balloon-type mortgage credit agreement is for a total amount of credit of €200000 which features equal monthly payments based on a 30-year amortization period but where the outstanding balance should be paid at the end of the 15th year by a balloon payment. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

The monthly instalment which provides full repayment of the credit in 30 years is €1199.10. This is the amount to be paid by the consumer each month of the first 15 years (from months 1 to 180), and in the last month of this period (month 180) the balance outstanding after the monthly payment (€142097.69) is added to the monthly instalment to obtain the amount to be paid at that time. As a result, the credit is fully repaid at the end of the 15th year.

The equation becomes:

$$200000 = 4000 + 1199.10\frac{1}{(1+X)^{1/12}} + \ldots + 1199.10\frac{1}{(1+X)^{180/12}} + 142097.69\frac{1}{(1+X)^{180/12}}$$

or:

$$200000 = 4000 + 1199.10 \frac{1 - \frac{1}{(1+X)^{15}}}{(1+X)^{1/12} - 1} + 142097.69 \frac{1}{(1+X)^{15}}$$

giving X= 6.409523%, i.e. an APR of 6.4%.

EXAMPLE 8

Interest-only mortgage credit agreement is for a total amount of credit of €200000 for a period of 20 years. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The credit agreement provides for payment of interest charges every month. The borrowing rate (nominal rate) is adjusted twice a year according to the 1-year Euribor rate plus a spread of 3%. The 1-year Euribor rate is 4% at the time of calculating the APR. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. For the scenario of change in the borrowing rate, the highest level of 1-year Euribor rate is 5.39%.

In interest-only credits the total amount of credit is still owed at the end of the duration of the agreement, meaning that the consumer will need to make a separate arrangement to repay such amount. The calculation of the APR takes into account such repayment, which is the counterpart of the drawdown that takes place at the beginning of the agreement.

As regards the borrowing rate, Article 17(4) should be applied on the basis that this rate cannot be quantified at the time of the calculation of the APR. Accordingly, the APR will be calculated on the assumption that the borrowing rate will remain fixed in relation to the level set at the conclusion of the agreement, which is 4+3=7%.

Given that the amount of credit and the borrowing rate remain constant over the duration of the agreement, interest charges are also a constant amount. The monthly payment of interest charges is:

$$A = 200000 \times \frac{7\%}{12} = €1166.67$$

The equation becomes:

$$200000 = 4000 + 1166.67 \frac{1}{(1+X)^{1/12}} + 1166.67 \frac{1}{(1+X)^{2/12}} + \ldots$$
$$\ldots + 1166.67 \frac{1}{(1+X)^{239/12}} + (1166.67 + 200000) \frac{1}{(1+X)^{240/12}}$$

or:

$$200000 = 4000 + 1166.67 \frac{1 - \frac{1}{(1+X)^{20}}}{(1+X)^{1/12} - 1} + 200000 \frac{1}{(1+X)^{20}}$$

giving X= 7.430479%, i.e. an APR of 7.4%.

The credit agreement allows for variations in the borrowing rate, and hence Article 17(6) should be applied. As a result, an additional illustrative APR should be provided. According to the instructions to complete the ESIS, this additional APR will be calculated on the basis that the borrowing rate rises at the earliest possible opportunity to the highest level foreseen in the credit agreement. This is determined by the highest value of the reference rate, the 1-year Euribor, in at least the last 20 years, or for the longest period of less than 20 years for which data is available, unless the borrowing rate is capped at a lower level, in which case this lower level should be used. As there is no cap on the borrowing rate in this example, the highest level of the 1-year Euribor rate, 5.39%, should be used for the payments taking place from the 7th month because the borrowing rate is adjusted every 6 months. From then on, the monthly payment of interest charges is:

$$A^* = 200000 \times \frac{8.39\%}{12} = €1398.33$$

The equation becomes:

$$\begin{aligned} 200000 &= 4000 + 1166.67 \frac{1}{(1+X)^{1/12}} + \ldots + 1166.67 \frac{1}{(1+X)^{6/12}} + \\ &+ 1398.33 \frac{1}{(1+X)^{7/12}} + \ldots + 1398.33 \frac{1}{(1+X)^{239/12}} + (1398.33 + 200000) \frac{1}{(1+X)^{240/12}} \\ &= 4000 + 1166.67 \frac{1}{(1+X)^{1/12}} + \ldots + 1166.67 \frac{1}{(1+X)^{6/12}} + \\ &+ 1398.33 \frac{1}{(1+X)^{6/12}} \left[\frac{1}{(1+X)^{1/12}} + \ldots + \frac{1}{(1+X)^{234/12}} \right] + 200000 \frac{1}{(1+X)^{240/12}} \end{aligned}$$

or:

$$200000 = 4000 + 1166.67 \frac{1 - \frac{1}{(1+X)^{6/12}}}{(1+X)^{1/12} - 1} + 1398.33 \frac{1}{(1+X)^{6/12}} \times \frac{1 - \frac{1}{(1+X)^{234/12}}}{(1+X)^{1/12} - 1} + 200000 \frac{1}{(1+X)^{20}}$$

giving X= 8.869280%, i.e. an illustrative APR of 8.9%.

EXAMPLE 9

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 monthly instalments (20 years). The amount of the instalments increases 3% each year. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

The monthly instalments which provide full repayment of the credit are €1130.33 for the first year and increase 3% each year up to an amount of €1982.05 for the last year.

The equation becomes:

$$
\begin{aligned}
200000 &= 4000 + 1130.33\frac{1}{(1+X)^{1/12}} + \ldots + 1130.33\frac{1}{(1+X)^{12/12}} + \ldots \\
&\ldots + 1982.05\frac{1}{(1+X)^{229/12}} + \ldots + 1982.05\frac{1}{(1+X)^{240/12}} \\
&= 4000 + 1130.33\left[\frac{1}{(1+X)^{1/12}} + \ldots + \frac{1}{(1+X)^{6/12}}\right] + \ldots \\
&\ldots + 1982.05\frac{1}{(1+X)^{228/12}}\left[\frac{1}{(1+X)^{1/12}} + \ldots + \frac{1}{(1+X)^{12/12}}\right]
\end{aligned}
$$

or:

$$
\begin{aligned}
200000 &= 4000 + 1130.33\frac{1-\frac{1}{(1+X)}}{(1+X)^{1/12}-1} + \ldots + 1982.05\frac{1}{(1+X)^{228/12}} \times \frac{1-\frac{1}{(1+X)}}{(1+X)^{1/12}-1} = \\
&= 4000 + \left(1130.33 + \ldots + 1982.05\frac{1}{(1+X)^{19}}\right) \times \frac{1-\frac{1}{(1+X)}}{(1+X)^{1/12}-1}
\end{aligned}
$$

giving X= 6.406400%, i.e. an APR of 6.4%.

EXAMPLE 10

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 monthly instalments (20 years). The amount of the instalments decreases 3% each year. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

The monthly instalments which provide full repayment of the credit are €1778.58 for the first year and decrease 3% each year down to an amount of €997.09 for the last year.

The equation becomes:

$$200000 = 4000 + 1778.58\ \frac{1}{(1+X)^{1/12}} + \ldots + 1778.58\ \frac{1}{(1+X)^{12/12}} + \ldots$$
$$\ldots + 997.09 \frac{1}{(1+X)^{229/12}} + \ldots + 997.09 \frac{1}{(1+X)^{240/12}}$$
$$= 4000 + 1778.58 \left[\frac{1}{(1+X)^{1/12}} + \ldots + \frac{1}{(1+X)^{6/12}} \right] + \ldots$$
$$\ldots + 997.09 \frac{1}{(1+X)^{228/12}} \left[\frac{1}{(1+X)^{1/12}} + \ldots + \frac{1}{(1+X)^{12/12}} \right]$$

or:

$$200000 = 4000 + 1778.58 \frac{1 - \frac{1}{(1+X)}}{(1+X)^{1/12} - 1} + \ldots + 997.09 \frac{1}{(1+X)^{228/12}} \times \frac{1 - \frac{1}{(1+X)}}{(1+X)^{1/12} - 1} =$$
$$= 4000 + \left(1778.58 + \ldots + 997.09 \frac{1}{(1+X)^{19}} \right) \times \frac{1 - \frac{1}{(1+X)}}{(1+X)^{1/12} - 1}$$

giving X= 6.468360%, i.e. an APR of 6.5%.

Compared to example 9, the APR is higher due to the earlier repayments of capital. However, charging interest on a lower balance outstanding implies a lower cost of the credit. The total cost of the credit in this example is 4000+124559.08 = €128559.08, while in example 9 is 4000 + 164469.64 = €168469.64.

EXAMPLE 11

Mortgage credit agreement is for a total amount of credit of €200000 to be drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The credit agreement provides for payment of a fixed amount specified in advance of €1500 every month until the complete repayment of the credit is made. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

The scheme of the repayments determines that the credit is completely repaid in 221 months (18 years and 5 months). According to the amortisation table, the amount of the last payment is only A221=407.70, which corresponds to the amount owed at the end of month 221.

The equation becomes:

$$200000 = 4000 + 1500 \frac{1}{(1+X)^{1/12}} + 1500 \frac{1}{(1+X)^{2/12}} + \ldots + 1500 \frac{1}{(1+X)^{220/12}} + 407.70 \frac{1}{(1+X)^{221/12}}$$

or:

$$200000 = 4000 + 1500\frac{1-\frac{1}{(1+X)^{220/12}}}{(1+X)^{1/12}-1} + 407.70\frac{1}{(1+X)^{221/12}}$$

giving X= 6.452756%, i.e. an APR of 6.5%.

EXAMPLE 12

Mortgage credit agreement is for a total amount of credit of €200000 to be draw down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The credit agreement provides for payment of interest plus a fixed amount specified in advance of €900 every month until the complete repayment of the credit is made. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

The scheme of payments determines that the credit is completely repaid in 223 months (18 years and 7 months). The monthly payments can be obtained from the amortisation table, being the payment in the first month A1 = 1900 and the payment in the last month A223 = 201. Note that the last payment is lower than the fixed amount of €900 because the amount owed is lower than such amount.

The equation becomes:

$$200000 = 4000 + 1900\frac{1}{(1+X)^{1/12}} + 1895.50\frac{1}{(1+X)^{2/12}} + \ldots$$
$$\ldots + 905.50\frac{1}{(1+X)^{222/12}} + 201\frac{1}{(1+X)^{223/12}}$$

giving X= 6.492533%, i.e. an APR of 6.5%.

EXAMPLE 13

Mortgage credit agreement is for a total amount of credit of €200000 for a period of 20 years. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The credit agreement provides for payment of interest and equal repayments of capital every month. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

The 240 monthly payments are comprised of a constant quota of capital of 200000/240 = €833.33 and the interest charges generated each month, which are of a decreasing amount.

The payments can be obtained from the amortisation table, being the payment in the first month A1 = 1833.33 and the payment in the last month A240 = 837.50.

The equation becomes:

$$200000 = 4000 + 1833.33\frac{1}{(1+X)^{1/12}} + 1829.17\frac{1}{(1+X)^{2/12}} + \ldots + 841.67\frac{1}{(1+X)^{239/12}} + 837.50\frac{1}{(1+X)^{240/12}}$$

giving X= 6.476009%, i.e. an APR of 6.5%.

EXAMPLE 14

Mortgage credit agreement is for a total amount of credit of €200000 to be draw down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The credit agreement provides for payment of interest every month plus a monthly payment of 2% of the outstanding balance of capital with a minimum of €100. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

The scheme of payments determines that the credit is completely repaid in 233 months (19 years and 5 months). The monthly payments can be obtained from the amortisation table, being the payment in the first month A1 = 5000 and the payment in the last month A240 = 59.38. Note that the last repayment is lower than the minimum amount because the amount owed is lower than the minimum amount.

The equation becomes:

$$200000 = 4000 + 5000\frac{1}{(1+X)^{1/12}} + 4900\frac{1}{(1+X)^{2/12}} + \ldots + 100.80\frac{1}{(1+X)^{232/12}} + 59.38\frac{1}{(1+X)^{233/12}}$$

giving X= 6.818859%, i.e. an APR of 6.8%.

EXAMPLE 15

Mortgage credit agreement is for a total amount of credit of €200000 to be draw down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The credit agreement provides for a monthly payment of 2% of the outstanding balance of capital and interest with a minimum of €300. The borrowing rate (nominal rate) is 6%. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

The scheme of payments determines that the credit is completely repaid in 228 months (19 years). The monthly payments can be obtained from the amortisation table, being the payment in the first month A1 = 4020 and the payment in the last month A228 = 274.76. Note that the last repayment is lower than the minimum amount because the amount owed is lower than the minimum amount.

The equation becomes:

$$200000 = 4000 + 4020\frac{1}{(1+X)^{1/12}} + 3959.30\frac{1}{(1+X)^{2/12}} + \ldots + 300\frac{1}{(1+X)^{227/12}} + 274.76\frac{1}{(1+X)^{228/12}}$$

giving X= 6.695965%, i.e. an APR of 6.7%.

EXAMPLE 16

Mortgage credit agreement is for a total amount of credit of €200000 for a period of 20 years. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The credit agreement provides for payment of interest and equal repayments of capital every month, but the borrower is allowed to postpone each year two monthly payments of capital, interest or both for three months without costs. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

This example differs from example 13 in the flexibility in payments. In order to determine the dates of the payments in this credit agreement with fixed duration (not open-ended), assumptions (g)(i) and (h)(i) should be applied. According to assumption (g)(i), the dates of the repayments of capital shall be deemed to be the earliest dates provided for in the credit agreement. According to assumption (h)(i), the interest charges shall be deemed to be paid together with the repayments of capital. Therefore, the postponement of payments is discarded for the calculation of the APR and the calculations coincide with example 13, which provided an APR of 6.5%.

EXAMPLE 17

Mortgage credit agreement is for a total amount of credit of €200000 for a period of 15 year. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The credit agreement provides for payment of interest every month plus a minimum monthly repayment of 2% of the outstanding balance of capital with a minimum of €100. A final payment at the end of the 15-year period is compulsory and must provide full repayment of the credit. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

This example differs from example 14 in the flexibility in the repayments of capital, now established as minimum repayments, and the duration of the credit, which decreases from 19 years and 5 months to 15 years to accommodate the possibility of higher repayments. In order to determine the amounts of the repayments of capital in this credit agreement with fixed duration (not open-ended), assumption (g)(i) should be applied. Accordingly, these amounts shall be deemed to be the lowest amounts for which the credit agreement provides, that is, 2% of the outstanding balance of capital with a minimum of €100 for months before the last one, and the residual payment which clears the balance for the last month.

The payments can be obtained from the amortisation table, being the payment in the first month A1 = 5000 and the payment in the last month A180 = 5403.361.

The equation becomes:

$$200000 = 4000 + 5000\frac{1}{(1+X)^{1/12}} + 4900\frac{1}{(1+X)^{2/12}} + \ldots + 137.15\frac{1}{(1+X)^{179/12}} + 5403.36\frac{1}{(1+X)^{180/12}}$$

giving X= 6.822923%, i.e. an APR of 6.8%.

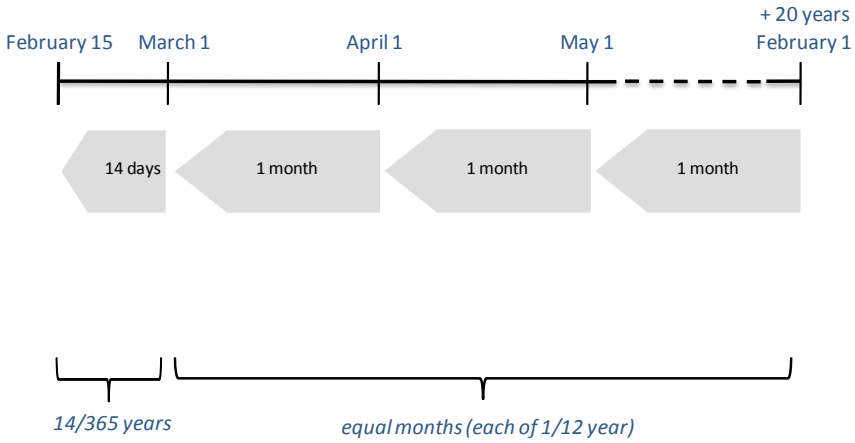
EXAMPLE 18

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 equal monthly instalments. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. If the drawdown occurs before or on the 15th day of a month the first instalment is due on the first calendar day of the following month; otherwise the first instalment is due the first calendar day of the second following month. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

In this example, the length of the interval to the first instalment is only known when the agreement is concluded (and the drawdown is made). For earlier stages (in advertising or at the pre-contractual stage), assumption (g)(ii) should be used to determine the length of such an interval.

Case 1. Advertising and pre-contractual stage.

According to assumption g(ii), if the interval between the date of initial drawdown and the date of the first payment to be made by the consumer cannot be ascertained, it shall be assumed to be the shortest interval. The shortest interval is 14 days (as the shortest possible period is February 15 to March 1 in a non-leap year). This interval should be used for the first instalment and the remaining intervals are obtained adding 1 month successively, in accordance with remark (c) and as shown in the figure.



The monthly instalment which provides full repayment of the credit is €1429.01

The equation becomes:

$$200000 = 4000 + 1429.01\frac{1}{(1+X)^{14/365}} + 1429.01\frac{1}{(1+X)^{14/365+1/12}} + \cdots + 1429.01\frac{1}{(1+X)^{14/365+239/12}} =$$

$$= 4000 + (1+X)^{1/2-14/365}\left[1429.01\frac{1}{(1+X)^{1/12}} + 1429.01\frac{1}{(1+X)^{2/12}} + \cdots + 1429.01\frac{1}{(1+X)^{240/12}}\right]$$

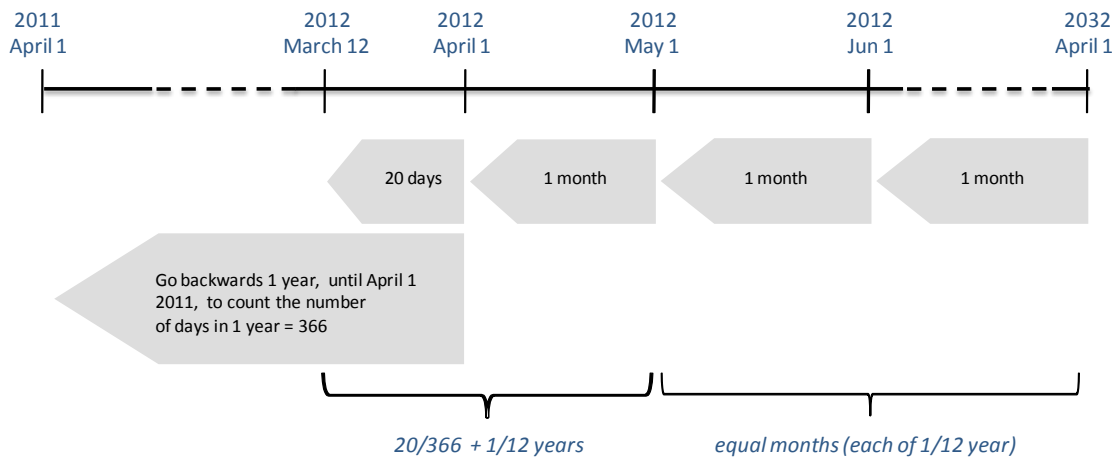
or:

$$200000 = 4000 + 1429.01 \times (1+X)^{1/2-14/365} \times \frac{1-\frac{1}{(1+X)^{20}}}{(1+X)^{1/12}-1}$$

giving X= 6.435937%, i.e. an APR of 6.4%.

Case 2. Contractual stage

At the contractual stage, the date of drawdown becomes known, and the length of the interval to the first instalment is obtained from it. For example, if the agreement is signed on March 12 2012, the date of drawdown is that same date; and as the drawdown occurs before the 15th of the month, the first instalment becomes due the first calendar day of the second following month, on the 1st of May. The length of the first interval is then 20/366 + 1/12 years (1 month from May 1 2012 to April 1 2012 plus 20 days from April 1 2012 to March 12 2012 within a year from April 1 2012 to April 1 2011 with 366 days). The remaining 239 instalments are payable at monthly intervals from May 1 2012 to April 1 2032, as shown in the figure:



The monthly instalment which provides full repayment of the credit is €1437.54

The equation becomes:

$$200000 = 4000 + 1437.54\frac{1}{(1+X)^{20/366+1/12}} + 1437.54\frac{1}{(1+X)^{20/366+2/12}} + \cdots + 1437.54\frac{1}{(1+X)^{20/366+240/12}} =$$

$$= 4000 + \frac{1}{(1+X)^{20/366}}\left[1437.54\frac{1}{(1+X)^{1/12}} + 1437.54\frac{1}{(1+X)^{2/12}} + \cdots + 1437.54\frac{1}{(1+X)^{240/12}}\right]$$

or:

$$200000 = 4000 + 1437.54 \times \frac{1}{(1+X)^{20/366}} \times \frac{1-\frac{1}{(1+X)^{20}}}{(1+X)^{1/12}-1}$$

giving X= 6.432478%, i.e. an APR of 6.4%.

EXAMPLE 19

Mortgage credit agreement is for a total amount of credit of €200000 for a period of 20 years. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The credit agreement provides for equal repayments of capital every month but is silent about the date of payment of charges, consisting of interest calculated by applying a borrowing rate (nominal rate) of 6%, a single sum (lump sum) cost of 2% of the total amount of credit and ten costs of €100.

The dates of the payment of charges are determined by assumption (h). Specifically, according to (h)(i), interest charges shall be deemed to be paid together with the repayments of capital (i.e. monthly); the single sum cost of 2% of the total amount of credit shall be deemed to be paid at the date of the conclusion of the credit agreement by virtue of (h)(ii); and according to

(h)(iii) the ten costs of €100 shall be deemed to be paid at regular intervals, commencing with the date of the first repayment of capital (as the remaining duration of the credit starting and including the month of the first repayment is 240 months and 240/10 = 24 months, these costs are paid every two years in months 1, 25, 49, 73, and so on.

The payments include a constant quota of capital of 200000/240 = €833.33 and can be obtained from the amortisation table, being the payment in the first month A1 = 1933.33 and the payment in the last month A240 = 837.50.

The equation becomes:

$$200000 = 4000 + 1933.33\frac{1}{(1+X)^{1/12}} + 1829.17\frac{1}{(1+X)^{2/12}} + \ldots + 841.67\frac{1}{(1+X)^{239/12}} + 837.50\frac{1}{(1+X)^{240/12}}$$

giving X= 6.523259%, i.e. an APR of 6.5%.

EXAMPLE 20

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 monthly instalments. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. A discount rate of 5% is charged during the first 2 years, after which the full rate of 6% is charged, both expressed as nominal rates. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

Assumption (d), which refers to the case where different borrowing rates and charges are offered for a limited period or amount, should not be applied in this example. This is because this assumption should be applied when, at the date of the calculation of the APR, the relevant elements of the credit which determine the application and the effect on the APR of different interest rates or charges are not known. This follows from the Guidelines on the application of Directive 2008/48/EC, which also include this assumption as assumption (i). In this example, all these elements are known and the effects on the APR are certain and quantifiable; in fact, none of the assumptions in Annex I are used for calculating the APR. Therefore, the calculation of the APR will take into account the different borrowing rates. This is different to the case where, for example, the credit is open-ended or it gives freedom of drawdown and/or repayment (either completely or within limits) to the consumer. In these and similar cases assumption (d) should be applied (see examples 33 and 37).

The monthly instalments which provide full repayment of the credit are €1319.91 for the period with a borrowing rate of 5% and €1423.41 for the period with a borrowing rate of 6%.

The equation becomes:

$$
\begin{aligned}
200000 &= 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + \cdots + 1319.91\frac{1}{(1+X)^{24/12}} + \\
&+1423.41\frac{1}{(1+X)^{25/12}} + \ldots + 1423.41\frac{1}{(1+X)^{240/12}} \\
&= 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + \cdots + 1319.91\frac{1}{(1+X)^{24/12}} + \\
&+\frac{1}{(1+X)^{24/12}} \times \left[1423.41\frac{1}{(1+X)^{1/12}} + \ldots + 1423.41\frac{1}{(1+X)^{216/12}} \right]
\end{aligned}
$$

or:

$$
200000 = 4000 + 1319.91 \times \frac{1 - \frac{1}{(1+X)^2}}{(1+X)^{1/12} - 1} + 1423.41 \times \frac{1}{(1+X)^2} \times \frac{1 - \frac{1}{(1+X)^{18}}}{(1+X)^{1/12} - 1}
$$

giving X= 6.190654%, i.e. an APR of 6.2%.

EXAMPLE 21

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is fixed at 5% for 9 months and after that it is adjusted twice a year according to the 1-year Euribor rate plus a spread of 1.5%. The 1-year Euribor rate is 4% at the time of calculating the APR. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. For the scenario of change in the borrowing rate, the highest level of 1-year Euribor rate is 5.39%.

Application of assumptions (e) and (d) should be assessed in this example. Assumption (e), which refers to those agreements where a fixed borrowing rate is agreed in relation to an initial period after which the borrowing rate is periodically adjusted according to an agreed indicator or internal reference rate, should be applied to determine the rate following the end of the initial fixed-rate period. Specifically, for the variable-rate period, the borrowing rate is assumed to be determined by the value of the agreed indicator or internal reference rate at the time of calculating the APR, provided that is not less than the fixed borrowing rate. The rate is 5.5% (i.e. 4% + spread of 1.5%), which is higher than the fixed borrowing rate, and then this level is assumed to be charged from the 10th month until the end of the credit agreement. As regards assumption (d), which refers to the case where different borrowing rates and charges are offered for a limited period or amount, this assumption should not be applied. Similar to example 20, the relevant elements of the credit which determine the application and the effect on the APR of different interest rates or charges are known and the effects on the APR are certain and quantifiable.

The monthly instalments which provide full repayment of the credit are €1319.91 for the fixed-rate period with a borrowing rate of 5% and €1374.06 for the variable-rate period with an assumed borrowing rate of 5.5%.

The equation becomes:

$$
\begin{aligned}
200000 &= 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + \cdots + 1319.91\frac{1}{(1+X)^{9/12}} + \\
&+1374.06\frac{1}{(1+X)^{10/12}} + \ldots + 1374.06\frac{1}{(1+X)^{240/12}} \\
&= 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + \cdots + 1319.91\frac{1}{(1+X)^{9/12}} + \\
&+\frac{1}{(1+X)^{9/12}} \times \left[1374.06\frac{1}{(1+X)^{1/12}} + \ldots + 1374.06\frac{1}{(1+X)^{231/12}} \right]
\end{aligned}
$$

or:

$$
200000 = 4000 + 1319.91 \times \frac{1 - \frac{1}{(1+X)^{9/12}}}{(1+X)^{1/12} - 1} + 1374.06 \times \frac{1}{(1+X)^{9/12}} \times \frac{1 - \frac{1}{(1+X)^{231/12}}}{(1+X)^{1/12} - 1}
$$

giving X= 5.853526%, i.e. an APR of 5.9%.

The credit agreement allows for variations in the borrowing rate, and hence Article 17(6) should be applied. As a result, an additional illustrative APR should be provided. According to the instructions to complete the ESIS, this additional APR will be calculated on the basis that the borrowing rate rises at the earliest possible opportunity to the highest level foreseen in the credit agreement. This is determined by the highest value of the reference rate, the 1-year Euribor, in at least the last 20 years, or for the longest period of less than 20 years for which data is available, unless the borrowing rate is capped at a lower level, in which case this lower level should be used. As there is no cap on the borrowing rate in this example, the highest level of the 1-year Euribor rate, 5.39%, should be used for the payments taking place after the fixed rate period, i.e. from the 10th month. From then on, the borrowing rate becomes 6.89% (i.e. 5.39% + spread of 1.5%) and the monthly instalment €1530.61.

The equation becomes:

$$
\begin{aligned}
200000 &= 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + \cdots + 1319.91\frac{1}{(1+X)^{9/12}} + \\
&+1530.61\frac{1}{(1+X)^{10/12}} + \ldots + 1530.61\frac{1}{(1+X)^{240/12}} \\
&= 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + \cdots + 1319.91\frac{1}{(1+X)^{9/12}} + \\
&+\frac{1}{(1+X)^{9/12}} \times \left[1530.61\frac{1}{(1+X)^{1/12}} + \ldots + 1530.61\frac{1}{(1+X)^{231/12}} \right]
\end{aligned}
$$

or:

$$200000 = 4000 + 1319.91 \times \frac{1 - \frac{1}{(1+X)^{9/12}}}{(1+X)^{1/12} - 1} + 1530.61 \times \frac{1}{(1+X)^{9/12}} \times \frac{1 - \frac{1}{(1+X)^{231/12}}}{(1+X)^{1/12} - 1}$$

giving X= 7.199734%, i.e. an illustrative APR of 7.2%.

EXAMPLE 22

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is fixed at 5% for 9 months and after that it is adjusted twice a year according to the 1-year Euribor rate plus a spread of 1.5%. The 1-year Euribor rate is 4% at the time of calculating the APR. There is a cap in the borrowing rate which limits its level to a stated maximum and whose cost is spread over the monthly payments. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. For the scenario of change in the borrowing rate, the highest level of 1-year Euribor rate is 5.39%.

This example differs from example 21 as there is a cap on the borrowing rate. This has two effects. On the one hand, application of assumptions (e) should take into account that the borrowing rate for the variable-rate period cannot be higher than the capped rate (as it constitutes a maximum limit for the borrowing rate). This is relevant when determining the level of the borrowing rate based on the value of the agreed indicator or internal reference rate and also when assessing the substitution of the variable borrowing rate by the initial fixed rate when the latter is higher. On the other hand, for the scenario of change in the borrowing rate (illustrative APR) the capped rate will be considered to be the highest possible borrowing rate if it is lower than the rate obtained from historical data.

Case 1. The capped rate is 6.5% and has an annual cost of €360 spread over the monthly payments.

As in example 21, the rate obtained from the level of the 1-year Euribor at the time of calculating the APR is 5.5% (i.e. 4% + spread of 1.5%) and is higher than the fixed borrowing rate. It is also lower than the capped rate, and hence this level of 5.5% is assumed to be charged from the 10th month until the end of the credit agreement.

The monthly instalments which provide full repayment of the credit are €1319.91 for the fixed-rate period with a borrowing rate of 5% and €1374.06 for the variable-rate period with an assumed borrowing rate of 5.5%. To these amounts the monthly cost of the cap of 360/12 = €30 is added to obtain the new monthly payments.

The equation becomes:

$$
\begin{aligned}
200000 &= 4000 + 1349.91\frac{1}{(1+X)^{1/12}} + \cdots + 1349.91\frac{1}{(1+X)^{9/12}} + \\
&+1404.06\frac{1}{(1+X)^{10/12}} + \ldots + 1404.06\frac{1}{(1+X)^{240/12}} \\
&= 4000 + 1349.91\frac{1}{(1+X)^{1/12}} + \cdots + 1349.91\frac{1}{(1+X)^{9/12}} + \\
&+\frac{1}{(1+X)^{9/12}} \times \left[1404.06\frac{1}{(1+X)^{1/12}} + \ldots + 1404.06\frac{1}{(1+X)^{231/12}} \right]
\end{aligned}
$$

or:

$$
200000 = 4000 + 1349.91 \times \frac{1 - \frac{1}{(1+X)^{9/12}}}{(1+X)^{1/12} - 1} + 1404.06 \times \frac{1}{(1+X)^{9/12}} \times \frac{1 - \frac{1}{(1+X)^{231/12}}}{(1+X)^{1/12} - 1}
$$

giving X= 6.134668%, i.e. an APR of 6.1%.

As regards the scenario of change in the borrowing rate, the borrowing rate determined in example 21 from the highest level of the 1-year Euribor rate, given as 6.89% (i.e. 5.39% + spread of 1.5%), is higher than the capped rate of 6.5%, and hence the capped rate is used in this case. The monthly instalment from the 10th month falls to €1485.81 and adding the cost of the cap the monthly payment becomes €1515.81.

The equation becomes:

$$
\begin{aligned}
200000 &= 4000 + 1349.91\frac{1}{(1+X)^{1/12}} + \cdots + 1349.91\frac{1}{(1+X)^{9/12}} + \\
&+1515.81\frac{1}{(1+X)^{10/12}} + \ldots + 1515.81\frac{1}{(1+X)^{240/12}} \\
&= 4000 + 1349.91\frac{1}{(1+X)^{1/12}} + \cdots + 1349.91\frac{1}{(1+X)^{9/12}} + \\
&+\frac{1}{(1+X)^{9/12}} \times \left[1515.81\frac{1}{(1+X)^{1/12}} + \ldots + 1515.81\frac{1}{(1+X)^{231/12}} \right]
\end{aligned}
$$

or:

$$
200000 = 4000 + 1349.91 \times \frac{1 - \frac{1}{(1+X)^{9/12}}}{(1+X)^{1/12} - 1} + 1515.81 \times \frac{1}{(1+X)^{9/12}} \times \frac{1 - \frac{1}{(1+X)^{231/12}}}{(1+X)^{1/12} - 1}
$$

giving X= 7.093592%, i.e. an illustrative APR of 7.1%.

Compared to example 21, the cap on the borrowing rate implies a higher APR for the credit due to the cost of the cap (6.1% versus 5.9%) and a lower APR in the scenario of change in the

borrowing rate (7.1% versus 7.2%) because the highest borrowing rate is limited to a lower level (the capped rate).

Case 2. The capped rate is 7.5% and has an annual cost of €240 spread over the monthly payments.

The capped rate is higher than in case 1 and its cost is lower. As a result, the level of the variable borrowing rate is assumed to be the same as in case 1, and also the instalments comprised of capital and interest which provide full repayment of the credit. However, the lower cost of the cap now given as 240/12 = €20 each month leads to lower monthly payments, which are of €1339.91 and €1394.06 for the fixed-rate and the variable-rate periods, respectively.

The equation becomes:

$$\begin{aligned}
200000 &= 4000 + 1339.91\frac{1}{(1+X)^{1/12}} + \cdots + 1339.91\frac{1}{(1+X)^{9/12}} + \\
&+1394.06\frac{1}{(1+X)^{10/12}} + \ldots + 1394.06\frac{1}{(1+X)^{240/12}} \\
&= 4000 + 1339.91\frac{1}{(1+X)^{1/12}} + \cdots + 1339.91\frac{1}{(1+X)^{9/12}} + \\
&+\frac{1}{(1+X)^{9/12}} \times \left[1394.06\frac{1}{(1+X)^{1/12}} + \ldots + 1394.06\frac{1}{(1+X)^{231/12}} \right]
\end{aligned}$$

or:

$$200000 = 4000 + 1339.91 \times \frac{1 - \frac{1}{(1+X)^{9/12}}}{(1+X)^{1/12} - 1} + 1394.06 \times \frac{1}{(1+X)^{9/12}} \times \frac{1 - \frac{1}{(1+X)^{231/12}}}{(1+X)^{1/12} - 1}$$

giving X= 6.041228%, i.e. an APR of 6.1%.

As regards the scenario of change in the borrowing rate, the capped rate in this case is higher than the borrowing rate determined in example 21 from the highest level of the 1-year Euribor rate, given as 6.89% (i.e. 5.39% + spread of 1.5%). Thus, this second rate is used in this case. The monthly instalment from the 10th month remains as in example 21, amounting to €1530.61 and adding the cost of the cap the monthly payment increases to €1550.61.

The equation becomes:

$$200000 = 4000 + 1339.91\frac{1}{(1+X)^{1/12}} + \cdots + 1339.91\frac{1}{(1+X)^{9/12}} +$$
$$+1550.61\frac{1}{(1+X)^{10/12}} + \ldots + 1550.61\frac{1}{(1+X)^{240/12}}$$
$$= 4000 + 1339.91\frac{1}{(1+X)^{1/12}} + \cdots + 1339.91\frac{1}{(1+X)^{9/12}} +$$
$$+\frac{1}{(1+X)^{9/12}} \times \left[1550.61\frac{1}{(1+X)^{1/12}} + \ldots + 1550.61\frac{1}{(1+X)^{231/12}} \right]$$

or:

$$200000 = 4000 + 1339.91 \times \frac{1 - \frac{1}{(1+X)^{9/12}}}{(1+X)^{1/12} - 1} + 1550.61 \times \frac{1}{(1+X)^{9/12}} \times \frac{1 - \frac{1}{(1+X)^{231/12}}}{(1+X)^{1/12} - 1}$$

giving X= 7.379073%, i.e. an illustrative APR of 7.4%.

Compared to case 1, the higher capped rate implies a lower APR of the credit (6.041228% versus 6.134668%) due to the lower cost of the cap but a higher *APR in the scenario of change in the borrowing rate (7.4% versus 7.1%). Moreover, when compared to example 21, the higher cost of the credit due to the cost of the cap comes without any benefit in terms of a reduction of the APR in the scenario of change in the borrowing rate, because the capped rate considered is too high when compared with the highest borrowing rate that derives from historical data on the reference rate.*

EXAMPLE 23

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is fixed at 5% for 9 months and after that it is adjusted twice a year according to the 1-year Euribor rate plus a spread of 1.5% or a new fixed rate could be agreed. The 1-year Euribor rate is 4% at the time of calculating the APR. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. For the scenario of change in the borrowing rate, the highest level of 1-year Euribor rate is 5.39% and the highest level of the benchmark rate for the fixed borrowing rate is 7.30%.

The difference between this example and example 21 is that in this example the change of the rate to a variable rate is only a possibility as a new fixed rate might be agreed. This implies that assumption (e) should not be applied because it only applies when it is known that the variable borrowing rate period follows the fixed rate period. This follows from the Guidelines on the application of Directive 2008/48/EC in relation to assumption (j) of this Directive, which is similar to assumption (e) of Directive 2014/07/EU. Instead, Article 17(4) should be applied on the basis that the borrowing rate cannot be quantified at the time of the calculation of the

APR. Accordingly, the initial borrowing rate of 5% shall be assumed to be fixed until the end of the credit agreement.

Using this borrowing rate, the monthly instalment which provides full repayment of the credit is €1319.91.

The equation becomes:

$$200000 = 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + 1319.91\frac{1}{(1+X)^{2/12}} + \cdots + 1319.91\frac{1}{(1+X)^{240/12}}$$

or:

$$200000 = 4000 + 1319.91\frac{1-\frac{1}{(1+X)^{20}}}{(1+X)^{1/12}-1}$$

giving X= 5.370286%, i.e. an APR of 5.4%.

The credit agreement allows for variations in the borrowing rate, and hence Article 17(6) should be applied. Article 17(5) does not apply in this example. As a result, the additional illustrative APR should be provided on the basis that the borrowing rate rises at the earliest possible opportunity to the highest level foreseen in the credit agreement. As in this example the change of the rate to a variable rate is only a possibility because a new fixed rate might be agreed, the highest level might corresponds to the fixed or to the variable rate. The higher of the two rates should be selected because the rationale for the scenario of change in the borrowing rate is to illustrate the 'maximum' payments and APR in the 'worst case scenario'. For the variable rate, the highest level of the 1-year Euribor rate, 5.39%, plus the spread of 1.5% should be considered, giving a borrowing rate of 6.89%. For the fixed rate, the highest level is 7.30%, as stated in the description of the credit. The higher fixed rate of 7.30% is then used for the payments taking place after the initial fixed rate period, i.e. from the 10th month. From then on, the borrowing rate becomes 7.30% and the monthly instalment €1578.43.

The equation becomes:

$$\begin{aligned}
200000 &= 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + \cdots + 1319.91\frac{1}{(1+X)^{9/12}} + \\
&+1578.43\frac{1}{(1+X)^{10/12}} + \ldots + 1578.43\frac{1}{(1+X)^{240/12}} \\
&= 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + \cdots + 1319.91\frac{1}{(1+X)^{9/12}} + \\
&+\frac{1}{(1+X)^{9/12}} \times \left[1578.43\frac{1}{(1+X)^{1/12}} + \ldots + 1578.43\frac{1}{(1+X)^{231/12}} \right]
\end{aligned}$$

or:

$$200000 = 4000 + 1319.91 \times \frac{1 - \frac{1}{(1+X)^{9/12}}}{(1+X)^{1/12} - 1} + 1578.43 \times \frac{1}{(1+X)^{9/12}} \times \frac{1 - \frac{1}{(1+X)^{231/12}}}{(1+X)^{1/12} - 1}$$

giving X= 7.597578%, i.e. an illustrative APR of 7.6%.

EXAMPLE 24

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is fixed at 5% for 5 years and after that a negotiation on the borrowing rate takes place to agree on a new fixed rate for the rest of the agreement. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

Article 17(4) should be applied in this example on the basis that the borrowing rate for the period following the initial fixed rate period cannot be quantified at the time of the calculation of the APR. Accordingly, the initial borrowing rate of 5% shall be assumed until the end of the credit agreement.

Using this borrowing rate, the monthly instalment which provides full repayment of the credit is €1319.91.

The equation becomes:

$$200000 = 4000 + 1319.91 \frac{1}{(1+X)^{1/12}} + 1319.91 \frac{1}{(1+X)^{2/12}} + \cdots + 1319.91 \frac{1}{(1+X)^{240/12}}$$

or:

$$200000 = 4000 + 1319.91 \frac{1 - \frac{1}{(1+X)^{20}}}{(1+X)^{1/12} - 1}$$

giving X= 5.370286%, i.e. an APR of 5.4%.

Article 17(5), which refers to credit agreements for which a fixed borrowing rate is agreed in relation to the initial period of at least five years, at the end of which a negotiation on the borrowing rate takes place to agree on a new fixed rate for a further material period, should be applied in this example. As a result, an additional illustrative APR should be provided on the basis that at the end of the initial fixed-rate period, the balance outstanding is repaid. This amount can be obtained from the amortisation table as it corresponds to the final balance at the end of the 60th month, which amounts to €166909.73

The equation becomes:

$$200000 = 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + \cdots + 1319.91\frac{1}{(1+X)^{60/12}} + 166909.73\frac{1}{(1+X)^{60/12}}$$

or:

$$200000 = 4000 + 1319.91\frac{1-\frac{1}{(1+X)^{5}}}{(1+X)^{1/12}-1} + 166909.73\frac{1}{(1+X)^{5}}$$

giving X= 5.635609%, i.e. an illustrative APR of 5.6%.

EXAMPLE 25

Mortgage credit agreement is for a total amount of credit of €200000 repayable in 240 monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is fixed at 5% for 9 months and after that a negotiation on the borrowing rate takes place to agree on a new fixed rate for the rest of the agreement. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. For the scenario of change in the borrowing rate, the highest level of the benchmark rate for the fixed borrowing rate is 7.30%.

The difference between this example and example 24 is that in this example the initial fixed-rate period is lower than 5 years. This does not alter the calculation of the APR of the credit. However, it has an effect on the illustrative APR, which in this example should be calculated in accordance with Article 17(6), instead of Article 17(5). According to the instructions to complete the ESIS, this additional APR will be calculated on the basis that the borrowing rate rises at the earliest possible opportunity to the highest level foreseen in the credit agreement. This is determined by the highest value of the benchmark rate for the fixed borrowing rate in at least the last 20 years, or for the longest period of less than 20 years for which data is available, unless the borrowing rate is capped at a lower level, in which case this lower level should be used. As there is no cap on the borrowing rate in this example, the highest level of the benchmark rate, 7.30%, is used for the payments taking place after the initial fixed rate period, i.e. from the 10th month. From then on, the borrowing rate becomes 7.30% and the monthly instalment €1578.43 (as obtained before in example 23).

The equation becomes:

$$200000 = 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + \cdots + 1319.91\frac{1}{(1+X)^{9/12}} +$$
$$+1578.43\frac{1}{(1+X)^{10/12}} + \ldots + 1578.43\frac{1}{(1+X)^{240/12}}$$
$$= 4000 + 1319.91\frac{1}{(1+X)^{1/12}} + \cdots + 1319.91\frac{1}{(1+X)^{9/12}} +$$
$$+\frac{1}{(1+X)^{9/12}} \times \left[1578.43\frac{1}{(1+X)^{1/12}} + \ldots + 1578.43\frac{1}{(1+X)^{231/12}} \right]$$

or:

$$200000 = 4000 + 1319.91 \times \frac{1 - \frac{1}{(1+X)^{9/12}}}{(1+X)^{1/12} - 1} + 1578.43 \times \frac{1}{(1+X)^{9/12}} \times \frac{1 - \frac{1}{(1+X)^{231/12}}}{(1+X)^{1/12} - 1}$$

giving X= 7.597578%, i.e. an illustrative APR of 7.6%.

EXAMPLE 26

Multi-part mortgage credit agreement is for a total amount of credit of €200000 repayable in 180 equal monthly instalments (15 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. A half of the amount of credit is provided at a fixed borrowing rate (nominal rate) of 6% and the other half at a variable borrowing rate which is adjusted twice a year according to the 1-year Euribor rate plus a spread of 1.5%. The 1-year Euribor rate is 4% at the time of calculating the APR. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. For the scenario of change in the borrowing rate, the highest level of 1-year Euribor rate is 5.39%.

In this example the two parts of the credit are dealt separately to obtain all the relevant amounts which are subsequently added up to obtain the APR figures.

For the fixed-rate part, the monthly instalment which provides full repayment of the credit of €100000 is €843.86. For the variable-rate part, Article 17(4) should be applied to determine the variable borrowing rate on the basis that this rate cannot be quantified at the time of the calculation of the APR. Accordingly, it is assumed that the borrowing rate will remain fixed in relation to the level set at the conclusion of the contract, which is 4+1.5=5.5%. The resulting monthly instalment which provides full repayment of this part of the credit of €100000 is €817.08. The total monthly instalment is thus 843.86+817.08=€1660.94.

The equation becomes:

$$200000 = 4000 + 1660.94\frac{1}{(1+X)^{1/12}} + 1660.94\frac{1}{(1+X)^{2/12}} + \cdots + 1660.94\frac{1}{(1+X)^{180/12}}$$

or:

$$200000 = 4000 + 1660.94 \times \frac{1 - \frac{1}{(1+X)^{15}}}{(1+X)^{1/12} - 1}$$

giving X= 6.237362%, i.e. an APR of 6.2%.

The credit agreement allows for variations in the borrowing rate in the variable-rate part, and hence Article 17(6) should be applied. As a result, an additional illustrative APR should be provided. According to the instructions to complete the ESIS, this additional APR will be calculated on the basis that the variable borrowing rate rises at the earliest possible opportunity to the highest level foreseen in the credit agreement. This is determined by the highest value of the reference rate, the 1-year Euribor, in at least the last 20 years, or for the longest period of less than 20 years for which data is available, unless the borrowing rate is capped at a lower level, in which case this lower level should be used. As there is no cap on the variable borrowing rate in this example, the highest level of the 1-year Euribor rate, 5.39%, should be used for the payments taking place from the 7th month because the variable borrowing rate is adjusted every 6 months. From then on, for the variable-rate part the borrowing rate becomes 6.89% (i.e. 5.39% + spread of 1.5%) and the monthly instalment €890.52. The fixed-rate part does not experience changes in the borrowing rate, and then the monthly instalment for this part of the credit remains the same, amounting to €843.86. The total monthly instalment in the scenario of change in the borrowing rate is thus 843.86+817.08=€1660.94 for the first 6 months and 843.86+890.52=€1734.38 afterwards.

The equation becomes:

$$\begin{aligned}
200000 &= 4000 + 1660.94 \frac{1}{(1+X)^{1/12}} + \cdots + 1660.94 \frac{1}{(1+X)^{6/12}} + \\
&+1734.38 \frac{1}{(1+X)^{7/12}} + \ldots + 1734.38 \frac{1}{(1+X)^{180/12}} \\
&= 4000 + 1660.94 \frac{1}{(1+X)^{1/12}} + \cdots + 1660.94 \frac{1}{(1+X)^{6/12}} + \\
&+ \frac{1}{(1+X)^{6/12}} \times \left[1734.38 \frac{1}{(1+X)^{1/12}} + \ldots + 1734.38 \frac{1}{(1+X)^{174/12}} \right]
\end{aligned}$$

or:

$$200000 = 4000 + 1660.94 \times \frac{1 - \frac{1}{(1+X)^{6/12}}}{(1+X)^{1/12} - 1} + 1734.38 \times \frac{1}{(1+X)^{6/12}} \times \frac{1 - \frac{1}{(1+X)^{174/12}}}{(1+X)^{1/12} - 1}$$

giving X=6.925014%, i.e. an illustrative APR of 6.9%.

EXAMPLE 27

Mortgage credit agreement is for a total amount of credit not specified repayable in 240 equal monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 6%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

In this example the amount of the credit is not specified, and hence assumption (f) should be applied to determine it. Between the two amounts appearing in the assumption, the amount of €170000 is chosen because the agreement is for a mortgage credit, which according to our definitions is the typical loan used to purchase a property.

The monthly instalment which provides full repayment of the credit of €170000 is €1217.93.

The equation becomes:

$$170000 = 3400 + 1217.93\frac{1}{(1+X)^{1/12}} + 1217.93\frac{1}{(1+X)^{2/12}} + \ldots + 1217.93\frac{1}{(1+X)^{240/12}}$$

or:

$$170000 = 3400 + 1217.93\frac{1-\frac{1}{(1+X)^{20}}}{(1+X)^{1/12}-1}$$

giving X= 6.434402%, i.e. an APR of 6.4%.

EXAMPLE 28

Foreign currency mortgage credit is for a total amount of credit of $200000 repayable in 240 equal monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 5%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. Payments are withdrawn from the consumer's domestic currency account using the exchange rate prevailing at the beginning of each month and applying an exchange rate conversion fee of 0.2% of the amount converted. The exchange rate applied at the conclusion of the agreement is 1.25€/$.

The costs associated with currency conversion must be included in the total cost of the credit if the use of the consumer's domestic currency account is compulsory in order to obtain the credit or to obtain it on the terms and conditions marketed. It is assumed this is the case.

The monthly instalment which provides full repayment of the credit is $1319.91, and the monthly payment including the currency conversion fee for this amount becomes:

$$A = 1319.91 \times (1 + 0.002) = \$1322.55$$

The equation becomes:

$$200000 = 4000 \times (1 + 0.002) + 1322.55 \frac{1}{(1+X)^{1/12}} + 1322.55 \frac{1}{(1+X)^{2/12}} + \ldots + 1322.55 \frac{1}{(1+X)^{240/12}}$$

or:

$$200000 = 4008 + 1322.55 \frac{1 - \frac{1}{(1+X)^{20}}}{(1+X)^{1/12} - 1}$$

giving X= 5.396096%, i.e. an APR of 5.4%.

For foreign currency loans as defined in Article 4(28), the Directive requires showing how changes to the relevant exchange rate may affect the amount of payments to be made by the consumer and the amount of capital denominated in the consumer's currency. The scenario of change in the exchange rate consists of a 20 % reduction in the value of the consumer's currency, unless there is a cap which limits that reduction to less than 20%, in which case this lower reduction should be used. As there is no cap in this example, the highest depreciation rate of 20% should be used, affecting the capital owed and the payments taking place from the 2nd month because the level of the exchange rate applied to the credit can change every month. Specifically, the balance outstanding at the beginning of the 2nd month of $199513.42, which corresponds to an amount of $199513.42/1.25=€159610.74 at the initial level of the exchange rate, would increase in €159610.74x0.2=€31922.15, meaning that the total payments of capital over the duration of the credit would increase from $200000/1.25=€160000 to €160000+€31922.15=€191922.15. As regard the monthly payments, the payments of the single-sum cost and its currency conversion cost in period 0 and the payments of capital and interest and their currency conversion costs in period 1 remain the same, amounting to $4008/1.25=€3206.4 and $1322.55/1.25=€1058.04, respectively. However, from period 2 the payments increase in 20% up to €1058.04x(1+0.2)=€1269.65. As a result, the total payments to be made by the consumer would increase from $321420/1.25=€257136 to €307710.31.

EXAMPLE 29

Foreign currency mortgage credit is for a total amount of credit of $200000 repayable in 240 equal monthly instalments (20 years). The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The borrowing rate (nominal rate) is 5%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. Payments are withdrawn from the consumer's domestic currency account using the exchange rate prevailing at the beginning of each month and applying a currency conversion fee of 0.2% of the amount

converted. The exchange rate applied at the conclusion of the agreement is 1.25€/$. There is a cap that limits the variation of the exchange rate to 10% and has an annual cost of $360 spread over the monthly payments.

This example differs from example 28 as there is a cap that limits exchange rate risk.

The costs associated with currency conversion must be included in the total cost of the credit if the use of the consumer's domestic currency account is compulsory in order to obtain the credit or to obtain it on the terms and conditions marketed. It is assumed this is the case.

The monthly instalment which provides full repayment of the credit is $1319.91, and the monthly payment including the cost of the cap and the related currency conversion fees becomes:

$$A = \left(1319.91 + \frac{360}{12}\right) \times (1 + 0.002) = \$1352.61$$

The equation becomes:

$$200000 = 4000 \times (1 + 0.002) + 1352.61 \frac{1}{(1+X)^{1/12}} + 1352.61 \frac{1}{(1+X)^{2/12}} + \ldots + 1352.61 \frac{1}{(1+X)^{240/12}}$$

or:

$$200000 = 4008 + 1352.61 \frac{1 - \frac{1}{(1+X)^{20}}}{(1+X)^{1/12} - 1}$$

giving X=5.682613%, i.e. an APR of 5.7%.

For foreign currency loans as defined in Article 4(28), the Directive requires showing how changes to the relevant exchange rate may affect the amount of payments to be made by the consumer and the amount of capital denominated in the consumer's currency. The scenario of change in the exchange rate consists on a 20% reduction in the value of the consumer's currency, unless there is a cap which limits that reduction to less than 20%, in which case this lower reduction should be used. Such a cap exists in this example and limits the depreciation of the exchange rate to 10%. Such depreciation affects the capital owed and the payments taking place from the 2nd month because the level of the exchange rate applied to the credit can change every month. Specifically, the balance outstanding at the beginning of the 2nd month of $199513.42, which corresponds to an amount of $199513.42/1.25=€159610.74 at the initial level of the exchange rate, would increase in €159610.74x0.1=€15961.07 (a half of the amount obtained in example 28), meaning that the total payments of capital over the duration of the credit would increase from $200000/1.25=€160000 to €160000+€15961.07=€175961.07. As regard the monthly payments, the payments of the single-sum cost and its currency conversion cost in period 0 and the payments of capital, interest and cost of the cap and their currency conversion costs in period 1 remain the same, amounting to $4008/1.25=€3206.4 and $1352.61/1.25=€1082.09, respectively. However, from

period 2 the payments increase in 10% up to €1082.09x(1+0.1)=€1190.30. As a result, the total payments to be made by the consumer would increase from $328634.40/1.25=€262907.52 to €288769.42.

Compared to example 28, the cap on the exchange rate increases the APR of the credit but limits the amount of payments to be made by the consumer in case of high depreciation of the exchange rate.

EXAMPLE 30

Credit agreement for a secured line of credit is for a maximum amount of €30000 for a period of 15 years. The credit agreement provides freedom of drawdown within the first 5 years and after that no further drawdowns are allowed and also after that period the credit is repaid in equal monthly repayments of capital. Interest charges are paid every month. The borrowing rate (effective rate) is adjusted twice a year according to the 1-year Euribor rate plus a spread of 3%. The 1-year Euribor rate is 4% at the time of calculating the APR. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. For the scenario of change in the borrowing rate, the highest level of 1-year Euribor rate is 5.39%.

The credit agreement gives freedom of drawdown but with a limitation with regard the period of time, and hence assumption (c) should be applied to determine the date of drawdown. According to this assumption, the amount of credit will be assumed to be drawn down on the earliest date (or dates) provided for in the agreement and in accordance to these limits. This implies that in this example the total amount of credit is assumed to be drawdown at the conclusion of the agreement.

As regards the borrowing rate, Article 17(4) should be applied on the basis that this rate cannot be quantified at the time of calculating the APR. Accordingly, the APR will be calculated on the assumption that the borrowing rate will remain fixed in relation to the level set at the conclusion of the agreement, which is 4+3=7%.

Given that the amount of credit and the borrowing rate remain constant over the first 5 years, interest charges are also a constant amount. The monthly payment of interest charges during this period is:

$$A = 30000 \times \left[(1+0.07)^{1/12} - 1 \right] = €169.62$$

During the next 10 years the credit is repaid in equal repayments of capital of 30000/120=€250, and interest charges vary over time according to the outstanding balance of the credit.

The equation becomes:

$$30000 = 600 + 169.62\frac{1}{(1+X)^{1/12}} + 169.62\frac{1}{(1+X)^{2/12}} + \ldots + 169.62\frac{1}{(1+X)^{60/12}} +$$
$$+419.62\frac{1}{(1+X)^{61/12}} + 418.21\frac{1}{(1+X)^{62/12}} + \ldots + 251.41\frac{1}{(1+X)^{180/12}}$$

or:

$$30000 = 600 + 169.62\frac{1-\frac{1}{(1+X)^5}}{(1+X)^{1/12}-1} +$$
$$+419.62\frac{1}{(1+X)^{61/12}} + 418.21\frac{1}{(1+X)^{62/12}} + \ldots + 251.41\frac{1}{(1+X)^{180/12}}$$

giving X= 7.302956%, i.e. an APR of 7.3%.

The credit agreement allows for variations in the borrowing rate, and hence Article 17(6) should be applied. As a result, an additional illustrative APR should be provided. According to the instructions to complete the ESIS, this additional APR will be calculated on the basis that the borrowing rate rises at the earliest possible opportunity to the highest level foreseen in the credit agreement. This is determined by the highest value of the reference rate, the 1-year Euribor, in at least the last 20 years, or for the longest period of less than 20 years for which data is available, unless the borrowing rate is capped at a lower level, in which case this lower level should be used. As there is no cap on the borrowing rate in this example, the highest level of the 1-year Euribor rate, 5.39%, should be used for the payments taking place from the 7th month because the borrowing rate is adjusted every 6 months. From then until the end of the 5th year, the monthly payment of interest charges is:

$$A = 30000 \times \left[(1+0.0839)^{1/12} - 1 \right] = €202.09$$

The equation becomes:

$$30000 = 600 + 169.62\frac{1}{(1+X)^{1/12}} + \ldots + 169.62\frac{1}{(1+X)^{6/12}} +$$
$$+202.09\frac{1}{(1+X)^{7/12}} + \ldots + 202.09\frac{1}{(1+X)^{60/12}} +$$
$$+452.09\frac{1}{(1+X)^{61/12}} + 450.41\frac{1}{(1+X)^{62/12}} + \ldots + 251.68\frac{1}{(1+X)^{180/12}}$$
$$= 600 + 169.62\frac{1}{(1+X)^{1/12}} + \ldots + 169.62\frac{1}{(1+X)^{6/12}} +$$
$$+202.09\frac{1}{(1+X)^{6/12}}\left[\frac{1}{(1+X)^{1/12}} + \ldots + \frac{1}{(1+X)^{54/12}}\right] +$$
$$+452.09\frac{1}{(1+X)^{61/12}} + 450.41\frac{1}{(1+X)^{62/12}} + \ldots + 251.68\frac{1}{(1+X)^{180/12}}$$

or:

$$30000 = 600 + 169.62\frac{1-\frac{1}{(1+X)^{6/12}}}{(1+X)^{1/12}-1} + 202.09 \times \frac{1}{(1+X)^{6/12}} \times \frac{1-\frac{1}{(1+X)^{54/12}}}{(1+X)^{1/12}-1} +$$
$$+452.09\frac{1}{(1+X)^{61/12}} + 450.41\frac{1}{(1+X)^{62/12}} + \ldots + 251.68\frac{1}{(1+X)^{180/12}}$$

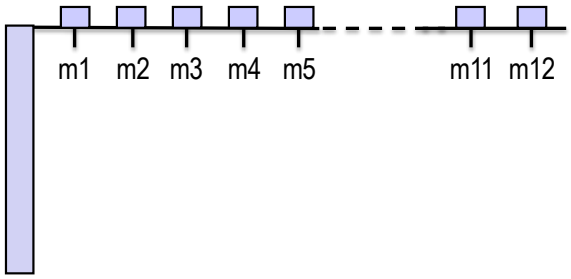
giving X= 8.61132%, i.e. an illustrative APR of 8.6%.

EXAMPLE 31

Credit agreement for an open-ended secured line of credit is for a maximum amount of €30000. The agreement gives freedom of drawdown and the credit may be used repeatedly as the borrower repays the sum used. The credit agreement provides for a minimum monthly payment of 2% of the outstanding balance of capital and interest with a minimum of €300. The borrowing rate (effective rate) is adjusted twice a year according to the 1-year Euribor rate plus a spread of 3%. The 1-year Euribor rate is 4% at the time of calculating the APR. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. For the scenario of change in the borrowing rate, the highest level of 1-year Euribor rate is 5.39%.

This example is of open-ended credit. That is, it does not have a fixed duration. This is due to two reasons: the revolving features of the credit and the scheme of repayments. Assumptions (a) and (k) are relevant in this type of credits. Assumption (a) determines that if the agreement gives the consumer freedom of drawdown, the total amount of credit shall be deemed to be drawn down immediately and in full. Also, as clarified in the Guidelines on the application of Directive 2008/48/EC in relation to the same assumption, the concept of additional drawdowns on the basis of the amount of the credit repaid is not a factor in the calculation of the APR unless it applies by virtue of assumption (k). Assumption (k) determines the duration and scheme of repayments of the credit to be assumed. Specifically, point (i) establishes an assumed duration of 1 or 20 years depending on the purpose of the credit and the drawdown mechanism and point (ii) determines the scheme of repayment, which in general (being the case of this example) consists of equal monthly repayments of capital.

According to our definitions of secured credit and mortgage credit, the purpose of a secured credit is not to acquire or retain rights in immovable property, and hence the duration of 1 year is assumed in this example, and the equal monthly repayments of capital occur within the 1-year period. The combination of the two assumptions is illustrated in the figure below. The downward bar represents the immediate drawdown of the credit limit, €30000 in this example, and the upward bars for months 1 to 12 represent the equal repayments of 1/12 of such amount, i.e. 30000/12 = €2500.



As regards interest and other charges point (ii) establishes that they shall be applied in accordance with these drawdowns and repayments of capital and as provided for in the credit agreement. Therefore, the single sum cost of 2% of the total amount of credit is paid on the date the agreement is concluded and interest charges are paid at a monthly frequency.

For the determination of the borrowing rate, Article 17(4) should be applied on the basis that this rate cannot be quantified at the time of the calculation of the APR. Accordingly, the APR will be calculated on the assumption that the borrowing rate will remain fixed in relation to the level set at the conclusion of the agreement, which is 4+3=7%.

The 12 monthly payments, comprised of a constant quota of capital of €2500 and the interest charges generated each month, can be obtained from the amortisation table, being A1 = 2669.62, A2 = 2655.49, A3 = 2641.35, A4 = 2627.22, A5 = 2613.08, A6 = 2598.95, A7 = 2584.81, A8 = 2570.68, A9 = 2556.54, A10 = 2542.41, A11 = 2528.27, A12 = 2514.14.

The equation becomes:

$$30000 = 600 + 2669.62\frac{1}{(1+X)^{1/12}} + 2655.49\frac{1}{(1+X)^{2/12}} + \ldots + 2514.14\frac{1}{(1+X)^{12/12}}$$

giving X= 11.164789%, i.e. an APR of 11.2%.

The credit agreement allows for variations in the borrowing rate, and hence Article 17(6) should be applied. As a result, an additional illustrative APR should be provided. According to the instructions to complete the ESIS, this additional APR will be calculated on the basis that the borrowing rate rises at the earliest possible opportunity to the highest level foreseen in the credit agreement. This is determined by the highest value of the reference rate, the 1-year Euribor, in at least the last 20 years, or for the longest period of less than 20 years for which data is available, unless the borrowing rate is capped at a lower level, in which case this lower level should be used. As there is no cap on the borrowing rate in this example, the highest level of the 1-year Euribor rate, 5.39%, should be used for the payments taking place from the 7th month because the borrowing rate is adjusted every 6 months.

The equation becomes:

$$30000 = 600 + 2669.62\frac{1}{(1+X)^{1/12}} + 2655.49\frac{1}{(1+X)^{2/12}} + \ldots + 2516.84\frac{1}{(1+X)^{12/12}}$$

giving X= 11.542158%, i.e. an illustrative APR of 11.5%.

EXAMPLE 32

Credit agreement for an open-ended secured line of credit is for a maximum amount of €30000. The agreement gives freedom of drawdown but with the limit that no more than a 25% of the amount of credit can be drawdown each of the first two quarters of the first year; from the third quarter no limitation exists. The credit may be used repeatedly as the borrower repays the sum used within the previous limits. The credit agreement provides for a minimum monthly payment of 2% of the outstanding balance of capital and interest with a minimum of €300. The borrowing rate (effective rate) is adjusted twice a year according to the 1-year Euribor rate plus a spread of 3%. The 1-year Euribor rate is 4% at the time of calculating the APR. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. For the scenario of change in the borrowing rate, the highest level of 1-year Euribor rate is 5.39%.

This example differs from example 31 in the existence of drawdown limits with regard to the amounts of drawdown and periods of time. Assumption (c) should be applied in this case, instead of assumption (a). According to assumption (c), the amount of credit will be assumed to be drawn down on the earliest date (or dates) provided for in the agreement and in accordance to these limits. As regards duration and repayments, assumption (k) is still of application, implying that the credit, whose purpose is not to acquire or retain rights in immovable property, is provided for a period of 1 year starting from the date of the initial drawdown and that capital is repaid in equal monthly repayments within this 1-year period and commencing 1 month after the date of the initial drawdown.

The combination of both assumptions implies the following plan of drawdowns and repayments of capital:

- a first drawdown after the conclusion of the agreement (this date is the earliest date of drawdown provided for in the agreement) of 25% of the amount of the credit (i.e. €7500), whose repayment starts at the end of the first month in monthly amounts of 7500/12=€625,
- a second drawdown of 25% after the end of the 3rd month, which increases the monthly repayments of capital from the 4th month in 7500/9=€833.33 up to €1458.33, and
- a final drawdown after the end of the 6th month of the remaining 50% of the credit, which increases the monthly repayments of capital from the 7th month in 15000/6=€2500 up to €3985.33.

The monthly payments to be made by the consumer are comprised of these repayments of capital plus interest charges. For the determination of the borrowing rate, Article 17(4) should be applied on the basis that this rate cannot be quantified at the time of the calculation of the APR. Accordingly, the APR will be calculated on the assumption that the borrowing rate will remain fixed in relation to the level set at the conclusion of the agreement, which is 4+3=7%.

The 12 monthly payments can be obtained from the amortisation table, being A1 = 667.41, A2 = 663.87, A3 = 660.34, A4 = 1532.54, A5 = 1524.3, A6 = 1516.05, A7 = 4092.62, A8 = 4070.24, A9 = 4047.86, A10 = 4025.48, A11 = 4003.1, A12 = 3980.71.

The equation becomes:

$$7500 + 7500\frac{1}{(1+X)^{3/12}} + 15000\frac{1}{(1+X)^{6/12}} = 600 + 667.41\frac{1}{(1+X)^{1/12}} + \ldots + 3980.71\frac{1}{(1+X)^{12/12}}$$

giving X= 13.063818%, i.e. an APR of 13.1%.

The credit agreement allows for variations in the borrowing rate, and hence Article 17(6) should be applied. As a result, an additional illustrative APR should be provided. According to the instructions to complete the ESIS, this additional APR will be calculated on the basis that the borrowing rate rises at the earliest possible opportunity to the highest level foreseen in the credit agreement. This is determined by the highest value of the reference rate, the 1-year Euribor, in at least the last 20 years, or for the longest period of less than 20 years for which data is available, unless the borrowing rate is capped at a lower level, in which case this lower level should be used. As there is no cap on the borrowing rate in this example, the highest level of the 1-year Euribor rate, 5.39%, should be used for the payments taking place from the 7th month because the borrowing rate is adjusted every 6 months.

The equation becomes:

$$7500 + 7500\frac{1}{(1+X)^{3/12}} + 15000\frac{1}{(1+X)^{6/12}} = 600 + 667.41\frac{1}{(1+X)^{1/12}} + \ldots + 3985\frac{1}{(1+X)^{12/12}}$$

giving X= 13.945824%, i.e. an illustrative APR of 13.9%.

EXAMPLE 33

Credit agreement for an open-ended secured line of credit is for a maximum amount of €30000. The agreement gives freedom of drawdown and the credit may be used repeatedly as the borrower repays the sum used. The credit agreement provides for a minimum monthly payment of 2% of the outstanding balance of capital and interest with a minimum of €300. The borrowing rate (effective rate) is fixed at 5% for 9 months and after that it is adjusted twice a year according to the 1-year Euribor rate plus a spread of 3%. The 1-year Euribor rate is 4% at the time of calculating the APR. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. For the scenario of change in the borrowing rate, the highest level of 1-year Euribor rate is 5.39%.

This example adds to example 31 the existence of a variable borrowing rate after an initial period where the borrowing rate is fixed. As in example 31, assumptions (a) and (k) should be applied and, in respect to the variable borrowing rate, the application of assumptions (e) and (d) should be assessed (as in example 21).

Specifically, for this example assumption (e) should be applied because it is known that the variable borrowing rate period will follow the fixed-rate period (similar to examples 21 and 22 but different to example 23). According to this assumption, for the variable-rate period, the borrowing rate is assumed to be determined by the value of the agreed indicator or internal reference rate at the time of calculating the APR, provided that it is not less than the fixed borrowing rate. Therefore, the borrowing rate of the credit after the first year is assumed to be 7% (i.e. 4% + spread of 3%). Note that this assumption (e) is coherent and more specific for the case than Article 19(4), and then a reference to this article is not needed.

As regards assumption (d), which refers to the case where different borrowing rates and charges are offered for a limited period or amount, this assumption should be also applied in this example (different to example 22) because for the agreement of this example relevant elements of the credit which determine the application and the effect on the APR of different interest rates or charges are unknown. Specifically, the agreement is open-ended and hence it does not have a fixed duration, and the dates and amounts of drawdowns and repayments are not certain. This implies that the borrowing rate is assumed to be the highest rate, i.e. 7%, for the whole duration of the credit agreement. As explained in the Guidelines on the application of Directive 2008/48/EC, this is regardless of whether this highest rate is payable later than the assumed duration of the credit, which is 1 year by virtue of assumption (k) because the purpose of the credit of this example is not to acquire or retain rights in immovable property.

The solution of the example then coincides with example 31 as regards the calculation of the APR. However, the scenario of change in the borrowing rate resulting from application of Article 17(6) differs in the fact that while in example 31 the highest borrowing rate obtained from historical data is applied after the first adjustment of the borrowing rate, i.e. from the 7th month, now it applies for the whole duration of the agreement, leading to a higher illustrative APR.

The equation for the illustrative APR then becomes:

$$30000 = 600 + 2702.09\frac{1}{(1+X)^{1/12}} + 2685.25\frac{1}{(1+X)^{2/12}} + \ldots + 2516.84\frac{1}{(1+X)^{12/12}}$$

giving X= 12.625685%, i.e. an illustrative APR of 12.6%.

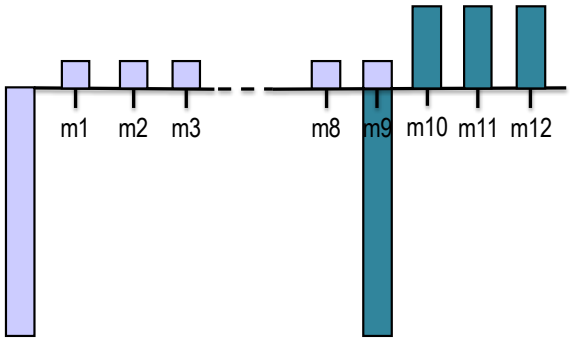
EXAMPLE 34

Credit agreement for an open-ended secured line of credit is for a maximum amount not specified. The agreement gives freedom of drawdown and repayment but requires full repayment of the credit within a period of 9 months before the credit can be draw down again. The borrowing rate (effective rate) is 7.5%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

In this example the amount of the credit is not specified, and hence assumption (f) should be applied to determine it. Between the two amounts appearing in the assumption, the amount of €1500 is chosen because the purpose of the secured credit of this example is not to acquire

or retain rights in immovable property, according to our distinction between mortgage and secured credits.

Similar to example 31, assumptions (a) and (k) should be applied in this example, with the difference that the recurrent periods until full repayment should be respected. Therefore, the assumed duration of 1 year (again because the purpose of the credit is not to acquire or retain rights in immovable property) is split into two periods which start with a drawdown of the total amount of credit followed by monthly and equal repayments of the capital at within each one of these periods, as shown in the figure below. The first period has a length of 9 months and the second period covers the remaining duration of the credit agreement until 1 year, i.e. 3 months. Therefore, the payments of capital are €166.67 (1500/9) for the first period and €500 (1500/3) for the second period.



As regards the costs of the credit, the single sum is paid on the date the agreement is concluded, as provided for the agreement, and interest charges should be determined by assumption (h)(i) because the agreement does not stipulates anything about them. Accordingly, interest charges are assumed to be paid together with the repayments of capital and for an amount given as the amount of interest accrued up to the date of each repayment of capital.

The 12 monthly payments can be obtained from the amortisation table, being A1 = 175,73, A2 = 174,73, A3 = 173,72, A4 = 172,71, A5 = 171,7, A6 = 170,7, A7 = 169,69, A8 = 168,68, A9 = 167,67, A10 = 509,07, A11 = 506,04, A12 = 503,02.

The equation becomes:

$$1500 + 1500\frac{1}{(1+X)^{9/12}} = 30 + 175.73\frac{1}{(1+X)^{1/12}} + 174.73\frac{1}{(1+X)^{2/12}} + \ldots + 503.02\frac{1}{(1+X)^{12/12}}$$

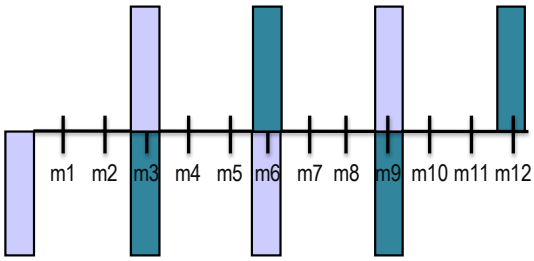
giving X= 11,415822%, i.e. an APR of 11.4%.

EXAMPLE 35

Credit agreement for an open-ended secured credit is for a maximum amount of €3000 involving the use of a deferred debit card for drawdowns. The agreement gives freedom of

drawdown but requires full repayment of the amount of the credit draw down in a single payment each three months (no revolving balance is allowed from one period to another). No interest is charged but an annual fee of €100 is payable at the first quarter of each year. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

As in the previous example, assumptions (a) and (k) should be applied in this case. What is specific of this example is that the scheme of repayments requires the capital to be repaid only in full, in a single payment, within each payment period. As a result, the special scheme of successive drawdowns and repayments established in the second sentence of point (ii) of assumption (k) should be applied. This scheme is illustrated in the figure below. For the payment periods of 3 months considered in this example, successive drawdowns (represented by downward bars) and repayments (upward bars) of the entire capital (i.e. €3000) are assumed to occur each three months over the duration of the credit agreement, which is 1-year according to (k)(i).



Taking into account the absence of interest charges and the only existence of the single-sum cost of 2% of the amount of credit payable at the conclusion of the agreement and the cost of €100 payable at month 3, the equation becomes:

$$3000+\frac{3000}{(1+X)^{3/12}}+\frac{3000}{(1+X)^{6/12}}+\frac{3000}{(1+X)^{9/12}}=60+\frac{100+3000}{(1+X)^{3/12}}+\frac{3000}{(1+X)^{6/12}}+\frac{3000}{(1+X)^{9/12}}+\frac{3000}{(1+X)^{12/12}}$$

Note that in the left side of this equation all of the terms except the first one cancel with terms on the right side. Thus, the equation simplifies to:

$$3000=60+100\frac{1}{(1+X)^{3/12}}+3000\frac{1}{(1+X)^{12/12}}$$

giving X= 5.583621%, i.e. an APR of 5.6%.

EXAMPLE 36

Credit agreement for an open-ended secured credit is for a maximum amount of €3000 involving the use of a credit card for drawdowns. The agreement gives freedom of drawdown and the credit may be used repeatedly as the borrower repays the sum used. The credit

agreement provides for a minimum monthly payment of 20% of the outstanding balance of capital and interest with a minimum of €20. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. The card has an annual cost of €25. Other costs are as follows:

Drawdown mechanism	*Borrowing rate (effective rate)*	*Fee payable on the date of drawdown*
Cash advances	12%	4% or €4 whichever is greater
Purchases (most common)	9%, with 0% for the first 2 months	None
Balance transfers	9%	3%

Several assumptions are required for this example. Firstly, freedom of drawdown is dealt with assumption (a), whereby the total amount of credit is deemed to be drawn down immediately and in full. Secondly, the open-ended nature of the agreement implies the application of assumption (k), which establishes an assumed duration of 1 year for credit cards and an scheme of repayments consisting of equal monthly repayments of capital within the 1 year period (as first showed in example 31). Thirdly, the agreement is silent about the date of the payment the annual cost of the card, leading to the application of point (iii) of assumption (h), which assumes that non-interest charges expressed as several payments are paid at regular intervals, commencing with the date of the first repayment of capital; therefore, the cost of the card is assumed to be paid the first month of each year coinciding with the first repayment of capital of the year. Fourthly, assumption (b) should be applied to determine the borrowing rate and drawdown fees. This assumption deals with the existence of different forms of drawdown with different charges and/or borrowing rates and implies using the highest charge and borrowing rate applied to the most common drawdown mechanism for the type of credit agreement considered. According to the table, purchases are the most common drawdown mechanism, being the highest charges corresponding to this mechanism a borrowing rate of 9% and no fee charged on drawdowns.

The 12 monthly payments to be made by the consumer are then comprised of a constant quota of capital of 3000/12=€250 and the interest charges generated during the month using a borrowing rate (effective rate) of 9%, to which the annual cost of the card of €25 is added in the first payment. These payments can be obtained from the amortisation table, being A1 = 296.62, A2 = 269.82, A3 = 268.02, A4 = 266.22, A5 = 264.41, A6 = 262.61, A7 = 260.81, A8 = 259.01, A9 = 257.21, A10 = 255.41, A11 = 253.6, A12 = 251.8.

The equation becomes:

$$3000 = 60 + 296.62\frac{1}{(1+X)^{1/12}} + 269.82\frac{1}{(1+X)^{2/12}} + \ldots + 251.8\frac{1}{(1+X)^{12/12}}$$

giving X= 15.10627%, i.e. an APR of 15.1%.

EXAMPLE 37

Credit agreement for an open-ended secured credit is for a maximum amount not specified involving the use of a credit card for drawdowns. The agreement gives freedom of drawdown and the credit may be used repeatedly as the borrower repays the sum used. The credit agreement provides for a minimum monthly payment of 20% of the outstanding balance of capital and interest with a minimum of €20. The borrowing rate (effective rate) is 0% for the first two months and 9% afterwards. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. The card has annual costs of €25.

This example requires assumptions (a), (k) and point (iii) of assumption (h) as applied in the previous example. However, assumption (b) is meaningless here, as there are not differences in costs depending on the mechanism of drawdown. In fact, the charges corresponding to purchases in the previous example have been retained here as the only applicable charges. These charges contemplate an introductory rate of 0% for the first two months. While this introductory rate was discarded in the previous example by virtue of assumption (b), in this example this rate should be assessed under assumption (d). This assumption, which refers to the case where different borrowing rates and charges are offered for a limited period or amount, should be applied in this example (as in example 33) because for the agreement of this example relevant elements of the credit which determine the application and the effect on the APR of different interest rates or charges are unknown. Specifically, the agreement is open-ended and hence it does not have a fixed duration, and the dates and amounts of drawdowns and repayments are not certain. This implies that the borrowing rate is assumed to be the highest rate, i.e. 9%, for the whole duration of the credit agreement. Finally, as the maximum amount of the credit is not specified, assumption (f) should be applied and because the credit is for a credit card, a ceiling of €1500 is assumed.

The above implies that the 12 monthly payments to be made by the consumer are comprised of a constant quota of capital of 1500/12=€125 and the interest charges generated during the month using a borrowing rate (effective rate) of 9%, to which the annual cost of the card of €25 is added in the first payment. These payments can be obtained from the amortisation table, being A1 = 160.81, A2 = 134.91, A3 = 134.01, A4 = 133.11, A5 = 132.21, A6 = 131.31, A7 = 130.41, A8 = 129.5, A9 = 128.6, A10 = 127.7, A11 = 126.8, A12 = 125.9.

The equation becomes:

$$1500 = 30 + 160.81\frac{1}{(1+X)^{1/12}} + 134.91\frac{1}{(1+X)^{2/12}} + \ldots + 125.9\frac{1}{(1+X)^{12/12}}$$

giving X= 16.991403%, i.e. an APR of 17.0%.

The higher APR of this example compared to example 36 (17.0% versus 15.1%) is exclusively due to the lower amount of credit used in this example, which increases the effect on the APR of the annual cost of the card (especially because this cost is independent from the amount of credit). This highlights the relevance of using the same amount of credit in cases where it is not specified, by virtue of assumption (f).

EXAMPLE 38

Credit agreement is for a maximum amount of €3000 in the form of a secured overdraft facility for a period up to 2 years. The credit agreement does not impose any requirements in terms of repayment of capital, but provides for monthly payment of the cost of the credit. The borrowing rate (effective rate) is 9%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement. Administrative charges amount to €2.5 per month.

The overdraft facility of this example has an unknown duration because there is not a specific date of termination of the credit; its length can either be shortened or lengthened, but is not fixed. In fact, the consumer can terminate the credit whenever and without additional expenses, and not exclusively to the expiration of the maximal length. Also, the date of drawdown and the scheme of repayments are not established. Therefore, assumption (i), which is specific for overdraft facilities, should be used to determine the drawdown and repayment of capital and also the duration of the credit. Accordingly, it is assumed that the duration of the credit is 3 months and the capital is drawdown in full and for the whole duration of the credit, implying that the capital is paid entirely in 3 months.

As the amount owed remains constant at a level of €3000 during the 3 months, the monthly interest charges are also constant, being:

$$3000 \times \left[(1+0.09)^{1/12} - 1 \right] = €21.62$$

The monthly payment of interest and charges is then given by:

$$A = 21.62 + 2.5 = €24.12$$

and the equation becomes:

$$3000 = 60 + 24.12 \frac{1}{(1+X)^{1/12}} + 24.12 \frac{1}{(1+X)^{2/12}} + (24.12 + 3000) \frac{1}{(1+X)^{3/12}}$$

or:

$$3000 = 60 + 24.12 \frac{1 - \frac{1}{(1+X)^{3/12}}}{(1+X)^{1/12} - 1} + 3000 \frac{1}{(1+X)^{3/12}}$$

giving X= 19.429412%, i.e. an APR of 19.4%.

EXAMPLE 39

Credit agreement is for a maximum amount of €3000 in the form of a secured overdraft facility. The credit should be repaid in 6 months. The borrowing rate (effective rate) is 9%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

Unlike example 38, here the duration of the credit is fixed because there is no flexibility in repayment. Therefore, the agreed duration of 6 months is used for the calculation of the APR. Also, the scheme of repayment is coherent with the first sentence of assumption (i), for which reason it is also respected. The agreement, however, does not specify the date of payment of interest charges and hence assumption (h)(i) should be used to determine it as the date at which the capital is repaid.

The interest charges are:

$$3000 \times \left[(1+0.9)^{6/12} - 1 \right] = €132.09$$

and the equation becomes:

$$3000 = 60 + 3132.09 \frac{1}{(1+X)^{6/12}}$$

giving X= 13.494231%, i.e. an APR of 13.5%.

EXAMPLE 40

Bridging loan[17] is for a total amount of credit of €200000 for a period of 6 months. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. Interest is charged monthly, but the credit agreement provides for payment of the balance outstanding of capital and interest at the end of the agreement. The borrowing rate (nominal rate) is 7.5%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

Assumption (j), which is specific for bridging loans, establishes the scheme of drawdown and repayment of capital, and also the duration of the loan when this duration is unknown. In this example the duration of the loan is known and the scheme of drawdown and repayment is coherent with the assumption.

As interest charges are debited monthly but are not paid, they increase the balance outstanding every month. This balance amounts to:

[17] Directive 2014/17/EU defines bridging loans in Article 4(23).

$$200000\left(1+\frac{7.5\%}{12}\right)^{6}=€207618.17$$

at the end of the 6-month period, being the amount to be paid at that time.

The equation becomes:

$$200000=4000+207618.17\frac{1}{(1+X)^{6/12}}$$

giving X= 12.206644%, i.e. an APR of 12.2%.

EXAMPLE 41

Bridging loan[18] is for a total amount of credit of €200000 for a period of 6 months. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The total sum of interest charges obtained applying the borrowing rate at a monthly basis are retained in order to meet the monthly payments of interest; no interest is credited or paid to the borrower on this amount of retained interest. The amount of credit is repaid at the end of the agreement. The borrowing rate (nominal rate) is 7.5%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

Assumption (j), which is specific for bridging loans, establishes the scheme of drawdown and repayment of capital, and also the duration of the loan when this duration is unknown. In this example the duration of the loan is known and the scheme of drawdown and repayment is coherent with the assumption.

The amount retained at the conclusion of the agreement to meet the six payments of interest charges is given as:

$$200000\frac{7.5\%}{12}\times 6=€7500$$

The equation becomes:

$$200000=4000+7500+200000\frac{1}{(1+X)^{6/12}}$$

giving X= 12.573788%, i.e. an APR of 12.6%.

[18] Directive 2014/17/EU defines bridging loans in Article 4(23).

EXAMPLE 42

Bridging loan is for a total amount of credit of €200000 for a period up to 2 years. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The credit agreement provides for payment of interest charges every month and repayment of the capital at the end. The borrowing rate (nominal rate) is 7.5%. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

Similar to example 38, the bridging loan in this example has an unknown duration because there is not a specific date of termination of the credit; its length can either be shortened or lengthened, but is not fixed. In fact, the consumer can terminate the credit whenever and without additional expenses, and not exclusively at the expiration of the maximum duration. Therefore, assumption (j) should be used in this case to determine the duration of the loan, which is assumed to be 12 months. As in examples 40 and 41, the scheme of drawdown and repayment agreed is in accordance with the first sentence of assumption (j).

As the amount owed remains constant at a level of €200000 during the year, the monthly interest charges are also constant, being:

$$200000 \times \frac{7.5\%}{12} = €1250$$

and the equation becomes:

$$200000 = 4000 + 1250\frac{1}{(1+X)^{1/12}} + 1250\frac{1}{(1+X)^{2/12}} + \cdots + (1250 + 200000)\frac{1}{(1+X)^{12/12}}$$

or:

$$200000 = 4000 + 1250\frac{1 - \frac{1}{(1+X)}}{(1+X)^{1/12} - 1} + 200000\frac{1}{(1+X)}$$

giving X=10.039962%, i.e. an APR of 10.0%.

EXAMPLE 43

Contingent liability or guarantee[19] is for a total amount of credit of €30000. The total amount of credit is drawn down in the event of non-payment by the debtor of an ancillary transaction within the duration of the guarantee. The credit should be repaid in 120 equal monthly

[19] Directive 2014/17/EU defines contingent liabilities or guarantees in Article 4(24).

instalments (10 years) after the date of drawdown. The borrowing rate (nominal rate) is 7.5%. Single sum (lump sum) cost of 0.5% of the total amount of credit payable at the conclusion of the agreement and 1.5% at the time of the event of drawdown. The agreement rolls over on a yearly basis provided that no drawdowns are made.

The example corresponds to a contingent liability or guarantee, for which Directive 2014/17/EU provides a specific assumption which regulates the drawdown of the credit. Specifically, assumption (l) establishes that the total amount of credit shall be deemed to be drawn down in full as a single amount at the earlier of two dates: (a) the latest draw down date permitted under the credit agreement being the potential source of the contingent liability or guarantee; or (b) in the case of a rolling credit agreement at the end of the initial period prior to the rollover of the agreement.

The example is of a rolling agreement, and then there are two dates to compare: the 1-year period before the first rollover of the agreement, and the latest draw down date permitted under the credit agreement. In this example, this second date is only limited by the duration of the guarantee and hence, it will not be sooner than the last date of the initial period prior to the rollover of the agreement. Therefore, the drawdown of the total amount of credit and the payment of the cost of 1.5% of such amount will be assumed to be 1 year after undertaking the contingent liability or guarantee and following such drawdown, the repayment of the credit will take place in equal monthly instalments during a period of 10 years. The instalment which provides full repayment of the credit during such period is €356.11. Taking into account the initial cost of 0.5% of the amount of credit, the equation becomes:

$$30000 = 150(1+X)^{12/12} + 450 + 356.11\frac{1}{(1+X)^{1/12}} + 356.11\frac{1}{(1+X)^{2/12}} + \ldots + 356.11\frac{1}{(1+X)^{120/12}}$$

or:

$$30000 = 150(1+X) + 450 + 356.11\frac{1-\frac{1}{(1+X)^{10}}}{(1+X)^{1/12}-1}$$

giving X= 8.269278%, i.e. an APR of 8.3%.

Note that the equation uses intervals of time calculated from the date of the first drawdown, as indicated in remark (b) of Annex I of Directive 2014/17/EU.

EXAMPLE 44

Shared equity credit agreement[20] is for a total amount of credit of €200000 repayable in 180 equal monthly instalments (15 years). The total amount of the credit is drawn down

[20] Directive 2014/17/EU defines shared equity credit agreements in Article 4(25).

immediately and in full at the conclusion of the agreement; further drawdowns are not allowed. The credit is interest-free for the five first years and after that period a reduced borrowing rate (nominal rate) of 4% is agreed, in exchange for the payment of a share of 25% in the increase in value of the property when the credit is fully repaid. The property has a purchase price of €250000 (the loan-to-value, LTV, of the credit is 80%) and is located in a country where the level of inflation is 2.8% and the central bank target inflation rate is 2% at the time the agreement is concluded. Single sum (lump sum) cost of 2% of the total amount of credit payable at the conclusion of the agreement.

Assumption (m) applies specifically to this type of agreements. The assumption establishes that the payments made by the consumer should be deemed to occur at the latest date/s permitted under the credit agreement and equates the increases in value of the property and the rate of any inflation index referred to in the agreement to the higher of the current central bank target inflation rate or the level of inflation in the Member State where the property is located at the time of conclusion of the credit agreement, with a minimum of 0%.

For the credit in this example, there is no flexibility in the dates of payment, and hence the first part of the assumption is not necessary, but the second part. According to it, the percentage of increase in value of the property is assumed to be 2.8% annual. This implies that the assumed increase in value of the property after 15 years is:

$$250000 \times \left[(1+0.028)^{15} - 1 \right] = €128300.34$$

and the additional payment to be made by the consumer at the end of that period is:

$$128300.34 \times 25\% = €32075.08$$

The monthly instalments which provides full repayment of the credit of €200000 are €1111.11 for the initial interest-free period of 5 years and €1349.94 for the rest of the agreement, when the reduced borrowing rate of 4% applies.

Then, the equation becomes:

$$\begin{aligned}
200000 &= 4000 + 1111.11\frac{1}{(1+X)^{1/12}} + \cdots + 1111.11\frac{1}{(1+X)^{60/12}} + \\
&+1349.94\frac{1}{(1+X)^{61/12}} + \cdots + 1349.94\frac{1}{(1+X)^{179/12}} + \\
&+(1349.94 + 32075.08)\frac{1}{(1+X)^{180/12}} \\
&= 4000 + 1111.11\frac{1}{(1+X)^{1/12}} + \cdots + 1111.11\frac{1}{(1+X)^{60/12}} + \\
&+\frac{1}{(1+X)^{60/12}}\left[1349.94\frac{1}{(1+X)^{1/12}} + \cdots + 1349.94\frac{1}{(1+X)^{120/12}} \right] + \\
&+32075.08\frac{1}{(1+X)^{180/12}}
\end{aligned}$$

or:

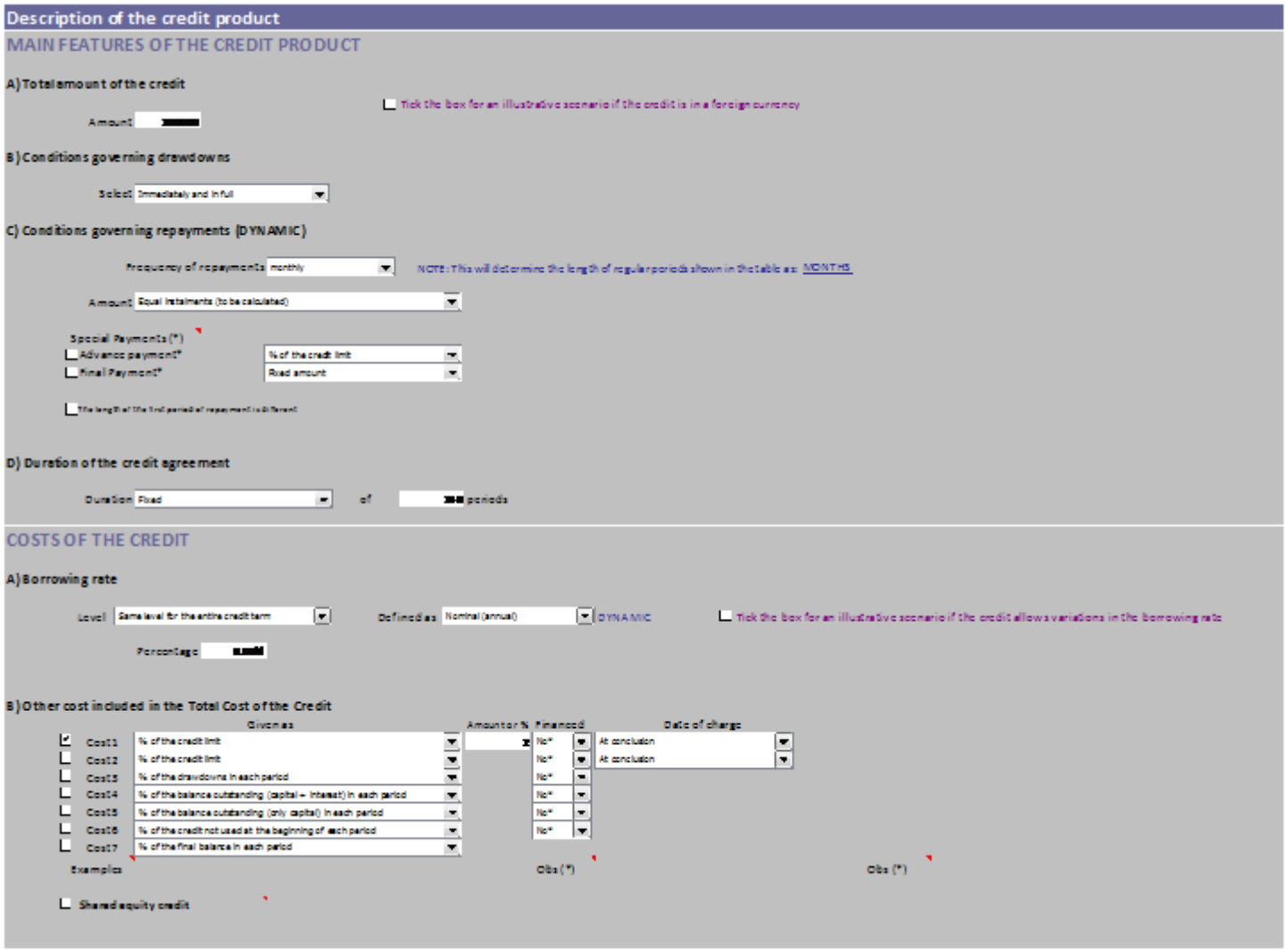
$$200000 = 4000 + 1111.11 \times \frac{1 - \frac{1}{(1+X)^5}}{(1+X)^{1/12} - 1} + 1349.94 \times \frac{1}{(1+X)^5} \times \frac{1 - \frac{1}{(1+X)^{10}}}{(1+X)^{1/12} - 1} + 32075.08 \frac{1}{(1+X)^{15}}$$

giving X= 3.470057%, i.e. an APR of 3.5%.

2.2. CREDIT INFORMATION AND AMORTISATION TABLES

EXAMPLE 1

As this is the default example, just click on the button *Reset* to automatically specify the data and obtain the main results and the amortisation table.



Main results

Final balance in the last period	0.00	
Amount of the first repayment	1432.86	
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.4%	DYNAMIC
Total cost of the credit	147886.40	
Total amount of credit	200000.00	
Total amount payable	347886.40	

Recalculate

Recalculate

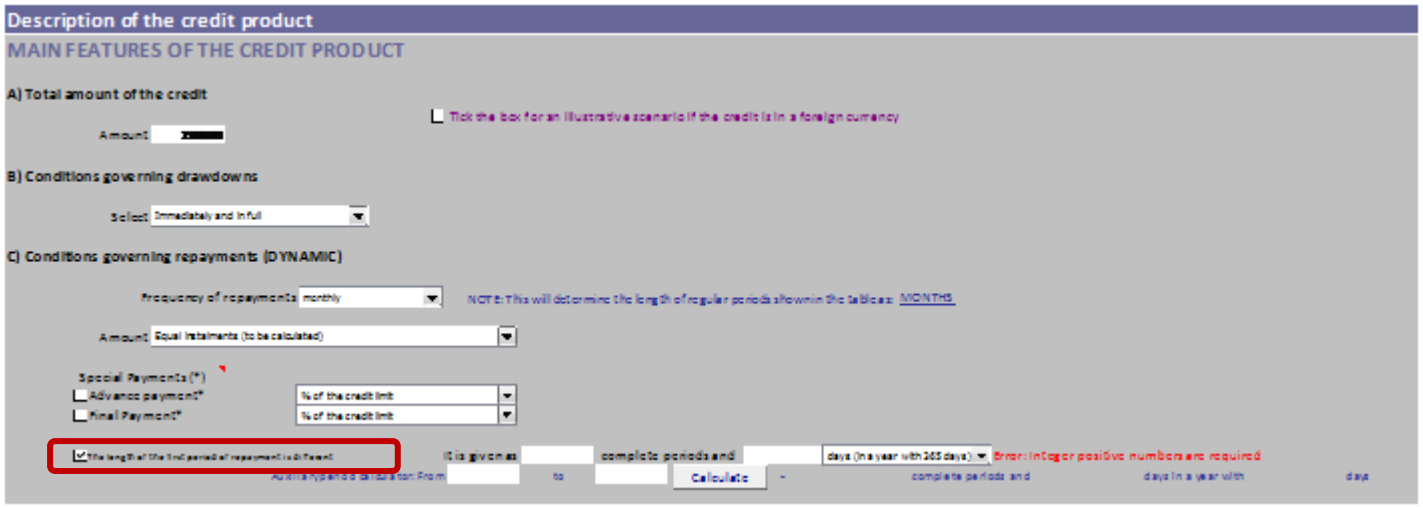
Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199567.14	6.00%	1000.00			432.86	1000.00	1432.86	0.00	1432.86	-1432.86	-1425.43		
2		199567.14	199567.14	200564.97	199132.11	6.00%	997.84			435.03	997.84	1432.86	0.00	1432.86	-1432.86	-1418.05		
3		199132.11	199132.11	200127.77	198694.91	6.00%	995.66			437.20	995.66	1432.86	0.00	1432.86	-1432.86	-1410.70		
4		198694.91	198694.91	199688.38	198255.52	6.00%	993.47			439.39	993.47	1432.86	0.00	1432.86	-1432.86	-1403.38		
5		198255.52	198255.52	199246.80	197813.94	6.00%	991.28			441.58	991.28	1432.86	0.00	1432.86	-1432.86	-1396.11		
6		197813.94	197813.94	198803.01	197370.15	6.00%	989.07			443.79	989.07	1432.86	0.00	1432.86	-1432.86	-1388.87		
7		197370.15	197370.15	198357.00	196924.13	6.00%	986.85			446.01	986.85	1432.86	0.00	1432.86	-1432.86	-1381.67		
8		196924.13	196924.13	197908.75	196475.89	6.00%	984.62			448.24	984.62	1432.86	0.00	1432.86	-1432.86	-1374.51		
9		196475.89	196475.89	197458.27	196025.41	6.00%	982.38			450.48	982.38	1432.86	0.00	1432.86	-1432.86	-1367.39		
10		196025.41	196025.41	197005.54	195572.67	6.00%	980.13			452.74	980.13	1432.86	0.00	1432.86	-1432.86	-1360.30		
11		195572.67	195572.67	196550.54	195117.68	6.00%	977.86			455.00	977.86	1432.86	0.00	1432.86	-1432.86	-1353.25		
12		195117.68	195117.68	196093.26	194660.40	6.00%	975.59			457.27	975.59	1432.86	0.00	1432.86	-1432.86	-1346.24		
Sums																		
Year 1	200000.00						11854.75	4000.00	0.00	5339.60	11854.75	17194.35	4000.00	21194.32	178805.68	179374.09		
Year 2	0.00						11525.41	0.00	0.00	5668.93	11525.41	17194.35	0.00	17194.32	-17194.32	-15620.80		
Year 3	0.00						11175.77	0.00	0.00	6018.58	11175.77	17194.35	0.00	17194.32	-17194.32	-14676.46		
Year 4	0.00						10804.55	0.00	0.00	6389.79	10804.55	17194.35	0.00	17194.32	-17194.32	-13789.20		
Year 5	0.00						10410.44	0.00	0.00	6783.90	10410.44	17194.35	0.00	17194.32	-17194.32	-12955.59		
Year 6	0.00						9992.03	0.00	0.00	7202.32	9992.03	17194.35	0.00	17194.32	-17194.32	-12172.37		
Year 7	0.00						9547.81	0.00	0.00	7646.54	9547.81	17194.35	0.00	17194.32	-17194.32	-11436.50		
Year 8	0.00						9076.18	0.00	0.00	8118.16	9076.18	17194.35	0.00	17194.32	-17194.32	-10745.11		
Year 9	0.00						8575.47	0.00	0.00	8618.87	8575.47	17194.35	0.00	17194.32	-17194.32	-10095.52		
Year 10	0.00						8043.88	0.00	0.00	9150.47	8043.88	17194.35	0.00	17194.32	-17194.32	-9485.21		
Year 11	0.00						7479.50	0.00	0.00	9714.85	7479.50	17194.35	0.00	17194.32	-17194.32	-8911.79		
Year 12	0.00						6880.31	0.00	0.00	10314.04	6880.31	17194.35	0.00	17194.32	-17194.32	-8373.03		
Year 13	0.00						6244.16	0.00	0.00	10950.18	6244.16	17194.35	0.00	17194.32	-17194.32	-7866.85		
Year 14	0.00						5568.78	0.00	0.00	11625.57	5568.78	17194.35	0.00	17194.32	-17194.32	-7391.26		
Year 15	0.00						4851.74	0.00	0.00	12342.61	4851.74	17194.35	0.00	17194.32	-17194.32	-6944.43		
Year 16	0.00						4090.47	0.00	0.00	13103.87	4090.47	17194.35	0.00	17194.32	-17194.32	-6524.61		
Year 17	0.00						3282.26	0.00	0.00	13912.09	3282.26	17194.35	0.00	17194.32	-17194.32	-6130.17		
Year 18	0.00						2424.19	0.00	0.00	14770.16	2424.19	17194.35	0.00	17194.32	-17194.32	-5759.57		
Year 19	0.00						1513.20	0.00	0.00	15681.15	1513.20	17194.35	0.00	17194.32	-17194.32	-5411.38		
Year 20	0.00						546.02	0.00	0.00	16648.33	546.02	17194.35	0.00	17194.32	-17194.32	-5084.24		
Total	200000.00						143886.91	4000.00	0.00	200000.00	143886.91	343886.91	4000.00	347886.40	-147886.40	0.00		

EXAMPLE 2

Case 1

Click on the button *Reset* and then enter the information highlighted in red.

Note that after ticking the box *The length of the first period of repayment is different*, an auxiliary period calculator appears.



In the auxiliary calculator enter the initial and final dates of the first period of repayment and click on the button *Calculate* to obtain the number of regular periods and days corresponding to this period and the number of days of the year.

Then enter the information obtained in the previous row.

Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

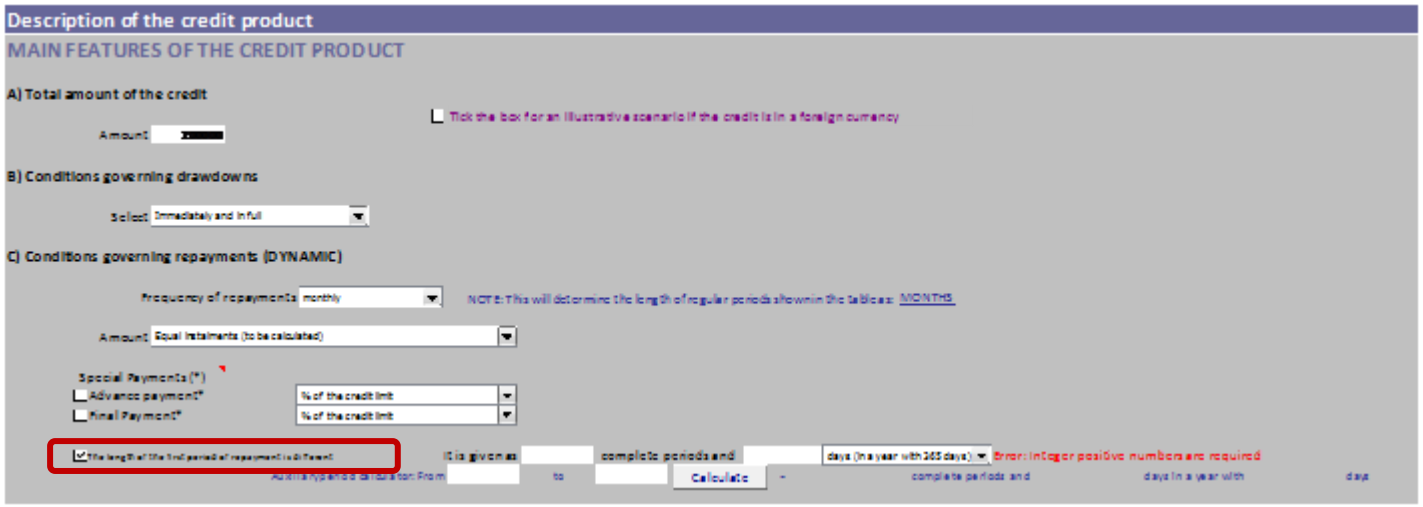
Final balance in the last period	0.00		
Amount of the first repayment	1433.57		Recalculate
Duration of the credit	240	MONTHS	
Present value of the cash flows	0.00		
Annual Percentage Rate of Charge	6.4%	DYNAMIC	Recalculate
Total cost of the credit	148056.80		
Total amount of credit	200000.00		
Total amount payable	348056.80		

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201098.63	199665.06	6.00%	1098.63			334.94	1098.63	1433.57	0.00	1433.57	-1433.57	-1425.41		
2		199665.06	199665.06	200663.39	199229.83	6.00%	998.33			435.24	998.33	1433.57	0.00	1433.57	-1433.57	-1418.02		
3		199229.83	199229.83	200225.97	198792.41	6.00%	996.15			437.42	996.15	1433.57	0.00	1433.57	-1433.57	-1410.67		
4		198792.41	198792.41	199786.37	198352.81	6.00%	993.96			439.60	993.96	1433.57	0.00	1433.57	-1433.57	-1403.36		
5		198352.81	198352.81	199344.57	197911.00	6.00%	991.76			441.80	991.76	1433.57	0.00	1433.57	-1433.57	-1396.09		
6		197911.00	197911.00	198900.56	197466.99	6.00%	989.56			444.01	989.56	1433.57	0.00	1433.57	-1433.57	-1388.85		
7		197466.99	197466.99	198454.33	197020.76	6.00%	987.33			446.23	987.33	1433.57	0.00	1433.57	-1433.57	-1381.65		
8		197020.76	197020.76	198005.87	196572.30	6.00%	985.10			448.46	985.10	1433.57	0.00	1433.57	-1433.57	-1374.49		
9		196572.30	196572.30	197555.16	196121.60	6.00%	982.86			450.70	982.86	1433.57	0.00	1433.57	-1433.57	-1367.37		
10		196121.60	196121.60	197102.21	195668.64	6.00%	980.61			452.96	980.61	1433.57	0.00	1433.57	-1433.57	-1360.28		
11		195668.64	195668.64	196646.99	195213.42	6.00%	978.34			455.22	978.34	1433.57	0.00	1433.57	-1433.57	-1353.23		
12		195213.42	195213.42	196189.49	194755.92	6.00%	976.07			457.50	976.07	1433.57	0.00	1433.57	-1433.57	-1346.22		
Sums																		
Year 1	200000.00						11958.70	4000.00	0.00	5244.08	11958.70	17202.78	4000.00	21202.84	178797.16	179374.36		
Year 2	0.00						11531.07	0.00	0.00	5671.71	11531.07	17202.78	0.00	17202.84	-17202.84	-15620.59		
Year 3	0.00						11181.25	0.00	0.00	6021.53	11181.25	17202.78	0.00	17202.84	-17202.84	-14676.29		
Year 4	0.00						10809.85	0.00	0.00	6392.93	10809.85	17202.78	0.00	17202.84	-17202.84	-13789.07		
Year 5	0.00						10415.55	0.00	0.00	6787.23	10415.55	17202.78	0.00	17202.84	-17202.84	-12955.49		
Year 6	0.00						9996.93	0.00	0.00	7205.85	9996.93	17202.78	0.00	17202.84	-17202.84	-12172.30		
Year 7	0.00						9552.49	0.00	0.00	7650.29	9552.49	17202.78	0.00	17202.84	-17202.84	-11436.46		
Year 8	0.00						9080.64	0.00	0.00	8122.15	9080.64	17202.78	0.00	17202.84	-17202.84	-10745.10		
Year 9	0.00						8579.68	0.00	0.00	8623.10	8579.68	17202.78	0.00	17202.84	-17202.84	-10095.54		
Year 10	0.00						8047.83	0.00	0.00	9154.96	8047.83	17202.78	0.00	17202.84	-17202.84	-9485.24		
Year 11	0.00						7483.17	0.00	0.00	9719.61	7483.17	17202.78	0.00	17202.84	-17202.84	-8911.83		
Year 12	0.00						6883.68	0.00	0.00	10319.10	6883.68	17202.78	0.00	17202.84	-17202.84	-8373.09		
Year 13	0.00						6247.23	0.00	0.00	10955.56	6247.23	17202.78	0.00	17202.84	-17202.84	-7866.92		
Year 14	0.00						5571.51	0.00	0.00	11631.27	5571.51	17202.78	0.00	17202.84	-17202.84	-7391.35		
Year 15	0.00						4854.12	0.00	0.00	12348.66	4854.12	17202.78	0.00	17202.84	-17202.84	-6944.52		
Year 16	0.00						4092.48	0.00	0.00	13110.30	4092.48	17202.78	0.00	17202.84	-17202.84	-6524.71		
Year 17	0.00						3283.87	0.00	0.00	13918.92	3283.87	17202.78	0.00	17202.84	-17202.84	-6130.28		
Year 18	0.00						2425.38	0.00	0.00	14777.41	2425.38	17202.78	0.00	17202.84	-17202.84	-5759.69		
Year 19	0.00						1513.94	0.00	0.00	15688.84	1513.94	17202.78	0.00	17202.84	-17202.84	-5411.50		
Year 20	0.00						546.29	0.00	0.00	16656.50	546.29	17202.78	0.00	17202.84	-17202.84	-5084.37		
Total	200000.00						144055.65	4000.00	0.00	200000.00	144055.65	344055.65	4000.00	348056.80	-148056.80	0.00		

Case 2

Click on the button *Reset* and then enter the information highlighted in red.

Note that after ticking the box *The length of the first period of repayment is different*, an auxiliary period calculator appears.



In the auxiliary calculator enter the initial and final dates of the first period of repayment and click on the button *Calculate* to obtain the number of regular periods and days corresponding to this period and the number of days of the year.

Then enter the information obtained in the previous row.

Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

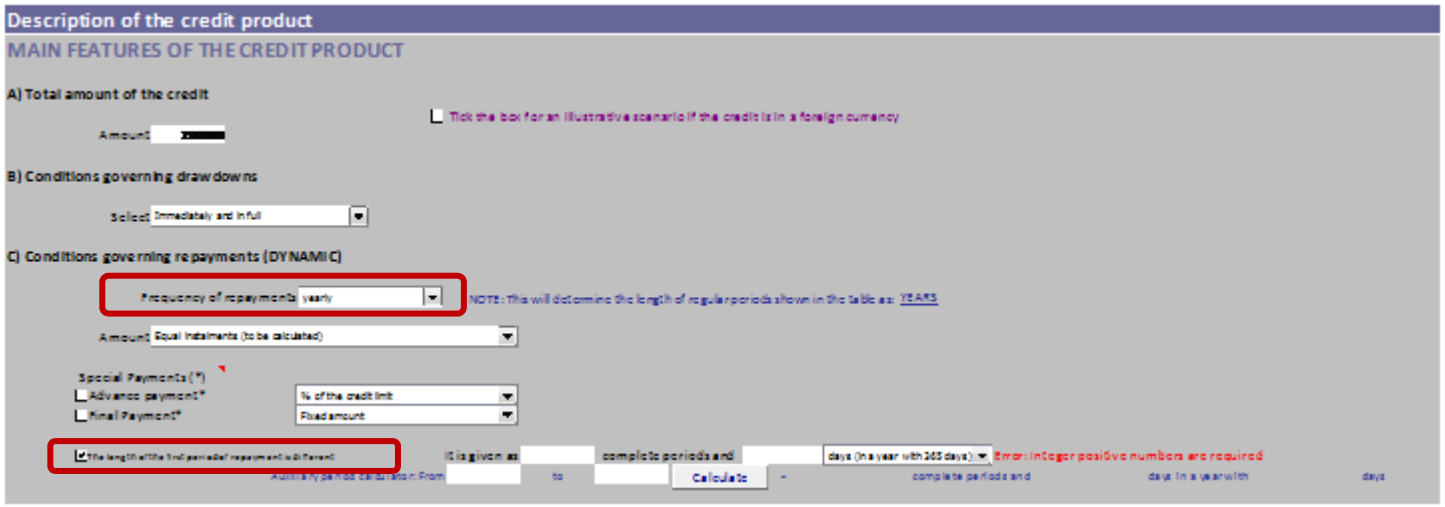
Final balance in the last period	0.00	
Amount of the first repayment	1433.56	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.4%	DYNAMIC Recalculate
Total cost of the credit	148054.40	
Total amount of credit	200000.00	
Total amount payable	348054.40	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201098.36	199664.80	6.00%	1098.36			335.20	1098.36	1433.56	0.00	1433.56	-1433.56	-1425.40		
2		199664.80	199664.80	200663.12	199229.56	6.00%	998.32			435.24	998.32	1433.56	0.00	1433.56	-1433.56	-1418.01		
3		199229.56	199229.56	200225.71	198792.14	6.00%	996.15			437.42	996.15	1433.56	0.00	1433.56	-1433.56	-1410.66		
4		198792.14	198792.14	199786.10	198352.54	6.00%	993.96			439.60	993.96	1433.56	0.00	1433.56	-1433.56	-1403.35		
5		198352.54	198352.54	199344.30	197910.74	6.00%	991.76			441.80	991.76	1433.56	0.00	1433.56	-1433.56	-1396.08		
6		197910.74	197910.74	198900.29	197466.73	6.00%	989.55			444.01	989.55	1433.56	0.00	1433.56	-1433.56	-1388.84		
7		197466.73	197466.73	198454.06	197020.50	6.00%	987.33			446.23	987.33	1433.56	0.00	1433.56	-1433.56	-1381.65		
8		197020.50	197020.50	198005.60	196572.04	6.00%	985.10			448.46	985.10	1433.56	0.00	1433.56	-1433.56	-1374.49		
9		196572.04	196572.04	197554.90	196121.34	6.00%	982.86			450.70	982.86	1433.56	0.00	1433.56	-1433.56	-1367.36		
10		196121.34	196121.34	197101.94	195668.38	6.00%	980.61			452.96	980.61	1433.56	0.00	1433.56	-1433.56	-1360.27		
11		195668.38	195668.38	196646.72	195213.16	6.00%	978.34			455.22	978.34	1433.56	0.00	1433.56	-1433.56	-1353.22		
12		195213.16	195213.16	196189.22	194755.66	6.00%	976.07			457.50	976.07	1433.56	0.00	1433.56	-1433.56	-1346.21		
Sums																		
Year 1	200000.00						11958.42	4000.00	0.00	5244.34	11958.42	17202.76	4000.00	21202.72	178797.28	179374.44		
Year 2	0.00						11531.05	0.00	0.00	5671.71	11531.05	17202.76	0.00	17202.72	-17202.72	-15620.52		
Year 3	0.00						11181.23	0.00	0.00	6021.52	11181.23	17202.76	0.00	17202.72	-17202.72	-14676.23		
Year 4	0.00						10809.84	0.00	0.00	6392.92	10809.84	17202.76	0.00	17202.72	-17202.72	-13789.03		
Year 5	0.00						10415.54	0.00	0.00	6787.22	10415.54	17202.76	0.00	17202.72	-17202.72	-12955.46		
Year 6	0.00						9996.92	0.00	0.00	7205.84	9996.92	17202.76	0.00	17202.72	-17202.72	-12172.28		
Year 7	0.00						9552.48	0.00	0.00	7650.28	9552.48	17202.76	0.00	17202.72	-17202.72	-11436.45		
Year 8	0.00						9080.62	0.00	0.00	8122.13	9080.62	17202.76	0.00	17202.72	-17202.72	-10745.10		
Year 9	0.00						8579.67	0.00	0.00	8623.09	8579.67	17202.76	0.00	17202.72	-17202.72	-10095.54		
Year 10	0.00						8047.82	0.00	0.00	9154.94	8047.82	17202.76	0.00	17202.72	-17202.72	-9485.25		
Year 11	0.00						7483.16	0.00	0.00	9719.60	7483.16	17202.76	0.00	17202.72	-17202.72	-8911.85		
Year 12	0.00						6883.68	0.00	0.00	10319.08	6883.68	17202.76	0.00	17202.72	-17202.72	-8373.11		
Year 13	0.00						6247.22	0.00	0.00	10955.54	6247.22	17202.76	0.00	17202.72	-17202.72	-7866.95		
Year 14	0.00						5571.50	0.00	0.00	11631.26	5571.50	17202.76	0.00	17202.72	-17202.72	-7391.38		
Year 15	0.00						4854.11	0.00	0.00	12348.65	4854.11	17202.76	0.00	17202.72	-17202.72	-6944.56		
Year 16	0.00						4092.47	0.00	0.00	13110.28	4092.47	17202.76	0.00	17202.72	-17202.72	-6524.75		
Year 17	0.00						3283.86	0.00	0.00	13918.90	3283.86	17202.76	0.00	17202.72	-17202.72	-6130.32		
Year 18	0.00						2425.37	0.00	0.00	14777.39	2425.37	17202.76	0.00	17202.72	-17202.72	-5759.73		
Year 19	0.00						1513.94	0.00	0.00	15688.82	1513.94	17202.76	0.00	17202.72	-17202.72	-5411.54		
Year 20	0.00						546.29	0.00	0.00	16656.47	546.29	17202.76	0.00	17202.72	-17202.72	-5084.41		
Total	200000.00						144055.19	4000.00	0.00	200000.00	144055.19	344055.19	4000.00	348054.40	-148054.40	0.00		

Case 3

Click on the button *Reset* and then enter the information highlighted in red.

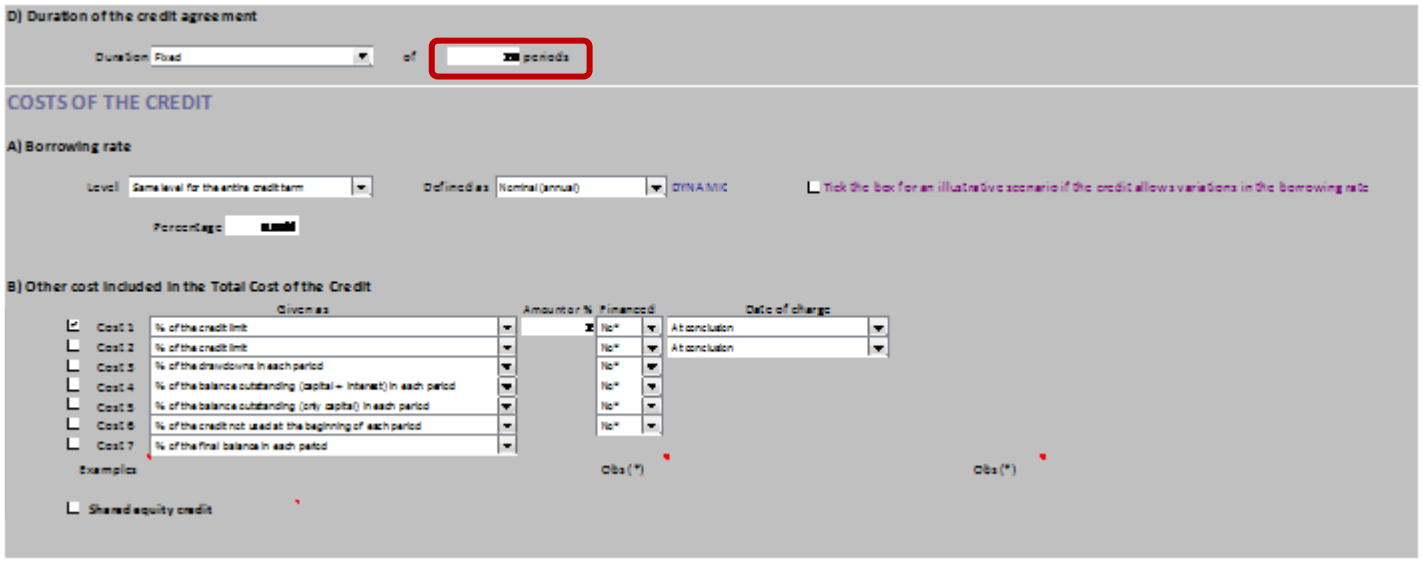
Note that after ticking the box *The length of the first period of repayment is different*, an auxiliary period calculator appears.



In the auxiliary calculator enter the initial and final dates of the first period of repayment and click on the button *Calculate* to obtain the number of regular periods and days corresponding to this period and the number of days of the year.

Then enter the information obtained in the previous row.

Complete the information with the number of repayment periods.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	16541.86	
Duration of the credit	20	YEARS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.3%	DYNAMIC
Total cost of the credit	134837.20	
Total amount of credit	200000.00	
Total amount payable	334837.20	

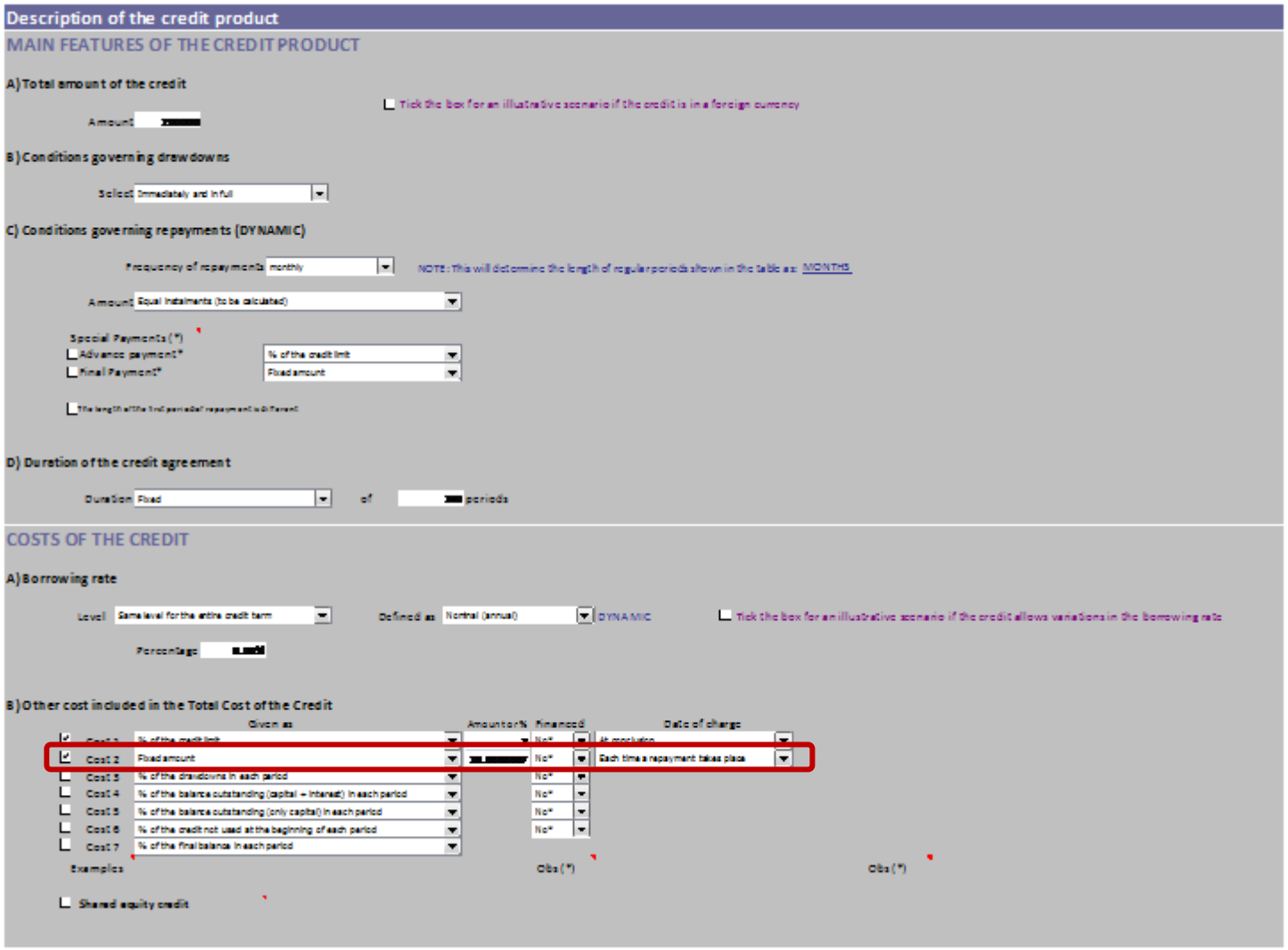
Recalculate

Recalculate

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201117.81	184575.95	6.00%	1117.81			15424.05	1117.81	16541.86	0.00	16541.86	-16541.86	-16448.25		
2		184575.95	184575.95	195650.51	179108.65	6.00%	11074.56			5467.30	11074.56	16541.86	0.00	16541.86	-16541.86	-15476.03		
3		179108.65	179108.65	189855.17	173313.32	6.00%	10746.52			5795.34	10746.52	16541.86	0.00	16541.86	-16541.86	-14561.28		
4		173313.32	173313.32	183712.12	167170.26	6.00%	10398.80			6143.06	10398.80	16541.86	0.00	16541.86	-16541.86	-13700.60		
5		167170.26	167170.26	177200.48	160658.62	6.00%	10030.22			6511.64	10030.22	16541.86	0.00	16541.86	-16541.86	-12890.79		
6		160658.62	160658.62	170298.14	153756.28	6.00%	9639.52			6902.34	9639.52	16541.86	0.00	16541.86	-16541.86	-12128.85		
7		153756.28	153756.28	162981.66	146439.80	6.00%	9225.38			7316.48	9225.38	16541.86	0.00	16541.86	-16541.86	-11411.94		
8		146439.80	146439.80	155226.19	138684.34	6.00%	8786.39			7755.47	8786.39	16541.86	0.00	16541.86	-16541.86	-10737.41		
9		138684.34	138684.34	147005.40	130463.54	6.00%	8321.06			8220.80	8321.06	16541.86	0.00	16541.86	-16541.86	-10102.75		
10		130463.54	130463.54	138291.35	121749.50	6.00%	7827.81			8714.04	7827.81	16541.86	0.00	16541.86	-16541.86	-9505.60		
11		121749.50	121749.50	129054.47	112512.61	6.00%	7304.97			9236.89	7304.97	16541.86	0.00	16541.86	-16541.86	-8943.75		
12		112512.61	112512.61	119263.37	102721.51	6.00%	6750.76			9791.10	6750.76	16541.86	0.00	16541.86	-16541.86	-8415.10		
13		102721.51	102721.51	108884.80	92342.95	6.00%	6163.29			10378.56	6163.29	16541.86	0.00	16541.86	-16541.86	-7917.71		
14		92342.95	92342.95	97883.52	81341.67	6.00%	5540.58			11001.28	5540.58	16541.86	0.00	16541.86	-16541.86	-7449.71		
15		81341.67	81341.67	86222.17	69680.31	6.00%	4880.50			11661.36	4880.50	16541.86	0.00	16541.86	-16541.86	-7009.38		
16		69680.31	69680.31	73861.13	57319.28	6.00%	4180.82			12361.04	4180.82	16541.86	0.00	16541.86	-16541.86	-6595.07		
17		57319.28	57319.28	60758.43	44216.58	6.00%	3439.16			13102.70	3439.16	16541.86	0.00	16541.86	-16541.86	-6205.25		
18		44216.58	44216.58	46869.57	30327.72	6.00%	2652.99			13888.86	2652.99	16541.86	0.00	16541.86	-16541.86	-5838.48		
19		30327.72	30327.72	32147.38	15605.52	6.00%	1819.66			14722.19	1819.66	16541.86	0.00	16541.86	-16541.86	-5493.38		
20		15605.52	15605.52	16541.86	0.00	6.00%	936.33			15605.52	936.33	16541.86	0.00	16541.86	-16541.86	-5168.68		
Total	200000.00						130837.11	4000.00	0.00	200000.00	130837.11	330837.11	4000.00	334837.20	-134837.20	0.00		

EXAMPLE 3

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

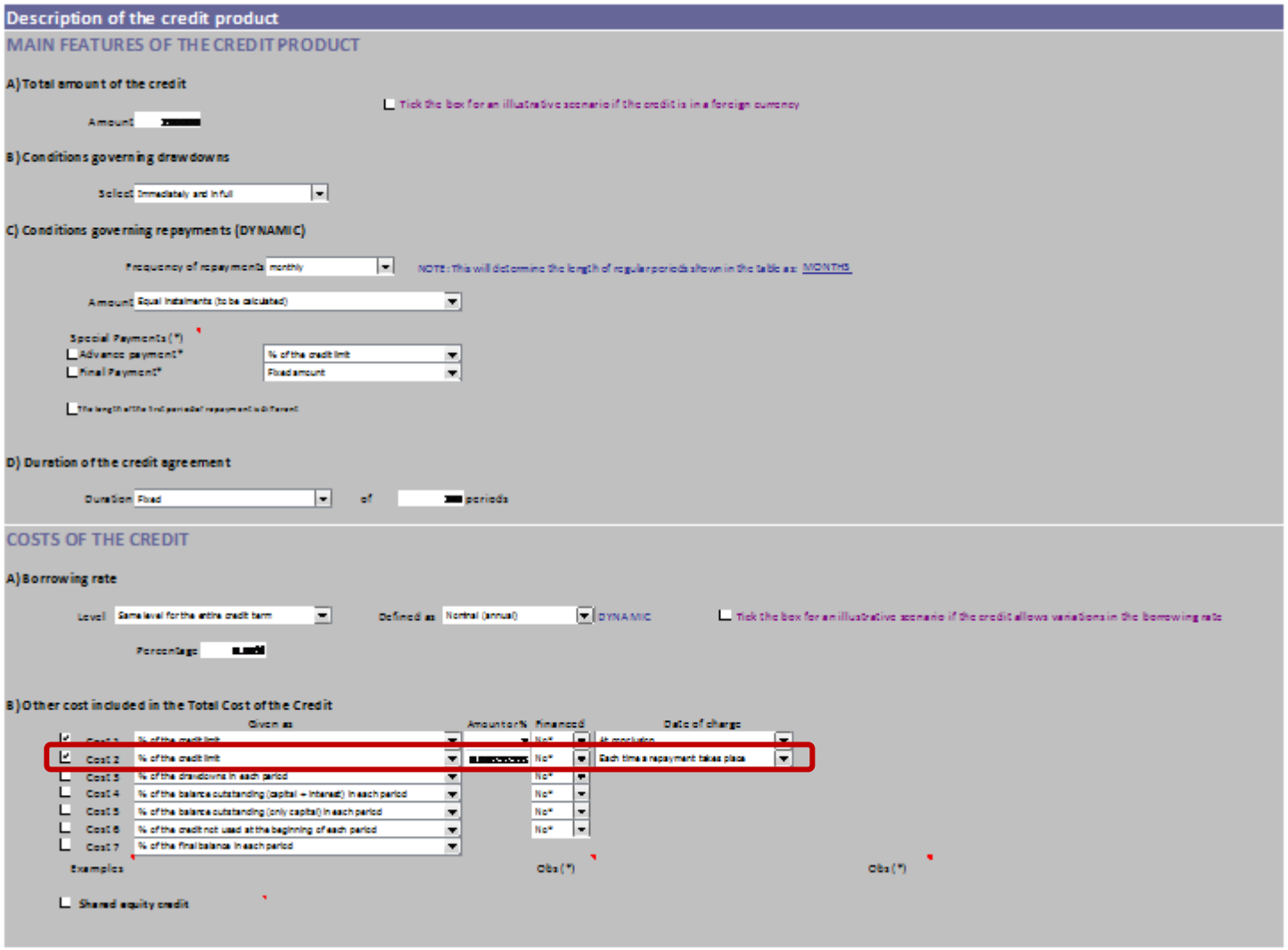
Main results

Final balance in the last period	0.00		
Amount of the first repayment	1432.86		Recalculate
Duration of the credit	240	MONTHS	
Present value of the cash flows	0.00		
Annual Percentage Rate of Charge	6.6%	DYNAMIC	Recalculate
Total cost of the credit	151887.20		
Total amount of credit	200000.00		
Total amount payable	351887.20		

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199567.14	6.00%	1000.00	16.67		432.86	1000.00	1432.86	16.67	1449.53	-1449.53	-1441.84		
2		199567.14	199567.14	200564.97	199132.11	6.00%	997.84	16.67		435.03	997.84	1432.86	16.67	1449.53	-1449.53	-1434.20		
3		199132.11	199132.11	200127.77	198694.91	6.00%	995.66	16.67		437.20	995.66	1432.86	16.67	1449.53	-1449.53	-1426.59		
4		198694.91	198694.91	199688.38	198255.52	6.00%	993.47	16.67		439.39	993.47	1432.86	16.67	1449.53	-1449.53	-1419.03		
5		198255.52	198255.52	199246.80	197813.94	6.00%	991.28	16.67		441.58	991.28	1432.86	16.67	1449.53	-1449.53	-1411.50		
6		197813.94	197813.94	198803.01	197370.15	6.00%	989.07	16.67		443.79	989.07	1432.86	16.67	1449.53	-1449.53	-1404.02		
7		197370.15	197370.15	198357.00	196924.13	6.00%	986.85	16.67		446.01	986.85	1432.86	16.67	1449.53	-1449.53	-1396.57		
8		196924.13	196924.13	197908.75	196475.89	6.00%	984.62	16.67		448.24	984.62	1432.86	16.67	1449.53	-1449.53	-1389.16		
9		196475.89	196475.89	197458.27	196025.41	6.00%	982.38	16.67		450.48	982.38	1432.86	16.67	1449.53	-1449.53	-1381.80		
10		196025.41	196025.41	197005.54	195572.67	6.00%	980.13	16.67		452.74	980.13	1432.86	16.67	1449.53	-1449.53	-1374.47		
11		195572.67	195572.67	196550.54	195117.68	6.00%	977.86	16.67		455.00	977.86	1432.86	16.67	1449.53	-1449.53	-1367.18		
12		195117.68	195117.68	196093.26	194660.40	6.00%	975.59	16.67		457.27	975.59	1432.86	16.67	1449.53	-1449.53	-1359.93		
Sums																		
Year 1	200000.00						11854.75	4200.00	0.00	5339.60	11854.75	17194.35	4200.00	21394.36	178605.64	179193.72		
Year 2	0.00						11525.41	200.00	0.00	5668.93	11525.41	17194.35	200.00	17394.36	-17394.36	-15767.44		
Year 3	0.00						11175.77	200.00	0.00	6018.58	11175.77	17194.35	200.00	17394.36	-17394.36	-14792.81		
Year 4	0.00						10804.55	200.00	0.00	6389.79	10804.55	17194.35	200.00	17394.36	-17394.36	-13878.42		
Year 5	0.00						10410.44	200.00	0.00	6783.90	10410.44	17194.35	200.00	17394.36	-17394.36	-13020.55		
Year 6	0.00						9992.03	200.00	0.00	7202.32	9992.03	17194.35	200.00	17394.36	-17394.36	-12215.71		
Year 7	0.00						9547.81	200.00	0.00	7646.54	9547.81	17194.35	200.00	17394.36	-17394.36	-11460.62		
Year 8	0.00						9076.18	200.00	0.00	8118.16	9076.18	17194.35	200.00	17394.36	-17394.36	-10752.21		
Year 9	0.00						8575.47	200.00	0.00	8618.87	8575.47	17194.35	200.00	17394.36	-17394.36	-10087.58		
Year 10	0.00						8043.88	200.00	0.00	9150.47	8043.88	17194.35	200.00	17394.36	-17394.36	-9464.04		
Year 11	0.00						7479.50	200.00	0.00	9714.85	7479.50	17194.35	200.00	17394.36	-17394.36	-8879.04		
Year 12	0.00						6880.31	200.00	0.00	10314.04	6880.31	17194.35	200.00	17394.36	-17394.36	-8330.20		
Year 13	0.00						6244.16	200.00	0.00	10950.18	6244.16	17194.35	200.00	17394.36	-17394.36	-7815.29		
Year 14	0.00						5568.78	200.00	0.00	11625.57	5568.78	17194.35	200.00	17394.36	-17394.36	-7332.20		
Year 15	0.00						4851.74	200.00	0.00	12342.61	4851.74	17194.35	200.00	17394.36	-17394.36	-6878.97		
Year 16	0.00						4090.47	200.00	0.00	13103.87	4090.47	17194.35	200.00	17394.36	-17394.36	-6453.77		
Year 17	0.00						3282.26	200.00	0.00	13912.09	3282.26	17194.35	200.00	17394.36	-17394.36	-6054.84		
Year 18	0.00						2424.19	200.00	0.00	14770.16	2424.19	17194.35	200.00	17394.36	-17394.36	-5680.57		
Year 19	0.00						1513.20	200.00	0.00	15681.15	1513.20	17194.35	200.00	17394.36	-17394.36	-5329.44		
Year 20	0.00						546.02	200.00	0.00	16648.33	546.02	17194.35	200.00	17394.36	-17394.36	-5000.01		
Total	200000.00						143886.91	8000.00	0.00	200000.00	143886.91	343886.91	8000.00	351887.20	-151887.20	0.00		

EXAMPLE 4

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

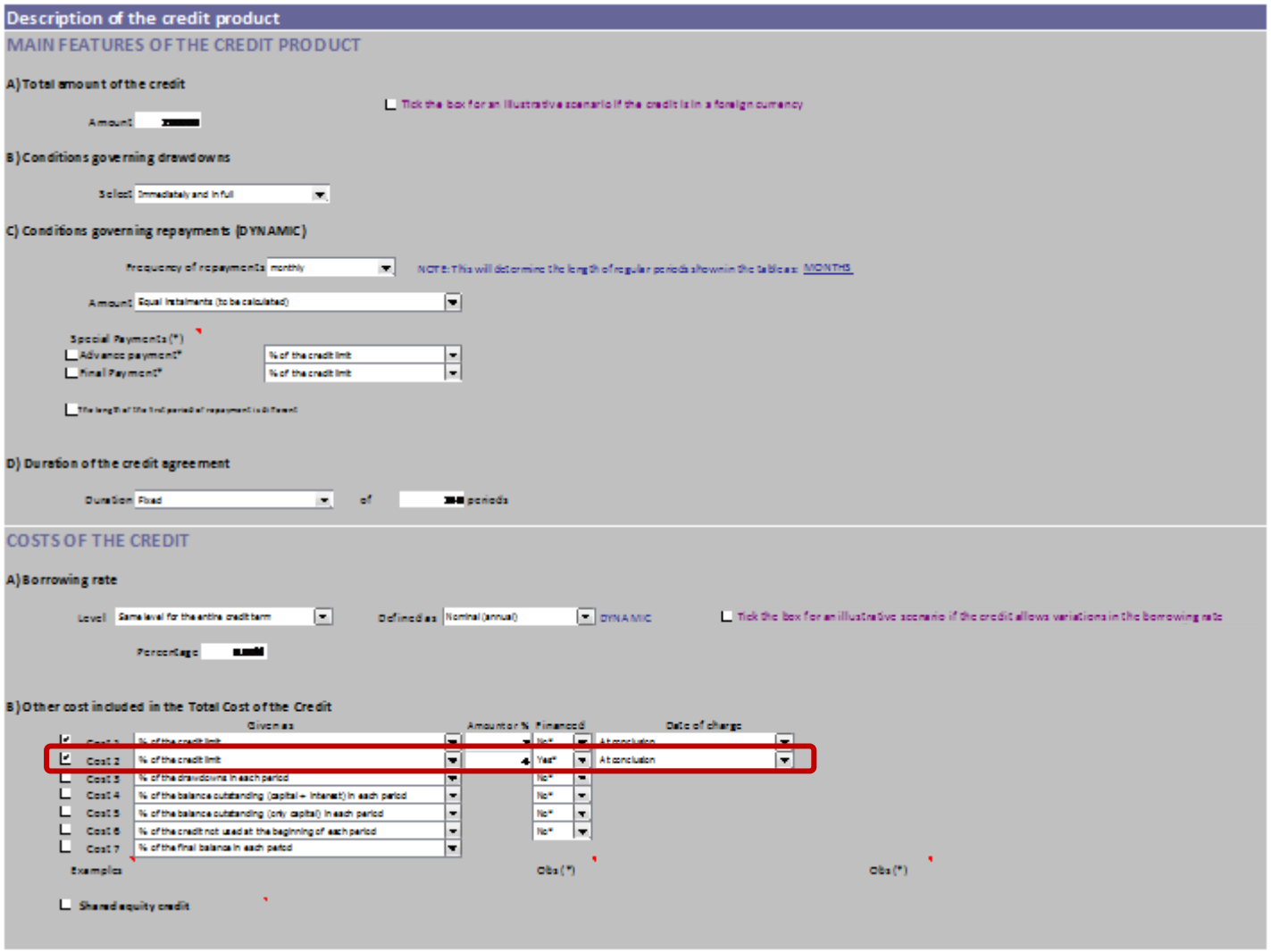
Main results

Final balance in the last period	0.00	
Amount of the first repayment	1432.86	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	7.9%	DYNAMIC Recalculate
Total cost of the credit	187887.20	
Total amount of credit	200000.00	
Total amount payable	387887.20	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199567.14	6.00%	1000.00	166.67		432.86	1000.00	1432.86	166.67	1599.53	-1599.53	-1589.37		
2		199567.14	199567.14	200564.97	199132.11	6.00%	997.84	166.67		435.03	997.84	1432.86	166.67	1599.53	-1599.53	-1579.27		
3		199132.11	199132.11	200127.77	198694.91	6.00%	995.66	166.67		437.20	995.66	1432.86	166.67	1599.53	-1599.53	-1569.24		
4		198694.91	198694.91	199688.38	198255.52	6.00%	993.47	166.67		439.39	993.47	1432.86	166.67	1599.53	-1599.53	-1559.27		
5		198255.52	198255.52	199246.80	197813.94	6.00%	991.28	166.67		441.58	991.28	1432.86	166.67	1599.53	-1599.53	-1549.37		
6		197813.94	197813.94	198803.01	197370.15	6.00%	989.07	166.67		443.79	989.07	1432.86	166.67	1599.53	-1599.53	-1539.53		
7		197370.15	197370.15	198357.00	196924.13	6.00%	986.85	166.67		446.01	986.85	1432.86	166.67	1599.53	-1599.53	-1529.75		
8		196924.13	196924.13	197908.75	196475.89	6.00%	984.62	166.67		448.24	984.62	1432.86	166.67	1599.53	-1599.53	-1520.03		
9		196475.89	196475.89	197458.27	196025.41	6.00%	982.38	166.67		450.48	982.38	1432.86	166.67	1599.53	-1599.53	-1510.38		
10		196025.41	196025.41	197005.54	195572.67	6.00%	980.13	166.67		452.74	980.13	1432.86	166.67	1599.53	-1599.53	-1500.78		
11		195572.67	195572.67	196550.54	195117.68	6.00%	977.86	166.67		455.00	977.86	1432.86	166.67	1599.53	-1599.53	-1491.25		
12		195117.68	195117.68	196093.26	194660.40	6.00%	975.59	166.67		457.27	975.59	1432.86	166.67	1599.53	-1599.53	-1481.78		
Sums																		
Year 1	200000.00						11854.75	6000.00	0.00	5339.60	11854.75	17194.35	6000.00	23194.36	176805.64	177579.96		
Year 2	0.00						11525.41	2000.00	0.00	5668.93	11525.41	17194.35	2000.00	19194.36	-19194.36	-17064.02		
Year 3	0.00						11175.77	2000.00	0.00	6018.58	11175.77	17194.35	2000.00	19194.36	-19194.36	-15807.83		
Year 4	0.00						10804.55	2000.00	0.00	6389.79	10804.55	17194.35	2000.00	19194.36	-19194.36	-14644.12		
Year 5	0.00						10410.44	2000.00	0.00	6783.90	10410.44	17194.35	2000.00	19194.36	-19194.36	-13566.07		
Year 6	0.00						9992.03	2000.00	0.00	7202.32	9992.03	17194.35	2000.00	19194.36	-19194.36	-12567.39		
Year 7	0.00						9547.81	2000.00	0.00	7646.54	9547.81	17194.35	2000.00	19194.36	-19194.36	-11642.23		
Year 8	0.00						9076.18	2000.00	0.00	8118.16	9076.18	17194.35	2000.00	19194.36	-19194.36	-10785.17		
Year 9	0.00						8575.47	2000.00	0.00	8618.87	8575.47	17194.35	2000.00	19194.36	-19194.36	-9991.21		
Year 10	0.00						8043.88	2000.00	0.00	9150.47	8043.88	17194.35	2000.00	19194.36	-19194.36	-9255.69		
Year 11	0.00						7479.50	2000.00	0.00	9714.85	7479.50	17194.35	2000.00	19194.36	-19194.36	-8574.32		
Year 12	0.00						6880.31	2000.00	0.00	10314.04	6880.31	17194.35	2000.00	19194.36	-19194.36	-7943.11		
Year 13	0.00						6244.16	2000.00	0.00	10950.18	6244.16	17194.35	2000.00	19194.36	-19194.36	-7358.37		
Year 14	0.00						5568.78	2000.00	0.00	11625.57	5568.78	17194.35	2000.00	19194.36	-19194.36	-6816.67		
Year 15	0.00						4851.74	2000.00	0.00	12342.61	4851.74	17194.35	2000.00	19194.36	-19194.36	-6314.86		
Year 16	0.00						4090.47	2000.00	0.00	13103.87	4090.47	17194.35	2000.00	19194.36	-19194.36	-5849.98		
Year 17	0.00						3282.26	2000.00	0.00	13912.09	3282.26	17194.35	2000.00	19194.36	-19194.36	-5419.33		
Year 18	0.00						2424.19	2000.00	0.00	14770.16	2424.19	17194.35	2000.00	19194.36	-19194.36	-5020.38		
Year 19	0.00						1513.20	2000.00	0.00	15681.15	1513.20	17194.35	2000.00	19194.36	-19194.36	-4650.80		
Year 20	0.00						546.02	2000.00	0.00	16648.33	546.02	17194.35	2000.00	19194.36	-19194.36	-4308.42		
Total	200000.00						143886.91	44000.00	0.00	200000.00	143886.91	343886.91	44000.00	387887.20	-187887.20	0.00		

EXAMPLE 5

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

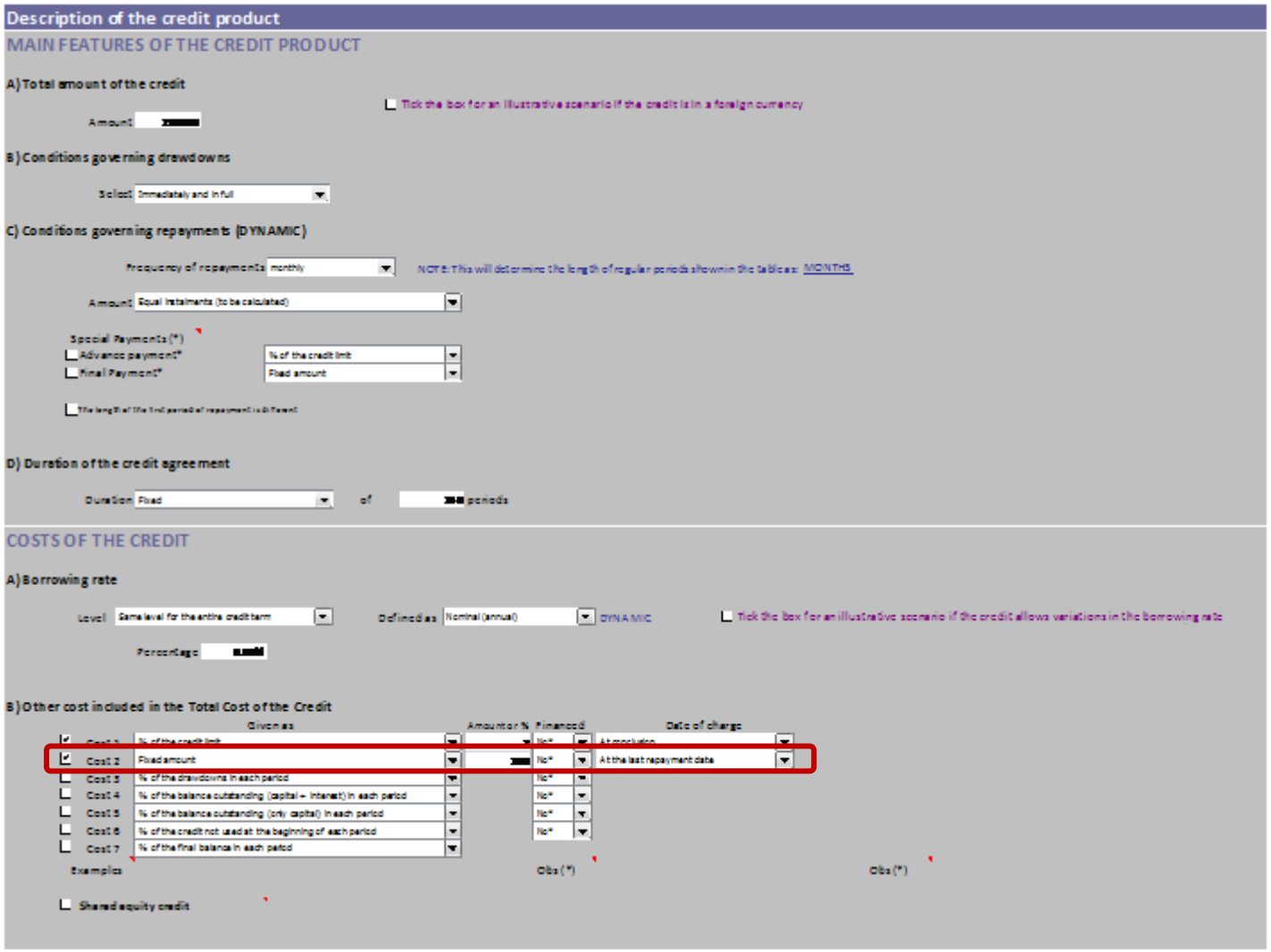
Main results

Final balance in the last period	0.00		
Amount of the first repayment	1490.18		Recalculate
Duration of the credit	240	MONTHS	
Present value of the cash flows	0.00		
Annual Percentage Rate of Charge	7.0%	DYNAMIC	Recalculate
Total cost of the credit	161643.20		
Total amount of credit	200000.00		
Total amount payable	361643.20		

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				208000.00			4000.00	8000.00				4000.00	4000.00	196000.00	196000.00		
1		208000.00	208000.00	209040.00	207549.82	6.00%	1040.00			450.18	1040.00	1490.18	0.00	1490.18	-1490.18	-1481.85		
2		207549.82	207549.82	208587.57	207097.40	6.00%	1037.75			452.43	1037.75	1490.18	0.00	1490.18	-1490.18	-1473.56		
3		207097.40	207097.40	208132.88	206642.71	6.00%	1035.49			454.69	1035.49	1490.18	0.00	1490.18	-1490.18	-1465.32		
4		206642.71	206642.71	207675.92	206185.74	6.00%	1033.21			456.96	1033.21	1490.18	0.00	1490.18	-1490.18	-1457.12		
5		206185.74	206185.74	207216.67	205726.50	6.00%	1030.93			459.25	1030.93	1490.18	0.00	1490.18	-1490.18	-1448.97		
6		205726.50	205726.50	206755.13	205264.95	6.00%	1028.63			461.54	1028.63	1490.18	0.00	1490.18	-1490.18	-1440.87		
7		205264.95	205264.95	206291.28	204801.10	6.00%	1026.32			463.85	1026.32	1490.18	0.00	1490.18	-1490.18	-1432.81		
8		204801.10	204801.10	205825.10	204334.93	6.00%	1024.01			466.17	1024.01	1490.18	0.00	1490.18	-1490.18	-1424.80		
9		204334.93	204334.93	205356.60	203866.43	6.00%	1021.67			468.50	1021.67	1490.18	0.00	1490.18	-1490.18	-1416.83		
10		203866.43	203866.43	204885.76	203395.58	6.00%	1019.33			470.84	1019.33	1490.18	0.00	1490.18	-1490.18	-1408.91		
11		203395.58	203395.58	204412.56	202922.38	6.00%	1016.98			473.20	1016.98	1490.18	0.00	1490.18	-1490.18	-1401.03		
12		202922.38	202922.38	203937.00	202446.82	6.00%	1014.61			475.56	1014.61	1490.18	0.00	1490.18	-1490.18	-1393.19		
Sums																		
Year 1	200000.00						12328.94	4000.00	8000.00	5553.18	12328.94	17882.12	4000.00	21882.16	178117.84	178754.74		
Year 2	0.00						11986.43	0.00	0.00	5895.69	11986.43	17882.12	0.00	17882.16	-17882.16	-16122.85		
Year 3	0.00						11622.80	0.00	0.00	6259.32	11622.80	17882.12	0.00	17882.16	-17882.16	-15073.50		
Year 4	0.00						11236.74	0.00	0.00	6645.38	11236.74	17882.12	0.00	17882.16	-17882.16	-14092.44		
Year 5	0.00						10826.86	0.00	0.00	7055.26	10826.86	17882.12	0.00	17882.16	-17882.16	-13175.24		
Year 6	0.00						10391.71	0.00	0.00	7490.41	10391.71	17882.12	0.00	17882.16	-17882.16	-12317.73		
Year 7	0.00						9929.72	0.00	0.00	7952.40	9929.72	17882.12	0.00	17882.16	-17882.16	-11516.03		
Year 8	0.00						9439.23	0.00	0.00	8442.89	9439.23	17882.12	0.00	17882.16	-17882.16	-10766.51		
Year 9	0.00						8918.49	0.00	0.00	8963.63	8918.49	17882.12	0.00	17882.16	-17882.16	-10065.78		
Year 10	0.00						8365.63	0.00	0.00	9516.48	8365.63	17882.12	0.00	17882.16	-17882.16	-9410.65		
Year 11	0.00						7778.68	0.00	0.00	10103.44	7778.68	17882.12	0.00	17882.16	-17882.16	-8798.16		
Year 12	0.00						7155.52	0.00	0.00	10726.60	7155.52	17882.12	0.00	17882.16	-17882.16	-8225.53		
Year 13	0.00						6493.93	0.00	0.00	11388.19	6493.93	17882.12	0.00	17882.16	-17882.16	-7690.17		
Year 14	0.00						5791.53	0.00	0.00	12090.59	5791.53	17882.12	0.00	17882.16	-17882.16	-7189.66		
Year 15	0.00						5045.81	0.00	0.00	12836.31	5045.81	17882.12	0.00	17882.16	-17882.16	-6721.72		
Year 16	0.00						4254.09	0.00	0.00	13628.03	4254.09	17882.12	0.00	17882.16	-17882.16	-6284.24		
Year 17	0.00						3413.55	0.00	0.00	14468.57	3413.55	17882.12	0.00	17882.16	-17882.16	-5875.23		
Year 18	0.00						2521.16	0.00	0.00	15360.96	2521.16	17882.12	0.00	17882.16	-17882.16	-5492.84		
Year 19	0.00						1573.72	0.00	0.00	16308.39	1573.72	17882.12	0.00	17882.16	-17882.16	-5135.34		
Year 20	0.00						567.86	0.00	0.00	17314.26	567.86	17882.12	0.00	17882.16	-17882.16	-4801.11		
Total	200000.00						149642.38	4000.00	8000.00	208000.00	149642.38	357642.38	4000.00	361643.20	-161643.20	0.00		

EXAMPLE 6

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

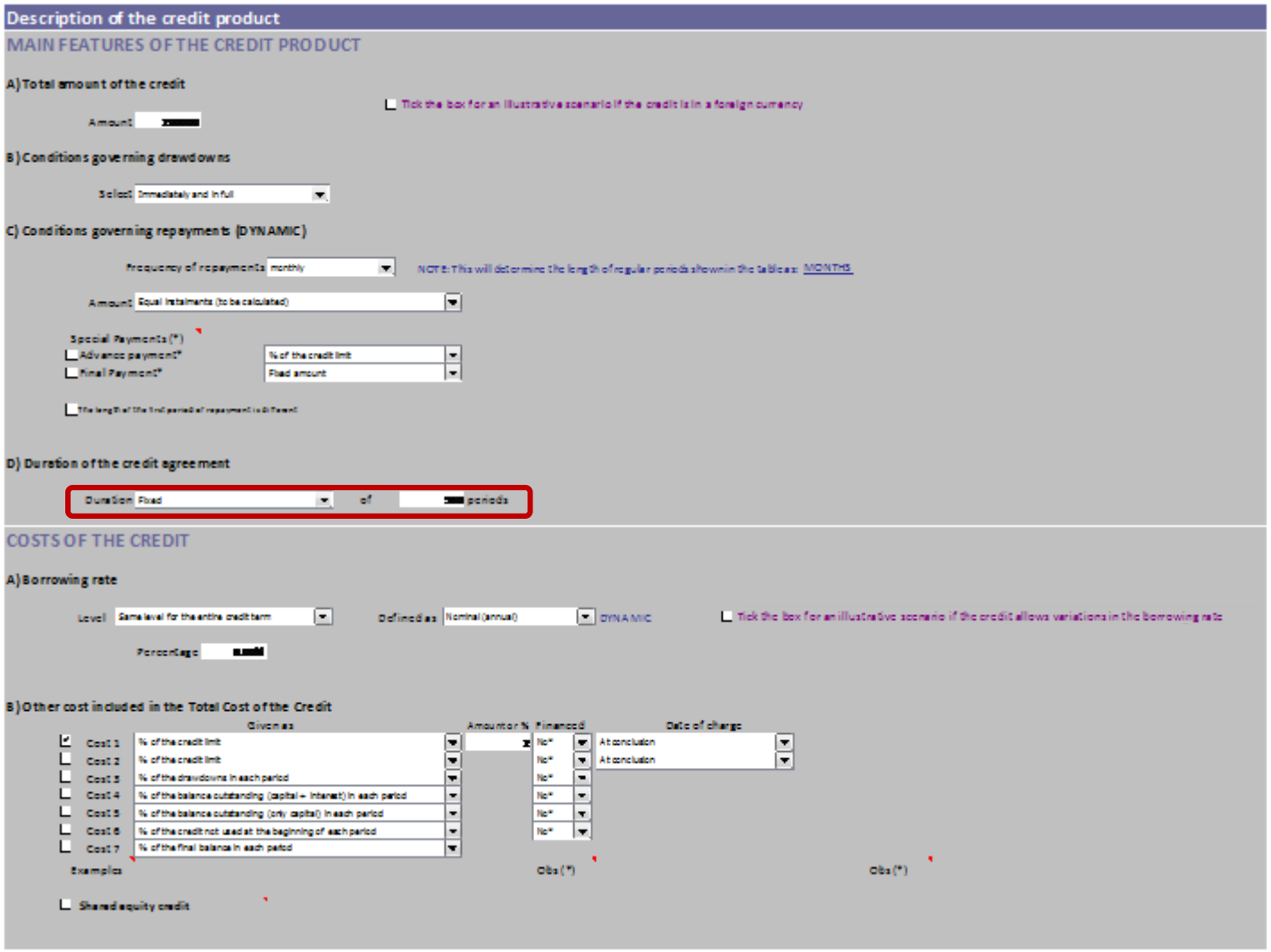
Final balance in the last period	0.00		
Amount of the first repayment	1432.86		Recalculate
Duration of the credit	240	MONTHS	
Present value of the cash flows	0.00		
Annual Percentage Rate of Charge	6.4%	DYNAMIC	Recalculate
Total cost of the credit	147986.40		
Total amount of credit	200000.00		
Total amount payable	347986.40		

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199567.14	6.00%	1000.00	0.00		432.86	1000.00	1432.86	0.00	1432.86	-1432.86	-1425.43		
2		199567.14	199567.14	200564.97	199132.11	6.00%	997.84	0.00		435.03	997.84	1432.86	0.00	1432.86	-1432.86	-1418.04		
3		199132.11	199132.11	200127.77	198694.91	6.00%	995.66	0.00		437.20	995.66	1432.86	0.00	1432.86	-1432.86	-1410.69		
4		198694.91	198694.91	199688.38	198255.52	6.00%	993.47	0.00		439.39	993.47	1432.86	0.00	1432.86	-1432.86	-1403.38		
5		198255.52	198255.52	199246.80	197813.94	6.00%	991.28	0.00		441.58	991.28	1432.86	0.00	1432.86	-1432.86	-1396.10		
6		197813.94	197813.94	198803.01	197370.15	6.00%	989.07	0.00		443.79	989.07	1432.86	0.00	1432.86	-1432.86	-1388.86		
7		197370.15	197370.15	198357.00	196924.13	6.00%	986.85	0.00		446.01	986.85	1432.86	0.00	1432.86	-1432.86	-1381.66		
8		196924.13	196924.13	197908.75	196475.89	6.00%	984.62	0.00		448.24	984.62	1432.86	0.00	1432.86	-1432.86	-1374.50		
9		196475.89	196475.89	197458.27	196025.41	6.00%	982.38	0.00		450.48	982.38	1432.86	0.00	1432.86	-1432.86	-1367.37		
10		196025.41	196025.41	197005.54	195572.67	6.00%	980.13	0.00		452.74	980.13	1432.86	0.00	1432.86	-1432.86	-1360.28		
11		195572.67	195572.67	196550.54	195117.68	6.00%	977.86	0.00		455.00	977.86	1432.86	0.00	1432.86	-1432.86	-1353.23		
12		195117.68	195117.68	196093.26	194660.40	6.00%	975.59	0.00		457.27	975.59	1432.86	0.00	1432.86	-1432.86	-1346.21		
Sums																		
Year 1	200000.00						11854.75	4000.00	0.00	5339.60	11854.75	17194.35	4000.00	21194.32	178805.68	179374.25		
Year 2	0.00						11525.41	0.00	0.00	5668.93	11525.41	17194.35	0.00	17194.32	-17194.32	-15620.36		
Year 3	0.00						11175.77	0.00	0.00	6018.58	11175.77	17194.35	0.00	17194.32	-17194.32	-14675.78		
Year 4	0.00						10804.55	0.00	0.00	6389.79	10804.55	17194.35	0.00	17194.32	-17194.32	-13788.31		
Year 5	0.00						10410.44	0.00	0.00	6783.90	10410.44	17194.35	0.00	17194.32	-17194.32	-12954.51		
Year 6	0.00						9992.03	0.00	0.00	7202.32	9992.03	17194.35	0.00	17194.32	-17194.32	-12171.14		
Year 7	0.00						9547.81	0.00	0.00	7646.54	9547.81	17194.35	0.00	17194.32	-17194.32	-11435.13		
Year 8	0.00						9076.18	0.00	0.00	8118.16	9076.18	17194.35	0.00	17194.32	-17194.32	-10743.63		
Year 9	0.00						8575.47	0.00	0.00	8618.87	8575.47	17194.35	0.00	17194.32	-17194.32	-10093.95		
Year 10	0.00						8043.88	0.00	0.00	9150.47	8043.88	17194.35	0.00	17194.32	-17194.32	-9483.55		
Year 11	0.00						7479.50	0.00	0.00	9714.85	7479.50	17194.35	0.00	17194.32	-17194.32	-8910.07		
Year 12	0.00						6880.31	0.00	0.00	10314.04	6880.31	17194.35	0.00	17194.32	-17194.32	-8371.26		
Year 13	0.00						6244.16	0.00	0.00	10950.18	6244.16	17194.35	0.00	17194.32	-17194.32	-7865.04		
Year 14	0.00						5568.78	0.00	0.00	11625.57	5568.78	17194.35	0.00	17194.32	-17194.32	-7389.43		
Year 15	0.00						4851.74	0.00	0.00	12342.61	4851.74	17194.35	0.00	17194.32	-17194.32	-6942.58		
Year 16	0.00						4090.47	0.00	0.00	13103.87	4090.47	17194.35	0.00	17194.32	-17194.32	-6522.75		
Year 17	0.00						3282.26	0.00	0.00	13912.09	3282.26	17194.35	0.00	17194.32	-17194.32	-6128.31		
Year 18	0.00						2424.19	0.00	0.00	14770.16	2424.19	17194.35	0.00	17194.32	-17194.32	-5757.73		
Year 19	0.00						1513.20	0.00	0.00	15681.15	1513.20	17194.35	0.00	17194.32	-17194.32	-5409.55		
Year 20	0.00						546.02	100.00	0.00	16648.33	546.02	17194.35	100.00	17294.32	-17294.32	-5111.15		
Total	200000.00						143886.91	4100.00	0.00	200000.00	143886.91	343886.91	4100.00	347986.40	-147986.40	0.00		

EXAMPLE 7

This example can be solved in two different ways, which start similarly.

As a first step, click on the button *Reset* and then enter the information highlighted in red for the 30-year credit agreement whose instalments will become the equal monthly payments of the 15-year credit agreement.



Click on the buttons *Generate* and then *Calculate* to obtain the instalments.

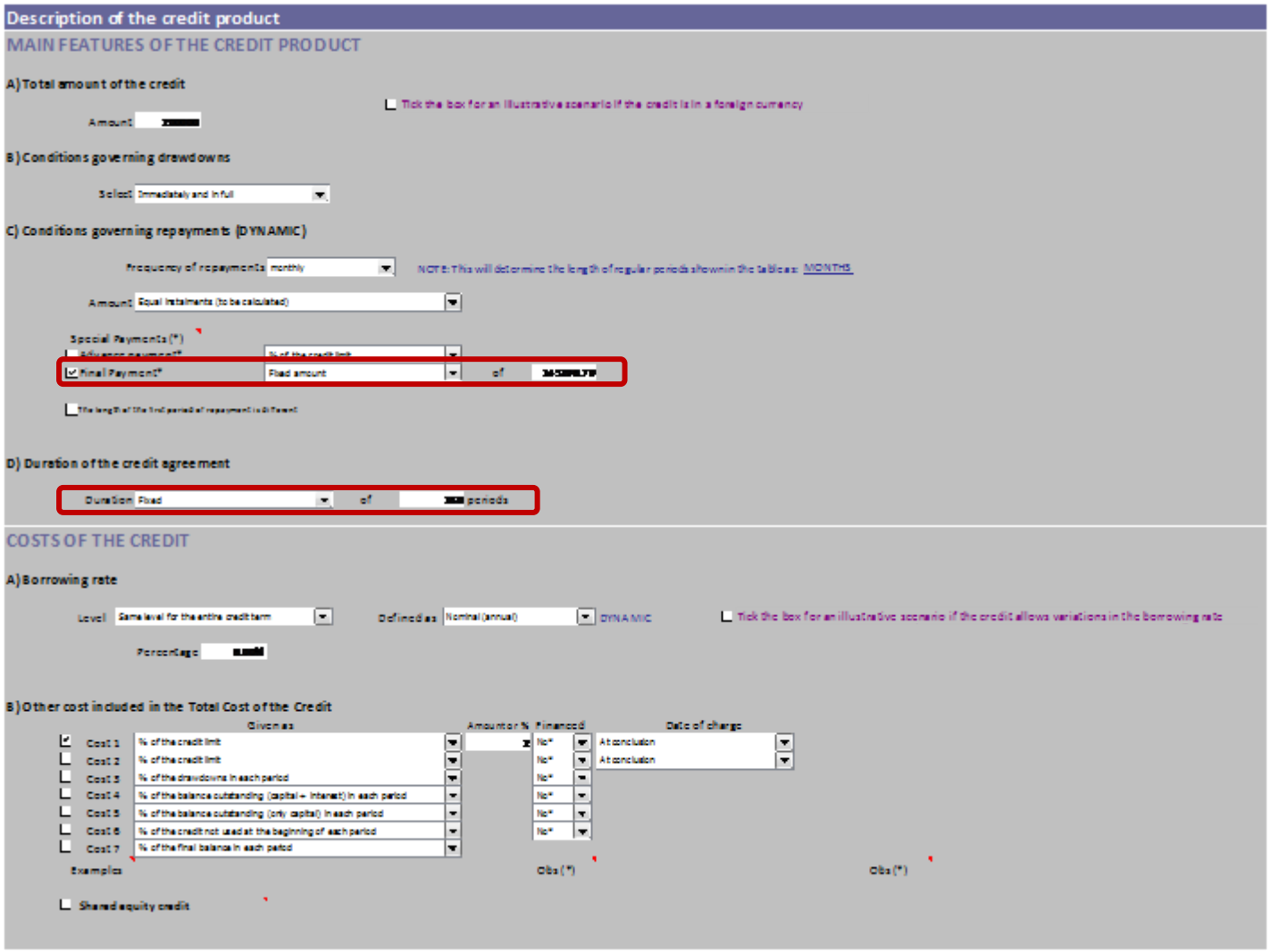
Main results

Final balance in the last period	0.00	
Amount of the first repayment	1199.10	Recalculate
Duration of the credit	360 MONTHS	
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.4% DYNAMIC	Recalculate
Total cost of the credit	235676.00	
Total amount of credit	200000.00	
Total amount payable	435676.00	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199800.90	6.00%	1000.00			199.10	1000.00	1199.10	0.00	1199.10	-1199.10	-1192.95		
2		199800.90	199800.90	200799.90	199600.80	6.00%	999.00			200.10	999.00	1199.10	0.00	1199.10	-1199.10	-1186.83		
3		199600.80	199600.80	200598.81	199399.71	6.00%	998.00			201.10	998.00	1199.10	0.00	1199.10	-1199.10	-1180.74		
4		199399.71	199399.71	200396.70	199197.60	6.00%	997.00			202.10	997.00	1199.10	0.00	1199.10	-1199.10	-1174.68		
5		199197.60	199197.60	200193.59	198994.49	6.00%	995.99			203.11	995.99	1199.10	0.00	1199.10	-1199.10	-1168.65		
6		198994.49	198994.49	199989.46	198790.36	6.00%	994.97			204.13	994.97	1199.10	0.00	1199.10	-1199.10	-1162.65		
7		198790.36	198790.36	199784.31	198585.21	6.00%	993.95			205.15	993.95	1199.10	0.00	1199.10	-1199.10	-1156.69		
8		198585.21	198585.21	199578.14	198379.04	6.00%	992.93			206.17	992.93	1199.10	0.00	1199.10	-1199.10	-1150.75		
9		198379.04	198379.04	199370.93	198171.83	6.00%	991.90			207.21	991.90	1199.10	0.00	1199.10	-1199.10	-1144.85		
10		198171.83	198171.83	199162.69	197963.59	6.00%	990.86			208.24	990.86	1199.10	0.00	1199.10	-1199.10	-1138.97		
11		197963.59	197963.59	198953.41	197754.31	6.00%	989.82			209.28	989.82	1199.10	0.00	1199.10	-1199.10	-1133.13		
12		197754.31	197754.31	198743.08	197543.98	6.00%	988.77			210.33	988.77	1199.10	0.00	1199.10	-1199.10	-1127.31		
13		197543.98	197543.98	198531.70	197332.60	6.00%	987.72			211.38	987.72	1199.10	0.00	1199.10	-1199.10	-1121.53		
14		197332.60	197332.60	198319.26	197120.16	6.00%	986.66			212.44	986.66	1199.10	0.00	1199.10	-1199.10	-1115.77		
15		197120.16	197120.16	198105.76	196906.66	6.00%	985.60			213.50	985.60	1199.10	0.00	1199.10	-1199.10	-1110.05		
16		196906.66	196906.66	197891.19	196692.09	6.00%	984.53			214.57	984.53	1199.10	0.00	1199.10	-1199.10	-1104.35		
17		196692.09	196692.09	197675.55	196476.45	6.00%	983.46			215.64	983.46	1199.10	0.00	1199.10	-1199.10	-1098.68		
18		196476.45	196476.45	197458.83	196259.73	6.00%	982.38			216.72	982.38	1199.10	0.00	1199.10	-1199.10	-1093.05		
19		196259.73	196259.73	197241.03	196041.93	6.00%	981.30			217.80	981.30	1199.10	0.00	1199.10	-1199.10	-1087.44		
20		196041.93	196041.93	197022.14	195823.04	6.00%	980.21			218.89	980.21	1199.10	0.00	1199.10	-1199.10	-1081.86		
21		195823.04	195823.04	196802.15	195603.05	6.00%	979.12			219.99	979.12	1199.10	0.00	1199.10	-1199.10	-1076.31		
22		195603.05	195603.05	196581.07	195381.96	6.00%	978.02			221.09	978.02	1199.10	0.00	1199.10	-1199.10	-1070.78		
23		195381.96	195381.96	196358.87	195159.77	6.00%	976.91			222.19	976.91	1199.10	0.00	1199.10	-1199.10	-1065.29		
24		195159.77	195159.77	196135.57	194936.47	6.00%	975.80			223.30	975.80	1199.10	0.00	1199.10	-1199.10	-1059.82		
25		194936.47	194936.47	195911.15	194712.05	6.00%	974.68			224.42	974.68	1199.10	0.00	1199.10	-1199.10	-1054.38		
26		194712.05	194712.05	195685.61	194486.51	6.00%	973.56			225.54	973.56	1199.10	0.00	1199.10	-1199.10	-1048.97		
27		194486.51	194486.51	195458.94	194259.84	6.00%	972.43			226.67	972.43	1199.10	0.00	1199.10	-1199.10	-1043.59		
28		194259.84	194259.84	195231.14	194032.04	6.00%	971.30			227.80	971.30	1199.10	0.00	1199.10	-1199.10	-1038.23		
29		194032.04	194032.04	195002.20	193803.10	6.00%	970.16			228.94	970.16	1199.10	0.00	1199.10	-1199.10	-1032.91		
30		193803.10	193803.10	194772.12	193573.01	6.00%	969.02			230.09	969.02	1199.10	0.00	1199.10	-1199.10	-1027.61		
31		193573.01	193573.01	194540.88	193341.78	6.00%	967.87			231.24	967.87	1199.10	0.00	1199.10	-1199.10	-1022.33		
32		193341.78	193341.78	194308.49	193109.39	6.00%	966.71			232.39	966.71	1199.10	0.00	1199.10	-1199.10	-1017.09		
33		193109.39	193109.39	194074.93	192875.83	6.00%	965.55			233.55	965.55	1199.10	0.00	1199.10	-1199.10	-1011.87		
34		192875.83	192875.83	193840.21	192641.11	6.00%	964.38			234.72	964.38	1199.10	0.00	1199.10	-1199.10	-1006.68		

Approach 1

Use the monthly instalment obtained of €1199.10 and the final balance of period 180 amounting to €142097.69 to define a new credit with equal monthly instalments, duration of 15 years, and a final payment given as the sum of the two amounts (€143296.79) by entering the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1199.10	Recalculate
Duration of the credit	180	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.4%	DYNAMIC Recalculate
Total cost of the credit	161935.69	
Total amount of credit	200000.00	
Total amount payable	361935.69	

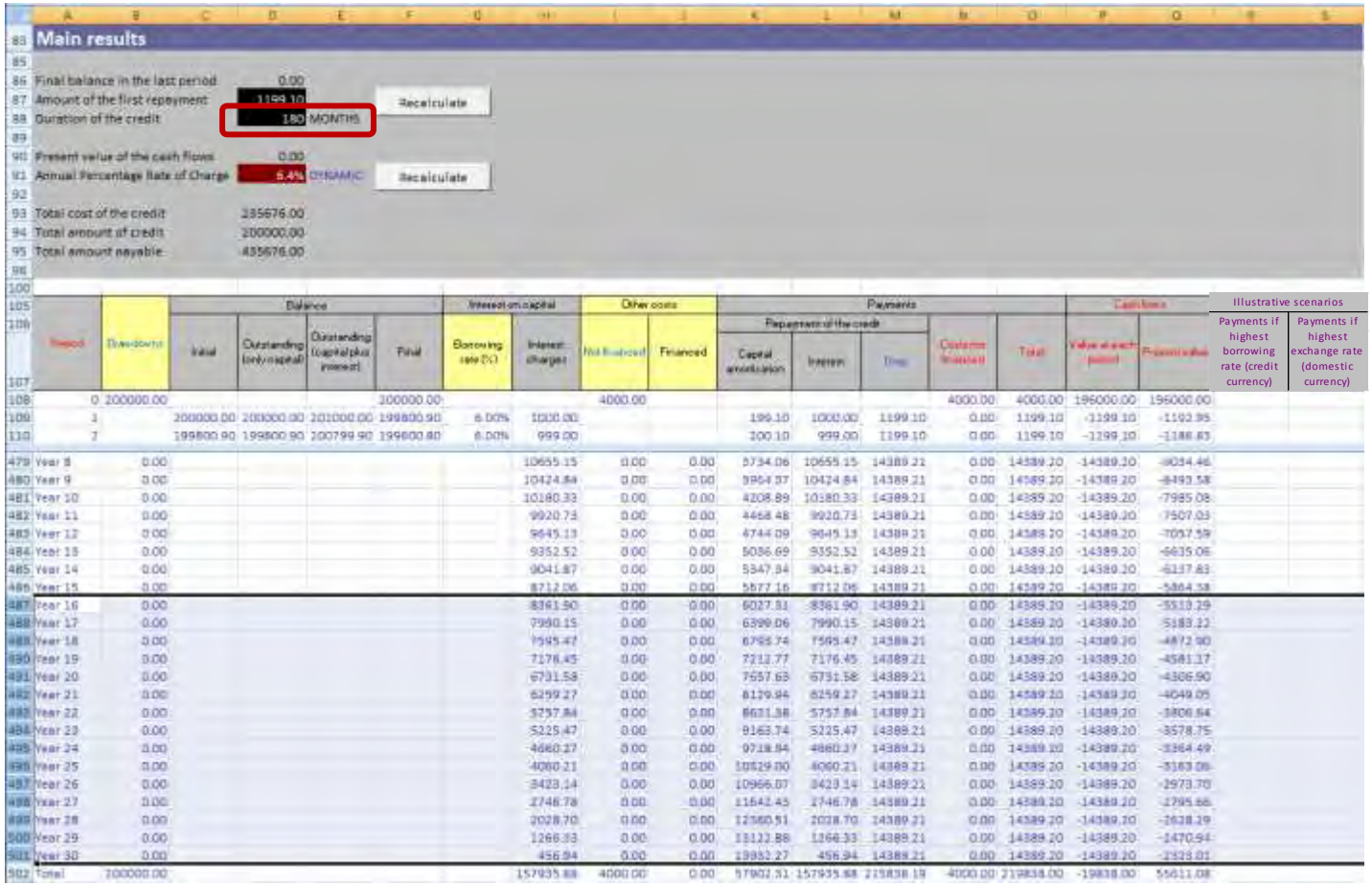
		Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Contract financial	Total	Value at start-period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201800.90	199800.90	6.00%	1000.00			199.10	1000.00	1199.10	0.00	1199.10	-1199.10	-1192.91		
178		143548.99	143548.99	144266.73	143067.63	6.00%	717.74			481.36	717.74	1199.10	0.00	1199.10	-1199.10	-477.14		
179		143067.63	143067.63	143781.97	142583.87	6.00%	715.34			483.76	715.34	1199.10	0.00	1199.10	-1199.10	-474.67		
180		142583.87	142583.87	143296.79	0.00	6.00%	712.92			142583.87	712.92	143296.79	0.00	143296.79	-143296.79	-56432.47		
Sums																		
Year 1	200000.00						11938.19	4000.00	0.00	2456.02	11938.19	14389.21	4000.00	18389.20	181610.80	182084.73		
Year 2	0.00						11781.71	0.00	0.00	2607.51	11781.71	14389.21	0.00	14389.20	-14389.20	-13077.09		
Year 3	0.00						11620.88	0.00	0.00	2768.33	11620.88	14389.21	0.00	14389.20	-14389.20	-12289.40		
Year 4	0.00						11450.14	0.00	0.00	2939.08	11450.14	14389.21	0.00	14389.20	-14389.20	-11549.15		
Year 5	0.00						11268.86	0.00	0.00	3120.35	11268.86	14389.21	0.00	14389.20	-14389.20	-10853.49		
Year 6	0.00						11076.41	0.00	0.00	3312.81	11076.41	14389.21	0.00	14389.20	-14389.20	-10199.74		
Year 7	0.00						10872.08	0.00	0.00	3517.13	10872.08	14389.21	0.00	14389.20	-14389.20	-9585.36		
Year 8	0.00						10655.15	0.00	0.00	3734.06	10655.15	14389.21	0.00	14389.20	-14389.20	-9007.99		
Year 9	0.00						10424.84	0.00	0.00	3964.37	10424.84	14389.21	0.00	14389.20	-14389.20	-8465.40		
Year 10	0.00						10180.33	0.00	0.00	4208.89	10180.33	14389.21	0.00	14389.20	-14389.20	-7955.49		
Year 11	0.00						9920.73	0.00	0.00	4468.48	9920.73	14389.21	0.00	14389.20	-14389.20	-7476.30		
Year 12	0.00						9645.13	0.00	0.00	4744.09	9645.13	14389.21	0.00	14389.20	-14389.20	-7025.97		
Year 13	0.00						9352.52	0.00	0.00	5036.69	9352.52	14389.21	0.00	14389.20	-14389.20	-6602.76		
Year 14	0.00						9041.87	0.00	0.00	5347.34	9041.87	14389.21	0.00	14389.20	-14389.20	-6205.05		
Year 15	0.00						8712.06	0.00	0.00	147774.85	8712.06	156486.90	0.00	156486.89	-156486.89	-61791.53		
Total	200000.00						157935.88	4000.00	0.00	200000.00	157935.88	357935.88	4000.00	361935.69	-161935.69	0.00		

Approach 2

This approach requires changing manually the results to reduce the duration of the credit to 15-years (180 periods of one month).

To this end, first enter as *Duration of the credit* in the area of *Main results* such term of 180 months.

Then delete the rows with the annual subtotals corresponding to years 16 to 30 (rows 487 to 501). Be aware of not deleting the row with the overall total (row 502), as this row is valid.



Main results

Final balance in the last period	0.00	
Amount of the first repayment	1199.10	Recalculate
Duration of the credit	180 MONTHS	
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.4% DYNAMIC	Recalculate
Total cost of the credit	235676.00	
Total amount of credit	200000.00	
Total amount payable	435676.00	

	Period	Drawdowns	Balance: Initial	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charges	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortization	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Drop	Payments: Customer financial	Payments: Total	Cash flows: Value at each period	Cash flows: Present value	Illustrative scenarios: Payments if highest borrowing rate (credit currency)	Illustrative scenarios: Payments if highest exchange rate (domestic currency)
108	0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
109	1		200000.00	200000.00	201000.00	199800.90	6.00%	1000.00			199.10	1000.00	1199.10	0.00	1199.10	-1199.10	-1192.95		
110	2		199800.90	199800.90	200799.90	199600.80	6.00%	999.00			200.10	999.00	1199.10	0.00	1199.10	-1199.10	-1186.83		
479	Year 8	0.00						10655.15	0.00	0.00	3734.06	10655.15	14389.21	0.00	14389.20	-14389.20	-9034.46		
480	Year 9	0.00						10424.84	0.00	0.00	3964.37	10424.84	14389.21	0.00	14389.20	-14389.20	-8493.58		
481	Year 10	0.00						10180.33	0.00	0.00	4208.89	10180.33	14389.21	0.00	14389.20	-14389.20	-7985.08		
482	Year 11	0.00						9920.73	0.00	0.00	4468.48	9920.73	14389.21	0.00	14389.20	-14389.20	-7507.03		
483	Year 12	0.00						9645.13	0.00	0.00	4744.09	9645.13	14389.21	0.00	14389.20	-14389.20	-7057.59		
484	Year 13	0.00						9352.52	0.00	0.00	5036.69	9352.52	14389.21	0.00	14389.20	-14389.20	-6635.06		
485	Year 14	0.00						9041.87	0.00	0.00	5347.34	9041.87	14389.21	0.00	14389.20	-14389.20	-6237.83		
486	Year 15	0.00						8712.06	0.00	0.00	5677.16	8712.06	14389.21	0.00	14389.20	-14389.20	-5864.58		
487	Year 16	0.00						8361.90	0.00	0.00	6027.31	8361.90	14389.21	0.00	14389.20	-14389.20	-5513.29		
488	Year 17	0.00						7990.15	0.00	0.00	6399.06	7990.15	14389.21	0.00	14389.20	-14389.20	-5183.22		
489	Year 18	0.00						7595.47	0.00	0.00	6793.74	7595.47	14389.21	0.00	14389.20	-14389.20	-4872.90		
490	Year 19	0.00						7176.45	0.00	0.00	7212.77	7176.45	14389.21	0.00	14389.20	-14389.20	-4581.17		
491	Year 20	0.00						6731.58	0.00	0.00	7657.63	6731.58	14389.21	0.00	14389.20	-14389.20	-4306.90		
492	Year 21	0.00						6259.27	0.00	0.00	8129.94	6259.27	14389.21	0.00	14389.20	-14389.20	-4049.05		
493	Year 22	0.00						5757.84	0.00	0.00	8631.38	5757.84	14389.21	0.00	14389.20	-14389.20	-3806.64		
494	Year 23	0.00						5225.47	0.00	0.00	9163.74	5225.47	14389.21	0.00	14389.20	-14389.20	-3578.75		
495	Year 24	0.00						4660.27	0.00	0.00	9728.94	4660.27	14389.21	0.00	14389.20	-14389.20	-3364.49		
496	Year 25	0.00						4060.21	0.00	0.00	10329.00	4060.21	14389.21	0.00	14389.20	-14389.20	-3163.06		
497	Year 26	0.00						3423.14	0.00	0.00	10966.07	3423.14	14389.21	0.00	14389.20	-14389.20	-2973.70		
498	Year 27	0.00						2746.78	0.00	0.00	11642.43	2746.78	14389.21	0.00	14389.20	-14389.20	-2795.66		
499	Year 28	0.00						2028.70	0.00	0.00	12360.51	2028.70	14389.21	0.00	14389.20	-14389.20	-2628.29		
500	Year 29	0.00						1266.33	0.00	0.00	13122.88	1266.33	14389.21	0.00	14389.20	-14389.20	-2470.94		
501	Year 30	0.00						456.94	0.00	0.00	13932.27	456.94	14389.21	0.00	14389.20	-14389.20	-2323.01		
502	Total	200000.00						157935.88	4000.00	0.00	57902.31	157935.88	215838.19	4000.00	219838.00	-19838.00	55611.08		

Next, delete the rows of the amortisation table beyond the last month of the 15th year, i.e. month 180 (rows 289 to 468).

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
105			Balance				Interest on capital		Other costs		Payments					Cashflows		Illustrative scenarios	
106											Repayment of the credit								
107	Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Commission financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
108	0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
109	1		200000.00	200000.00	201000.00	199800.90	6.00%	1000.00			199.10	1000.00	1199.10	0.00	1199.10	-1199.10	-1192.95		
110	2		199800.90	199800.90	200799.90	199600.80	6.00%	999.00			200.10	999.00	1199.10	0.00	1199.10	-1199.10	-1186.83		
111	3		199600.80	199600.80	200598.81	199399.71	6.00%	998.00			201.10	998.00	1199.10	0.00	1199.10	-1199.10	-1180.74		
112	4		199399.71	199399.71	200396.70	199197.60	6.00%	997.00			202.10	997.00	1199.10	0.00	1199.10	-1199.10	-1174.68		
113	5		199197.60	199197.60	200193.59	198994.49	6.00%	995.99			203.11	995.99	1199.10	0.00	1199.10	-1199.10	-1168.65		
458	351		11667.75	11667.75	11726.09	10526.98	6.00%	58.34			1140.76	58.34	1199.10	0.00	1199.10	-1199.10	-197.07		
460	352		10526.98	10526.98	10579.62	9380.52	6.00%	52.63			1146.47	52.63	1199.10	0.00	1199.10	-1199.10	-196.06		
461	353		9380.52	9380.52	9437.42	8228.32	6.00%	46.90			1152.20	46.90	1199.10	0.00	1199.10	-1199.10	-195.05		
462	354		8228.32	8228.32	8269.46	7070.36	6.00%	41.14			1157.96	41.14	1199.10	0.00	1199.10	-1199.10	-194.05		
463	355		7070.36	7070.36	7105.71	5906.61	6.00%	35.35			1163.75	35.35	1199.10	0.00	1199.10	-1199.10	-193.06		
464	356		5906.61	5906.61	5936.14	4737.04	6.00%	29.53			1169.57	29.53	1199.10	0.00	1199.10	-1199.10	-192.07		
465	357		4737.04	4737.04	4760.73	3561.63	6.00%	23.69			1175.42	23.69	1199.10	0.00	1199.10	-1199.10	-191.08		
466	358		3561.63	3561.63	3579.44	2380.33	6.00%	17.81			1181.29	17.81	1199.10	0.00	1199.10	-1199.10	-190.10		
467	359		2380.33	2380.33	2392.24	1193.14	6.00%	11.90			1187.20	11.90	1199.10	0.00	1199.10	-1199.10	-189.12		
468	360		1193.14	1193.14	1199.10	0.00	6.00%	5.97			1193.14	5.97	1199.10	0.00	1199.10	-1199.10	-188.15		
469																			
470																			
471	Sums																		
472	Year 1	200000.00						11933.19	4000.00	0.00	2456.02	11933.19	14389.21	4000.00	18389.20	181610.80	182081.83		
473	Year 2	0.00						11781.71	0.00	0.00	2607.51	11781.71	14389.21	0.00	14389.20	-14389.20	-13084.91		
474	Year 3	0.00						11620.88	0.00	0.00	2768.33	11620.88	14389.21	0.00	14389.20	-14389.20	-12501.54		
475	Year 4	0.00						11450.14	0.00	0.00	2939.08	11450.14	14389.21	0.00	14389.20	-14389.20	-11965.06		
476	Year 5	0.00						11268.86	0.00	0.00	3120.35	11268.86	14389.21	0.00	14389.20	-14389.20	-10872.68		
477	Year 6	0.00						11076.41	0.00	0.00	3312.81	11076.41	14389.21	0.00	14389.20	-14389.20	-10321.75		
478	Year 7	0.00						10872.08	0.00	0.00	3517.13	10872.08	14389.21	0.00	14389.20	-14389.20	-9809.79		
479	Year 8	0.00						10655.15	0.00	0.00	3734.06	10655.15	14389.21	0.00	14389.20	-14389.20	-9334.46		
480	Year 9	0.00						10424.84	0.00	0.00	3964.37	10424.84	14389.21	0.00	14389.20	-14389.20	-8895.58		
481	Year 10	0.00						10180.33	0.00	0.00	4208.89	10180.33	14389.21	0.00	14389.20	-14389.20	-7985.08		
482	Year 11	0.00						9920.73	0.00	0.00	4468.48	9920.73	14389.21	0.00	14389.20	-14389.20	-7507.03		
483	Year 12	0.00						9645.15	0.00	0.00	4744.06	9645.15	14389.21	0.00	14389.20	-14389.20	-7057.59		
484	Year 13	0.00						9352.52	0.00	0.00	5036.69	9352.52	14389.21	0.00	14389.20	-14389.20	-6635.06		
485	Year 14	0.00						9041.87	0.00	0.00	5347.34	9041.87	14389.21	0.00	14389.20	-14389.20	-6237.83		
486	Year 15	0.00						8712.06	0.00	0.00	5677.16	8712.06	14389.21	0.00	14389.20	-14389.20	-5864.38		
487	Total	200000.00						231876.38	4000.00	0.00	200000.00	231876.38	431876.38	4000.00	435676.00	-235676.00	0.00		

To provide full repayment of the credit in period 180, for this period substitute the last payment in the column with the *Total* of *Repayment of the credit* by the reference to the cell where the amount of €143296.79 of *Balance Outstanding (capital plus interest)* appears. That is, enter the formula =E288 in the former cell. As a result, the *Final Balance* becomes 0, meaning that the credit repaid in full.

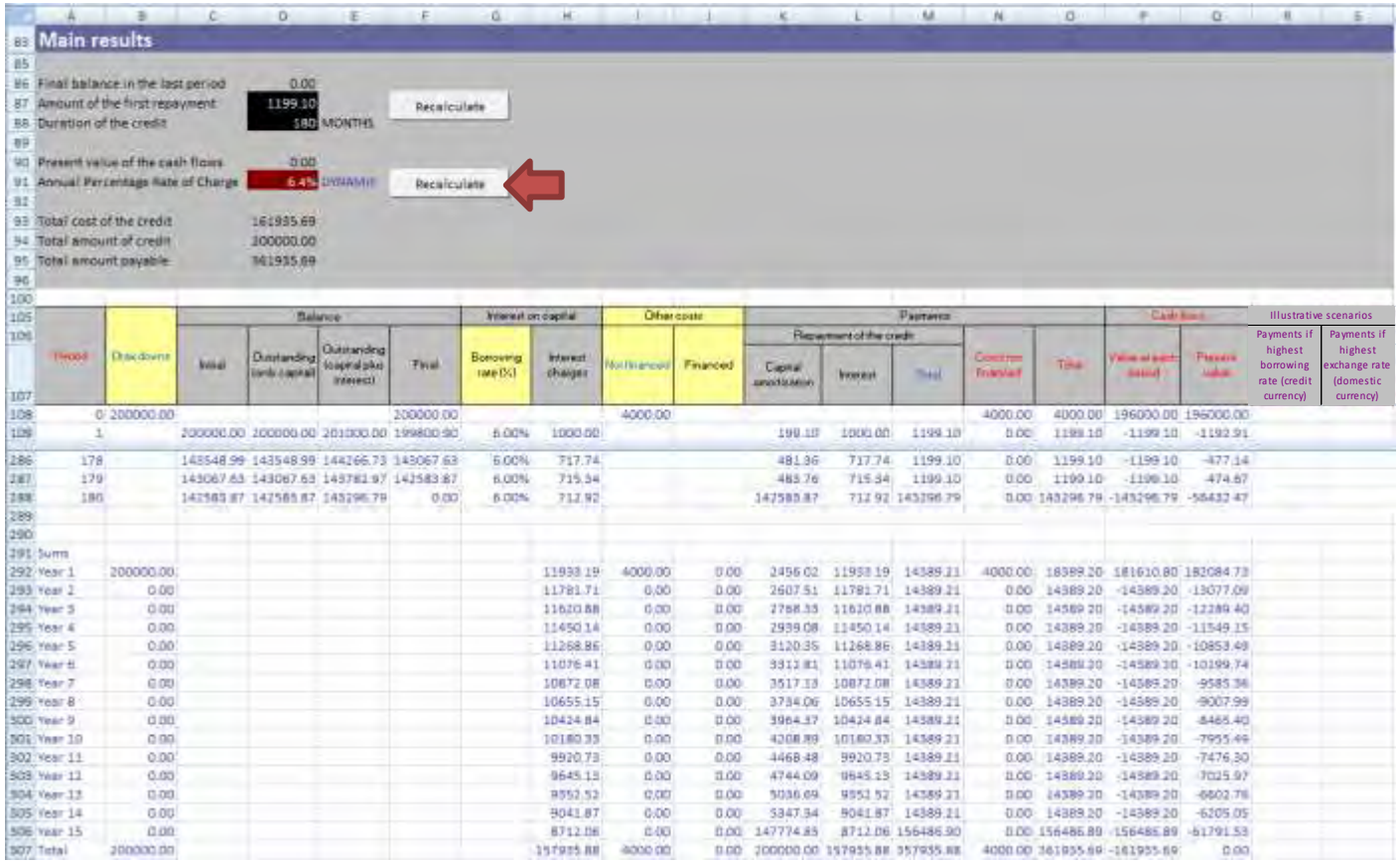
Note that due to these changes, the area of *Main results* reports the error that *the APR is not valid because the present value of the cash flows is not zero*.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1199.10	Recalculate
Duration of the credit	360	MONTHS
Present value of the cash flows	-676.88	Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	6.4%	DYNAMIC Recalculate
Total cost of the credit	161935.69	
Total amount of credit	200000.00	
Total amount payable	361935.69	

	Balance					Interest on capital		Other costs		Payments					Cashflows		Illustrative scenarios	
										Repayment of the credit								
Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199800.90	6.00%	1000.00			199.10	1000.00	1199.10	0.00	1199.10	-1199.10	-1192.95		
2		199800.90	199800.90	200799.90	199600.80	6.00%	999.00			200.10	999.00	1199.10	0.00	1199.10	-1199.10	-1186.83		
178		143548.99	143548.99	144266.73	143067.63	6.00%	717.74			481.36	717.74	1199.10	0.00	1199.10	-1199.10	-479.90		
179		143067.63	143067.63	143782.97	142583.87	6.00%	715.34			483.76	715.34	1199.10	0.00	1199.10	-1199.10	-477.44		
180		142583.87	142583.87	143296.79	0.00	6.00%	712.92			142583.87	712.92	=E288	0.00	143296.79	-143296.79	-56762.95		
Sums																		
Year 1	200000.00						11933.19	4000.00	0.00	2456.02	11933.19	14389.21	4000.00	18389.20	181610.80	182081.83		
Year 2	0.00						11781.71	0.00	0.00	2607.51	11781.71	14389.21	0.00	14389.20	-14389.20	-13084.91		
Year 3	0.00						11620.88	0.00	0.00	2768.33	11620.88	14389.21	0.00	14389.20	-14389.20	-12301.54		
Year 4	0.00						11450.14	0.00	0.00	2939.08	11450.14	14389.21	0.00	14389.20	-14389.20	-11565.06		
Year 5	0.00						11268.86	0.00	0.00	3120.35	11268.86	14389.21	0.00	14389.20	-14389.20	-10872.68		
Year 6	0.00						11076.41	0.00	0.00	3312.81	11076.41	14389.21	0.00	14389.20	-14389.20	-10221.75		
Year 7	0.00						10872.08	0.00	0.00	3517.13	10872.08	14389.21	0.00	14389.20	-14389.20	-9609.79		
Year 8	0.00						10655.15	0.00	0.00	3734.06	10655.15	14389.21	0.00	14389.20	-14389.20	-9034.46		
Year 9	0.00						10424.84	0.00	0.00	3964.37	10424.84	14389.21	0.00	14389.20	-14389.20	-8493.58		
Year 10	0.00						10180.33	0.00	0.00	4208.89	10180.33	14389.21	0.00	14389.20	-14389.20	-7985.08		
Year 11	0.00						9920.73	0.00	0.00	4468.48	9920.73	14389.21	0.00	14389.20	-14389.20	-7507.03		
Year 12	0.00						9645.13	0.00	0.00	4744.09	9645.13	14389.21	0.00	14389.20	-14389.20	-7057.59		
Year 13	0.00						9352.52	0.00	0.00	5036.69	9352.52	14389.21	0.00	14389.20	-14389.20	-6635.06		
Year 14	0.00						9041.87	0.00	0.00	5347.34	9041.87	14389.21	0.00	14389.20	-14389.20	-6237.83		
Year 15	0.00						8712.06	0.00	0.00	147774.85	8712.06	156486.90	0.00	156486.89	-156486.89	-62152.35		
Total	200000.00						157935.88	4000.00	0.00	57902.31	157935.88	215838.19	4000.00	219838.00	-19838.00	55611.08		

To obtain the correct APR, click on the button *Recalculate* next to the cell showing the *Annual Percentage Rate of Charge*. A new APR of 6.4% is obtained and the error message disappears.



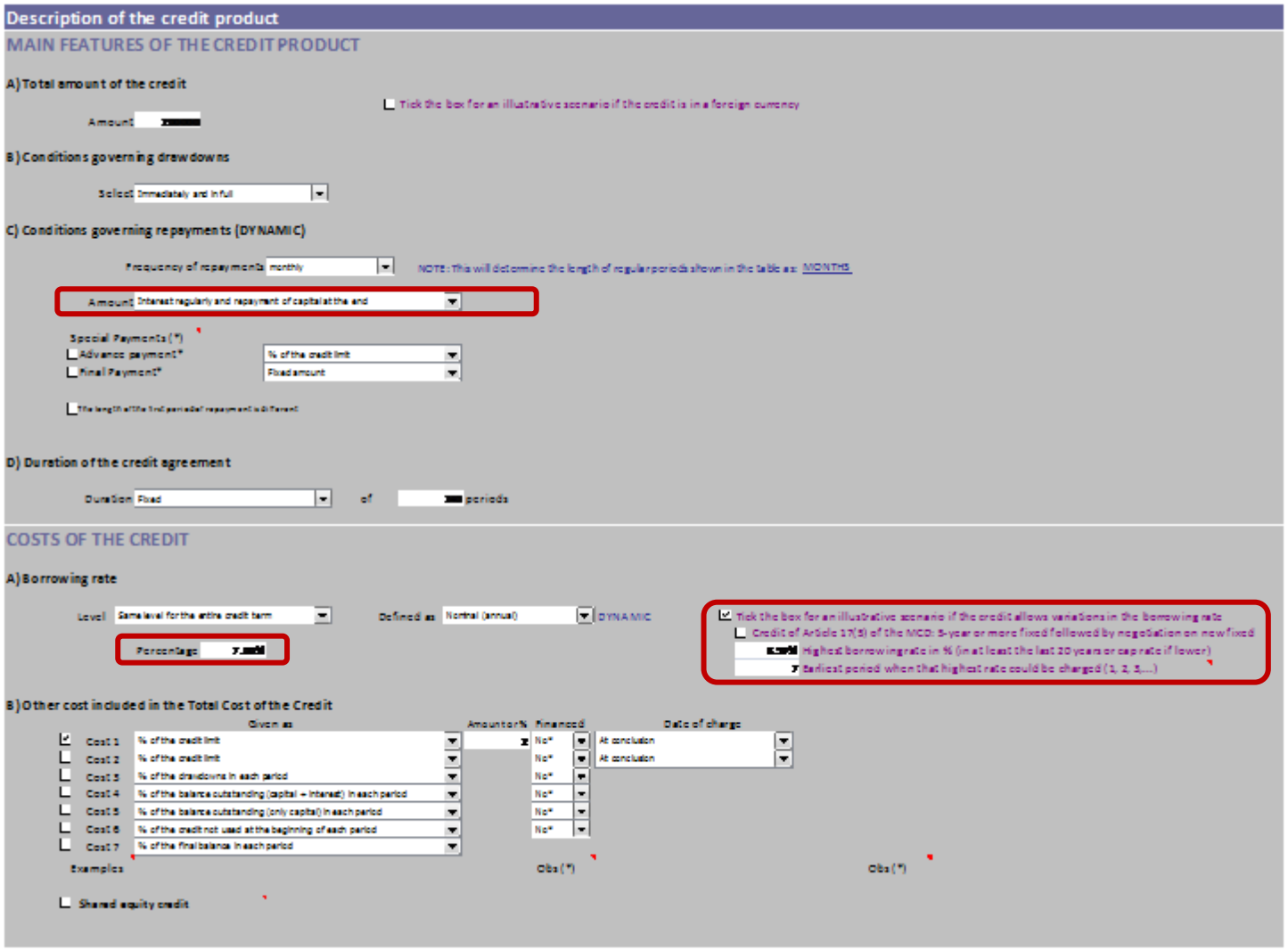
Main results

Final balance in the last period	0.00		
Amount of the first repayment	1199.10		Recalculate
Duration of the credit	180	MONTHS	
Present value of the cash flows	0.00		
Annual Percentage Rate of Charge	6.4%	DYNAMIC	Recalculate
Total cost of the credit	161935.69		
Total amount of credit	200000.00		
Total amount payable	361935.69		

		Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortization	Interest	Total	Costs financed	Total	Value at start-period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199800.90	6.00%	1000.00			199.10	1000.00	1199.10	0.00	1199.10	-1199.10	-1192.91		
178		143548.99	143548.99	144266.73	143067.63	6.00%	717.74			481.36	717.74	1199.10	0.00	1199.10	-1199.10	-477.14		
179		143067.63	143067.63	143781.97	142583.87	6.00%	715.54			483.76	715.54	1199.10	0.00	1199.10	-1199.10	-474.67		
180		142583.87	142583.87	143296.79	0.00	6.00%	712.92			142583.87	712.92	143296.79	0.00	143296.79	-143296.79	-56432.47		
Sums																		
Year 1	200000.00						11938.19	4000.00	0.00	2456.02	11938.19	14389.21	4000.00	18389.20	181610.80	182084.73		
Year 2	0.00						11781.71	0.00	0.00	2607.51	11781.71	14389.21	0.00	14389.20	-14389.20	-13077.09		
Year 3	0.00						11610.88	0.00	0.00	2768.33	11610.88	14389.21	0.00	14389.20	-14389.20	-12289.40		
Year 4	0.00						11450.14	0.00	0.00	2939.08	11450.14	14389.21	0.00	14389.20	-14389.20	-11549.15		
Year 5	0.00						11268.86	0.00	0.00	3120.35	11268.86	14389.21	0.00	14389.20	-14389.20	-10853.49		
Year 6	0.00						11076.41	0.00	0.00	3312.81	11076.41	14389.21	0.00	14389.20	-14389.20	-10199.74		
Year 7	0.00						10872.08	0.00	0.00	3517.13	10872.08	14389.21	0.00	14389.20	-14389.20	-9585.36		
Year 8	0.00						10655.15	0.00	0.00	3734.06	10655.15	14389.21	0.00	14389.20	-14389.20	-9007.99		
Year 9	0.00						10424.84	0.00	0.00	3964.37	10424.84	14389.21	0.00	14389.20	-14389.20	-8465.40		
Year 10	0.00						10180.33	0.00	0.00	4208.89	10180.33	14389.21	0.00	14389.20	-14389.20	-7955.49		
Year 11	0.00						9920.73	0.00	0.00	4468.48	9920.73	14389.21	0.00	14389.20	-14389.20	-7476.30		
Year 12	0.00						9645.13	0.00	0.00	4744.09	9645.13	14389.21	0.00	14389.20	-14389.20	-7025.97		
Year 13	0.00						9352.52	0.00	0.00	5036.69	9352.52	14389.21	0.00	14389.20	-14389.20	-6602.76		
Year 14	0.00						9041.87	0.00	0.00	5347.34	9041.87	14389.21	0.00	14389.20	-14389.20	-6205.05		
Year 15	0.00						8712.06	0.00	0.00	147774.85	8712.06	156486.90	0.00	156486.89	-156486.89	-61791.53		
Total	200000.00						157935.88	4000.00	0.00	200000.00	157935.88	357935.88	4000.00	361935.69	-161935.69	0.00		

EXAMPLE 8

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	7.4%	DYNAMIC Recalculate
Total cost of the credit	284000.80	
Total amount of credit	200000.00	
Total amount payable	484000.80	

Illustrative scenario of change in the borrowing rate

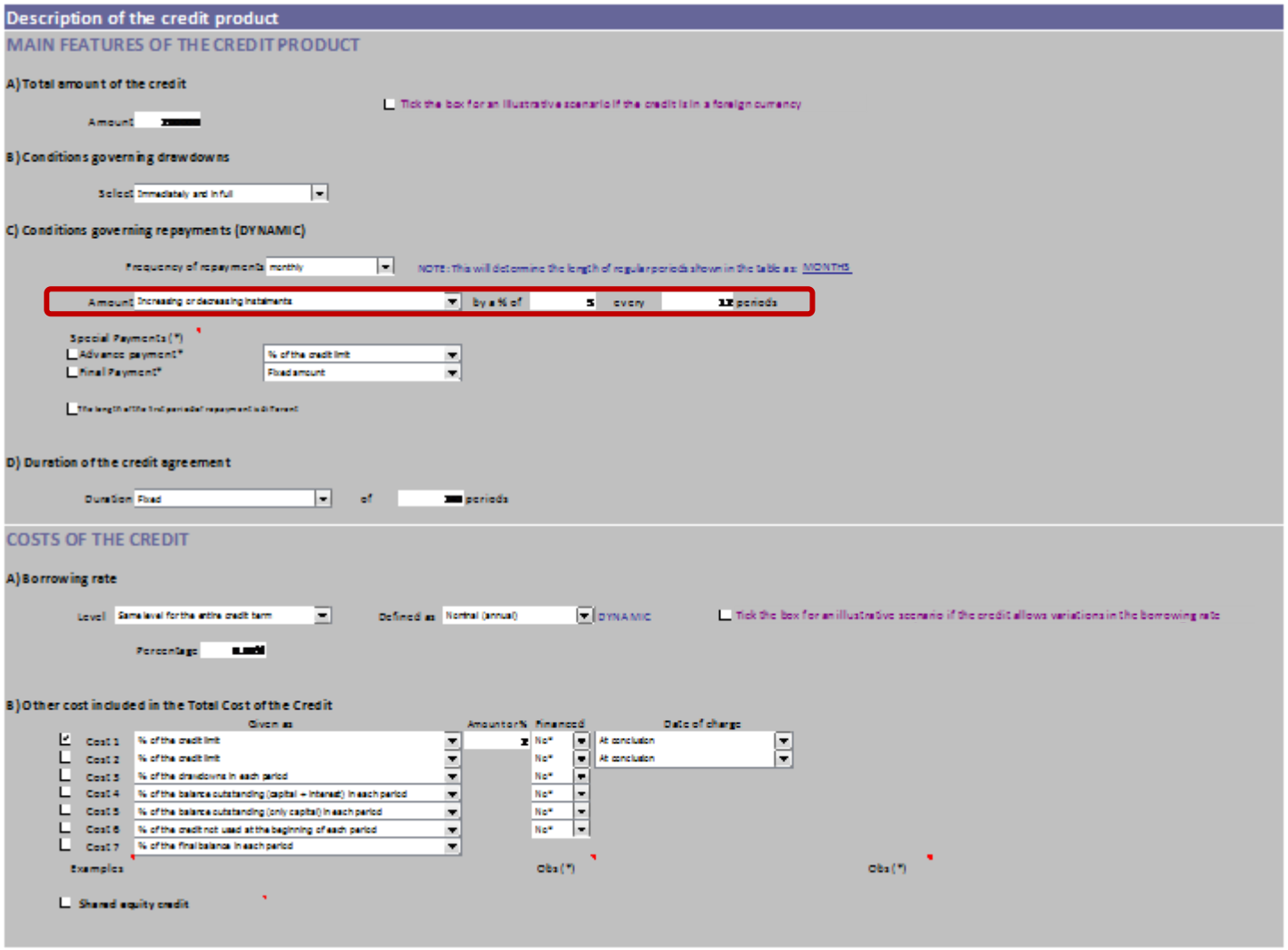
If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

8.9%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00	4000.00	
1		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1159.72	1166.67	
2		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1152.82	1166.67	
3		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1145.95	1166.67	
4		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1139.13	1166.67	
5		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1132.34	1166.67	
6		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1125.60	1166.67	
7		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1118.90	1398.33	
8		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1112.23	1398.33	
9		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1105.61	1398.33	
10		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1099.03	1398.33	
11		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1092.48	1398.33	
12		200000.00	200000.00	201166.67	200000.00	7.00%	1166.67			0.00	1166.67	1166.67	0.00	1166.67	-1166.67	-1085.98	1398.33	
Sums																		
Year 1	200000.00						14000.00	4000.00	0.00	0.00	14000.00	14000.00	4000.00	18000.04	181999.96	182530.21	19390.00	
Year 2	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-12538.15	16779.96	
Year 3	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-11670.94	16779.96	
Year 4	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-10863.71	16779.96	
Year 5	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-10112.32	16779.96	
Year 6	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-9412.90	16779.96	
Year 7	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-8761.85	16779.96	
Year 8	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-8155.83	16779.96	
Year 9	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-7591.73	16779.96	
Year 10	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-7066.64	16779.96	
Year 11	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-6577.88	16779.96	
Year 12	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-6122.92	16779.96	
Year 13	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-5699.42	16779.96	
Year 14	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-5305.22	16779.96	
Year 15	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-4938.28	16779.96	
Year 16	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-4596.72	16779.96	
Year 17	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-4278.79	16779.96	
Year 18	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-3982.84	16779.96	
Year 19	0.00						14000.00	0.00	0.00	0.00	14000.00	14000.00	0.00	14000.04	-14000.04	-3707.37	16779.96	
Year 20	0.00						14000.00	0.00	0.00	200000.00	14000.00	214000.00	0.00	214000.04	-214000.04	-51146.71	216779.96	
Total	200000.00						280000.00	4000.00	0.00	200000.00	280000.00	480000.00	4000.00	484000.80	-284000.80	0.00	538209.24	

EXAMPLE 9

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

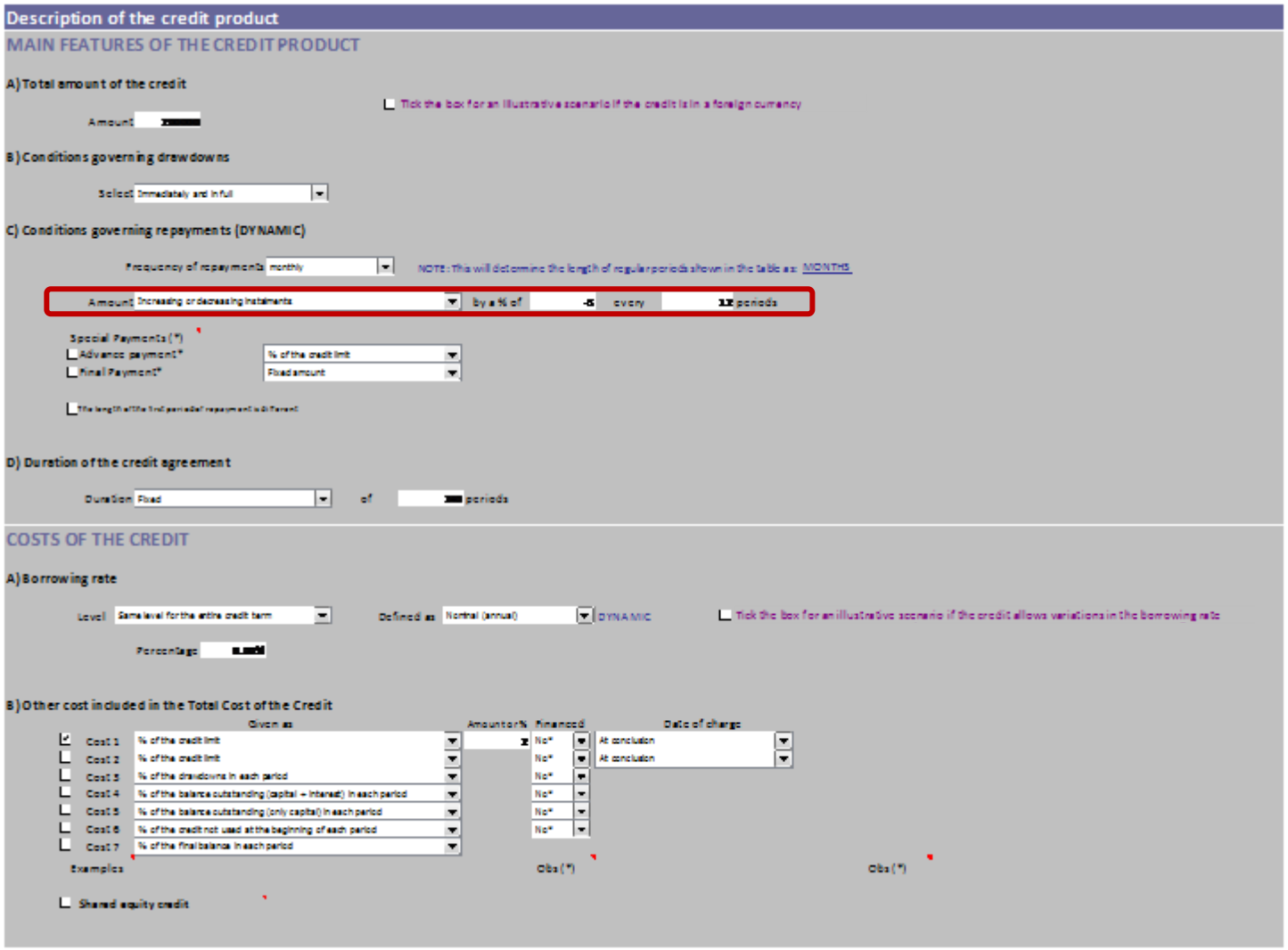
Main results

Final balance in the last period	0.00	
Amount of the first repayment	1130.33	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.4%	DYNAMIC Recalculate
Total cost of the credit	168469.64	
Total amount of credit	200000.00	
Total amount payable	368469.64	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit currency)	Highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199869.67	6.00%	1000.00			130.33	1000.00	1130.33	0.00	1130.33	-1130.33	-1124.50		
2		199869.67	199869.67	200869.02	199738.68	6.00%	999.35			130.98	999.35	1130.33	0.00	1130.33	-1130.33	-1118.69		
3		199738.68	199738.68	200737.38	199607.04	6.00%	998.69			131.64	998.69	1130.33	0.00	1130.33	-1130.33	-1112.92		
4		199607.04	199607.04	200605.08	199474.75	6.00%	998.04			132.30	998.04	1130.33	0.00	1130.33	-1130.33	-1107.17		
5		199474.75	199474.75	200472.12	199341.79	6.00%	997.37			132.96	997.37	1130.33	0.00	1130.33	-1130.33	-1101.46		
6		199341.79	199341.79	200338.50	199208.16	6.00%	996.71			133.62	996.71	1130.33	0.00	1130.33	-1130.33	-1095.77		
7		199208.16	199208.16	200204.20	199073.87	6.00%	996.04			134.29	996.04	1130.33	0.00	1130.33	-1130.33	-1090.12		
8		199073.87	199073.87	200069.24	198938.91	6.00%	995.37			134.96	995.37	1130.33	0.00	1130.33	-1130.33	-1084.49		
9		198938.91	198938.91	199933.60	198803.27	6.00%	994.69			135.64	994.69	1130.33	0.00	1130.33	-1130.33	-1078.90		
10		198803.27	198803.27	199797.29	198666.95	6.00%	994.02			136.32	994.02	1130.33	0.00	1130.33	-1130.33	-1073.33		
11		198666.95	198666.95	199660.29	198529.96	6.00%	993.33			137.00	993.33	1130.33	0.00	1130.33	-1130.33	-1067.79		
12		198529.96	198529.96	199522.61	198392.27	6.00%	992.65			137.68	992.65	1130.33	0.00	1130.33	-1130.33	-1062.28		
13		198392.27	198392.27	199384.23	198219.99	6.00%	991.96			172.28	991.96	1164.24	0.00	1164.24	-1164.24	-1088.50		
14		198219.99	198219.99	199211.09	198046.85	6.00%	991.10			173.14	991.10	1164.24	0.00	1164.24	-1164.24	-1082.88		
Sums																		
Year 1	200000.00						11956.27	4000.00	0.00	1607.73	11956.27	13563.99	4000.00	17563.96	182436.04	182882.59		
Year 2	0.00						11845.73	0.00	0.00	2125.19	11845.73	13970.91	0.00	13970.88	-13970.88	-12697.49		
Year 3	0.00						11702.93	0.00	0.00	2687.11	11702.93	14390.04	0.00	14390.04	-14390.04	-12291.03		
Year 4	0.00						11525.12	0.00	0.00	3296.62	11525.12	14821.74	0.00	14821.80	-14821.80	-11897.60		
Year 5	0.00						11309.36	0.00	0.00	3957.03	11309.36	15266.39	0.00	15266.40	-15266.40	-11516.68		
Year 6	0.00						11052.49	0.00	0.00	4671.89	11052.49	15724.38	0.00	15724.44	-15724.44	-11148.03		
Year 7	0.00						10751.15	0.00	0.00	5444.97	10751.15	16196.12	0.00	16196.16	-16196.16	-10791.14		
Year 8	0.00						10401.73	0.00	0.00	6280.27	10401.73	16682.00	0.00	16682.04	-16682.04	-10445.68		
Year 9	0.00						10000.38	0.00	0.00	7182.08	10000.38	17182.46	0.00	17182.44	-17182.44	-10111.24		
Year 10	0.00						9542.99	0.00	0.00	8154.94	9542.99	17697.93	0.00	17697.96	-17697.96	-9787.58		
Year 11	0.00						9025.16	0.00	0.00	9203.71	9025.16	18228.87	0.00	18228.84	-18228.84	-9474.22		
Year 12	0.00						8442.21	0.00	0.00	10333.53	8442.21	18775.74	0.00	18775.68	-18775.68	-9170.91		
Year 13	0.00						7789.11	0.00	0.00	11549.90	7789.11	19339.01	0.00	19338.96	-19338.96	-8877.32		
Year 14	0.00						7060.51	0.00	0.00	12858.67	7060.51	19919.18	0.00	19919.16	-19919.16	-8593.14		
Year 15	0.00						6250.70	0.00	0.00	14266.05	6250.70	20516.75	0.00	20516.76	-20516.76	-8318.06		
Year 16	0.00						5353.59	0.00	0.00	15778.66	5353.59	21132.26	0.00	21132.24	-21132.24	-8051.76		
Year 17	0.00						4362.67	0.00	0.00	17403.55	4362.67	21766.23	0.00	21766.20	-21766.20	-7794.00		
Year 18	0.00						3271.00	0.00	0.00	19148.21	3271.00	22419.21	0.00	22419.24	-22419.24	-7544.51		
Year 19	0.00						2071.17	0.00	0.00	21020.62	2071.17	23091.79	0.00	23091.84	-23091.84	-7302.99		
Year 20	0.00						755.29	0.00	0.00	23029.25	755.29	23784.54	0.00	23784.60	-23784.60	-7069.20		
Total	200000.00						164469.54	4000.00	0.00	200000.00	164469.54	364469.54	4000.00	368469.64	-168469.64	0.00		

EXAMPLE 10

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

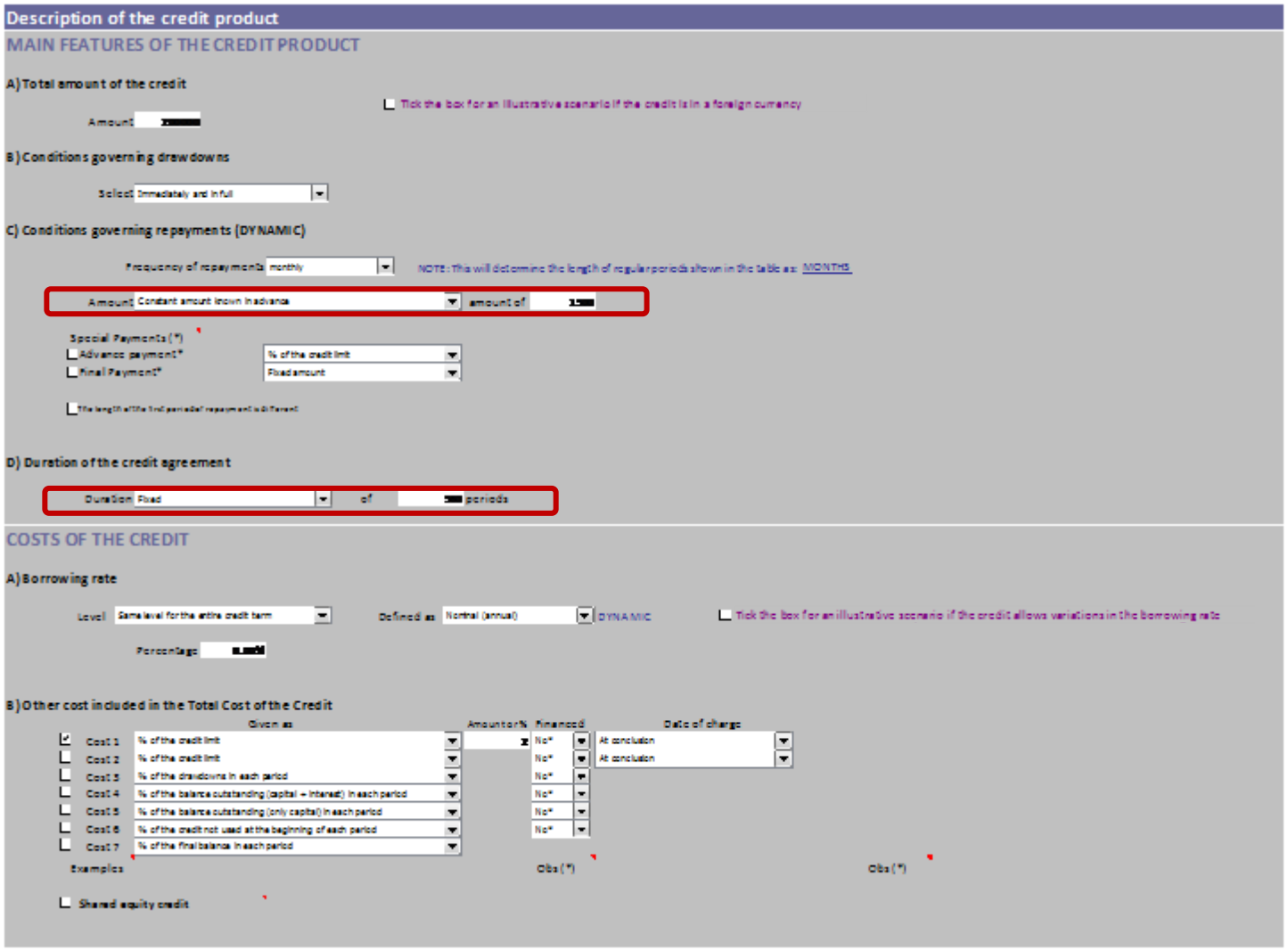
Final balance in the last period	0.00		
Amount of the first repayment	1778.58		Recalculate
Duration of the credit	240	MONTHS	
Present value of the cash flows	0.00		
Annual Percentage Rate of Charge	6.5%	DYNAMIC	Recalculate
Total cost of the credit	128559.08		
Total amount of credit	200000.00		
Total amount payable	328559.08		

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199221.42	6.00%	1000.00			778.58	1000.00	1778.58	0.00	1778.58	-1778.58	-1769.31		
2		199221.42	199221.42	200217.53	198438.95	6.00%	996.11			782.47	996.11	1778.58	0.00	1778.58	-1778.58	-1760.10		
3		198438.95	198438.95	199431.14	197652.56	6.00%	992.19			786.39	992.19	1778.58	0.00	1778.58	-1778.58	-1750.93		
4		197652.56	197652.56	198640.82	196862.24	6.00%	988.26			790.32	988.26	1778.58	0.00	1778.58	-1778.58	-1741.81		
5		196862.24	196862.24	197846.55	196067.97	6.00%	984.31			794.27	984.31	1778.58	0.00	1778.58	-1778.58	-1732.73		
6		196067.97	196067.97	197048.31	195269.73	6.00%	980.34			798.24	980.34	1778.58	0.00	1778.58	-1778.58	-1723.71		
7		195269.73	195269.73	196246.08	194467.50	6.00%	976.35			802.23	976.35	1778.58	0.00	1778.58	-1778.58	-1714.73		
8		194467.50	194467.50	195439.84	193661.26	6.00%	972.34			806.24	972.34	1778.58	0.00	1778.58	-1778.58	-1705.79		
9		193661.26	193661.26	194629.56	192850.98	6.00%	968.31			810.27	968.31	1778.58	0.00	1778.58	-1778.58	-1696.91		
10		192850.98	192850.98	193815.24	192036.66	6.00%	964.25			814.33	964.25	1778.58	0.00	1778.58	-1778.58	-1688.07		
11		192036.66	192036.66	192996.84	191218.26	6.00%	960.18			818.40	960.18	1778.58	0.00	1778.58	-1778.58	-1679.27		
12		191218.26	191218.26	192174.35	190395.77	6.00%	956.09			822.49	956.09	1778.58	0.00	1778.58	-1778.58	-1670.52		
13		190395.77	190395.77	191347.75	189622.53	6.00%	951.98			773.24	951.98	1725.22	0.00	1725.22	-1725.22	-1611.96		
14		189622.53	189622.53	190570.64	188845.42	6.00%	948.11			777.11	948.11	1725.22	0.00	1725.22	-1725.22	-1603.57		
Sums																		
Year 1	200000.00						11738.74	4000.00	0.00	9604.23	11738.74	21342.97	4000.00	25342.96	174657.04	175366.13		
Year 2	0.00						11164.27	0.00	0.00	9538.40	11164.27	20702.68	0.00	20702.64	-20702.64	-18798.85		
Year 3	0.00						10593.33	0.00	0.00	9488.26	10593.33	20081.60	0.00	20081.64	-20081.64	-17127.11		
Year 4	0.00						10024.97	0.00	0.00	9454.18	10024.97	19479.15	0.00	19479.12	-19479.12	-15603.92		
Year 5	0.00						9458.19	0.00	0.00	9436.58	9458.19	18894.77	0.00	18894.72	-18894.72	-14216.23		
Year 6	0.00						8892.02	0.00	0.00	9435.91	8892.02	18327.93	0.00	18327.96	-18327.96	-12952.02		
Year 7	0.00						8325.41	0.00	0.00	9452.69	8325.41	17778.09	0.00	17778.12	-17778.12	-11800.18		
Year 8	0.00						7757.30	0.00	0.00	9487.45	7757.30	17244.75	0.00	17244.72	-17244.72	-10750.74		
Year 9	0.00						7186.60	0.00	0.00	9540.81	7186.60	16727.41	0.00	16727.40	-16727.40	-9794.68		
Year 10	0.00						6612.18	0.00	0.00	9613.41	6612.18	16225.59	0.00	16225.56	-16225.56	-8923.61		
Year 11	0.00						6032.85	0.00	0.00	9705.96	6032.85	15738.82	0.00	15738.84	-15738.84	-8130.05		
Year 12	0.00						5447.42	0.00	0.00	9819.24	5447.42	15266.65	0.00	15266.64	-15266.64	-7407.02		
Year 13	0.00						4854.59	0.00	0.00	9954.06	4854.59	14808.65	0.00	14808.60	-14808.60	-6748.28		
Year 14	0.00						4253.07	0.00	0.00	10111.32	4253.07	14364.39	0.00	14364.36	-14364.36	-6148.16		
Year 15	0.00						3641.48	0.00	0.00	10291.99	3641.48	13933.46	0.00	13933.44	-13933.44	-5601.40		
Year 16	0.00						3018.38	0.00	0.00	10497.08	3018.38	13515.46	0.00	13515.48	-13515.48	-5103.28		
Year 17	0.00						2382.28	0.00	0.00	10727.71	2382.28	13110.00	0.00	13110.00	-13110.00	-4649.43		
Year 18	0.00						1731.62	0.00	0.00	10985.08	1731.62	12716.70	0.00	12716.64	-12716.64	-4235.93		
Year 19	0.00						1064.75	0.00	0.00	11270.45	1064.75	12335.19	0.00	12335.16	-12335.16	-3859.23		
Year 20	0.00						379.96	0.00	0.00	11585.18	379.96	11965.14	0.00	11965.08	-11965.08	-3516.02		
Total	200000.00						124559.40	4000.00	0.00	200000.00	124559.40	324559.40	4000.00	328559.08	-128559.08	0.00		

EXAMPLE 11

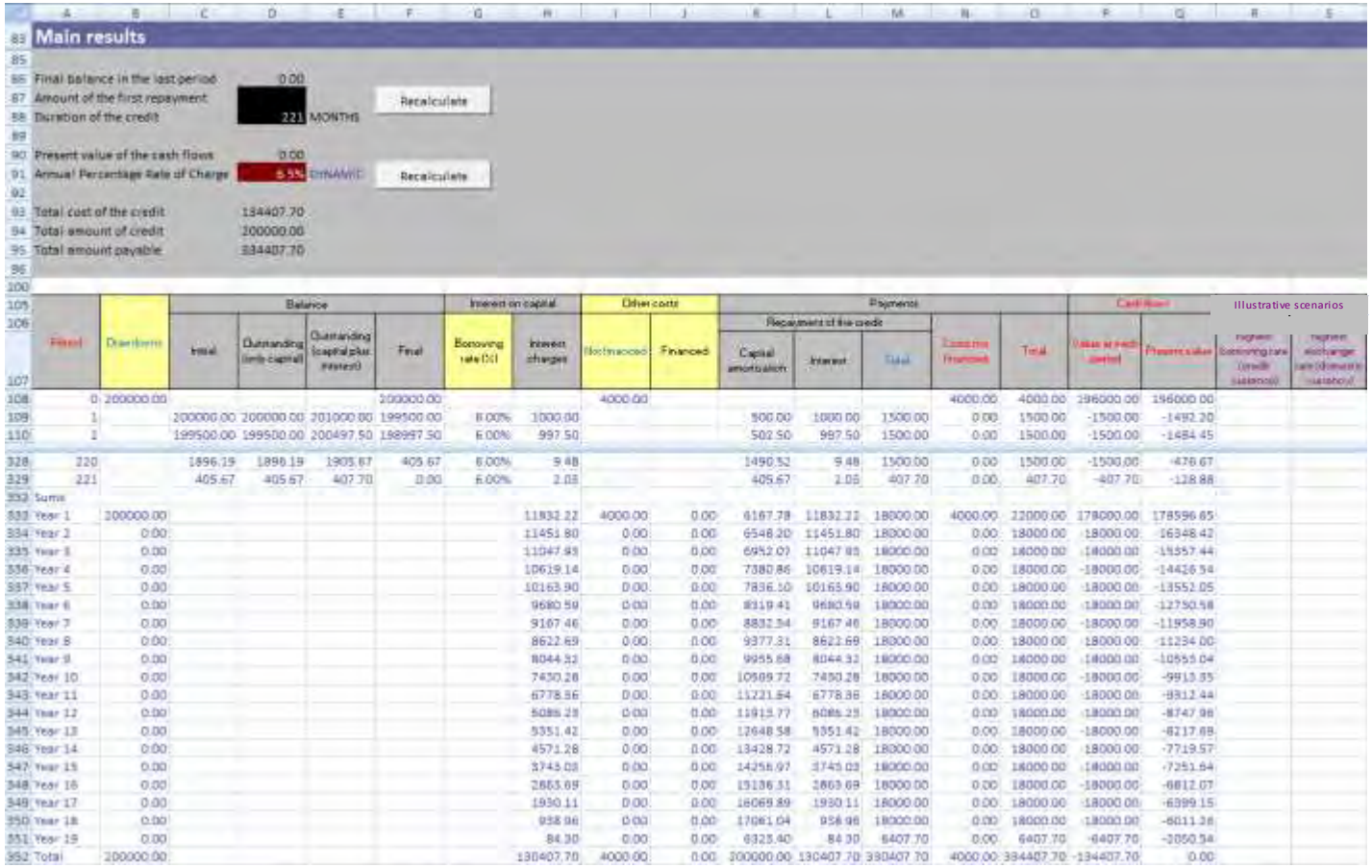
Click on the button *Reset* and then enter the information highlighted in red.

The duration of the credit in this example depends on the amount of the repayments and will be determined internally by the simulator. However, if you plan to enter or change manually the values in the amortisation table before calculating the APR, you should enter as *Duration of the credit agreement* a high number of periods (e.g. 360 months), so that the table will not be extended by the simulator without considering your changes.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

As shown in the amortisation table and the main results, the duration of the credit resulting from the repayments is 221 months.



Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	221 MONTHS	
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.5% DYNAMIC	Recalculate
Total cost of the credit	134407.70	
Total amount of credit	200000.00	
Total amount payable	334407.70	

	Fixed	Overterm	Balance: Initial	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charges	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortisation	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Total	Payments: Expenses financed	Payments: Total	Cash flows: Value at each period	Cash flows: Present value	Illustrative scenarios: Higher borrowing rate (credit customer)	Illustrative scenarios: Higher exchange rate (element customer)
108	0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
109	1		200000.00	200000.00	201000.00	199500.00	6.00%	1000.00			500.00	1000.00	1500.00	0.00	1500.00	-1500.00	-1492.20		
110	2		199500.00	199500.00	200497.50	198997.50	6.00%	997.50			502.50	997.50	1500.00	0.00	1500.00	-1500.00	-1484.45		
328	220		1896.19	1896.19	1905.67	405.67	6.00%	9.48			1490.52	9.48	1500.00	0.00	1500.00	-1500.00	-478.67		
329	221		405.67	405.67	407.70	0.00	6.00%	2.03			405.67	2.03	407.70	0.00	407.70	-407.70	-128.88		
332	Sums																		
333	Year 1	200000.00						11832.22	4000.00	0.00	6167.78	11832.22	18000.00	4000.00	22000.00	178000.00	178596.65		
334	Year 2	0.00						11451.80	0.00	0.00	6548.20	11451.80	18000.00	0.00	18000.00	-18000.00	-16348.42		
335	Year 3	0.00						11047.93	0.00	0.00	6952.07	11047.93	18000.00	0.00	18000.00	-18000.00	-15557.44		
336	Year 4	0.00						10619.14	0.00	0.00	7380.86	10619.14	18000.00	0.00	18000.00	-18000.00	-14826.54		
337	Year 5	0.00						10163.90	0.00	0.00	7836.10	10163.90	18000.00	0.00	18000.00	-18000.00	-14152.05		
338	Year 6	0.00						9680.59	0.00	0.00	8319.41	9680.59	18000.00	0.00	18000.00	-18000.00	-13530.58		
339	Year 7	0.00						9167.46	0.00	0.00	8832.54	9167.46	18000.00	0.00	18000.00	-18000.00	-11958.90		
340	Year 8	0.00						8622.69	0.00	0.00	9377.31	8622.69	18000.00	0.00	18000.00	-18000.00	-11234.00		
341	Year 9	0.00						8044.32	0.00	0.00	9955.68	8044.32	18000.00	0.00	18000.00	-18000.00	-10555.04		
342	Year 10	0.00						7450.28	0.00	0.00	10549.72	7450.28	18000.00	0.00	18000.00	-18000.00	-9913.35		
343	Year 11	0.00						6778.36	0.00	0.00	11221.64	6778.36	18000.00	0.00	18000.00	-18000.00	-9312.44		
344	Year 12	0.00						6086.23	0.00	0.00	11913.77	6086.23	18000.00	0.00	18000.00	-18000.00	-8747.98		
345	Year 13	0.00						5351.42	0.00	0.00	12648.58	5351.42	18000.00	0.00	18000.00	-18000.00	-8217.68		
346	Year 14	0.00						4571.28	0.00	0.00	13428.72	4571.28	18000.00	0.00	18000.00	-18000.00	-7719.57		
347	Year 15	0.00						3743.03	0.00	0.00	14256.97	3743.03	18000.00	0.00	18000.00	-18000.00	-7251.64		
348	Year 16	0.00						2863.69	0.00	0.00	15136.31	2863.69	18000.00	0.00	18000.00	-18000.00	-6812.07		
349	Year 17	0.00						1930.11	0.00	0.00	16069.89	1930.11	18000.00	0.00	18000.00	-18000.00	-6399.15		
350	Year 18	0.00						938.96	0.00	0.00	17061.04	938.96	18000.00	0.00	18000.00	-18000.00	-6011.28		
351	Year 19	0.00						84.30	0.00	0.00	6323.40	84.30	6407.70	0.00	6407.70	-6407.70	-2050.54		
352	Total	200000.00						130407.70	4000.00	0.00	200000.00	130407.70	330407.70	4000.00	334407.70	-134407.70	0.00		

The simulator also update the duration previously entered to this final number of periods.

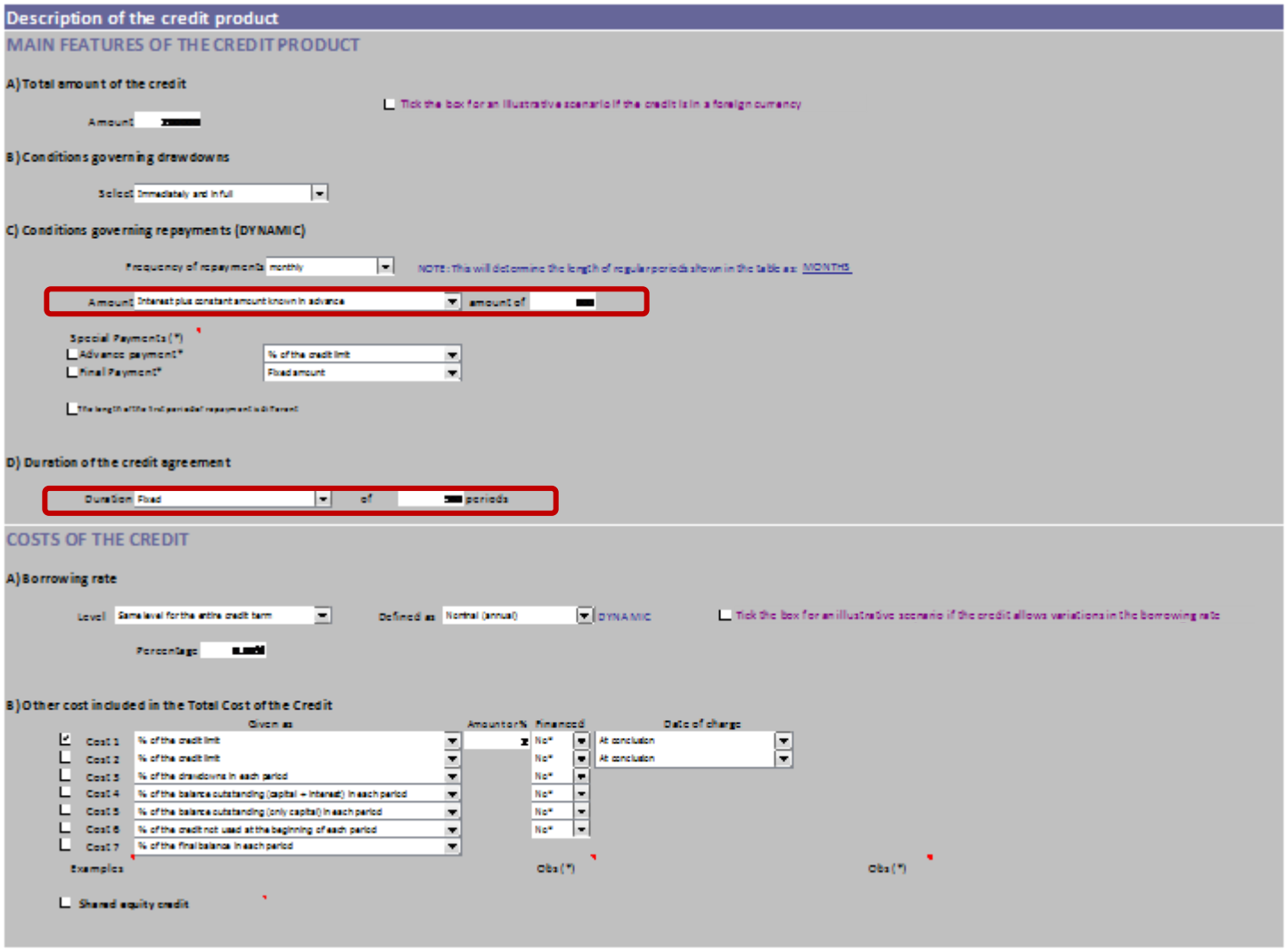
D) Duration of the credit agreement

Duration Fixed of 221 periods

EXAMPLE 12

Click on the button *Reset* and then enter the information highlighted in red.

The duration of the credit in this example depends on the amount of the repayments and will be determined internally by the simulator. However, if you plan to enter or change manually the values in the amortisation table before calculating the APR, you should enter as *Duration of the credit agreement* a high number of periods (e.g. 360), so that the table will not be extended by the simulator without considering your changes.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

As shown in the amortisation table and the main results, the duration of the credit resulting from the repayments is 223 months.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	223	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.5%	DYNAMIC — Recalculate
Total cost of the credit	115611.50	
Total amount of credit	200000.00	
Total amount payable	315611.50	

	Period	Drawdowns	Balance: Value	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charges	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortisation	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Total	Payments: Cost not financed	Payments: Total	Cash flows: Value to credit period	Cash flows: Present value	Illustrative scenarios: Higher borrowing rate (credit currency)	Illustrative scenarios: Higher exchange rate (domestic currency)
108	0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
109	1		200000.00	200000.00	201000.00	199100.00	6.00%	1000.00			900.00	1000.00	1900.00	0.00	1900.00	-1900.00	-1890.07		
110	2		199100.00	199100.00	200095.50	198200.00	6.00%	995.50			900.00	995.50	1895.50	0.00	1895.50	-1895.50	-1875.75		
330	222		1100.00	1100.00	1105.50	200.00	6.00%	5.50			900.00	5.50	905.50	0.00	905.50	-905.50	-282.80		
331	223		200.00	200.00	201.00	0.00	6.00%	1.00			200.00	1.00	201.00	0.00	201.00	-201.00	-62.45		
334	Sums																		
335	Year 1	200000.00						11703.00	4000.00	0.00	10800.00	11703.00	22503.00	4000.00	26503.00	173497.00	174244.02		
336	Year 2	0.00						11055.00	0.00	0.00	10800.00	11055.00	21855.00	0.00	21855.00	-21855.00	-19841.38		
337	Year 3	0.00						10407.00	0.00	0.00	10800.00	10407.00	21207.00	0.00	21207.00	-21207.00	-18079.37		
338	Year 4	0.00						9759.00	0.00	0.00	10800.00	9759.00	20559.00	0.00	20559.00	20559.00	-16458.45		
339	Year 5	0.00						9111.00	0.00	0.00	10800.00	9111.00	19911.00	0.00	19911.00	-19911.00	-14967.98		
340	Year 6	0.00						8463.00	0.00	0.00	10800.00	8463.00	19263.00	0.00	19263.00	-19263.00	-13598.07		
341	Year 7	0.00						7815.00	0.00	0.00	10800.00	7815.00	18615.00	0.00	18615.00	-18615.00	-12339.57		
342	Year 8	0.00						7167.00	0.00	0.00	10800.00	7167.00	17967.00	0.00	17967.00	-17967.00	-11185.98		
343	Year 9	0.00						6519.00	0.00	0.00	10800.00	6519.00	17319.00	0.00	17319.00	-17319.00	-10123.42		
344	Year 10	0.00						5871.00	0.00	0.00	10800.00	5871.00	16671.00	0.00	16671.00	-16671.00	-9150.62		
345	Year 11	0.00						5223.00	0.00	0.00	10800.00	5223.00	16023.00	0.00	16023.00	-16023.00	-8258.80		
346	Year 12	0.00						4575.00	0.00	0.00	10800.00	4575.00	15375.00	0.00	15375.00	-15375.00	-7441.71		
347	Year 13	0.00						3927.00	0.00	0.00	10800.00	3927.00	14727.00	0.00	14727.00	-14727.00	-6693.56		
348	Year 14	0.00						3279.00	0.00	0.00	10800.00	3279.00	14079.00	0.00	14079.00	-14079.00	-6008.97		
349	Year 15	0.00						2631.00	0.00	0.00	10800.00	2631.00	13431.00	0.00	13431.00	-13431.00	-5382.98		
350	Year 16	0.00						1983.00	0.00	0.00	10800.00	1983.00	12783.00	0.00	12783.00	-12783.00	-4810.98		
351	Year 17	0.00						1335.00	0.00	0.00	10800.00	1335.00	12135.00	0.00	12135.00	-12135.00	-4288.72		
352	Year 18	0.00						687.00	0.00	0.00	10800.00	687.00	11487.00	0.00	11487.00	-11487.00	-3812.25		
353	Year 19	0.00						101.50	0.00	0.00	5600.00	101.50	5701.50	0.00	5701.50	-5701.50	-1803.21		
354	Total	200000.00						111611.50	4000.00	0.00	100000.00	111611.50	311611.50	4000.00	315611.50	-115611.50	0.00		

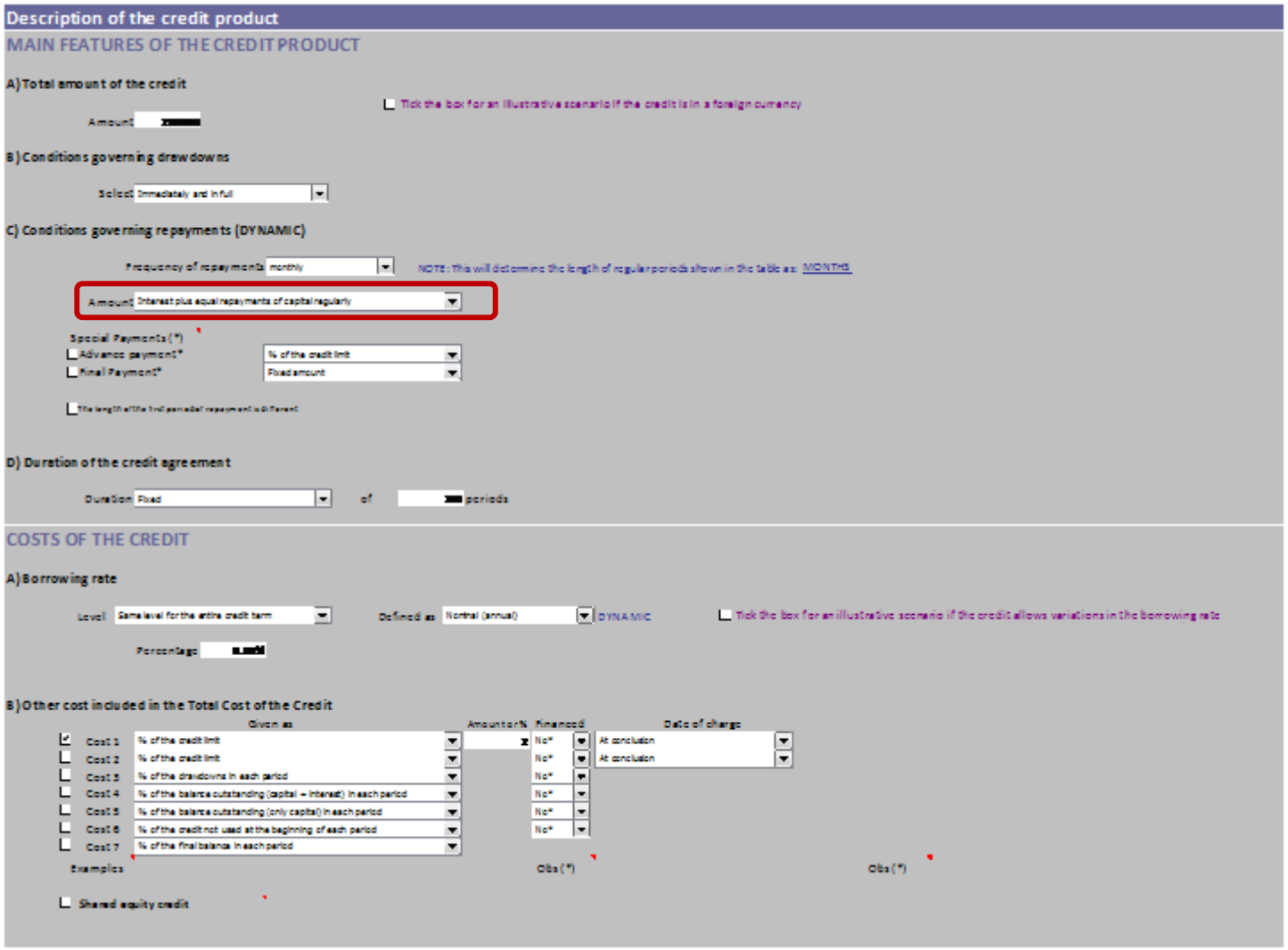
The simulator also update the duration previously entered to this final number of periods.

D) Duration of the credit agreement

Duration Fixed of 223 periods

EXAMPLE 13

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

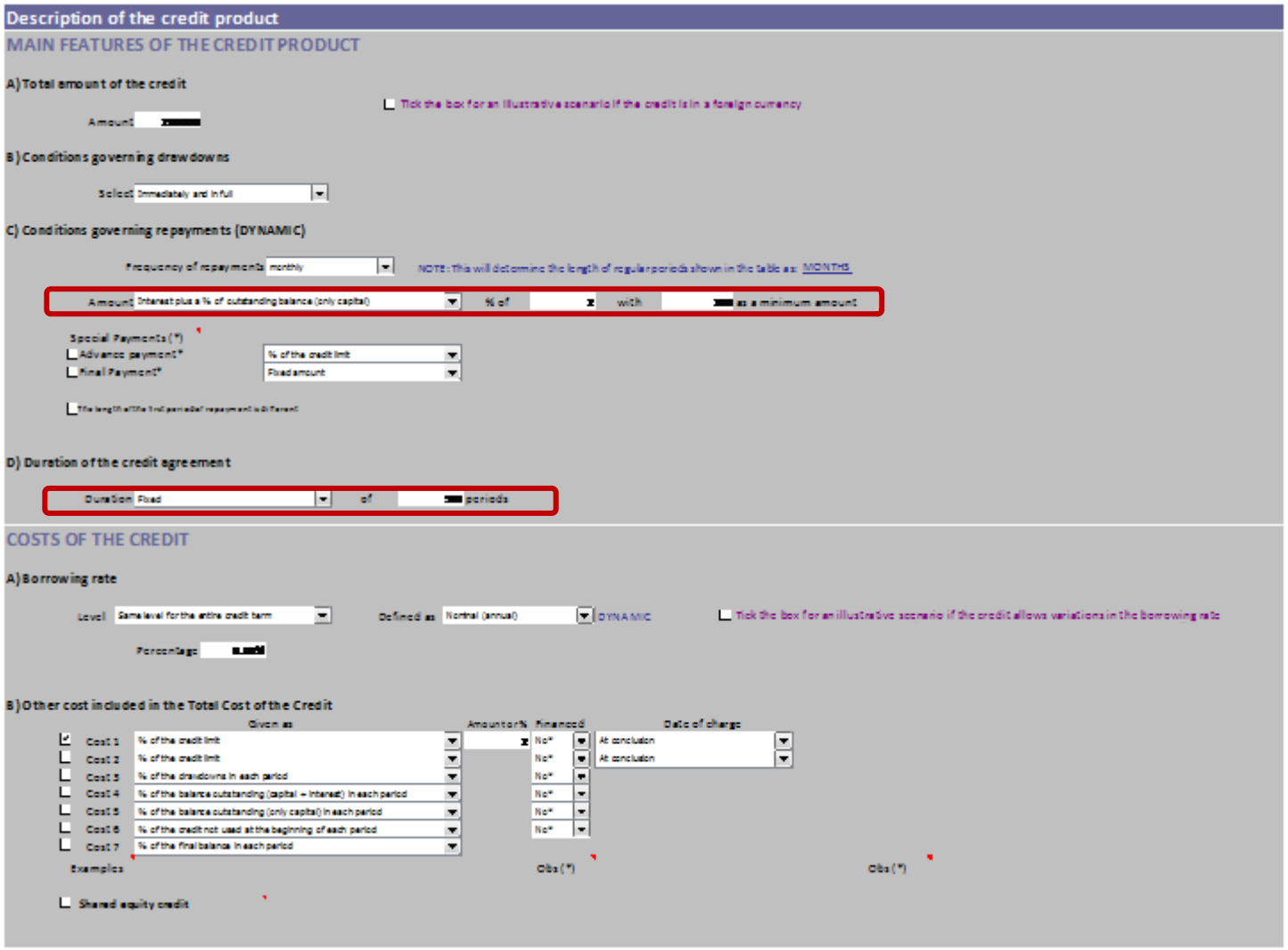
Final balance in the last period	0.00	
Amount of the first repayment		Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.5%	DYNAMIC Recalculate
Total cost of the credit	124500.00	
Total amount of credit	200000.00	
Total amount payable	324500.00	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit currency)	Highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199166.67	6.00%	1000.00			833.33	1000.00	1833.33	0.00	1833.33	-1833.33	-1823.77		
2		199166.67	199166.67	200162.50	198333.33	6.00%	995.83			833.33	995.83	1829.17	0.00	1829.17	-1829.17	-1810.14		
3		198333.33	198333.33	199325.00	197500.00	6.00%	991.67			833.33	991.67	1825.00	0.00	1825.00	-1825.00	-1796.59		
4		197500.00	197500.00	198487.50	196666.67	6.00%	987.50			833.33	987.50	1820.83	0.00	1820.83	-1820.83	-1783.14		
5		196666.67	196666.67	197650.00	195833.33	6.00%	983.33			833.33	983.33	1816.67	0.00	1816.67	-1816.67	-1769.79		
6		195833.33	195833.33	196812.50	195000.00	6.00%	979.17			833.33	979.17	1812.50	0.00	1812.50	-1812.50	-1756.52		
7		195000.00	195000.00	195975.00	194166.67	6.00%	975.00			833.33	975.00	1808.33	0.00	1808.33	-1808.33	-1743.33		
8		194166.67	194166.67	195137.50	193333.33	6.00%	970.83			833.33	970.83	1804.17	0.00	1804.17	-1804.17	-1730.25		
9		193333.33	193333.33	194300.00	192500.00	6.00%	966.67			833.33	966.67	1800.00	0.00	1800.00	-1800.00	-1717.25		
10		192500.00	192500.00	193462.50	191666.67	6.00%	962.50			833.33	962.50	1795.83	0.00	1795.83	-1795.83	-1704.34		
11		191666.67	191666.67	192625.00	190833.33	6.00%	958.33			833.33	958.33	1791.67	0.00	1791.67	-1791.67	-1691.52		
12		190833.33	190833.33	191787.50	190000.00	6.00%	954.17			833.33	954.17	1787.50	0.00	1787.50	-1787.50	-1678.78		
Sums																		
Year 1	200000.00						11725.00	4000.00	0.00	10000.00	11725.00	21725.00	4000.00	25725.00	174275.00	174994.58		
Year 2	0.00						11125.00	0.00	0.00	10000.00	11125.00	21125.00	0.00	21125.00	-21125.00	-19183.08		
Year 3	0.00						10525.00	0.00	0.00	10000.00	10525.00	20525.00	0.00	20525.00	-20525.00	-17504.71		
Year 4	0.00						9925.00	0.00	0.00	10000.00	9925.00	19925.00	0.00	19925.00	-19925.00	-15959.54		
Year 5	0.00						9325.00	0.00	0.00	10000.00	9325.00	19325.00	0.00	19325.00	-19325.00	-14537.57		
Year 6	0.00						8725.00	0.00	0.00	10000.00	8725.00	18725.00	0.00	18725.00	-18725.00	-13229.54		
Year 7	0.00						8125.00	0.00	0.00	10000.00	8125.00	18125.00	0.00	18125.00	-18125.00	-12026.84		
Year 8	0.00						7525.00	0.00	0.00	10000.00	7525.00	17525.00	0.00	17525.00	-17525.00	-10921.50		
Year 9	0.00						6925.00	0.00	0.00	10000.00	6925.00	16925.00	0.00	16925.00	-16925.00	-9906.13		
Year 10	0.00						6325.00	0.00	0.00	10000.00	6325.00	16325.00	0.00	16325.00	-16325.00	-8973.87		
Year 11	0.00						5725.00	0.00	0.00	10000.00	5725.00	15725.00	0.00	15725.00	-15725.00	-8118.36		
Year 12	0.00						5125.00	0.00	0.00	10000.00	5125.00	15125.00	0.00	15125.00	-15125.00	-7333.73		
Year 13	0.00						4525.00	0.00	0.00	10000.00	4525.00	14525.00	0.00	14525.00	-14525.00	-6614.51		
Year 14	0.00						3925.00	0.00	0.00	10000.00	3925.00	13925.00	0.00	13925.00	-13925.00	-5955.64		
Year 15	0.00						3325.00	0.00	0.00	10000.00	3325.00	13325.00	0.00	13325.00	-13325.00	-5352.46		
Year 16	0.00						2725.00	0.00	0.00	10000.00	2725.00	12725.00	0.00	12725.00	-12725.00	-4800.62		
Year 17	0.00						2125.00	0.00	0.00	10000.00	2125.00	12125.00	0.00	12125.00	-12125.00	-4296.10		
Year 18	0.00						1525.00	0.00	0.00	10000.00	1525.00	11525.00	0.00	11525.00	-11525.00	-3835.20		
Year 19	0.00						925.00	0.00	0.00	10000.00	925.00	10925.00	0.00	10925.00	-10925.00	-3414.47		
Year 20	0.00						325.00	0.00	0.00	10000.00	325.00	10325.00	0.00	10325.00	-10325.00	-3030.73		
Total	200000.00						120500.00	4000.00	0.00	200000.00	120500.00	320500.00	4000.00	324500.00	-124500.00	0.00		

EXAMPLE 14

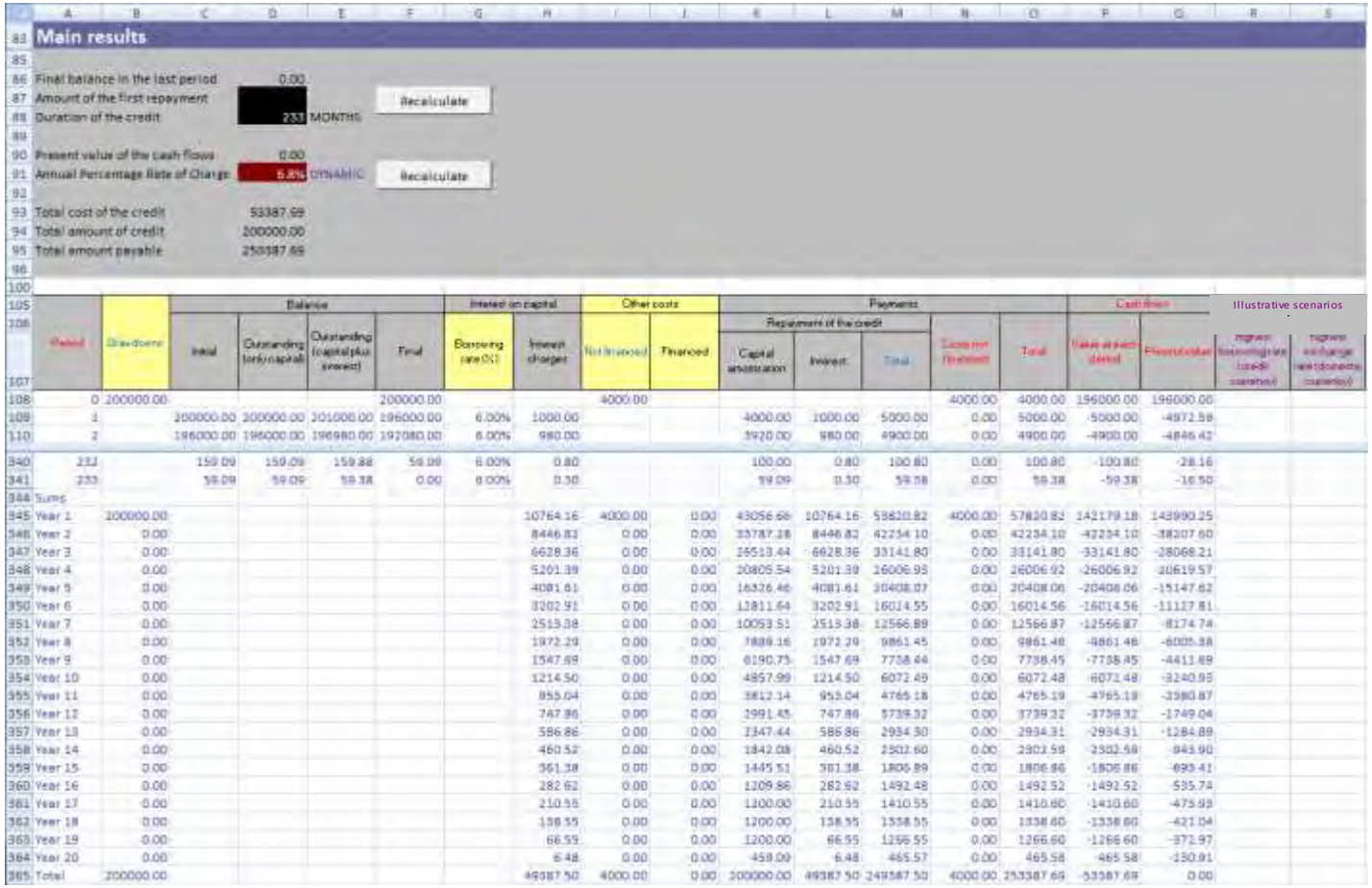
Click on the button *Reset* and then enter the information highlighted in red.

The duration of the credit in this example depends on the amount of the repayments and will be determined internally by the simulator. However, if you plan to enter or change manually the values in the amortisation table before calculating the APR, you should enter as *Duration of the credit agreement* a high number of periods (e.g. 360), so that the table will not be extended by the simulator without considering your changes.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

As shown in the amortisation table and the main results, the duration of the credit resulting from the repayments is 233 months.



Main results

Final balance in the last period	0.00
Amount of the first repayment	[redacted]
Duration of the credit	233 MONTHS
Present value of the cash flows	0.00
Annual Percentage Rate of Charge	6.8% DYNAMIC
Total cost of the credit	53387.69
Total amount of credit	200000.00
Total amount payable	253387.69

Recalculate

Recalculate

			Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
											Repayment of the credit								
Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit scenario)	Highest exchange rate (currency scenario)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	196000.00	6.00%	1000.00			4000.00	1000.00	5000.00	0.00	5000.00	-5000.00	-4872.58		
2		196000.00	196000.00	196980.00	192080.00	6.00%	980.00			3920.00	980.00	4900.00	0.00	4900.00	-4900.00	-4846.42		
232		159.09	159.09	159.88	59.08	6.00%	0.80			100.00	0.80	100.80	0.00	100.80	-100.80	-28.16		
233		59.09	59.09	59.38	0.00	6.00%	0.30			59.09	0.30	59.38	0.00	59.38	-59.38	-16.50		
Sums																		
Year 1	200000.00						10764.16	4000.00	0.00	43056.66	10764.16	53820.82	4000.00	57820.82	142179.18	143990.25		
Year 2	0.00						8446.83	0.00	0.00	33787.28	8446.82	42234.10	0.00	42234.10	-42234.10	-38207.60		
Year 3	0.00						6628.36	0.00	0.00	26513.44	6628.36	33141.80	0.00	33141.80	-33141.80	-28068.21		
Year 4	0.00						5201.39	0.00	0.00	20805.54	5201.38	26006.93	0.00	26006.92	-26006.92	-20619.57		
Year 5	0.00						4081.61	0.00	0.00	16326.46	4081.61	20408.07	0.00	20408.06	-20408.06	-15147.62		
Year 6	0.00						3202.91	0.00	0.00	12811.64	3202.91	16014.55	0.00	16014.56	-16014.56	-11127.81		
Year 7	0.00						2513.38	0.00	0.00	10053.51	2513.38	12566.89	0.00	12566.87	-12566.87	-8174.74		
Year 8	0.00						1972.29	0.00	0.00	7888.16	1972.29	9861.45	0.00	9861.48	-9861.48	-6005.38		
Year 9	0.00						1547.69	0.00	0.00	6190.75	1547.69	7738.44	0.00	7738.45	-7738.45	-4411.89		
Year 10	0.00						1214.50	0.00	0.00	4857.99	1214.50	6072.49	0.00	6072.48	-6072.48	-3240.93		
Year 11	0.00						953.04	0.00	0.00	3812.14	953.04	4765.18	0.00	4765.19	-4765.19	-2380.87		
Year 12	0.00						747.86	0.00	0.00	2991.45	747.86	3739.32	0.00	3739.32	-3739.32	-1749.04		
Year 13	0.00						586.86	0.00	0.00	2347.44	586.86	2934.30	0.00	2934.31	-2934.31	-1284.89		
Year 14	0.00						460.52	0.00	0.00	1842.08	460.52	2302.60	0.00	2302.59	-2302.59	-945.90		
Year 15	0.00						361.38	0.00	0.00	1445.51	361.38	1806.89	0.00	1806.88	-1806.88	-693.41		
Year 16	0.00						282.62	0.00	0.00	1209.86	282.62	1492.48	0.00	1492.52	-1492.52	-535.74		
Year 17	0.00						210.55	0.00	0.00	1200.00	210.55	1410.55	0.00	1410.60	-1410.60	-475.93		
Year 18	0.00						138.55	0.00	0.00	1200.00	138.55	1338.55	0.00	1338.60	-1338.60	-421.04		
Year 19	0.00						66.55	0.00	0.00	1200.00	66.55	1266.55	0.00	1266.60	-1266.60	-372.97		
Year 20	0.00						6.48	0.00	0.00	459.00	6.48	465.57	0.00	465.58	-465.58	-130.91		
Total	200000.00						49387.50	4000.00	0.00	200000.00	49387.50	249387.50	4000.00	253387.69	-53387.69	0.00		

The simulator also update the duration previously entered to this final number of periods.

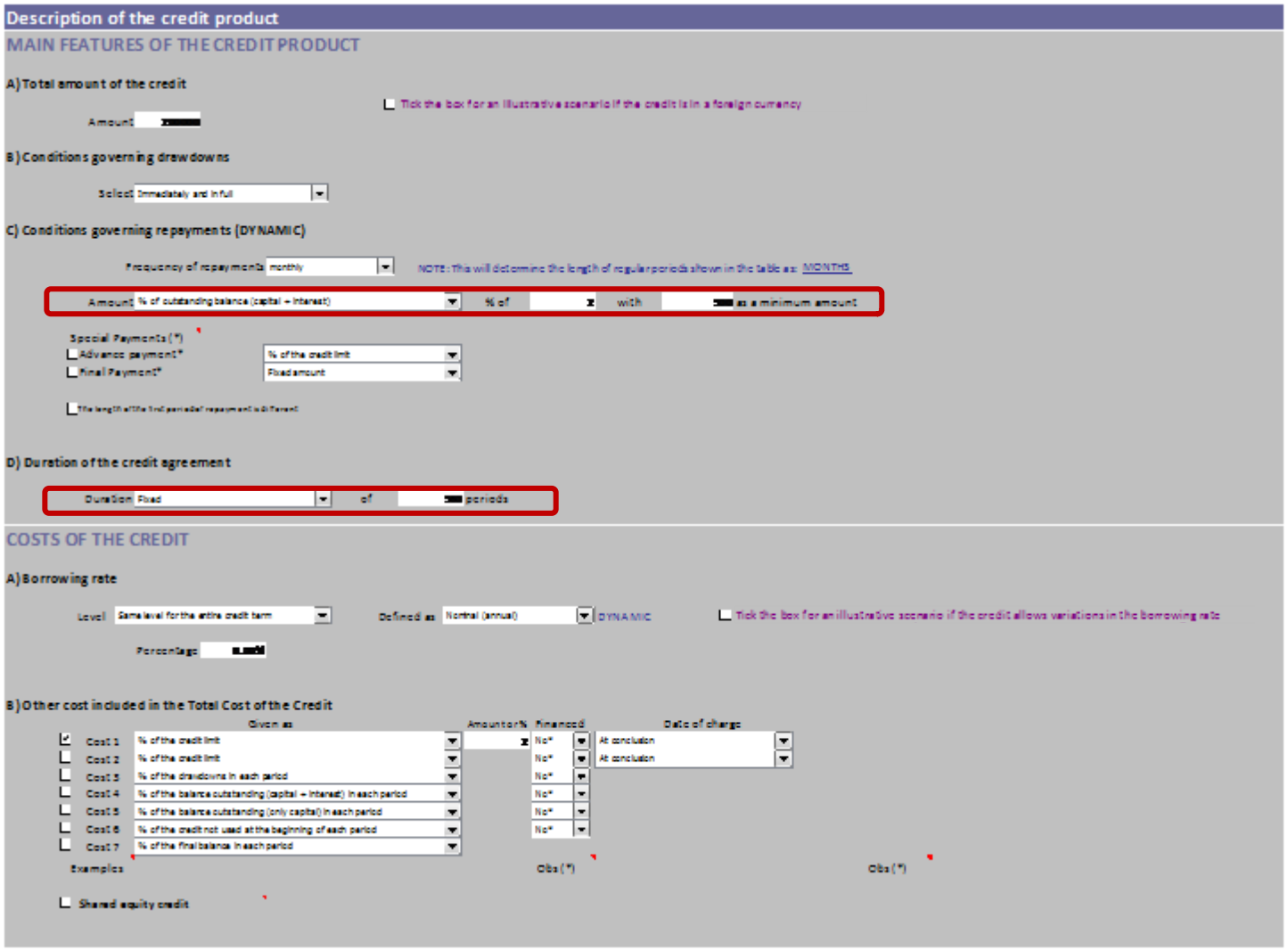
D) Duration of the credit agreement

Duration Fixed of 233 periods

EXAMPLE 15

Click on the button *Reset* and then enter the information highlighted in red.

The duration of the credit in this example depends on the amount of the repayments and will be determined internally by the simulator. However, if you plan to enter or change manually the values in the amortisation table before calculating the APR, you should enter as *Duration of the credit agreement* a high number of periods (e.g. 360), so that the table will not be extended by the simulator without considering your changes.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

As shown in the amortisation table and the main results, the duration of the credit resulting from the repayments is 16 months.

Main results

86	Final balance in the last period	0.00	
87	Amount of the first repayment	[redacted]	Recalculate
88	Duration of the credit	228	MONTHS
90	Present value of the cash flows	0.00	
91	Annual Percentage Rate of Charge	6.7%	DYNAMIC Recalculate
93	Total cost of the credit	67561.85	
94	Total amount of credit	200000.00	
95	Total amount payable	267561.85	

	Period	Drawdowns	Balance: Initial	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charges	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortisation	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Total	Payments: Commission financed	Payments: Total	Cash flows: Value at each period	Cash flows: Present value	Illustrative scenarios: borrowing rate (credit numerical)	Illustrative scenarios: exchange rate (numerical)
108	0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
109	1		200000.00	200000.00	201000.00	196980.00	6.00%	1000.00			3020.00	1000.00	4020.00	0.00	4020.00	-4020.00	-3998.35		
110	2		196980.00	196980.00	197964.90	194005.60	6.00%	984.90			2974.40	984.90	3959.30	0.00	3959.30	-3959.30	-3916.76		
335	227		570.54	570.54	573.40	273.40	6.00%	2.85			297.15	2.85	300.00	0.00	300.00	-300.00	-88.03		
336	228		273.40	273.40	274.76	0.00	6.00%	1.37			273.40	1.37	274.76	0.00	274.76	-274.76	-80.19		
339	Sums																		
340	Year 1	200000.00						11051.90	4000.00	0.00	33376.73	11051.90	44428.63	4000.00	48428.63	151571.37	153054.62		
341	Year 2	0.00						9207.52	0.00	0.00	27808.70	9207.52	37014.22	0.00	37014.22	-37014.22	-33533.14		
344	Year 5	0.00						5324.26	0.00	0.00	16079.27	5324.26	21403.54	0.00	21403.54	-21403.54	-15964.20		
345	Year 6	0.00						4435.73	0.00	0.00	13395.91	4435.73	17831.64	0.00	17831.65	-17831.65	-12465.37		
346	Year 7	0.00						3695.48	0.00	0.00	11160.35	3695.48	14855.83	0.00	14855.83	-14855.83	-9733.55		
347	Year 8	0.00						3078.76	0.00	0.00	9297.87	3078.76	12376.63	0.00	12376.61	-12376.61	-7600.10		
348	Year 9	0.00						2564.97	0.00	0.00	7746.21	2564.97	10311.17	0.00	10311.18	-10311.18	-5934.42		
349	Year 10	0.00						2136.92	0.00	0.00	6453.49	2136.92	8590.41	0.00	8590.40	-8590.40	-4633.78		
350	Year 11	0.00						1780.30	0.00	0.00	5376.51	1780.30	7156.81	0.00	7156.83	-7156.83	-3618.21		
351	Year 12	0.00						1483.20	0.00	0.00	4479.26	1483.20	5962.45	0.00	5962.46	-5962.46	-2825.21		
352	Year 13	0.00						1235.68	0.00	0.00	3731.74	1235.68	4967.42	0.00	4967.41	-4967.41	-2206.01		
353	Year 14	0.00						1029.46	0.00	0.00	3108.98	1029.46	4138.44	0.00	4138.41	-4138.41	-1722.52		
354	Year 15	0.00						855.44	0.00	0.00	2766.39	855.44	3621.83	0.00	3621.82	-3621.82	-1411.74		
355	Year 16	0.00						685.98	0.00	0.00	2914.02	685.98	3600.00	0.00	3600.00	-3600.00	-1314.96		
356	Year 17	0.00						506.25	0.00	0.00	3093.75	506.25	3600.00	0.00	3600.00	-3600.00	-1232.43		
357	Year 18	0.00						315.44	0.00	0.00	3284.56	315.44	3600.00	0.00	3600.00	-3600.00	-1155.09		
358	Year 19	0.00						112.85	0.00	0.00	3461.91	112.85	3574.76	0.00	3574.76	-3574.76	-1075.23		
359	Total	200000.00						63561.86	4000.00	0.00	200000.00	63561.86	263561.86	4000.00	267561.85	-67561.85	0.00		

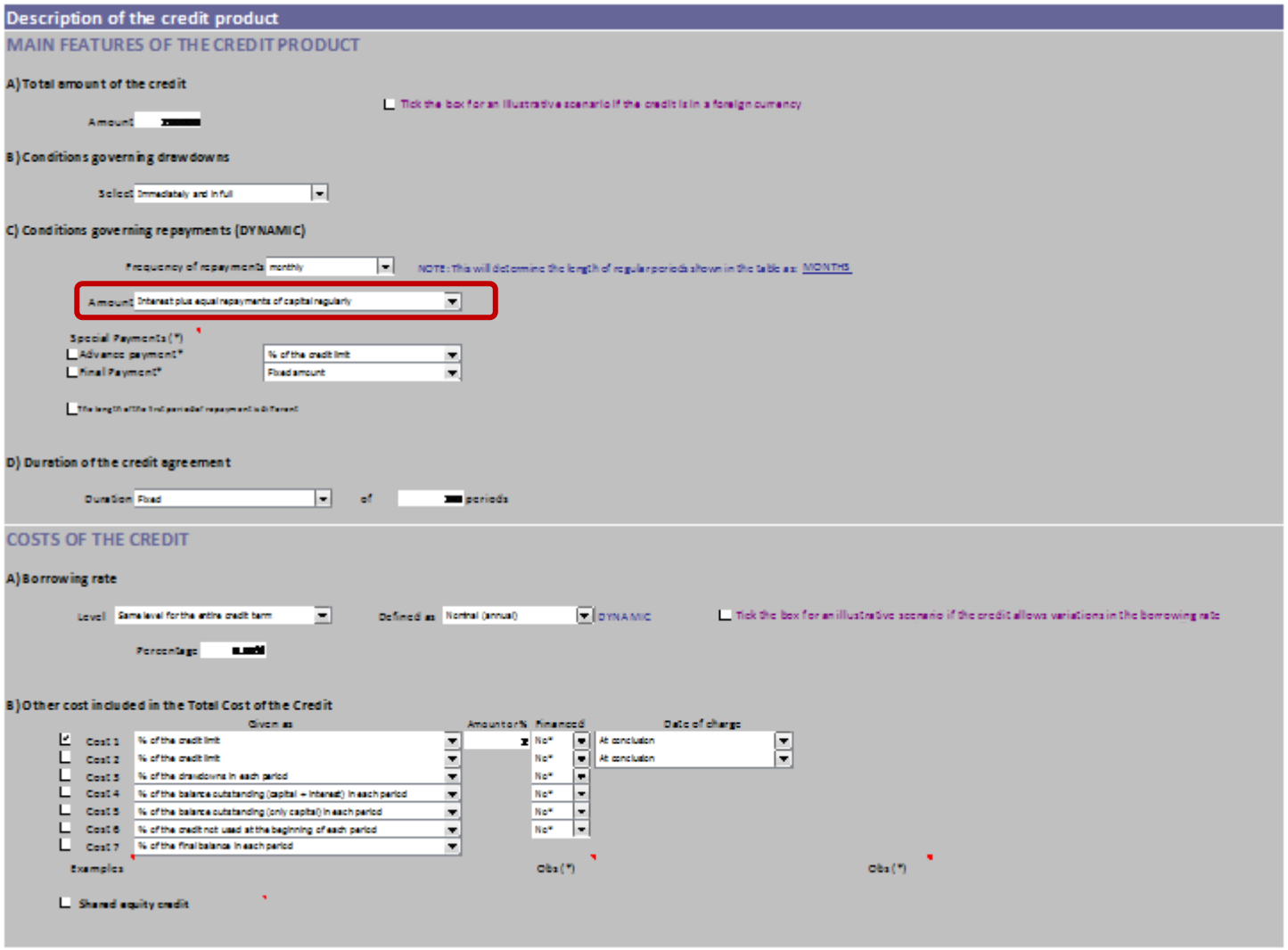
The simulator also update the duration previously entered to this final number of periods.

D) Duration of the credit agreement

Duration Fixed of 228 periods

EXAMPLE 16

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment		Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.5%	DYNAMIC Recalculate
Total cost of the credit	124500.00	
Total amount of credit	200000.00	
Total amount payable	324500.00	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit currency)	Highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199166.67	6.00%	1000.00			833.33	1000.00	1833.33	0.00	1833.33	-1833.33	-1823.77		
2		199166.67	199166.67	200162.50	198333.33	6.00%	995.83			833.33	995.83	1829.17	0.00	1829.17	-1829.17	-1810.14		
3		198333.33	198333.33	199325.00	197500.00	6.00%	991.67			833.33	991.67	1825.00	0.00	1825.00	-1825.00	-1796.59		
4		197500.00	197500.00	198487.50	196666.67	6.00%	987.50			833.33	987.50	1820.83	0.00	1820.83	-1820.83	-1783.14		
5		196666.67	196666.67	197650.00	195833.33	6.00%	983.33			833.33	983.33	1816.67	0.00	1816.67	-1816.67	-1769.79		
6		195833.33	195833.33	196812.50	195000.00	6.00%	979.17			833.33	979.17	1812.50	0.00	1812.50	-1812.50	-1756.52		
7		195000.00	195000.00	195975.00	194166.67	6.00%	975.00			833.33	975.00	1808.33	0.00	1808.33	-1808.33	-1743.33		
8		194166.67	194166.67	195137.50	193333.33	6.00%	970.83			833.33	970.83	1804.17	0.00	1804.17	-1804.17	-1730.25		
9		193333.33	193333.33	194300.00	192500.00	6.00%	966.67			833.33	966.67	1800.00	0.00	1800.00	-1800.00	-1717.25		
10		192500.00	192500.00	193462.50	191666.67	6.00%	962.50			833.33	962.50	1795.83	0.00	1795.83	-1795.83	-1704.34		
11		191666.67	191666.67	192625.00	190833.33	6.00%	958.33			833.33	958.33	1791.67	0.00	1791.67	-1791.67	-1691.52		
12		190833.33	190833.33	191787.50	190000.00	6.00%	954.17			833.33	954.17	1787.50	0.00	1787.50	-1787.50	-1678.78		
Sums																		
Year 1	200000.00						11725.00	4000.00	0.00	10000.00	11725.00	21725.00	4000.00	25725.00	174275.00	174994.58		
Year 2	0.00						11125.00	0.00	0.00	10000.00	11125.00	21125.00	0.00	21125.00	-21125.00	-19183.08		
Year 3	0.00						10525.00	0.00	0.00	10000.00	10525.00	20525.00	0.00	20525.00	-20525.00	-17504.71		
Year 4	0.00						9925.00	0.00	0.00	10000.00	9925.00	19925.00	0.00	19925.00	-19925.00	-15959.54		
Year 5	0.00						9325.00	0.00	0.00	10000.00	9325.00	19325.00	0.00	19325.00	-19325.00	-14537.57		
Year 6	0.00						8725.00	0.00	0.00	10000.00	8725.00	18725.00	0.00	18725.00	-18725.00	-13229.54		
Year 7	0.00						8125.00	0.00	0.00	10000.00	8125.00	18125.00	0.00	18125.00	-18125.00	-12026.84		
Year 8	0.00						7525.00	0.00	0.00	10000.00	7525.00	17525.00	0.00	17525.00	-17525.00	-10921.50		
Year 9	0.00						6925.00	0.00	0.00	10000.00	6925.00	16925.00	0.00	16925.00	-16925.00	-9906.13		
Year 10	0.00						6325.00	0.00	0.00	10000.00	6325.00	16325.00	0.00	16325.00	-16325.00	-8973.87		
Year 11	0.00						5725.00	0.00	0.00	10000.00	5725.00	15725.00	0.00	15725.00	-15725.00	-8118.36		
Year 12	0.00						5125.00	0.00	0.00	10000.00	5125.00	15125.00	0.00	15125.00	-15125.00	-7333.73		
Year 13	0.00						4525.00	0.00	0.00	10000.00	4525.00	14525.00	0.00	14525.00	-14525.00	-6614.51		
Year 14	0.00						3925.00	0.00	0.00	10000.00	3925.00	13925.00	0.00	13925.00	-13925.00	-5955.64		
Year 15	0.00						3325.00	0.00	0.00	10000.00	3325.00	13325.00	0.00	13325.00	-13325.00	-5352.46		
Year 16	0.00						2725.00	0.00	0.00	10000.00	2725.00	12725.00	0.00	12725.00	-12725.00	-4800.62		
Year 17	0.00						2125.00	0.00	0.00	10000.00	2125.00	12125.00	0.00	12125.00	-12125.00	-4296.10		
Year 18	0.00						1525.00	0.00	0.00	10000.00	1525.00	11525.00	0.00	11525.00	-11525.00	-3835.20		
Year 19	0.00						925.00	0.00	0.00	10000.00	925.00	10925.00	0.00	10925.00	-10925.00	-3414.47		
Year 20	0.00						325.00	0.00	0.00	10000.00	325.00	10325.00	0.00	10325.00	-10325.00	-3030.73		
Total	200000.00						120500.00	4000.00	0.00	200000.00	120500.00	320500.00	4000.00	324500.00	-124500.00	0.00		

EXAMPLE 17

This example can be solved in two different ways, which start similarly.

As a first step, click on the button *Reset* and then enter the information highlighted in red

Description of the credit product

MAIN FEATURES OF THE CREDIT PRODUCT

A) Total amount of the credit

Amount [redacted]

☐ Tick the box for an illustrative scenario if the credit is in a foreign currency

B) Conditions governing drawdowns

Select: Immediately and in full

C) Conditions governing repayments (DYNAMIC)

Frequency of repayments: monthly

NOTE: This will determine the length of regular periods shown in the table as: MONTHS

Amount: Interest plus a % of outstanding balance (only capital) | % of [redacted] | with [redacted] as a minimum amount

Special Payments (*)

☐ Advance payment*: % of the credit limit

☐ Final Payment*: Fixed amount

☐ The length of the first period of repayment is different

D) Duration of the credit agreement

Duration: Fixed | of [redacted] periods

COSTS OF THE CREDIT

A) Borrowing rate

Level: Same level for the entire credit term | Defined as: Nominal (annual) | DYNAMIC

☐ Tick the box for an illustrative scenario if the credit allows variations in the borrowing rate

Percentage: [redacted]

B) Other cost included in the Total Cost of the Credit

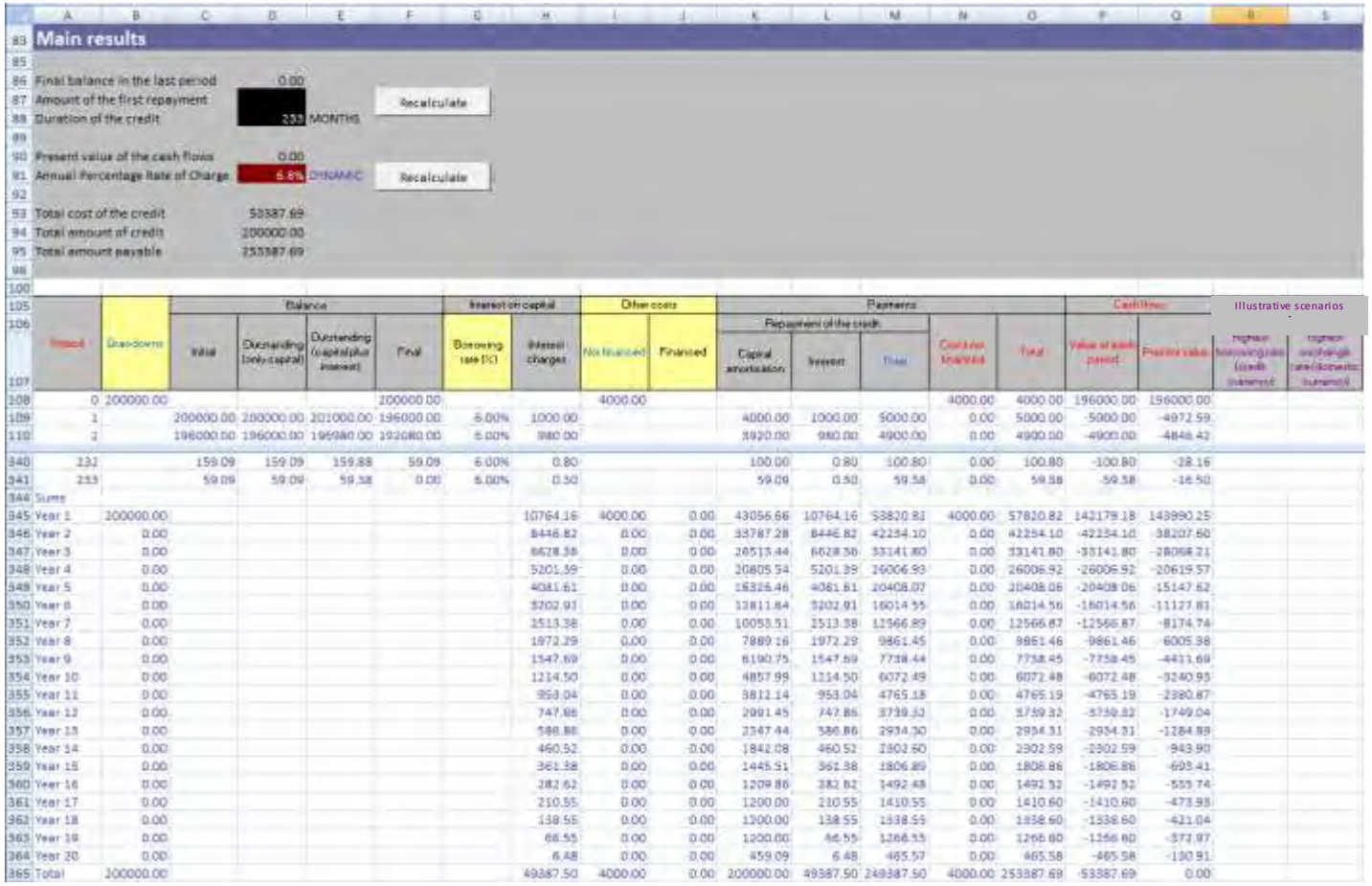
	Given as	Amount or %	Financed	Date of charge
☑ Cost 1	% of the credit limit	[redacted]	No*	At conclusion
☐ Cost 2	% of the credit limit		No*	At conclusion
☐ Cost 3	% of the drawdowns in each period		No*	
☐ Cost 4	% of the balance outstanding (capital + interest) in each period		No*	
☐ Cost 5	% of the balance outstanding (only capital) in each period		No*	
☐ Cost 6	% of the credit not used at the beginning of each period		No*	
☐ Cost 7	% of the final balance in each period			

Examples: Obs (*) Obs (*)

☐ Shared equity credit

Click on the buttons *Generate* and then *Calculate* to obtain the preliminary results and amortisation table.

As shown, the simulator has extended the number of periods of repayment to 233 because the scheme of repayments entered before does not provide full repayment of the credit in 180 months (15 years) (see example 14).



Main results

Final balance in the last period	0.00
Amount of the first repayment	[redacted]
Duration of the credit	233 MONTHS
Present value of the cash flows	0.00
Annual Percentage Rate of Charge	6.8% DYNAMIC
Total cost of the credit	53387.69
Total amount of credit	200000.00
Total amount payable	253387.69

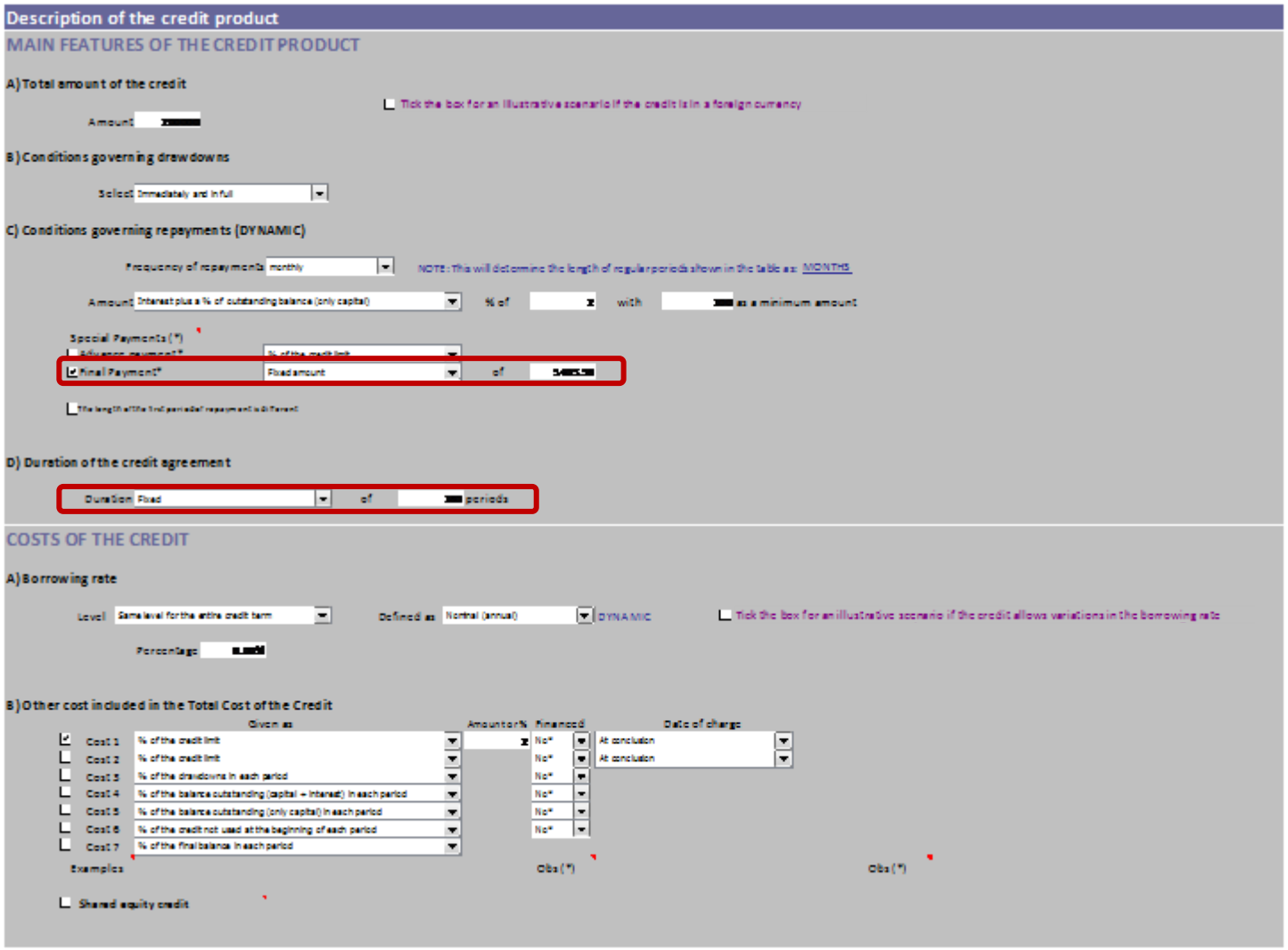
Recalculate

Recalculate

	Period	Drawdowns	Balance: Initial	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charges	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortisation	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Total	Payments: Cost of the financial	Payments: Total	Cash flows: Value at each period	Cash flows: Present value	Illustrative scenarios: Higher borrowing rate (credit numerical)	Illustrative scenarios: Higher exchange rate (domestic numerical)
108	0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
109	1		200000.00	200000.00	201000.00	196000.00	6.00%	1000.00			4000.00	1000.00	5000.00	0.00	5000.00	-5000.00	-4972.59		
110	2		196000.00	196000.00	195980.00	192080.00	6.00%	980.00			3920.00	980.00	4900.00	0.00	4900.00	-4900.00	-4846.42		
340	232		159.09	159.09	159.88	59.09	6.00%	0.80			100.00	0.80	100.80	0.00	100.80	-100.80	-28.16		
341	233		59.09	59.09	59.58	0.00	6.00%	0.50			59.09	0.50	59.58	0.00	59.58	-59.58	-16.50		
344	Sums																		
345	Year 1	200000.00						10764.16	4000.00	0.00	43056.66	10764.16	53820.82	4000.00	57820.82	142179.18	143990.25		
346	Year 2	0.00						8446.82	0.00	0.00	33787.28	8446.82	42234.10	0.00	42234.10	-42234.10	-38207.60		
347	Year 3	0.00						6628.38	0.00	0.00	26513.44	6628.38	33141.80	0.00	33141.80	-33141.80	-28068.21		
348	Year 4	0.00						5201.39	0.00	0.00	20805.54	5201.39	26006.93	0.00	26006.92	-26006.92	-20619.57		
349	Year 5	0.00						4081.61	0.00	0.00	16326.46	4081.61	20408.07	0.00	20408.06	-20408.06	-15147.62		
350	Year 6	0.00						3202.91	0.00	0.00	12811.84	3202.91	16014.55	0.00	16014.56	-16014.56	-11127.81		
351	Year 7	0.00						2513.38	0.00	0.00	10053.51	2513.38	12566.89	0.00	12566.87	-12566.87	-8174.74		
352	Year 8	0.00						1972.29	0.00	0.00	7889.16	1972.29	9861.45	0.00	9861.46	-9861.46	-6005.38		
353	Year 9	0.00						1547.69	0.00	0.00	6190.75	1547.69	7738.44	0.00	7738.45	-7738.45	-4411.69		
354	Year 10	0.00						1214.50	0.00	0.00	4857.99	1214.50	6072.49	0.00	6072.48	-6072.48	-3240.93		
355	Year 11	0.00						953.04	0.00	0.00	3812.14	953.04	4765.18	0.00	4765.19	-4765.19	-2380.87		
356	Year 12	0.00						747.86	0.00	0.00	2991.45	747.86	3739.32	0.00	3739.32	-3739.32	-1749.04		
357	Year 13	0.00						586.86	0.00	0.00	2347.44	586.86	2934.30	0.00	2934.31	-2934.31	-1284.89		
358	Year 14	0.00						460.52	0.00	0.00	1842.08	460.52	2302.60	0.00	2302.59	-2302.59	-943.90		
359	Year 15	0.00						361.38	0.00	0.00	1445.51	361.38	1806.89	0.00	1806.88	-1806.88	-693.41		
360	Year 16	0.00						282.62	0.00	0.00	1209.86	282.62	1492.48	0.00	1492.52	-1492.52	-509.74		
361	Year 17	0.00						210.55	0.00	0.00	1200.00	210.55	1410.55	0.00	1410.60	-1410.60	-473.93		
362	Year 18	0.00						138.55	0.00	0.00	1200.00	138.55	1338.55	0.00	1338.60	-1338.60	-421.04		
363	Year 19	0.00						66.55	0.00	0.00	1200.00	66.55	1266.55	0.00	1266.60	-1266.60	-372.97		
364	Year 20	0.00						6.48	0.00	0.00	459.09	6.48	465.57	0.00	465.58	-465.58	-130.91		
365	Total	200000.00						49387.50	4000.00	0.00	200000.00	49387.50	249387.50	4000.00	253387.69	-53387.69	0.00		

Approach 1

Use the outstanding balance of capital plus interest of period 180 amounting to €5403.36 to define a new credit with a final payment of such amount and duration of 15 years by entering the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

86	Final balance in the last period	0.00	
87	Amount of the first repayment		Recalculate
88	Duration of the credit	180 MONTHS	
90	Present value of the cash flows	0.00	
91	Annual Percentage Rate of Charge	6.8% DYNAMIC	Recalculate
93	Total cost of the credit	52682.74	
94	Total amount of credit	200000.00	
95	Total amount payable	252682.74	

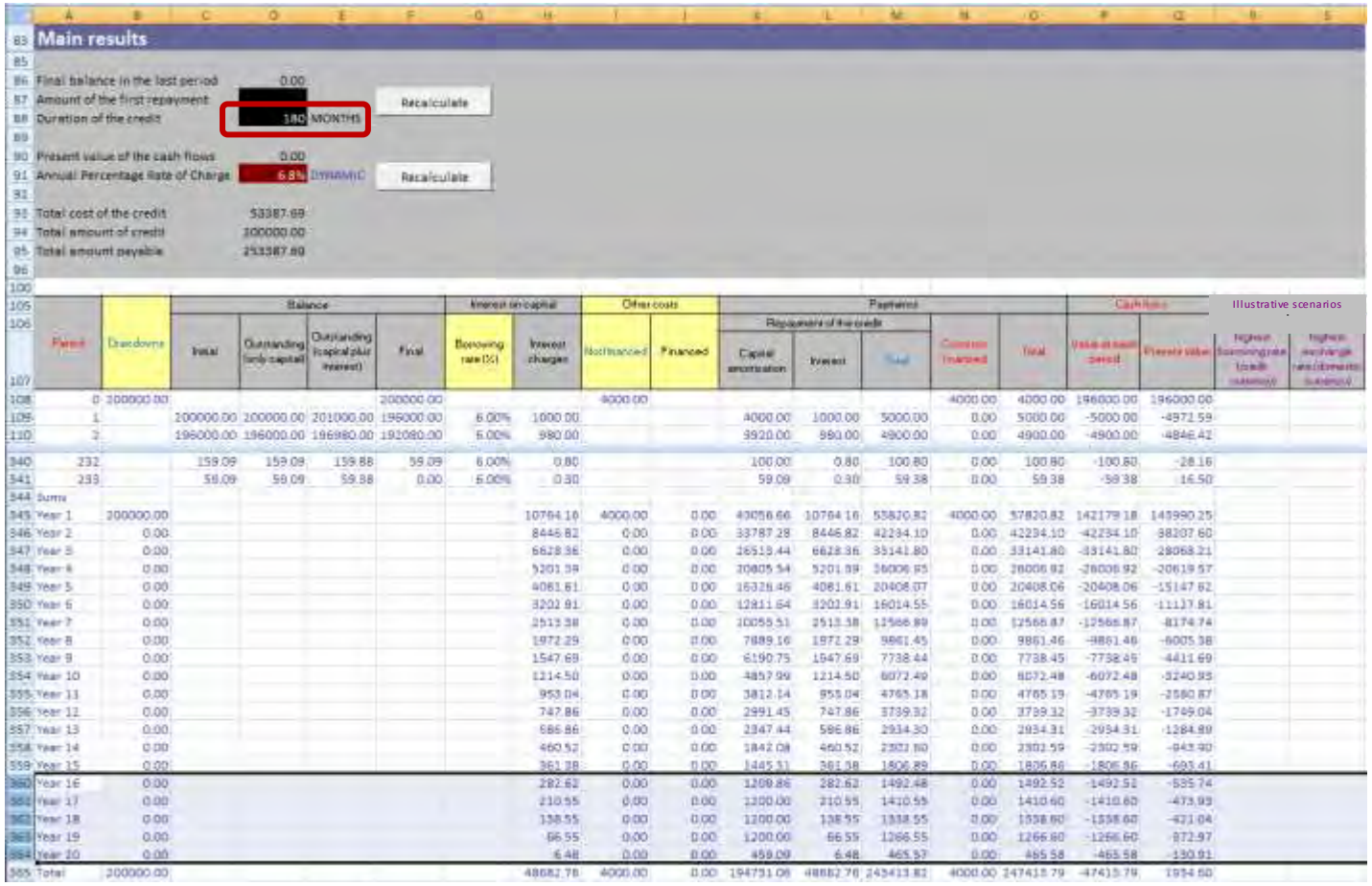
			Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
											Repayment of the credit								
107	Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at credit period	Present value	Highest borrowing rate (credit scenario)	Highest exchange rate (credit scenario)
108	0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
109	1		200000.00	200000.00	201000.00	196000.00	6.00%	1000.00			4000.00	1000.00	5000.00	0.00	5000.00	-5000.00	-4972.57		
110	2		196000.00	196000.00	196980.00	192080.00	6.00%	980.00			3920.00	980.00	4900.00	0.00	4900.00	-4900.00	-4846.39		
287	179		5486.20	5486.20	5513.63	5376.48	6.00%	27.43			109.72	27.43	137.15	0.00	137.15	-137.15	-51.24		
288	180		5376.48	5376.48	5403.36	0.00	6.00%	26.88			5376.48	26.88	5403.36	0.00	5403.36	-5403.36	-2007.69		
289																			
290																			
291	Sums																		
292	Year 1	200000.00						10764.16	4000.00	0.00	43056.66	10764.16	53820.82	4000.00	57820.82	142179.18	143991.27		
293	Year 2	0.00						8446.82	0.00	0.00	33787.28	8446.82	42234.10	0.00	42234.10	-42234.10	-38205.40		
294	Year 3	0.00						6628.36	0.00	0.00	26513.44	6628.36	33141.80	0.00	33141.80	-33141.80	-28065.52		
295	Year 4	0.00						5201.39	0.00	0.00	20805.54	5201.39	26006.93	0.00	26006.93	-26006.93	-20816.81		
296	Year 5	0.00						4081.61	0.00	0.00	16326.46	4081.61	20408.07	0.00	20408.06	-20408.06	-15145.02		
297	Year 6	0.00						3202.91	0.00	0.00	12811.64	3202.91	16014.55	0.00	16014.56	-16014.56	-11125.48		
298	Year 7	0.00						2513.38	0.00	0.00	10053.51	2513.38	12566.89	0.00	12566.87	-12566.87	-8172.71		
299	Year 8	0.00						1972.29	0.00	0.00	7889.16	1972.29	9861.45	0.00	9861.46	-9861.46	-6003.66		
300	Year 9	0.00						1547.69	0.00	0.00	6190.75	1547.69	7738.44	0.00	7738.45	-7738.45	-4410.26		
301	Year 10	0.00						1214.50	0.00	0.00	4857.99	1214.50	6072.49	0.00	6072.48	-6072.48	-3239.75		
302	Year 11	0.00						953.04	0.00	0.00	3812.14	953.04	4765.18	0.00	4765.19	-4765.19	-2379.92		
303	Year 12	0.00						747.86	0.00	0.00	2991.45	747.86	3739.32	0.00	3739.32	-3739.32	-1748.27		
304	Year 13	0.00						586.86	0.00	0.00	2347.44	586.86	2934.30	0.00	2934.31	-2934.31	-1284.28		
305	Year 14	0.00						460.52	0.00	0.00	1842.08	460.52	2302.60	0.00	2302.59	-2302.59	-945.42		
306	Year 15	0.00						361.38	0.00	0.00	6714.45	361.38	7075.83	0.00	7075.81	-7075.81	-2650.77		
307	Total	200000.00						48682.76	4000.00	0.00	200000.00	48682.76	248682.75	4000.00	252682.74	-52682.74	0.00		

Approach 2

This approach requires changing manually the results to reduce the duration of the credit to 15-years (180 periods of one month).

To this end, first enter as *Duration of the credit* in the area of *Main results* such term of 180 months.

Then delete the rows with the annual subtotals corresponding to years 16 to 20 (rows 360 to 364). Be aware of not deleting the row with the overall total (row 365), as this row is valid.



Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	180	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.8%	DYNAMIC — Recalculate
Total cost of the credit	53387.69	
Total amount of credit	200000.00	
Total amount payable	253387.69	

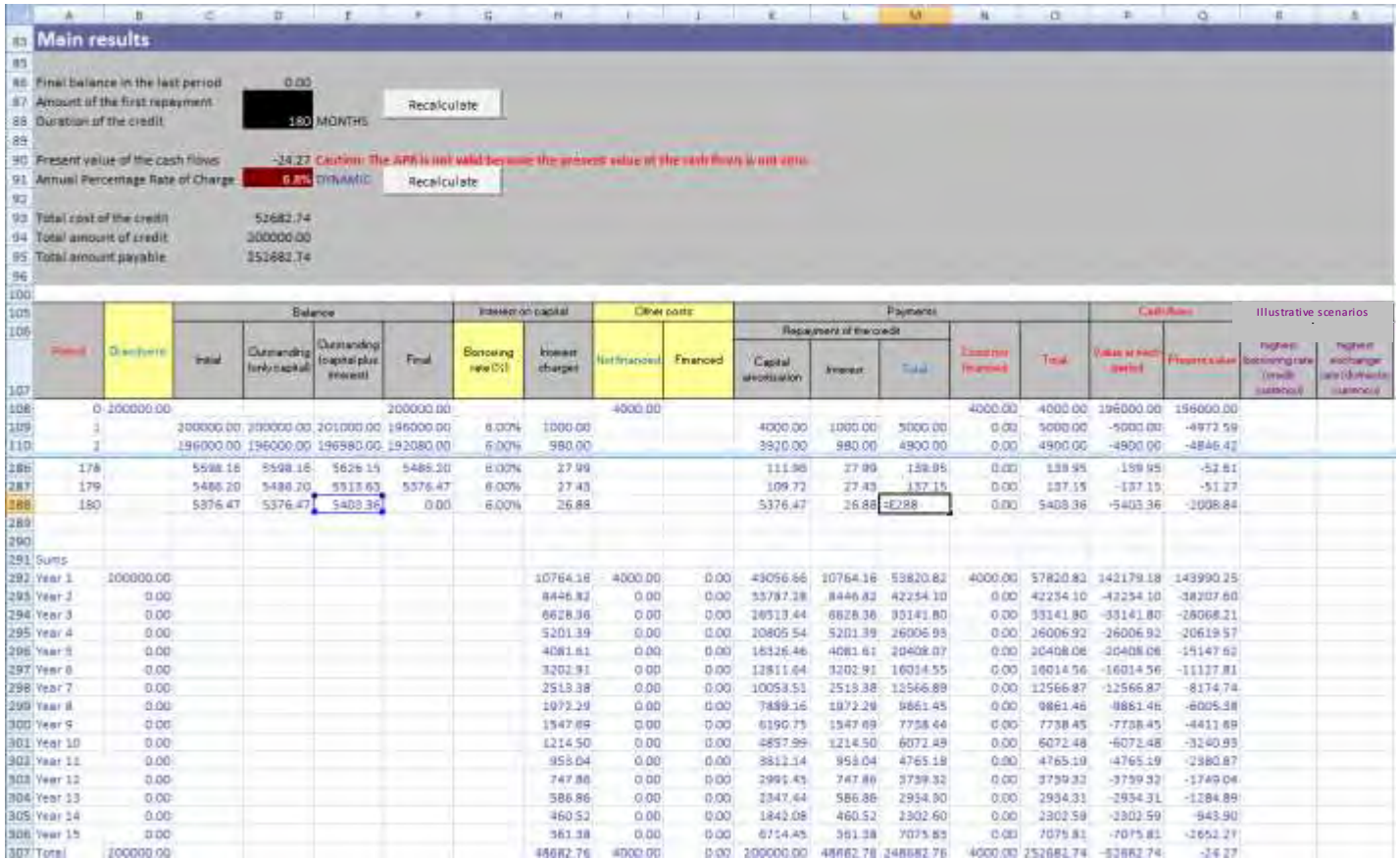
Period	Drawdowns	Balance: Initial	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charges	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortization	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Total	Payments: Commission financed	Payments: Total	Cash flows: Value at each period	Cash flows: Present value	Illustrative scenarios: Higher borrowing rate (credit customer)	Illustrative scenarios: Higher exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	196000.00	6.00%	1000.00			4000.00	1000.00	5000.00	0.00	5000.00	-5000.00	-4971.59		
2		196000.00	196000.00	196980.00	192080.00	6.00%	980.00			3920.00	980.00	4900.00	0.00	4900.00	-4900.00	-4846.42		
232		159.09	159.09	159.88	59.09	6.00%	0.80			100.00	0.80	100.80	0.00	100.80	-100.80	-28.16		
233		59.09	59.09	59.38	0.00	6.00%	0.30			59.09	0.30	59.38	0.00	59.38	-59.38	16.50		
Sums																		
Year 1	200000.00						10764.16	4000.00	0.00	43056.66	10764.16	53820.82	4000.00	57820.82	142179.18	143990.25		
Year 2	0.00						8446.82	0.00	0.00	33787.28	8446.82	42234.10	0.00	42234.10	-42234.10	38207.60		
Year 3	0.00						6628.36	0.00	0.00	26513.44	6628.36	33141.80	0.00	33141.80	-33141.80	28068.21		
Year 4	0.00						5201.39	0.00	0.00	20805.54	5201.39	26006.93	0.00	26006.93	-26006.93	-20619.57		
Year 5	0.00						4081.61	0.00	0.00	16326.46	4081.61	20408.07	0.00	20408.06	-20408.06	-15147.62		
Year 6	0.00						3202.91	0.00	0.00	12811.64	3202.91	16014.55	0.00	16014.56	-16014.56	-11137.81		
Year 7	0.00						2513.38	0.00	0.00	10055.51	2513.38	12568.89	0.00	12568.87	-12568.87	-8174.74		
Year 8	0.00						1972.29	0.00	0.00	7889.16	1972.29	9861.45	0.00	9861.46	-9861.46	-6005.38		
Year 9	0.00						1547.69	0.00	0.00	6190.75	1547.69	7738.44	0.00	7738.45	-7738.45	-4411.69		
Year 10	0.00						1214.50	0.00	0.00	4857.99	1214.50	6072.49	0.00	6072.48	-6072.48	-3240.93		
Year 11	0.00						953.04	0.00	0.00	3812.14	953.04	4765.18	0.00	4765.19	-4765.19	-2380.87		
Year 12	0.00						747.86	0.00	0.00	2991.45	747.86	3739.32	0.00	3739.32	-3739.32	-1749.04		
Year 13	0.00						586.86	0.00	0.00	2347.44	586.86	2934.30	0.00	2934.31	-2934.31	-1284.89		
Year 14	0.00						460.52	0.00	0.00	1842.08	460.52	2302.60	0.00	2302.59	-2302.59	-943.90		
Year 15	0.00						361.38	0.00	0.00	1445.51	361.38	1806.89	0.00	1806.86	-1806.86	-693.41		
Year 16	0.00						282.62	0.00	0.00	1209.86	282.62	1492.48	0.00	1492.52	-1492.52	-535.74		
Year 17	0.00						210.55	0.00	0.00	1200.00	210.55	1410.55	0.00	1410.60	-1410.60	-473.93		
Year 18	0.00						138.55	0.00	0.00	1200.00	138.55	1338.55	0.00	1338.60	-1338.60	-421.04		
Year 19	0.00						66.55	0.00	0.00	1200.00	66.55	1266.55	0.00	1266.60	-1266.60	-372.97		
Year 20	0.00						6.48	0.00	0.00	459.09	6.48	465.57	0.00	465.58	-465.58	-130.91		
Total	200000.00						48882.78	4000.00	0.00	194751.06	48882.78	243633.82	4000.00	247415.79	-47415.79	1934.60		

Next, delete the rows of the amortisation table beyond the last month of the 15th year, i.e. month 180 (rows 289 to 341).

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
105			Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
106											Repayment of the credit								
107	Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs no financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (loan currency)
108	0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
109	1		200000.00	200000.00	201000.00	196000.00	6.00%	1000.00			4000.00	1000.00	5000.00	0.00	5000.00	-5000.00	-4972.59		
110	2		196000.00	196000.00	196980.00	192080.00	6.00%	980.00			3920.00	980.00	4900.00	0.00	4900.00	-4900.00	-4846.42		
111	3		192080.00	192080.00	193040.40	188238.40	6.00%	960.40			3841.60	960.40	4802.00	0.00	4802.00	-4802.00	-4723.46		
112	4		188238.40	188238.40	189179.59	184473.63	6.00%	941.19			3764.77	941.19	4705.96	0.00	4705.96	-4705.96	-4603.61		
113	5		184473.63	184473.63	185396.00	180784.16	6.00%	922.37			3689.47	922.37	4611.84	0.00	4611.84	-4611.84	-4486.81		
281	224		959.09	959.09	963.88	859.09	6.00%	4.80			100.00	4.80	104.80	0.00	104.80	-104.80	-30.59		
283	225		859.09	859.09	863.38	759.09	6.00%	4.30			100.00	4.30	104.30	0.00	104.30	-104.30	-30.28		
284	226		759.09	759.09	762.88	659.09	6.00%	3.80			100.00	3.80	103.80	0.00	103.80	-103.80	-29.97		
285	227		659.09	659.09	662.38	559.09	6.00%	3.30			100.00	3.30	103.30	0.00	103.30	-103.30	-29.66		
286	228		559.09	559.09	561.88	459.09	6.00%	2.80			100.00	2.80	102.80	0.00	102.80	-102.80	-29.36		
288	231		259.09	259.09	260.38	159.09	6.00%	1.30			100.00	1.30	101.30	0.00	101.30	-101.30	-28.45		
290	232		159.09	159.09	159.88	59.09	6.00%	0.80			100.00	0.80	100.80	0.00	100.80	-100.80	-28.15		
291	233		59.09	59.09	59.38	0.00	6.00%	0.30			59.09	0.30	59.38	0.00	59.38	-59.38	-18.50		
342																			
343																			
344	Sums																		
345	Year 1	200000.00						10764.16	4000.00	0.00	43056.66	10764.16	53820.82	4000.00	57820.82	142179.18	143990.25		
346	Year 2	0.00						8446.82	0.00	0.00	33787.28	8446.82	42234.10	0.00	42234.10	-42234.10	-38207.60		
347	Year 3	0.00						6628.56	0.00	0.00	26513.44	6628.56	33141.80	0.00	33141.80	-33141.80	-28068.21		
348	Year 4	0.00						5201.59	0.00	0.00	20805.54	5201.59	26006.92	0.00	26006.92	-26006.92	-20819.57		
349	Year 5	0.00						4081.61	0.00	0.00	16326.46	4081.61	20408.07	0.00	20408.06	-20408.06	-15147.62		
350	Year 6	0.00						3202.91	0.00	0.00	12811.64	3202.91	16014.55	0.00	16014.56	-16014.56	-11137.81		
351	Year 7	0.00						2513.38	0.00	0.00	10053.51	2513.38	12566.89	0.00	12566.87	-12566.87	-8174.74		
352	Year 8	0.00						1972.29	0.00	0.00	7889.16	1972.29	9861.45	0.00	9861.46	-9861.46	-6005.38		
353	Year 9	0.00						1547.69	0.00	0.00	6190.75	1547.69	7738.44	0.00	7738.45	-7738.45	-4411.69		
354	Year 10	0.00						1214.50	0.00	0.00	4857.99	1214.50	6072.49	0.00	6072.48	-6072.48	-3240.93		
355	Year 11	0.00						953.04	0.00	0.00	3812.14	953.04	4765.18	0.00	4765.19	-4765.19	-2380.87		
356	Year 12	0.00						747.86	0.00	0.00	2991.45	747.86	3739.32	0.00	3739.32	-3739.32	-1749.04		
357	Year 13	0.00						586.86	0.00	0.00	2347.44	586.86	2934.30	0.00	2934.31	-2934.31	-1284.89		
358	Year 14	0.00						460.51	0.00	0.00	1842.08	460.51	2302.60	0.00	2302.59	-2302.59	-943.90		
359	Year 15	0.00						361.38	0.00	0.00	1445.51	361.38	1806.89	0.00	1806.86	-1806.86	-693.41		
360	Total	200000.00						48682.78	4000.00	0.00	194731.06	48682.78	243413.82	4000.00	247413.79	-47413.79	1934.60		

To provide full repayment of the credit in period 180, for this period substitute the last payment in the column with the *Total* of *Repayment of the credit* by the reference to the cell where the amount of €5403.36 of *Balance Outstanding (capital plus interest)* appears. That is, enter the formula =E288 in the former cell. As a result, the *Final Balance* becomes 0, meaning that the credit repaid in full.

Note that due to these changes, the area of *Main results* reports the error that *the APR is not valid because the present value of the cash flows is not zero*.



Main results

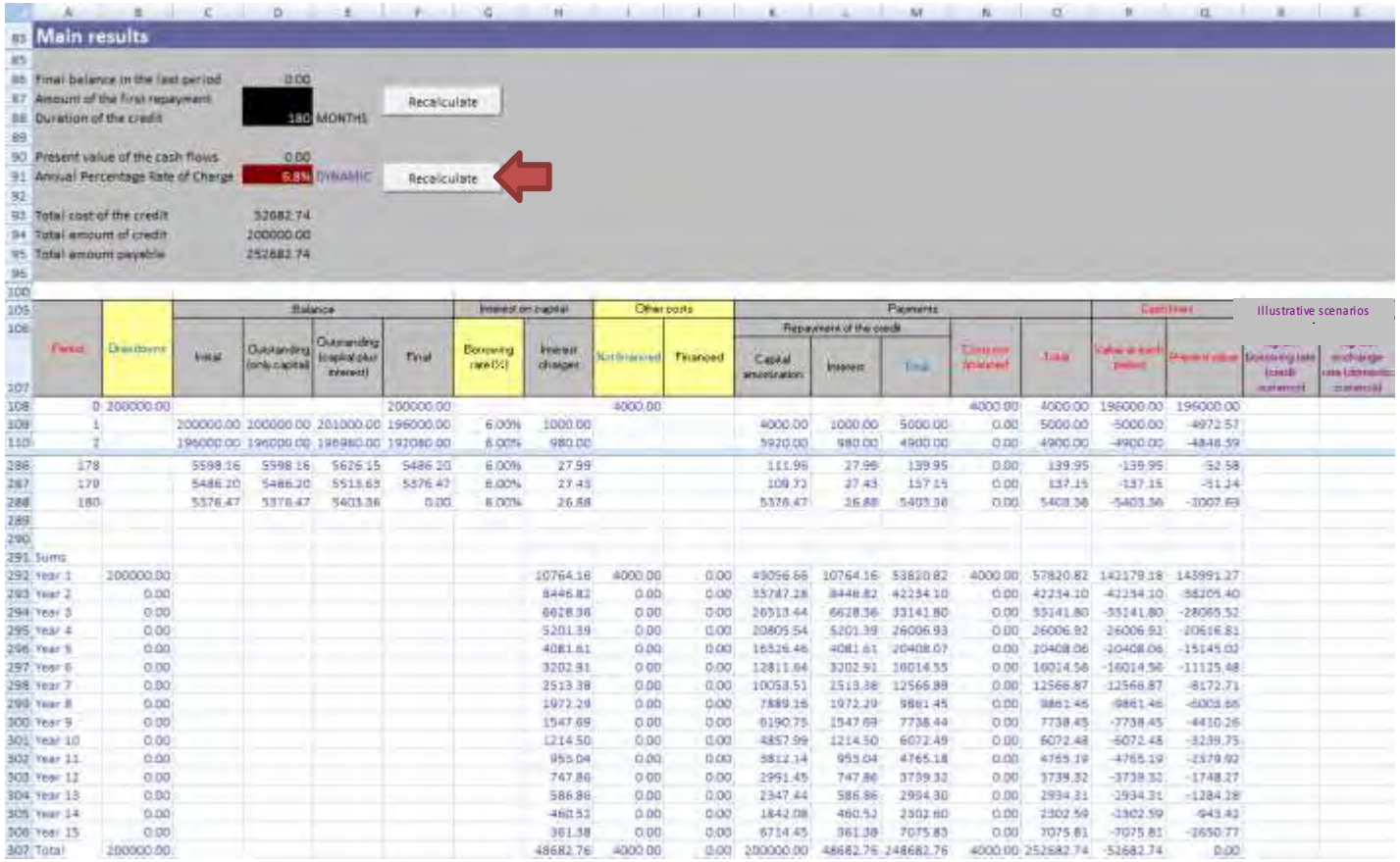
Final balance in the last period	0.00
Amount of the first repayment	
Duration of the credit	180 MONTHS
Present value of the cash flows	-24.27 Caution: The APR is not valid because the present value of the cash flows is not zero
Annual Percentage Rate of Charge	6.8% DYNAMIC
Total cost of the credit	52682.74
Total amount of credit	200000.00
Total amount payable	252682.74

Recalculate

Recalculate

	Period	Drawdowns	Balance: Initial	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charged	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortisation	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Total	Payments: Costs not financed	Payments: Total	Cash flows: Value at each period	Cash flows: Present value	Illustrative scenarios: Higher borrowing rate (credit currency)	Illustrative scenarios: Higher exchange rate (drawdown currency)
108	0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
109	1		200000.00	200000.00	201000.00	196000.00	6.00%	1000.00			4000.00	1000.00	5000.00	0.00	5000.00	-5000.00	-4973.59		
110	2		196000.00	196000.00	196980.00	192080.00	6.00%	980.00			3920.00	980.00	4900.00	0.00	4900.00	-4900.00	-4846.42		
286	178		5598.16	5598.16	5626.15	5486.20	6.00%	27.99			111.96	27.99	139.95	0.00	139.95	-139.95	-52.81		
287	179		5486.20	5486.20	5513.63	5376.47	6.00%	27.43			109.72	27.43	137.15	0.00	137.15	-137.15	-51.27		
288	180		5376.47	5376.47	5403.36	0.00	6.00%	26.88			5376.47	26.88	=E288	0.00	5403.36	-5403.36	-2008.84		
291	Sums																		
292	Year 1	200000.00						10764.18	4000.00	0.00	43056.66	10764.16	53820.82	4000.00	57820.82	142179.18	143990.25		
293	Year 2	0.00						8446.82	0.00	0.00	33787.28	8446.82	42234.10	0.00	42234.10	-42234.10	-38207.60		
294	Year 3	0.00						6628.36	0.00	0.00	26513.44	6628.36	33141.80	0.00	33141.80	-33141.80	-28068.21		
295	Year 4	0.00						5201.39	0.00	0.00	20805.54	5201.39	26006.93	0.00	26006.92	-26006.92	-20619.57		
296	Year 5	0.00						4081.61	0.00	0.00	16326.46	4081.61	20408.07	0.00	20408.06	-20408.06	-15147.62		
297	Year 6	0.00						3202.91	0.00	0.00	12811.64	3202.91	16014.55	0.00	16014.56	-16014.56	-11127.81		
298	Year 7	0.00						2513.38	0.00	0.00	10053.51	2513.38	12566.89	0.00	12566.87	-12566.87	-8174.74		
299	Year 8	0.00						1972.29	0.00	0.00	7889.16	1972.29	9861.45	0.00	9861.46	-9861.46	-6005.38		
300	Year 9	0.00						1547.69	0.00	0.00	6190.75	1547.69	7738.44	0.00	7738.45	-7738.45	-4411.69		
301	Year 10	0.00						1214.50	0.00	0.00	4857.99	1214.50	6072.49	0.00	6072.48	-6072.48	-3240.93		
302	Year 11	0.00						953.04	0.00	0.00	3812.14	953.04	4765.19	0.00	4765.19	-4765.19	-2380.87		
303	Year 12	0.00						747.86	0.00	0.00	2991.45	747.86	3739.32	0.00	3739.32	-3739.32	-1749.04		
304	Year 13	0.00						586.86	0.00	0.00	2347.44	586.86	2934.30	0.00	2934.31	-2934.31	-1284.89		
305	Year 14	0.00						460.52	0.00	0.00	1842.08	460.52	2302.60	0.00	2302.59	-2302.59	-943.90		
306	Year 15	0.00						361.38	0.00	0.00	6714.45	361.38	7075.83	0.00	7075.81	-7075.81	-2652.27		
307	Total	200000.00						48682.76	4000.00	0.00	200000.00	48682.78	248682.78	4000.00	252682.74	-52682.74	-24.27		

To obtain the correct APR, click on the button *Recalculate* next to the cell showing the *Annual Percentage Rate of Charge*. A new APR of 6.8% is obtained and the error message disappears.



Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	180	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.8%	DYNAMIC — Recalculate
Total cost of the credit	52682.74	
Total amount of credit	200000.00	
Total amount payable	252682.74	

	Period	Drawdowns	Balance: Initial	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charges	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortisation	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Total	Payments: Consumer deposited	Payments: Total	Cash flows: Value at each period	Cash flows: Present value	Illustrative scenarios: Borrowing rate (credit scenario)	Illustrative scenarios: exchange rate (domestic currency)
108	0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
109	1		200000.00	200000.00	201000.00	196000.00	6.00%	1000.00			4000.00	1000.00	5000.00	0.00	5000.00	-5000.00	-4972.57		
110	2		196000.00	196000.00	196980.00	192080.00	6.00%	980.00			3920.00	980.00	4900.00	0.00	4900.00	-4900.00	-4846.59		
288	178		5598.16	5598.16	5626.15	5486.20	6.00%	27.99			111.96	27.99	139.95	0.00	139.95	-139.95	-52.58		
287	179		5486.20	5486.20	5513.63	5376.47	6.00%	27.43			109.72	27.43	137.15	0.00	137.15	-137.15	-51.24		
288	180		5376.47	5376.47	5403.38	0.00	6.00%	26.88			5376.47	26.88	5403.38	0.00	5403.38	-5403.38	-2007.69		
289																			
290																			
291	Sums																		
292	Year 1	200000.00						10764.16	4000.00	0.00	49056.66	10764.16	53820.82	4000.00	57820.82	142179.18	143991.27		
293	Year 2	0.00						8446.82	0.00	0.00	33787.28	8446.82	42234.10	0.00	42234.10	-42234.10	-38205.40		
294	Year 3	0.00						6628.36	0.00	0.00	26513.44	6628.36	33141.80	0.00	33141.80	-33141.80	-28065.52		
295	Year 4	0.00						5201.39	0.00	0.00	20805.54	5201.39	26006.93	0.00	26006.93	-26006.93	-20616.81		
296	Year 5	0.00						4081.61	0.00	0.00	16326.46	4081.61	20408.07	0.00	20408.06	-20408.06	-15145.02		
297	Year 6	0.00						3202.91	0.00	0.00	12811.64	3202.91	16014.55	0.00	16014.56	-16014.56	-11125.48		
298	Year 7	0.00						2513.38	0.00	0.00	10053.51	2513.38	12566.88	0.00	12566.87	-12566.87	-8172.71		
299	Year 8	0.00						1972.29	0.00	0.00	7889.16	1972.29	9861.45	0.00	9861.46	-9861.46	-6003.66		
300	Year 9	0.00						1547.69	0.00	0.00	6190.75	1547.69	7738.44	0.00	7738.45	-7738.45	-4410.26		
301	Year 10	0.00						1214.50	0.00	0.00	4857.99	1214.50	6072.49	0.00	6072.48	-6072.48	-3239.75		
302	Year 11	0.00						953.04	0.00	0.00	3812.14	953.04	4765.18	0.00	4765.19	-4765.19	-2379.92		
303	Year 12	0.00						747.86	0.00	0.00	2991.45	747.86	3739.32	0.00	3739.32	-3739.32	-1748.27		
304	Year 13	0.00						586.86	0.00	0.00	2347.44	586.86	2934.30	0.00	2934.31	-2934.31	-1284.28		
305	Year 14	0.00						460.51	0.00	0.00	1842.08	460.51	2302.60	0.00	2302.59	-2302.59	-943.42		
306	Year 15	0.00						361.38	0.00	0.00	6714.45	361.38	7075.83	0.00	7075.81	-7075.81	-2650.77		
307	Total	200000.00						48682.76	4000.00	0.00	200000.00	48682.76	248682.76	4000.00	252682.74	-52682.74	0.00		

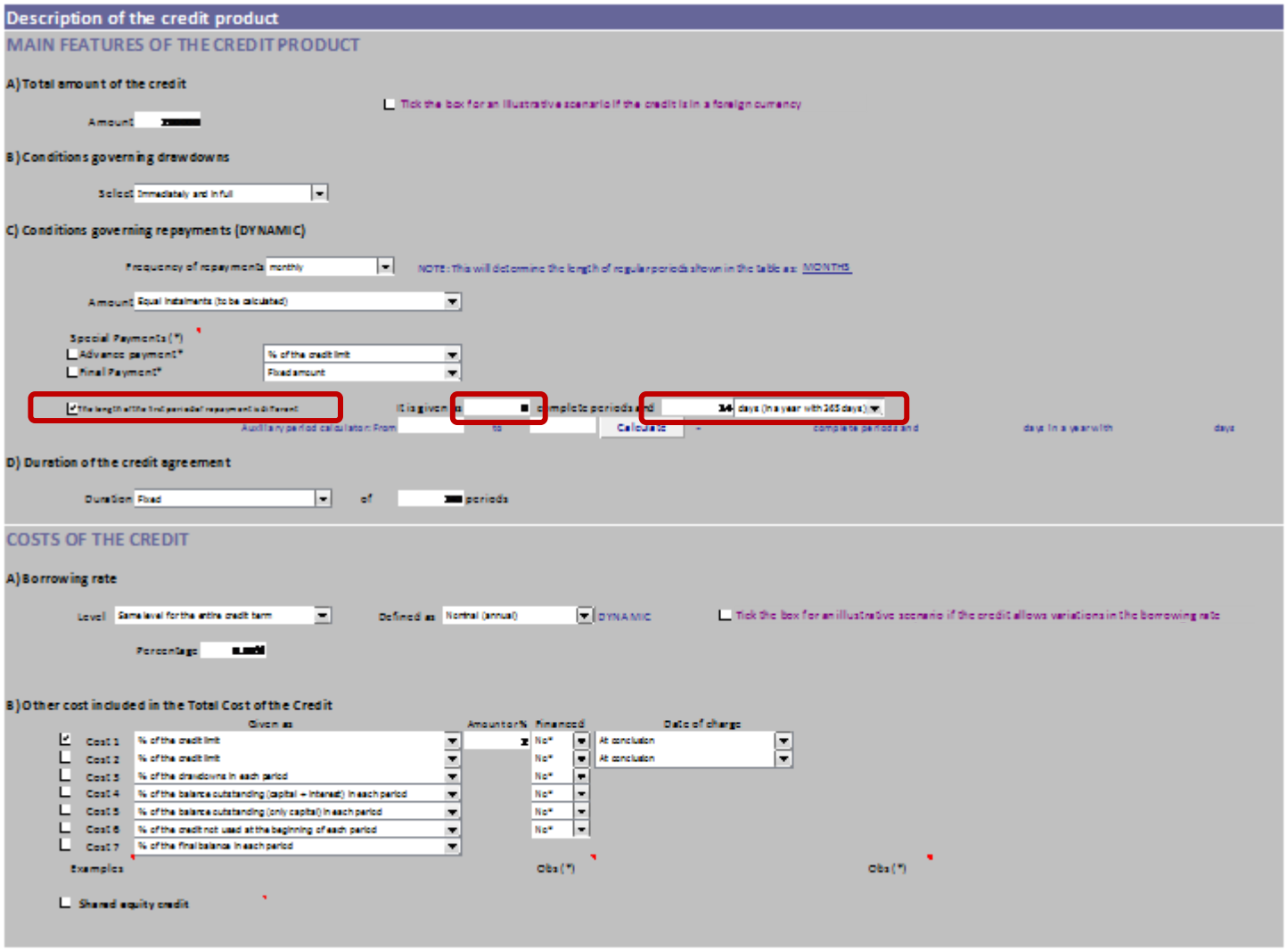
EXAMPLE 18

Case 1

Click on the button *Reset* and then enter the information highlighted in red.

Note that after ticking the box *The length of the first period of repayment is different*, an auxiliary period calculator appears.

The auxiliary calculator is not necessary in this example, as it is assumed that the length of the first interval is exactly 0 regular periods and 14 days in a year with 365 days (i.e. a non-leap year). Therefore, enter this information directly in the upper row.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

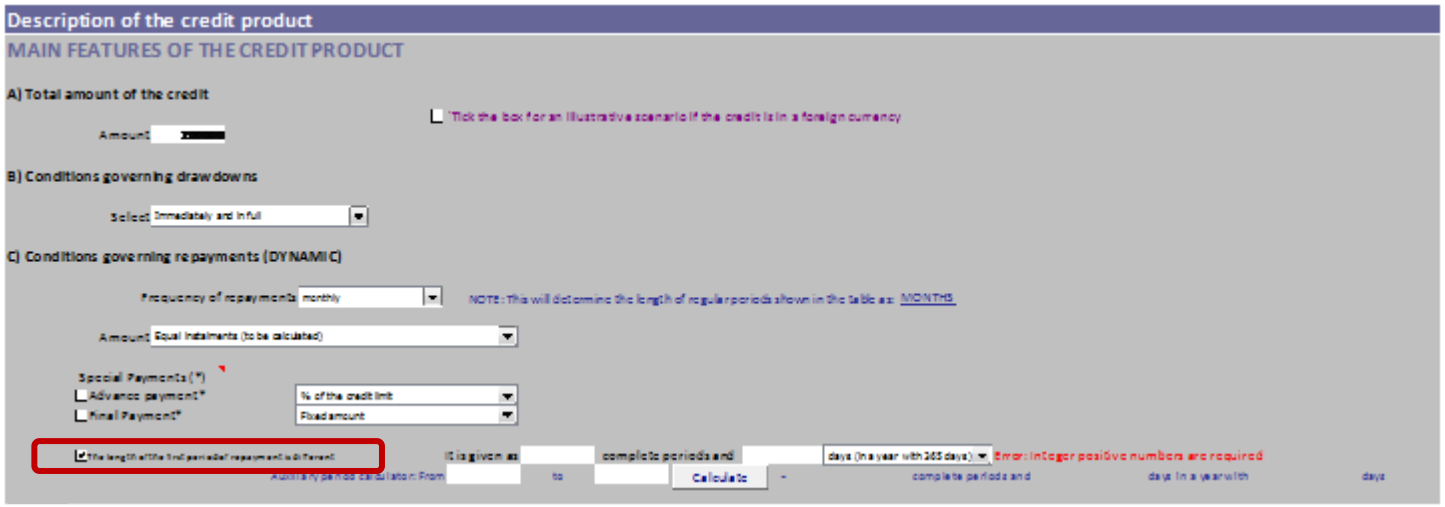
Final balance in the last period	0.00	
Amount of the first repayment	1429.01	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.4%	DYNAMIC Recalculate
Total cost of the credit	146962.40	
Total amount of credit	200000.00	
Total amount payable	346962.40	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	200460.27	199031.26	6.00%	460.27			968.74	460.27	1429.01	0.00	1429.01	-1429.01	-1425.60		
2		199031.26	199031.26	200026.42	198597.40	6.00%	995.16			433.86	995.16	1429.01	0.00	1429.01	-1429.01	-1418.20		
3		198597.40	198597.40	199590.39	198161.37	6.00%	992.99			436.03	992.99	1429.01	0.00	1429.01	-1429.01	-1410.85		
4		198161.37	198161.37	199152.18	197723.17	6.00%	990.81			438.21	990.81	1429.01	0.00	1429.01	-1429.01	-1403.54		
5		197723.17	197723.17	198711.78	197282.77	6.00%	988.62			440.40	988.62	1429.01	0.00	1429.01	-1429.01	-1396.26		
6		197282.77	197282.77	198269.18	196840.17	6.00%	986.41			442.60	986.41	1429.01	0.00	1429.01	-1429.01	-1389.02		
7		196840.17	196840.17	197824.37	196395.35	6.00%	984.20			444.81	984.20	1429.01	0.00	1429.01	-1429.01	-1381.82		
8		196395.35	196395.35	197377.33	195948.31	6.00%	981.98			447.04	981.98	1429.01	0.00	1429.01	-1429.01	-1374.66		
9		195948.31	195948.31	196928.06	195499.04	6.00%	979.74			449.27	979.74	1429.01	0.00	1429.01	-1429.01	-1367.53		
10		195499.04	195499.04	196476.54	195047.52	6.00%	977.50			451.52	977.50	1429.01	0.00	1429.01	-1429.01	-1360.44		
11		195047.52	195047.52	196022.76	194593.75	6.00%	975.24			453.78	975.24	1429.01	0.00	1429.01	-1429.01	-1353.39		
12		194593.75	194593.75	195566.71	194137.70	6.00%	972.97			456.05	972.97	1429.01	0.00	1429.01	-1429.01	-1346.37		
Sums																		
Year 1	200000.00						11285.87	4000.00	0.00	5862.30	11285.87	17148.18	4000.00	21148.12	178851.88	179372.31		
Year 2	0.00						11494.46	0.00	0.00	5653.71	11494.46	17148.18	0.00	17148.12	-17148.12	-15622.25		
Year 3	0.00						11145.76	0.00	0.00	6002.42	11145.76	17148.18	0.00	17148.12	-17148.12	-14677.61		
Year 4	0.00						10775.54	0.00	0.00	6372.63	10775.54	17148.18	0.00	17148.12	-17148.12	-13790.09		
Year 5	0.00						10382.49	0.00	0.00	6765.68	10382.49	17148.18	0.00	17148.12	-17148.12	-12956.23		
Year 6	0.00						9965.20	0.00	0.00	7182.98	9965.20	17148.18	0.00	17148.12	-17148.12	-12172.80		
Year 7	0.00						9522.17	0.00	0.00	7626.01	9522.17	17148.18	0.00	17148.12	-17148.12	-11436.74		
Year 8	0.00						9051.81	0.00	0.00	8096.36	9051.81	17148.18	0.00	17148.12	-17148.12	-10745.19		
Year 9	0.00						8552.45	0.00	0.00	8595.73	8552.45	17148.18	0.00	17148.12	-17148.12	-10095.45		
Year 10	0.00						8022.28	0.00	0.00	9125.89	8022.28	17148.18	0.00	17148.12	-17148.12	-9485.00		
Year 11	0.00						7459.41	0.00	0.00	9688.76	7459.41	17148.18	0.00	17148.12	-17148.12	-8911.46		
Year 12	0.00						6861.83	0.00	0.00	10286.34	6861.83	17148.18	0.00	17148.12	-17148.12	-8372.61		
Year 13	0.00						6227.39	0.00	0.00	10920.78	6227.39	17148.18	0.00	17148.12	-17148.12	-7866.34		
Year 14	0.00						5553.82	0.00	0.00	11594.35	5553.82	17148.18	0.00	17148.12	-17148.12	-7390.68		
Year 15	0.00						4838.71	0.00	0.00	12309.46	4838.71	17148.18	0.00	17148.12	-17148.12	-6943.78		
Year 16	0.00						4079.49	0.00	0.00	13068.69	4079.49	17148.18	0.00	17148.12	-17148.12	-6523.90		
Year 17	0.00						3273.44	0.00	0.00	13874.73	3273.44	17148.18	0.00	17148.12	-17148.12	-6129.42		
Year 18	0.00						2417.68	0.00	0.00	14730.50	2417.68	17148.18	0.00	17148.12	-17148.12	-5758.79		
Year 19	0.00						1509.13	0.00	0.00	15639.04	1509.13	17148.18	0.00	17148.12	-17148.12	-5410.57		
Year 20	0.00						544.55	0.00	0.00	16603.62	544.55	17148.18	0.00	17148.12	-17148.12	-5083.40		
Total	200000.00						142963.50	4000.00	0.00	200000.00	142963.50	342963.50	4000.00	346962.40	-146962.40	0.00		

Case 2

Click on the button *Reset* and then enter the information highlighted in red.

Note that after ticking the box *The length of the first period of repayment is different*, an auxiliary period calculator appears.



In the auxiliary calculator enter the initial and final dates of the first period of repayment and click on the button *Calculate* to obtain the number of regular periods and days corresponding to this period and the number of days of the year.

Then enter the information obtained in the previous row.

Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1437.54	
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.4%	DYNAMIC
Total cost of the credit	149009.60	
Total amount of credit	200000.00	
Total amount payable	349009.60	

Recalculate

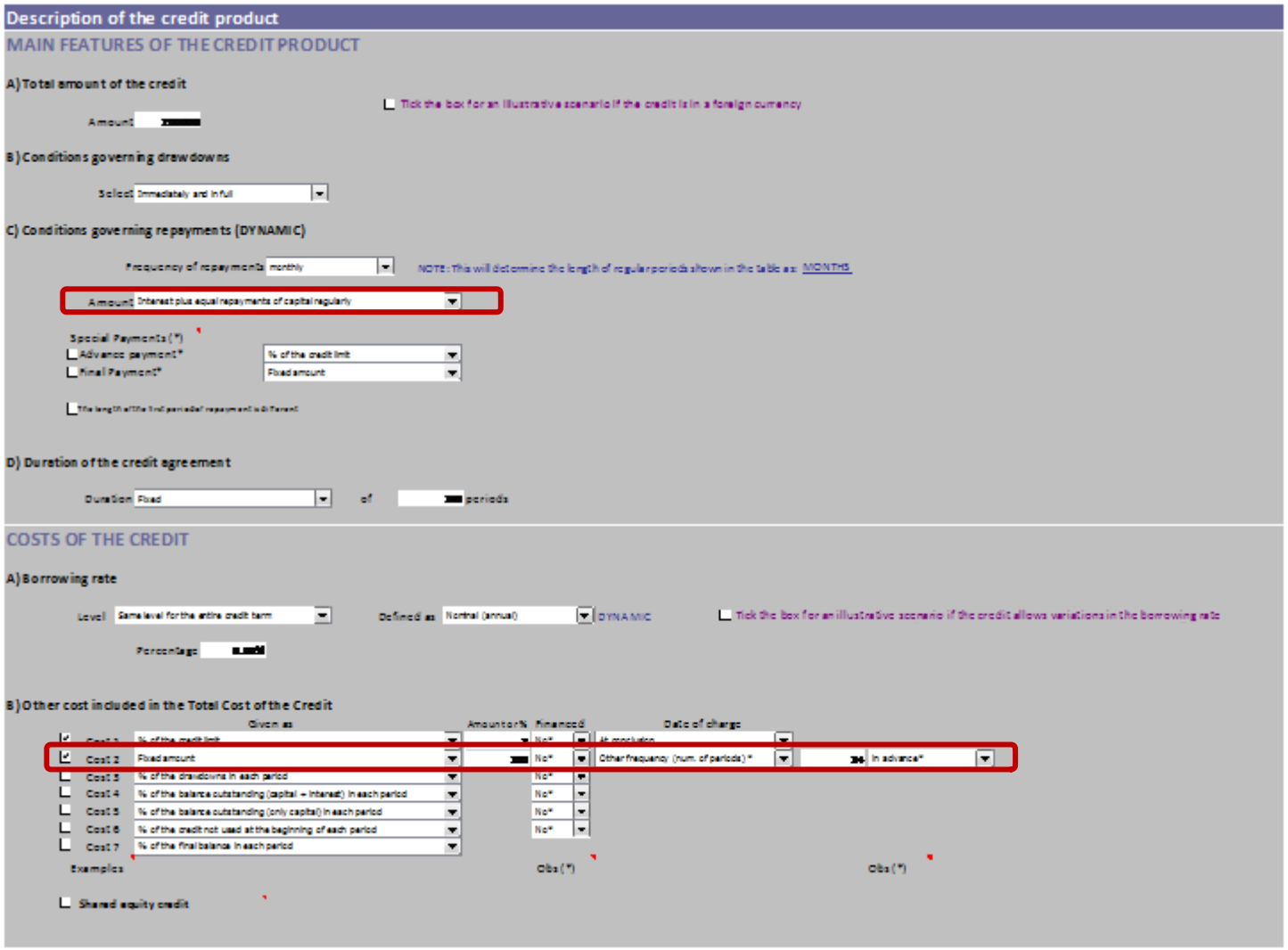
Recalculate

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201655.74	200218.20	6.00%	1655.74			-218.20	1655.74	1437.54	0.00	1437.54	-1437.54	-1425.23		
2		200218.20	200218.20	201219.29	199781.76	6.00%	1001.09			436.45	1001.09	1437.54	0.00	1437.54	-1437.54	-1417.84		
3		199781.76	199781.76	200780.66	199343.13	6.00%	998.91			438.63	998.91	1437.54	0.00	1437.54	-1437.54	-1410.50		
4		199343.13	199343.13	200339.84	198902.31	6.00%	996.72			440.82	996.72	1437.54	0.00	1437.54	-1437.54	-1403.19		
5		198902.31	198902.31	199896.82	198459.28	6.00%	994.51			443.03	994.51	1437.54	0.00	1437.54	-1437.54	-1395.92		
6		198459.28	198459.28	199451.58	198014.04	6.00%	992.30			445.24	992.30	1437.54	0.00	1437.54	-1437.54	-1388.68		
7		198014.04	198014.04	199004.11	197566.57	6.00%	990.07			447.47	990.07	1437.54	0.00	1437.54	-1437.54	-1381.49		
8		197566.57	197566.57	198554.41	197116.87	6.00%	987.83			449.70	987.83	1437.54	0.00	1437.54	-1437.54	-1374.33		
9		197116.87	197116.87	198102.46	196664.92	6.00%	985.58			451.95	985.58	1437.54	0.00	1437.54	-1437.54	-1367.21		
10		196664.92	196664.92	197648.24	196210.71	6.00%	983.32			454.21	983.32	1437.54	0.00	1437.54	-1437.54	-1360.12		
11		196210.71	196210.71	197191.76	195754.22	6.00%	981.05			456.48	981.05	1437.54	0.00	1437.54	-1437.54	-1353.08		
12		195754.22	195754.22	196732.99	195295.46	6.00%	978.77			458.77	978.77	1437.54	0.00	1437.54	-1437.54	-1346.07		
Sums																		
Year 1	200000.00						12545.90	4000.00	0.00	4704.54	12545.90	17250.44	4000.00	21250.48	178749.52	179376.35		
Year 2	0.00						11563.01	0.00	0.00	5687.43	11563.01	17250.44	0.00	17250.48	-17250.48	-15618.96		
Year 3	0.00						11212.23	0.00	0.00	6038.21	11212.23	17250.44	0.00	17250.48	-17250.48	-14675.00		
Year 4	0.00						10839.80	0.00	0.00	6410.64	10839.80	17250.44	0.00	17250.48	-17250.48	-13788.08		
Year 5	0.00						10444.41	0.00	0.00	6806.03	10444.41	17250.44	0.00	17250.48	-17250.48	-12954.77		
Year 6	0.00						10024.63	0.00	0.00	7225.81	10024.63	17250.44	0.00	17250.48	-17250.48	-12171.82		
Year 7	0.00						9578.95	0.00	0.00	7671.49	9578.95	17250.44	0.00	17250.48	-17250.48	-11436.19		
Year 8	0.00						9105.79	0.00	0.00	8144.65	9105.79	17250.44	0.00	17250.48	-17250.48	-10745.02		
Year 9	0.00						8603.45	0.00	0.00	8646.99	8603.45	17250.44	0.00	17250.48	-17250.48	-10095.62		
Year 10	0.00						8070.12	0.00	0.00	9180.32	8070.12	17250.44	0.00	17250.48	-17250.48	-9485.47		
Year 11	0.00						7503.90	0.00	0.00	9746.54	7503.90	17250.44	0.00	17250.48	-17250.48	-8912.19		
Year 12	0.00						6902.75	0.00	0.00	10347.69	6902.75	17250.44	0.00	17250.48	-17250.48	-8373.57		
Year 13	0.00						6264.53	0.00	0.00	10985.91	6264.53	17250.44	0.00	17250.48	-17250.48	-7867.49		
Year 14	0.00						5586.95	0.00	0.00	11663.49	5586.95	17250.44	0.00	17250.48	-17250.48	-7392.00		
Year 15	0.00						4867.57	0.00	0.00	12382.87	4867.57	17250.44	0.00	17250.48	-17250.48	-6945.25		
Year 16	0.00						4103.82	0.00	0.00	13146.62	4103.82	17250.44	0.00	17250.48	-17250.48	-6525.50		
Year 17	0.00						3292.96	0.00	0.00	13957.48	3292.96	17250.44	0.00	17250.48	-17250.48	-6131.12		
Year 18	0.00						2432.10	0.00	0.00	14818.34	2432.10	17250.44	0.00	17250.48	-17250.48	-5760.57		
Year 19	0.00						1518.13	0.00	0.00	15732.31	1518.13	17250.44	0.00	17250.48	-17250.48	-5412.42		
Year 20	0.00						547.80	0.00	0.00	16702.64	547.80	17250.44	0.00	17250.48	-17250.48	-5085.31		
Total	200000.00						145008.80	4000.00	0.00	200000.00	145008.80	345008.80	4000.00	349009.60	-149009.60	0.00		

EXAMPLE 19

Click on the button *Reset* and then enter the information highlighted in red.

Note that the explanations in Obs(*) under the *Date of charge* of other costs indicate that 'costs paid in advance are payable at the beginning of the interval assuming that the first payment coincides with the first repayment of the credit'. This is coherent with the treatment of the regular costs in this example by virtue of assumption (h)(iii); therefore, payment *in advance* is the option to choose for these costs.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

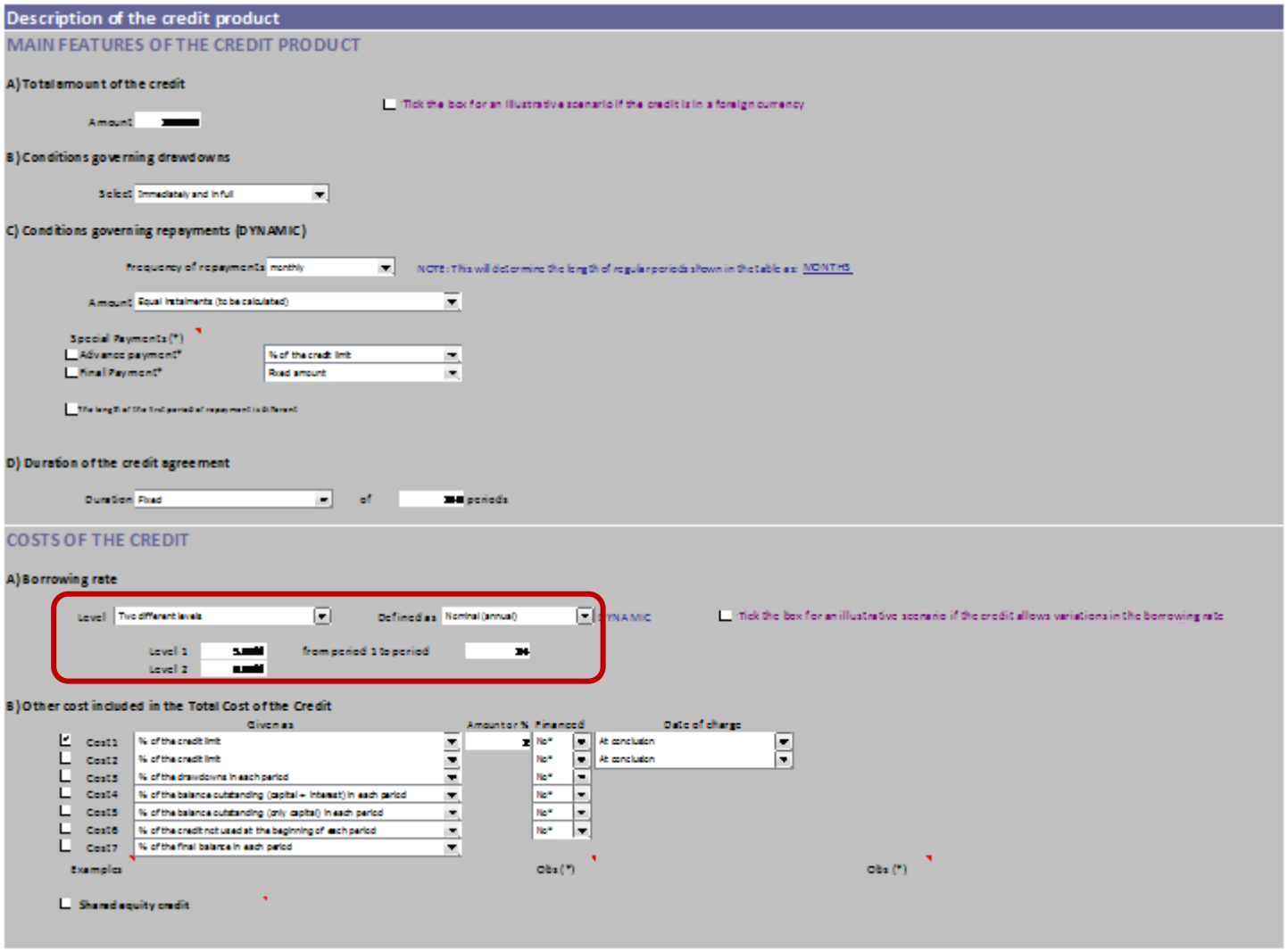
Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.5%	DYNAMIC Recalculate
Total cost of the credit	125500.00	
Total amount of credit	200000.00	
Total amount payable	325500.00	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201000.00	199166.67	6.00%	1000.00	100.00		833.33	1000.00	1833.33	100.00	1933.33	-1933.33	-1923.18		
2		199166.67	199166.67	200162.50	198333.33	6.00%	995.83			833.33	995.83	1829.17	0.00	1829.17	-1829.17	-1810.01		
3		198333.33	198333.33	199325.00	197500.00	6.00%	991.67			833.33	991.67	1825.00	0.00	1825.00	-1825.00	-1796.39		
4		197500.00	197500.00	198487.50	196666.67	6.00%	987.50			833.33	987.50	1820.83	0.00	1820.83	-1820.83	-1782.88		
5		196666.67	196666.67	197650.00	195833.33	6.00%	983.33			833.33	983.33	1816.67	0.00	1816.67	-1816.67	-1769.46		
6		195833.33	195833.33	196812.50	195000.00	6.00%	979.17			833.33	979.17	1812.50	0.00	1812.50	-1812.50	-1756.13		
7		195000.00	195000.00	195975.00	194166.67	6.00%	975.00			833.33	975.00	1808.33	0.00	1808.33	-1808.33	-1742.88		
8		194166.67	194166.67	195137.50	193333.33	6.00%	970.83			833.33	970.83	1804.17	0.00	1804.17	-1804.17	-1729.74		
9		193333.33	193333.33	194300.00	192500.00	6.00%	966.67			833.33	966.67	1800.00	0.00	1800.00	-1800.00	-1716.68		
10		192500.00	192500.00	193462.50	191666.67	6.00%	962.50			833.33	962.50	1795.83	0.00	1795.83	-1795.83	-1703.71		
11		191666.67	191666.67	192625.00	190833.33	6.00%	958.33			833.33	958.33	1791.67	0.00	1791.67	-1791.67	-1690.83		
12		190833.33	190833.33	191787.50	190000.00	6.00%	954.17			833.33	954.17	1787.50	0.00	1787.50	-1787.50	-1678.04		
Sums																		
Year 1	200000.00						11725.00	4100.00	0.00	10000.00	11725.00	21725.00	4100.00	25825.00	174175.00	174900.08		
Year 2	0.00						11125.00	0.00	0.00	10000.00	11125.00	21125.00	0.00	21125.00	-21125.00	-19170.03		
Year 3	0.00						10525.00	100.00	0.00	10000.00	10525.00	20525.00	100.00	20625.00	-20625.00	-17572.71		
Year 4	0.00						9925.00	0.00	0.00	10000.00	9925.00	19925.00	0.00	19925.00	-19925.00	-15934.54		
Year 5	0.00						9325.00	100.00	0.00	10000.00	9325.00	19325.00	100.00	19425.00	-19425.00	-14585.61		
Year 6	0.00						8725.00	0.00	0.00	10000.00	8725.00	18725.00	0.00	18725.00	-18725.00	-13197.10		
Year 7	0.00						8125.00	100.00	0.00	10000.00	8125.00	18125.00	100.00	18225.00	-18225.00	-12060.11		
Year 8	0.00						7525.00	0.00	0.00	10000.00	7525.00	17525.00	0.00	17525.00	-17525.00	-10885.06		
Year 9	0.00						6925.00	100.00	0.00	10000.00	6925.00	16925.00	100.00	17025.00	-17025.00	-9928.69		
Year 10	0.00						6325.00	0.00	0.00	10000.00	6325.00	16325.00	0.00	16325.00	-16325.00	-8935.99		
Year 11	0.00						5725.00	100.00	0.00	10000.00	5725.00	15725.00	100.00	15825.00	-15825.00	-8133.39		
Year 12	0.00						5125.00	0.00	0.00	10000.00	5125.00	15125.00	0.00	15125.00	-15125.00	-7296.30		
Year 13	0.00						4525.00	100.00	0.00	10000.00	4525.00	14525.00	100.00	14625.00	-14625.00	-6624.43		
Year 14	0.00						3925.00	0.00	0.00	10000.00	3925.00	13925.00	0.00	13925.00	-13925.00	-5919.99		
Year 15	0.00						3325.00	100.00	0.00	10000.00	3325.00	13325.00	100.00	13425.00	-13425.00	-5359.13		
Year 16	0.00						2725.00	0.00	0.00	10000.00	2725.00	12725.00	0.00	12725.00	-12725.00	-4767.65		
Year 17	0.00						2125.00	100.00	0.00	10000.00	2125.00	12125.00	100.00	12225.00	-12225.00	-4300.90		
Year 18	0.00						1525.00	0.00	0.00	10000.00	1525.00	11525.00	0.00	11525.00	-11525.00	-3805.48		
Year 19	0.00						925.00	100.00	0.00	10000.00	925.00	10925.00	100.00	11025.00	-11025.00	-3418.40		
Year 20	0.00						325.00	0.00	0.00	10000.00	325.00	10325.00	0.00	10325.00	-10325.00	-3004.58		
Total	200000.00						120500.00	5000.00	0.00	200000.00	120500.00	320500.00	5000.00	325500.00	-125500.00	0.00		

EXAMPLE 20

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

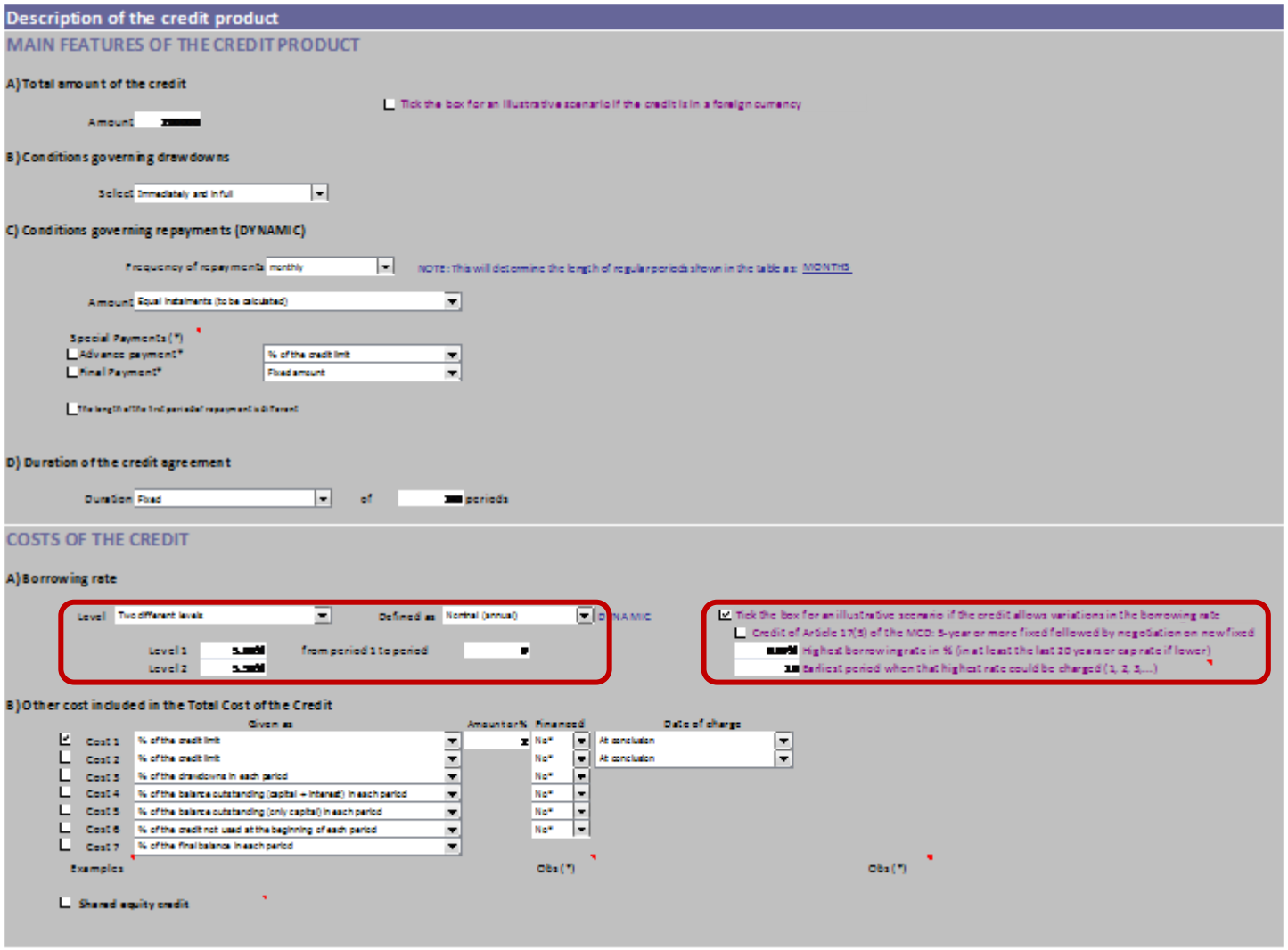
Main results

Final balance in the last period	0.00	
Amount of the first repayment	1319.91	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.2%	DYNAMIC Recalculate
Total cost of the credit	143134.40	
Total amount of credit	200000.00	
Total amount payable	343134.40	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	200833.33	199513.42	5.00%	833.33			486.58	833.33	1319.91	0.00	1319.91	-1319.91	-1313.32		
2		199513.42	199513.42	200344.73	199024.82	5.00%	831.31			488.61	831.31	1319.91	0.00	1319.91	-1319.91	-1306.76		
3		199024.82	199024.82	199854.09	198534.17	5.00%	829.27			490.64	829.27	1319.91	0.00	1319.91	-1319.91	-1300.24		
4		198534.17	198534.17	199361.40	198041.49	5.00%	827.23			492.69	827.23	1319.91	0.00	1319.91	-1319.91	-1293.75		
5		198041.49	198041.49	198866.66	197546.75	5.00%	825.17			494.74	825.17	1319.91	0.00	1319.91	-1319.91	-1287.29		
6		197546.75	197546.75	198369.86	197049.95	5.00%	823.11			496.80	823.11	1319.91	0.00	1319.91	-1319.91	-1280.86		
7		197049.95	197049.95	197870.99	196551.08	5.00%	821.04			498.87	821.04	1319.91	0.00	1319.91	-1319.91	-1274.46		
8		196551.08	196551.08	197370.04	196050.13	5.00%	818.96			500.95	818.96	1319.91	0.00	1319.91	-1319.91	-1268.10		
9		196050.13	196050.13	196867.01	195547.10	5.00%	816.88			503.04	816.88	1319.91	0.00	1319.91	-1319.91	-1261.77		
10		195547.10	195547.10	196361.88	195041.96	5.00%	814.78			505.13	814.78	1319.91	0.00	1319.91	-1319.91	-1255.47		
11		195041.96	195041.96	195854.64	194534.73	5.00%	812.67			507.24	812.67	1319.91	0.00	1319.91	-1319.91	-1249.20		
12		194534.73	194534.73	195345.29	194025.38	5.00%	810.56			509.35	810.56	1319.91	0.00	1319.91	-1319.91	-1242.96		
Sums																		
Year 1	200000.00						9864.32	4000.00	0.00	5974.62	9864.32	15838.94	4000.00	19838.92	180161.08	180665.83		
Year 2	0.00						9558.64	0.00	0.00	6280.30	9558.64	15838.94	0.00	15838.92	-15838.92	-14440.23		
Year 3	0.00						11102.06	0.00	0.00	5978.89	11102.06	17080.95	0.00	17080.92	-17080.92	-14664.71		
Year 4	0.00						10733.30	0.00	0.00	6347.65	10733.30	17080.95	0.00	17080.92	-17080.92	-13809.79		
Year 5	0.00						10341.79	0.00	0.00	6739.16	10341.79	17080.95	0.00	17080.92	-17080.92	-13004.71		
Year 6	0.00						9926.13	0.00	0.00	7154.82	9926.13	17080.95	0.00	17080.92	-17080.92	-12246.57		
Year 7	0.00						9484.84	0.00	0.00	7596.11	9484.84	17080.95	0.00	17080.92	-17080.92	-11532.63		
Year 8	0.00						9016.33	0.00	0.00	8064.62	9016.33	17080.95	0.00	17080.92	-17080.92	-10860.30		
Year 9	0.00						8518.92	0.00	0.00	8562.03	8518.92	17080.95	0.00	17080.92	-17080.92	-10227.17		
Year 10	0.00						7990.83	0.00	0.00	9090.12	7990.83	17080.95	0.00	17080.92	-17080.92	-9630.95		
Year 11	0.00						7430.17	0.00	0.00	9650.78	7430.17	17080.95	0.00	17080.92	-17080.92	-9069.49		
Year 12	0.00						6834.93	0.00	0.00	10246.02	6834.93	17080.95	0.00	17080.92	-17080.92	-8540.76		
Year 13	0.00						6202.98	0.00	0.00	10877.97	6202.98	17080.95	0.00	17080.92	-17080.92	-8042.86		
Year 14	0.00						5532.05	0.00	0.00	11548.90	5532.05	17080.95	0.00	17080.92	-17080.92	-7573.98		
Year 15	0.00						4819.74	0.00	0.00	12261.21	4819.74	17080.95	0.00	17080.92	-17080.92	-7132.44		
Year 16	0.00						4063.50	0.00	0.00	13017.45	4063.50	17080.95	0.00	17080.92	-17080.92	-6716.63		
Year 17	0.00						3260.61	0.00	0.00	13820.34	3260.61	17080.95	0.00	17080.92	-17080.92	-6325.07		
Year 18	0.00						2408.20	0.00	0.00	14672.75	2408.20	17080.95	0.00	17080.92	-17080.92	-5956.33		
Year 19	0.00						1503.22	0.00	0.00	15577.73	1503.22	17080.95	0.00	17080.92	-17080.92	-5609.09		
Year 20	0.00						542.42	0.00	0.00	16538.53	542.42	17080.95	0.00	17080.92	-17080.92	-5282.10		
Total	200000.00						139134.97	4000.00	0.00	200000.00	139134.97	339134.97	4000.00	343134.40	-143134.40	0.00		

EXAMPLE 21

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1319.91	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	5.9%	DYNAMIC Recalculate
Total cost of the credit	133287.05	
Total amount of credit	200000.00	
Total amount payable	333287.05	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

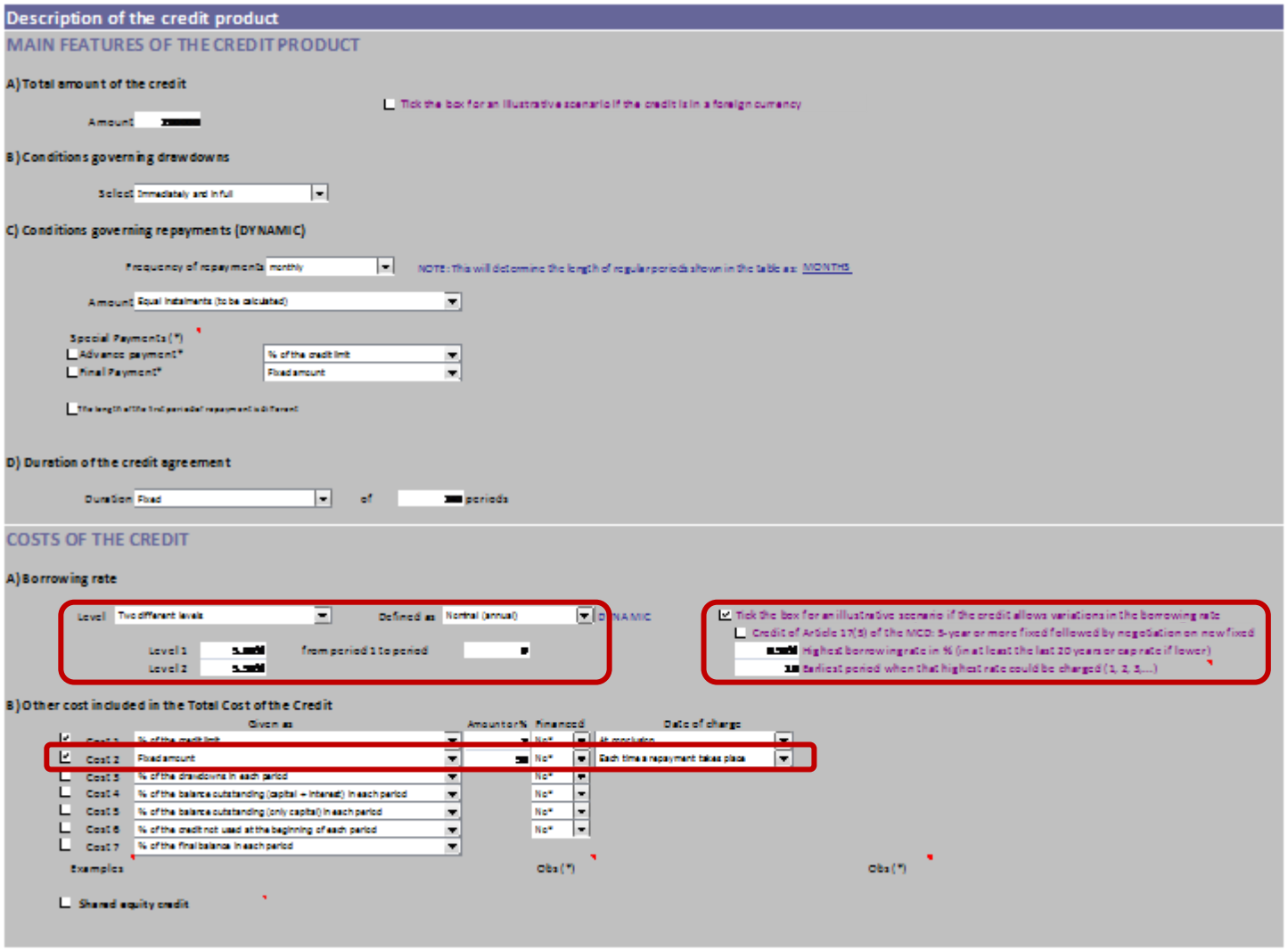
7.2%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00	4000.00	
1		200000.00	200000.00	200833.33	199513.42	5.00%	833.33			486.58	833.33	1319.91	0.00	1319.91	-1319.91	-1313.67	1319.91	
2		199513.42	199513.42	200344.73	199024.82	5.00%	831.31			488.61	831.31	1319.91	0.00	1319.91	-1319.91	-1307.46	1319.91	
3		199024.82	199024.82	199854.09	198534.17	5.00%	829.27			490.64	829.27	1319.91	0.00	1319.91	-1319.91	-1301.27	1319.91	
4		198534.17	198534.17	199361.40	198041.49	5.00%	827.23			492.69	827.23	1319.91	0.00	1319.91	-1319.91	-1295.12	1319.91	
5		198041.49	198041.49	198866.66	197546.75	5.00%	825.17			494.74	825.17	1319.91	0.00	1319.91	-1319.91	-1288.99	1319.91	
6		197546.75	197546.75	198369.86	197049.95	5.00%	823.11			496.80	823.11	1319.91	0.00	1319.91	-1319.91	-1282.90	1319.91	
7		197049.95	197049.95	197870.99	196551.08	5.00%	821.04			498.87	821.04	1319.91	0.00	1319.91	-1319.91	-1276.83	1319.91	
8		196551.08	196551.08	197370.04	196050.13	5.00%	818.96			500.95	818.96	1319.91	0.00	1319.91	-1319.91	-1270.79	1319.91	
9		196050.13	196050.13	196867.01	195547.10	5.00%	816.88			503.04	816.88	1319.91	0.00	1319.91	-1319.91	-1264.78	1319.91	
10		195547.10	195547.10	196443.35	195069.30	5.50%	896.26			477.80	896.26	1374.06	0.00	1374.06	-1374.06	-1310.44	1530.61	
11		195069.30	195069.30	195963.36	194589.31	5.50%	894.07			479.99	894.07	1374.06	0.00	1374.06	-1374.06	-1304.24	1530.61	
12		194589.31	194589.31	195481.17	194107.12	5.50%	891.87			482.19	891.87	1374.06	0.00	1374.06	-1374.06	-1298.08	1530.61	
Sums																		
Year 1	200000.00						10108.49	4000.00	0.00	5892.88	10108.49	16001.38	4000.00	20001.37	179998.63	180485.43	20471.02	
Year 2	0.00						10527.10	0.00	0.00	5961.59	10527.10	16488.69	0.00	16488.72	-16488.72	-15106.29	18367.32	
Year 3	0.00						10190.82	0.00	0.00	6297.87	10190.82	16488.69	0.00	16488.72	-16488.72	-14270.93	18367.32	
Year 4	0.00						9835.57	0.00	0.00	6653.12	9835.57	16488.69	0.00	16488.72	-16488.72	-13481.77	18367.32	
Year 5	0.00						9460.28	0.00	0.00	7028.41	9460.28	16488.69	0.00	16488.72	-16488.72	-12736.25	18367.32	
Year 6	0.00						9063.82	0.00	0.00	7424.87	9063.82	16488.69	0.00	16488.72	-16488.72	-12031.96	18367.32	
Year 7	0.00						8645.00	0.00	0.00	7843.69	8645.00	16488.69	0.00	16488.72	-16488.72	-11366.61	18367.32	
Year 8	0.00						8202.56	0.00	0.00	8286.13	8202.56	16488.69	0.00	16488.72	-16488.72	-10738.06	18367.32	
Year 9	0.00						7735.15	0.00	0.00	8753.54	7735.15	16488.69	0.00	16488.72	-16488.72	-10144.26	18367.32	
Year 10	0.00						7241.38	0.00	0.00	9247.31	7241.38	16488.69	0.00	16488.72	-16488.72	-9583.30	18367.32	
Year 11	0.00						6719.76	0.00	0.00	9768.93	6719.76	16488.69	0.00	16488.72	-16488.72	-9053.36	18367.32	
Year 12	0.00						6168.72	0.00	0.00	10319.97	6168.72	16488.69	0.00	16488.72	-16488.72	-8552.72	18367.32	
Year 13	0.00						5586.59	0.00	0.00	10902.10	5586.59	16488.69	0.00	16488.72	-16488.72	-8079.77	18367.32	
Year 14	0.00						4971.63	0.00	0.00	11517.06	4971.63	16488.69	0.00	16488.72	-16488.72	-7632.97	18367.32	
Year 15	0.00						4321.97	0.00	0.00	12166.72	4321.97	16488.69	0.00	16488.72	-16488.72	-7210.88	18367.32	
Year 16	0.00						3635.68	0.00	0.00	12853.01	3635.68	16488.69	0.00	16488.72	-16488.72	-6812.13	18367.32	
Year 17	0.00						2910.67	0.00	0.00	13578.03	2910.67	16488.69	0.00	16488.72	-16488.72	-6435.43	18367.32	
Year 18	0.00						2144.76	0.00	0.00	14343.93	2144.76	16488.69	0.00	16488.72	-16488.72	-6079.56	18367.32	
Year 19	0.00						1335.65	0.00	0.00	15153.04	1335.65	16488.69	0.00	16488.72	-16488.72	-5743.37	18367.32	
Year 20	0.00						480.90	0.00	0.00	16007.79	480.90	16488.69	0.00	16488.72	-16488.72	-5425.78	18367.32	
Total	200000.00						129286.49	4000.00	0.00	200000.00	129286.49	329286.49	4000.00	333287.05	-133287.05	0.00	369450.10	

EXAMPLE 22

Case 1

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1319.91	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.1%	DYNAMIC Recalculate
Total cost of the credit	140487.05	
Total amount of credit	200000.00	
Total amount payable	340487.05	

Illustrative scenario of change in the borrowing rate

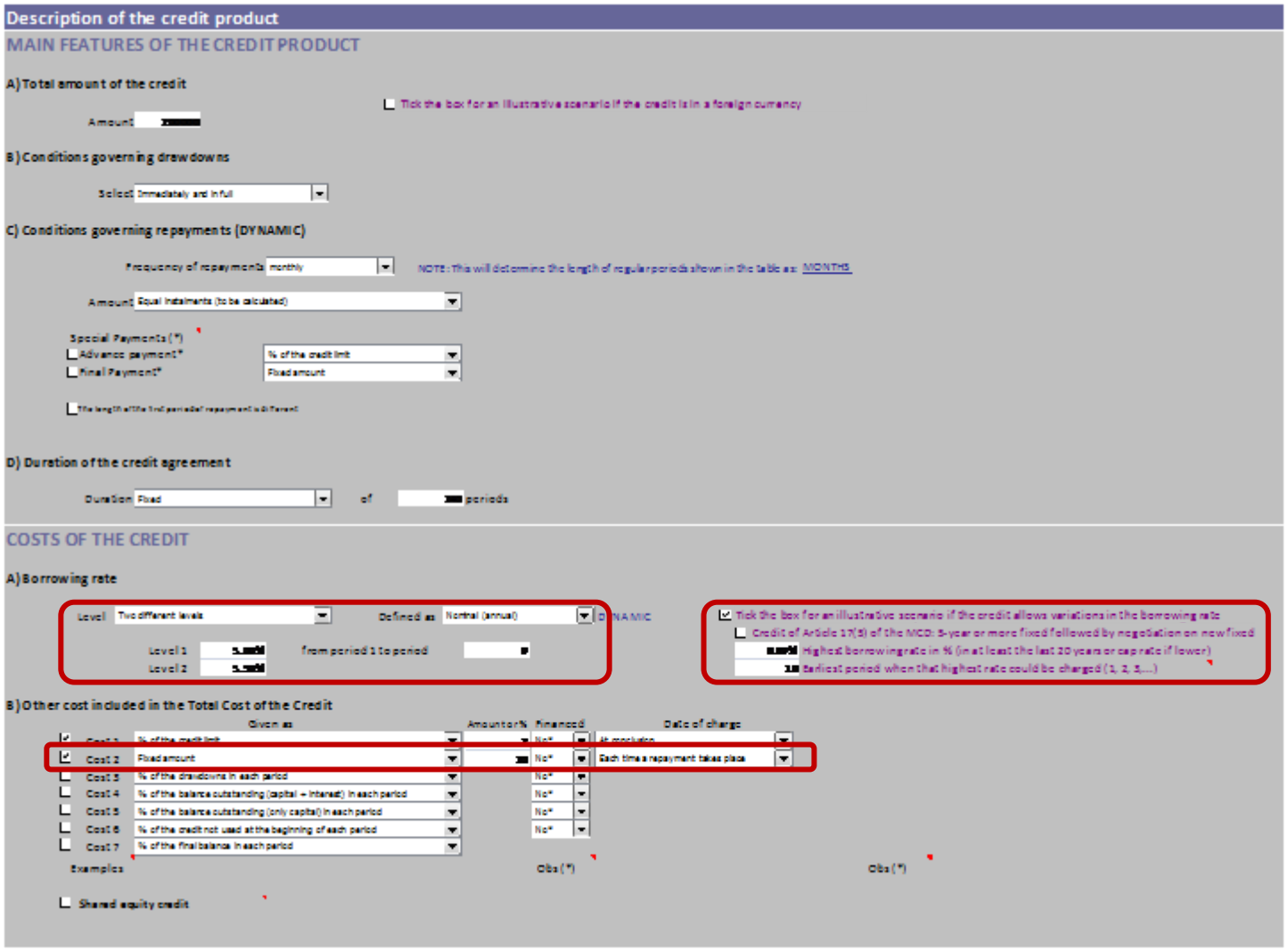
If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

7.1%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00	4000.00	
1		200000.00	200000.00	200833.33	199513.42	5.00%	833.33	30.00		486.58	833.33	1319.91	30.00	1349.91	-1349.91	-1343.23	1349.91	
2		199513.42	199513.42	200344.73	199024.82	5.00%	831.31	30.00		488.61	831.31	1319.91	30.00	1349.91	-1349.91	-1336.58	1349.91	
3		199024.82	199024.82	199854.09	198534.17	5.00%	829.27	30.00		490.64	829.27	1319.91	30.00	1349.91	-1349.91	-1329.97	1349.91	
4		198534.17	198534.17	199361.40	198041.49	5.00%	827.23	30.00		492.69	827.23	1319.91	30.00	1349.91	-1349.91	-1323.38	1349.91	
5		198041.49	198041.49	198866.66	197546.75	5.00%	825.17	30.00		494.74	825.17	1319.91	30.00	1349.91	-1349.91	-1316.83	1349.91	
6		197546.75	197546.75	198369.86	197049.95	5.00%	823.11	30.00		496.80	823.11	1319.91	30.00	1349.91	-1349.91	-1310.32	1349.91	
7		197049.95	197049.95	197870.99	196551.08	5.00%	821.04	30.00		498.87	821.04	1319.91	30.00	1349.91	-1349.91	-1303.83	1349.91	
8		196551.08	196551.08	197370.04	196050.13	5.00%	818.96	30.00		500.95	818.96	1319.91	30.00	1349.91	-1349.91	-1297.38	1349.91	
9		196050.13	196050.13	196867.01	195547.10	5.00%	816.88	30.00		503.04	816.88	1319.91	30.00	1349.91	-1349.91	-1290.96	1349.91	
10		195547.10	195547.10	196443.35	195069.30	5.50%	896.26	30.00		477.80	896.26	1374.06	30.00	1404.06	-1404.06	-1336.10	1515.81	
11		195069.30	195069.30	195963.36	194589.31	5.50%	894.07	30.00		479.99	894.07	1374.06	30.00	1404.06	-1404.06	-1329.48	1515.81	
12		194589.31	194589.31	195481.17	194107.12	5.50%	891.87	30.00		482.19	891.87	1374.06	30.00	1404.06	-1404.06	-1322.90	1515.81	
Sums																		
Year 1	200000.00						10108.49	4360.00	0.00	5892.88	10108.49	16001.38	4360.00	20361.37	179638.63	180159.04	20696.62	
Year 2	0.00						10527.10	360.00	0.00	5961.59	10527.10	16488.69	360.00	16848.72	-16848.72	-15373.31	18189.72	
Year 3	0.00						10190.82	360.00	0.00	6297.87	10190.82	16488.69	360.00	16848.72	-16848.72	-14484.72	18189.72	
Year 4	0.00						9835.57	360.00	0.00	6653.12	9835.57	16488.69	360.00	16848.72	-16848.72	-13647.49	18189.72	
Year 5	0.00						9460.28	360.00	0.00	7028.41	9460.28	16488.69	360.00	16848.72	-16848.72	-12858.65	18189.72	
Year 6	0.00						9063.82	360.00	0.00	7424.87	9063.82	16488.69	360.00	16848.72	-16848.72	-12115.41	18189.72	
Year 7	0.00						8645.00	360.00	0.00	7843.69	8645.00	16488.69	360.00	16848.72	-16848.72	-11415.13	18189.72	
Year 8	0.00						8202.56	360.00	0.00	8286.13	8202.56	16488.69	360.00	16848.72	-16848.72	-10755.33	18189.72	
Year 9	0.00						7735.15	360.00	0.00	8753.54	7735.15	16488.69	360.00	16848.72	-16848.72	-10133.66	18189.72	
Year 10	0.00						7241.38	360.00	0.00	9247.31	7241.38	16488.69	360.00	16848.72	-16848.72	-9547.93	18189.72	
Year 11	0.00						6719.76	360.00	0.00	9768.93	6719.76	16488.69	360.00	16848.72	-16848.72	-8996.05	18189.72	
Year 12	0.00						6168.72	360.00	0.00	10319.97	6168.72	16488.69	360.00	16848.72	-16848.72	-8476.07	18189.72	
Year 13	0.00						5586.59	360.00	0.00	10902.10	5586.59	16488.69	360.00	16848.72	-16848.72	-7986.15	18189.72	
Year 14	0.00						4971.63	360.00	0.00	11517.06	4971.63	16488.69	360.00	16848.72	-16848.72	-7524.54	18189.72	
Year 15	0.00						4321.97	360.00	0.00	12166.72	4321.97	16488.69	360.00	16848.72	-16848.72	-7089.62	18189.72	
Year 16	0.00						3635.68	360.00	0.00	12853.01	3635.68	16488.69	360.00	16848.72	-16848.72	-6679.83	18189.72	
Year 17	0.00						2910.67	360.00	0.00	13578.03	2910.67	16488.69	360.00	16848.72	-16848.72	-6293.73	18189.72	
Year 18	0.00						2144.76	360.00	0.00	14343.93	2144.76	16488.69	360.00	16848.72	-16848.72	-5929.95	18189.72	
Year 19	0.00						1335.65	360.00	0.00	15153.04	1335.65	16488.69	360.00	16848.72	-16848.72	-5587.19	18189.72	
Year 20	0.00						480.90	360.00	0.00	16007.79	480.90	16488.69	360.00	16848.72	-16848.72	-5264.25	18189.72	
Total	200000.00						129286.49	11200.00	0.00	200000.00	129286.49	329286.49	11200.00	340487.05	-140487.05	0.00	366301.30	

Case 2

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1319.91	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.0%	DYNAMIC Recalculate
Total cost of the credit	138087.05	
Total amount of credit	200000.00	
Total amount payable	338087.05	

Illustrative scenario of change in the borrowing rate

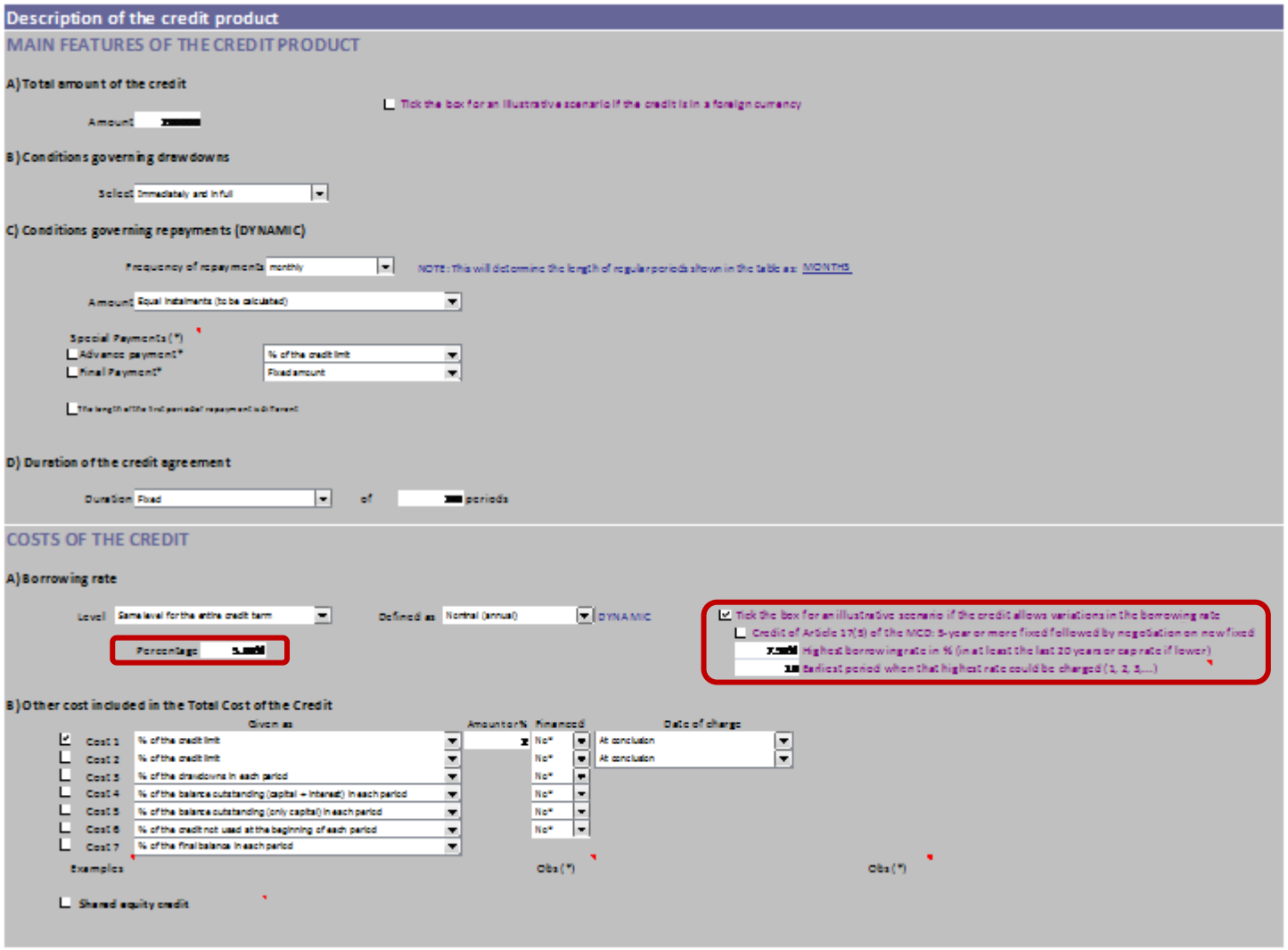
If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

7.4%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00	4000.00	
1		200000.00	200000.00	200833.33	199513.42	5.00%	833.33	20.00		486.58	833.33	1319.91	20.00	1339.91	-1339.91	-1333.38	1339.91	
2		199513.42	199513.42	200344.73	199024.82	5.00%	831.31	20.00		488.61	831.31	1319.91	20.00	1339.91	-1339.91	-1326.87	1339.91	
3		199024.82	199024.82	199854.09	198534.17	5.00%	829.27	20.00		490.64	829.27	1319.91	20.00	1339.91	-1339.91	-1320.40	1339.91	
4		198534.17	198534.17	199361.40	198041.49	5.00%	827.23	20.00		492.69	827.23	1319.91	20.00	1339.91	-1339.91	-1313.97	1339.91	
5		198041.49	198041.49	198866.66	197546.75	5.00%	825.17	20.00		494.74	825.17	1319.91	20.00	1339.91	-1339.91	-1307.56	1339.91	
6		197546.75	197546.75	198369.86	197049.95	5.00%	823.11	20.00		496.80	823.11	1319.91	20.00	1339.91	-1339.91	-1301.18	1339.91	
7		197049.95	197049.95	197870.99	196551.08	5.00%	821.04	20.00		498.87	821.04	1319.91	20.00	1339.91	-1339.91	-1294.84	1339.91	
8		196551.08	196551.08	197370.04	196050.13	5.00%	818.96	20.00		500.95	818.96	1319.91	20.00	1339.91	-1339.91	-1288.52	1339.91	
9		196050.13	196050.13	196867.01	195547.10	5.00%	816.88	20.00		503.04	816.88	1319.91	20.00	1339.91	-1339.91	-1282.24	1339.91	
10		195547.10	195547.10	196443.35	195069.30	5.50%	896.26	20.00		477.80	896.26	1374.06	20.00	1394.06	-1394.06	-1327.55	1550.61	
11		195069.30	195069.30	195963.36	194589.31	5.50%	894.07	20.00		479.99	894.07	1374.06	20.00	1394.06	-1394.06	-1321.08	1550.61	
12		194589.31	194589.31	195481.17	194107.12	5.50%	891.87	20.00		482.19	891.87	1374.06	20.00	1394.06	-1394.06	-1314.64	1550.61	
Sums																		
Year 1	200000.00						10108.49	4240.00	0.00	5892.88	10108.49	16001.38	4240.00	20241.37	179758.63	180267.76	20711.02	
Year 2	0.00						10527.10	240.00	0.00	5961.59	10527.10	16488.69	240.00	16728.72	-16728.72	-15284.49	18607.32	
Year 3	0.00						10190.82	240.00	0.00	6297.87	10190.82	16488.69	240.00	16728.72	-16728.72	-14413.72	18607.32	
Year 4	0.00						9835.57	240.00	0.00	6653.12	9835.57	16488.69	240.00	16728.72	-16728.72	-13592.57	18607.32	
Year 5	0.00						9460.28	240.00	0.00	7028.41	9460.28	16488.69	240.00	16728.72	-16728.72	-12818.19	18607.32	
Year 6	0.00						9063.82	240.00	0.00	7424.87	9063.82	16488.69	240.00	16728.72	-16728.72	-12087.93	18607.32	
Year 7	0.00						8645.00	240.00	0.00	7843.69	8645.00	16488.69	240.00	16728.72	-16728.72	-11399.28	18607.32	
Year 8	0.00						8202.56	240.00	0.00	8286.13	8202.56	16488.69	240.00	16728.72	-16728.72	-10749.85	18607.32	
Year 9	0.00						7735.15	240.00	0.00	8753.54	7735.15	16488.69	240.00	16728.72	-16728.72	-10137.43	18607.32	
Year 10	0.00						7241.38	240.00	0.00	9247.31	7241.38	16488.69	240.00	16728.72	-16728.72	-9559.89	18607.32	
Year 11	0.00						6719.76	240.00	0.00	9768.93	6719.76	16488.69	240.00	16728.72	-16728.72	-9015.26	18607.32	
Year 12	0.00						6168.72	240.00	0.00	10319.97	6168.72	16488.69	240.00	16728.72	-16728.72	-8501.66	18607.32	
Year 13	0.00						5586.59	240.00	0.00	10902.10	5586.59	16488.69	240.00	16728.72	-16728.72	-8017.31	18607.32	
Year 14	0.00						4971.63	240.00	0.00	11517.06	4971.63	16488.69	240.00	16728.72	-16728.72	-7560.56	18607.32	
Year 15	0.00						4321.97	240.00	0.00	12166.72	4321.97	16488.69	240.00	16728.72	-16728.72	-7129.83	18607.32	
Year 16	0.00						3635.68	240.00	0.00	12853.01	3635.68	16488.69	240.00	16728.72	-16728.72	-6723.64	18607.32	
Year 17	0.00						2910.67	240.00	0.00	13578.03	2910.67	16488.69	240.00	16728.72	-16728.72	-6340.59	18607.32	
Year 18	0.00						2144.76	240.00	0.00	14343.93	2144.76	16488.69	240.00	16728.72	-16728.72	-5979.36	18607.32	
Year 19	0.00						1335.65	240.00	0.00	15153.04	1335.65	16488.69	240.00	16728.72	-16728.72	-5638.72	18607.32	
Year 20	0.00						480.90	240.00	0.00	16007.79	480.90	16488.69	240.00	16728.72	-16728.72	-5317.48	18607.32	
Total	200000.00						129286.49	8800.00	0.00	200000.00	129286.49	329286.49	8800.00	338087.05	-138087.05	0.00	374250.10	

EXAMPLE 23

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1319.91	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	5.4%	DYNAMIC Recalculate
Total cost of the credit	120778.40	
Total amount of credit	200000.00	
Total amount payable	320778.40	

Illustrative scenario of change in the borrowing rate

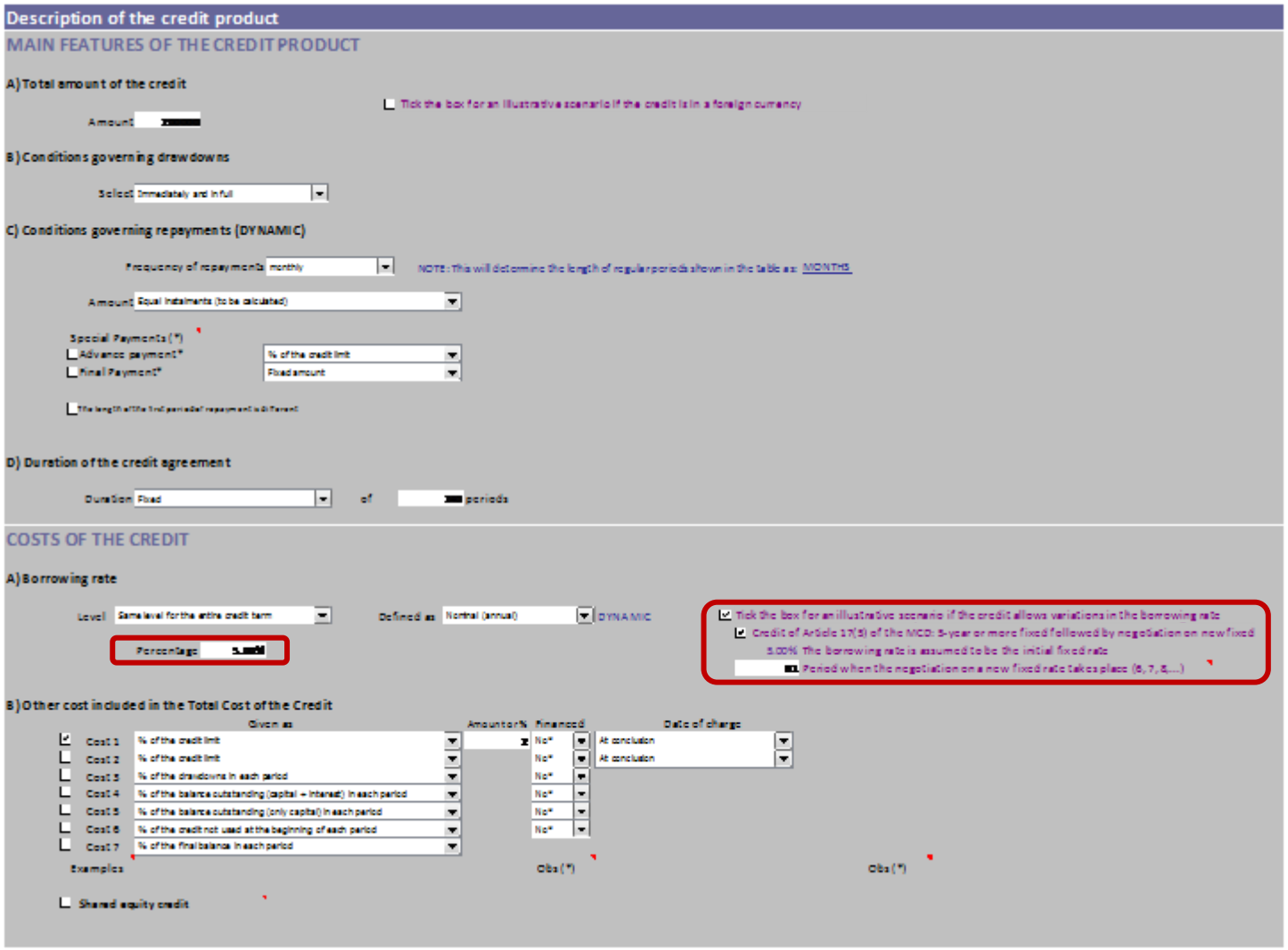
If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

7.6%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit currency)	Highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00	4000.00	
1		200000.00	200000.00	200833.33	199513.42	5.00%	833.33			486.58	833.33	1319.91	0.00	1319.91	-1319.91	-1314.17	1319.91	
2		199513.42	199513.42	200344.73	199024.82	5.00%	831.31			488.61	831.31	1319.91	0.00	1319.91	-1319.91	-1308.45	1319.91	
3		199024.82	199024.82	199854.09	198534.17	5.00%	829.27			490.64	829.27	1319.91	0.00	1319.91	-1319.91	-1302.76	1319.91	
4		198534.17	198534.17	199361.40	198041.49	5.00%	827.23			492.69	827.23	1319.91	0.00	1319.91	-1319.91	-1297.09	1319.91	
5		198041.49	198041.49	198866.66	197546.75	5.00%	825.17			494.74	825.17	1319.91	0.00	1319.91	-1319.91	-1291.45	1319.91	
6		197546.75	197546.75	198369.86	197049.95	5.00%	823.11			496.80	823.11	1319.91	0.00	1319.91	-1319.91	-1285.83	1319.91	
7		197049.95	197049.95	197870.99	196551.08	5.00%	821.04			498.87	821.04	1319.91	0.00	1319.91	-1319.91	-1280.24	1319.91	
8		196551.08	196551.08	197370.04	196050.13	5.00%	818.96			500.95	818.96	1319.91	0.00	1319.91	-1319.91	-1274.67	1319.91	
9		196050.13	196050.13	196867.01	195547.10	5.00%	816.88			503.04	816.88	1319.91	0.00	1319.91	-1319.91	-1269.13	1319.91	
10		195547.10	195547.10	196361.88	195041.96	5.00%	814.78			505.13	814.78	1319.91	0.00	1319.91	-1319.91	-1263.61	1578.43	
11		195041.96	195041.96	195854.64	194534.73	5.00%	812.67			507.24	812.67	1319.91	0.00	1319.91	-1319.91	-1258.11	1578.43	
12		194534.73	194534.73	195345.29	194025.38	5.00%	810.56			509.35	810.56	1319.91	0.00	1319.91	-1319.91	-1252.64	1578.43	
Sums																		
Year 1	200000.00						9864.32	4000.00	0.00	5974.62	9864.32	15838.94	4000.00	19838.92	180161.08	180601.83	20614.48	
Year 2	0.00						9558.64	0.00	0.00	6280.30	9558.64	15838.94	0.00	15838.92	-15838.92	-14613.39	18941.16	
Year 3	0.00						9237.33	0.00	0.00	6601.61	9237.33	15838.94	0.00	15838.92	-15838.92	-13868.60	18941.16	
Year 4	0.00						8899.58	0.00	0.00	6939.36	8899.58	15838.94	0.00	15838.92	-15838.92	-13161.78	18941.16	
Year 5	0.00						8544.55	0.00	0.00	7294.39	8544.55	15838.94	0.00	15838.92	-15838.92	-12490.98	18941.16	
Year 6	0.00						8171.35	0.00	0.00	7667.58	8171.35	15838.94	0.00	15838.92	-15838.92	-11854.36	18941.16	
Year 7	0.00						7779.07	0.00	0.00	8059.87	7779.07	15838.94	0.00	15838.92	-15838.92	-11250.20	18941.16	
Year 8	0.00						7366.71	0.00	0.00	8472.23	7366.71	15838.94	0.00	15838.92	-15838.92	-10676.82	18941.16	
Year 9	0.00						6933.25	0.00	0.00	8905.69	6933.25	15838.94	0.00	15838.92	-15838.92	-10132.67	18941.16	
Year 10	0.00						6477.62	0.00	0.00	9361.32	6477.62	15838.94	0.00	15838.92	-15838.92	-9616.25	18941.16	
Year 11	0.00						5998.68	0.00	0.00	9840.26	5998.68	15838.94	0.00	15838.92	-15838.92	-9126.15	18941.16	
Year 12	0.00						5495.23	0.00	0.00	10343.71	5495.23	15838.94	0.00	15838.92	-15838.92	-8661.03	18941.16	
Year 13	0.00						4966.03	0.00	0.00	10872.91	4966.03	15838.94	0.00	15838.92	-15838.92	-8219.61	18941.16	
Year 14	0.00						4409.75	0.00	0.00	11429.19	4409.75	15838.94	0.00	15838.92	-15838.92	-7800.69	18941.16	
Year 15	0.00						3825.01	0.00	0.00	12013.93	3825.01	15838.94	0.00	15838.92	-15838.92	-7403.12	18941.16	
Year 16	0.00						3210.35	0.00	0.00	12628.58	3210.35	15838.94	0.00	15838.92	-15838.92	-7025.81	18941.16	
Year 17	0.00						2564.25	0.00	0.00	13274.69	2564.25	15838.94	0.00	15838.92	-15838.92	-6667.74	18941.16	
Year 18	0.00						1885.09	0.00	0.00	13953.84	1885.09	15838.94	0.00	15838.92	-15838.92	-6327.91	18941.16	
Year 19	0.00						1171.19	0.00	0.00	14667.75	1171.19	15838.94	0.00	15838.92	-15838.92	-6005.40	18941.16	
Year 20	0.00						420.76	0.00	0.00	15418.18	420.76	15838.94	0.00	15838.92	-15838.92	-5699.33	18941.16	
Total	200000.00						116778.75	4000.00	0.00	200000.00	116778.75	316778.75	4000.00	320778.40	-120778.40	0.00	380496.52	

EXAMPLE 24

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1319.91	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	5.4%	DYNAMIC Recalculate
Total cost of the credit	120778.40	
Total amount of credit	200000.00	
Total amount payable	320778.40	

Illustrative scenario of change in the borrowing rate

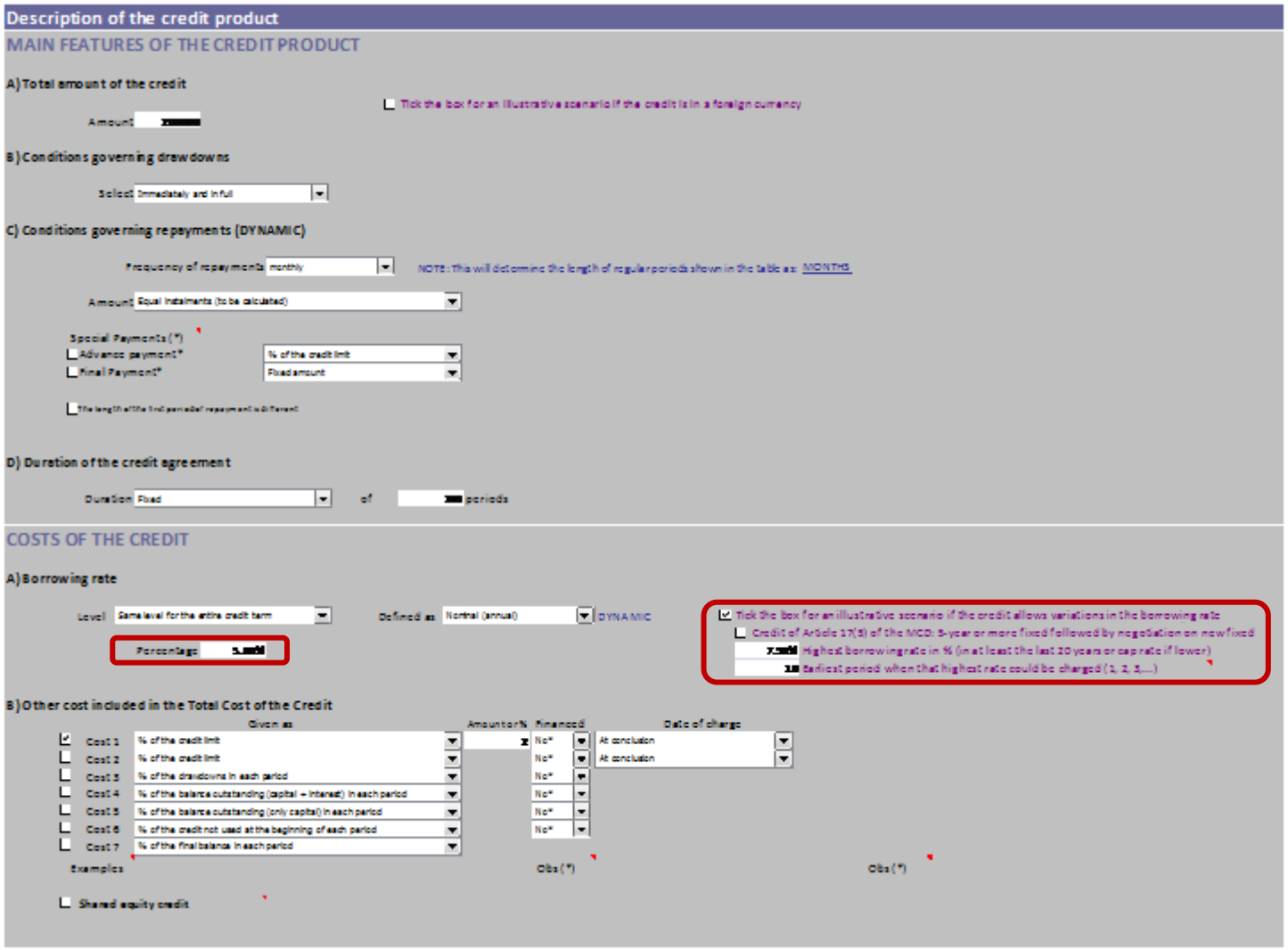
The illustrative APR calculated on the basis of the borrowing rate for the initial period and the assumption that at the end of this period the capital outstanding is repaid is:

5.6%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit currency)	Highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	200833.33	199513.42	5.00%	833.33			486.58	833.33	1319.91	0.00	1319.91	-1319.91	-1314.17		
2		199513.42	199513.42	200344.73	199024.82	5.00%	831.31			488.61	831.31	1319.91	0.00	1319.91	-1319.91	-1308.45		
3		199024.82	199024.82	199854.09	198534.17	5.00%	829.27			490.64	829.27	1319.91	0.00	1319.91	-1319.91	-1302.76		
4		198534.17	198534.17	199361.40	198041.49	5.00%	827.23			492.69	827.23	1319.91	0.00	1319.91	-1319.91	-1297.09		
5		198041.49	198041.49	198866.66	197546.75	5.00%	825.17			494.74	825.17	1319.91	0.00	1319.91	-1319.91	-1291.45		
6		197546.75	197546.75	198369.86	197049.95	5.00%	823.11			496.80	823.11	1319.91	0.00	1319.91	-1319.91	-1285.83		
7		197049.95	197049.95	197870.99	196551.08	5.00%	821.04			498.87	821.04	1319.91	0.00	1319.91	-1319.91	-1280.24		
8		196551.08	196551.08	197370.04	196050.13	5.00%	818.96			500.95	818.96	1319.91	0.00	1319.91	-1319.91	-1274.67		
9		196050.13	196050.13	196867.01	195547.10	5.00%	816.88			503.04	816.88	1319.91	0.00	1319.91	-1319.91	-1269.13		
10		195547.10	195547.10	196361.88	195041.96	5.00%	814.78			505.13	814.78	1319.91	0.00	1319.91	-1319.91	-1263.61		
11		195041.96	195041.96	195854.64	194534.73	5.00%	812.67			507.24	812.67	1319.91	0.00	1319.91	-1319.91	-1258.11		
12		194534.73	194534.73	195345.29	194025.38	5.00%	810.56			509.35	810.56	1319.91	0.00	1319.91	-1319.91	-1252.64		
Sums																		
Year 1	200000.00						9864.32	4000.00	0.00	5974.62	9864.32	15838.94	4000.00	19838.92	180161.08	180601.83		
Year 2	0.00						9558.64	0.00	0.00	6280.30	9558.64	15838.94	0.00	15838.92	-15838.92	-14613.39		
Year 3	0.00						9237.33	0.00	0.00	6601.61	9237.33	15838.94	0.00	15838.92	-15838.92	-13868.60		
Year 4	0.00						8899.58	0.00	0.00	6939.36	8899.58	15838.94	0.00	15838.92	-15838.92	-13161.78		
Year 5	0.00						8544.55	0.00	0.00	7294.39	8544.55	15838.94	0.00	15838.92	-15838.92	-12490.98		
Year 6	0.00						8171.35	0.00	0.00	7667.58	8171.35	15838.94	0.00	15838.92	-15838.92	-11854.36		
Year 7	0.00						7779.07	0.00	0.00	8059.87	7779.07	15838.94	0.00	15838.92	-15838.92	-11250.20		
Year 8	0.00						7366.71	0.00	0.00	8472.23	7366.71	15838.94	0.00	15838.92	-15838.92	-10676.82		
Year 9	0.00						6933.25	0.00	0.00	8905.69	6933.25	15838.94	0.00	15838.92	-15838.92	-10132.67		
Year 10	0.00						6477.62	0.00	0.00	9361.32	6477.62	15838.94	0.00	15838.92	-15838.92	-9616.25		
Year 11	0.00						5998.68	0.00	0.00	9840.26	5998.68	15838.94	0.00	15838.92	-15838.92	-9126.15		
Year 12	0.00						5495.23	0.00	0.00	10343.71	5495.23	15838.94	0.00	15838.92	-15838.92	-8661.03		
Year 13	0.00						4966.03	0.00	0.00	10872.91	4966.03	15838.94	0.00	15838.92	-15838.92	-8219.61		
Year 14	0.00						4409.75	0.00	0.00	11429.19	4409.75	15838.94	0.00	15838.92	-15838.92	-7800.69		
Year 15	0.00						3825.01	0.00	0.00	12013.93	3825.01	15838.94	0.00	15838.92	-15838.92	-7403.12		
Year 16	0.00						3210.35	0.00	0.00	12628.58	3210.35	15838.94	0.00	15838.92	-15838.92	-7025.81		
Year 17	0.00						2564.25	0.00	0.00	13274.69	2564.25	15838.94	0.00	15838.92	-15838.92	-6667.74		
Year 18	0.00						1885.09	0.00	0.00	13953.84	1885.09	15838.94	0.00	15838.92	-15838.92	-6327.91		
Year 19	0.00						1171.19	0.00	0.00	14667.75	1171.19	15838.94	0.00	15838.92	-15838.92	-6005.40		
Year 20	0.00						420.76	0.00	0.00	15418.18	420.76	15838.94	0.00	15838.92	-15838.92	-5699.33		
Total	200000.00						116778.75	4000.00	0.00	200000.00	116778.75	316778.75	4000.00	320778.40	-120778.40	0.00		

EXAMPLE 25

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1319.91	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	5.4%	DYNAMIC Recalculate
Total cost of the credit	120778.40	
Total amount of credit	200000.00	
Total amount payable	320778.40	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

7.6%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00	4000.00	
1		200000.00	200000.00	200833.33	199513.42	5.00%	833.33			486.58	833.33	1319.91	0.00	1319.91	-1319.91	-1314.17	1319.91	
2		199513.42	199513.42	200344.73	199024.82	5.00%	831.31			488.61	831.31	1319.91	0.00	1319.91	-1319.91	-1308.45	1319.91	
3		199024.82	199024.82	199854.09	198534.17	5.00%	829.27			490.64	829.27	1319.91	0.00	1319.91	-1319.91	-1302.76	1319.91	
4		198534.17	198534.17	199361.40	198041.49	5.00%	827.23			492.69	827.23	1319.91	0.00	1319.91	-1319.91	-1297.09	1319.91	
5		198041.49	198041.49	198866.66	197546.75	5.00%	825.17			494.74	825.17	1319.91	0.00	1319.91	-1319.91	-1291.45	1319.91	
6		197546.75	197546.75	198369.86	197049.95	5.00%	823.11			496.80	823.11	1319.91	0.00	1319.91	-1319.91	-1285.83	1319.91	
7		197049.95	197049.95	197870.99	196551.08	5.00%	821.04			498.87	821.04	1319.91	0.00	1319.91	-1319.91	-1280.24	1319.91	
8		196551.08	196551.08	197370.04	196050.13	5.00%	818.96			500.95	818.96	1319.91	0.00	1319.91	-1319.91	-1274.67	1319.91	
9		196050.13	196050.13	196867.01	195547.10	5.00%	816.88			503.04	816.88	1319.91	0.00	1319.91	-1319.91	-1269.13	1319.91	
10		195547.10	195547.10	196361.88	195041.96	5.00%	814.78			505.13	814.78	1319.91	0.00	1319.91	-1319.91	-1263.61	1578.43	
11		195041.96	195041.96	195854.64	194534.73	5.00%	812.67			507.24	812.67	1319.91	0.00	1319.91	-1319.91	-1258.11	1578.43	
12		194534.73	194534.73	195345.29	194025.38	5.00%	810.56			509.35	810.56	1319.91	0.00	1319.91	-1319.91	-1252.64	1578.43	
Sums																		
Year 1	200000.00						9864.32	4000.00	0.00	5974.62	9864.32	15838.94	4000.00	19838.92	180161.08	180601.83	20614.48	
Year 2	0.00						9558.64	0.00	0.00	6280.30	9558.64	15838.94	0.00	15838.92	-15838.92	-14613.39	18941.16	
Year 3	0.00						9237.33	0.00	0.00	6601.61	9237.33	15838.94	0.00	15838.92	-15838.92	-13868.60	18941.16	
Year 4	0.00						8899.58	0.00	0.00	6939.36	8899.58	15838.94	0.00	15838.92	-15838.92	-13161.78	18941.16	
Year 5	0.00						8544.55	0.00	0.00	7294.39	8544.55	15838.94	0.00	15838.92	-15838.92	-12490.98	18941.16	
Year 6	0.00						8171.35	0.00	0.00	7667.58	8171.35	15838.94	0.00	15838.92	-15838.92	-11854.36	18941.16	
Year 7	0.00						7779.07	0.00	0.00	8059.87	7779.07	15838.94	0.00	15838.92	-15838.92	-11250.20	18941.16	
Year 8	0.00						7366.71	0.00	0.00	8472.23	7366.71	15838.94	0.00	15838.92	-15838.92	-10676.82	18941.16	
Year 9	0.00						6933.25	0.00	0.00	8905.69	6933.25	15838.94	0.00	15838.92	-15838.92	-10132.67	18941.16	
Year 10	0.00						6477.62	0.00	0.00	9361.32	6477.62	15838.94	0.00	15838.92	-15838.92	-9616.25	18941.16	
Year 11	0.00						5998.68	0.00	0.00	9840.26	5998.68	15838.94	0.00	15838.92	-15838.92	-9126.15	18941.16	
Year 12	0.00						5495.23	0.00	0.00	10343.71	5495.23	15838.94	0.00	15838.92	-15838.92	-8661.03	18941.16	
Year 13	0.00						4966.03	0.00	0.00	10872.91	4966.03	15838.94	0.00	15838.92	-15838.92	-8219.61	18941.16	
Year 14	0.00						4409.75	0.00	0.00	11429.19	4409.75	15838.94	0.00	15838.92	-15838.92	-7800.69	18941.16	
Year 15	0.00						3825.01	0.00	0.00	12013.93	3825.01	15838.94	0.00	15838.92	-15838.92	-7403.12	18941.16	
Year 16	0.00						3210.35	0.00	0.00	12628.58	3210.35	15838.94	0.00	15838.92	-15838.92	-7025.81	18941.16	
Year 17	0.00						2564.25	0.00	0.00	13274.69	2564.25	15838.94	0.00	15838.92	-15838.92	-6667.74	18941.16	
Year 18	0.00						1885.09	0.00	0.00	13953.84	1885.09	15838.94	0.00	15838.92	-15838.92	-6327.91	18941.16	
Year 19	0.00						1171.19	0.00	0.00	14667.75	1171.19	15838.94	0.00	15838.92	-15838.92	-6005.40	18941.16	
Year 20	0.00						420.76	0.00	0.00	15418.18	420.76	15838.94	0.00	15838.92	-15838.92	-5699.33	18941.16	
Total	200000.00						116778.75	4000.00	0.00	200000.00	116778.75	316778.75	4000.00	320778.40	-120778.40	0.00	380496.52	

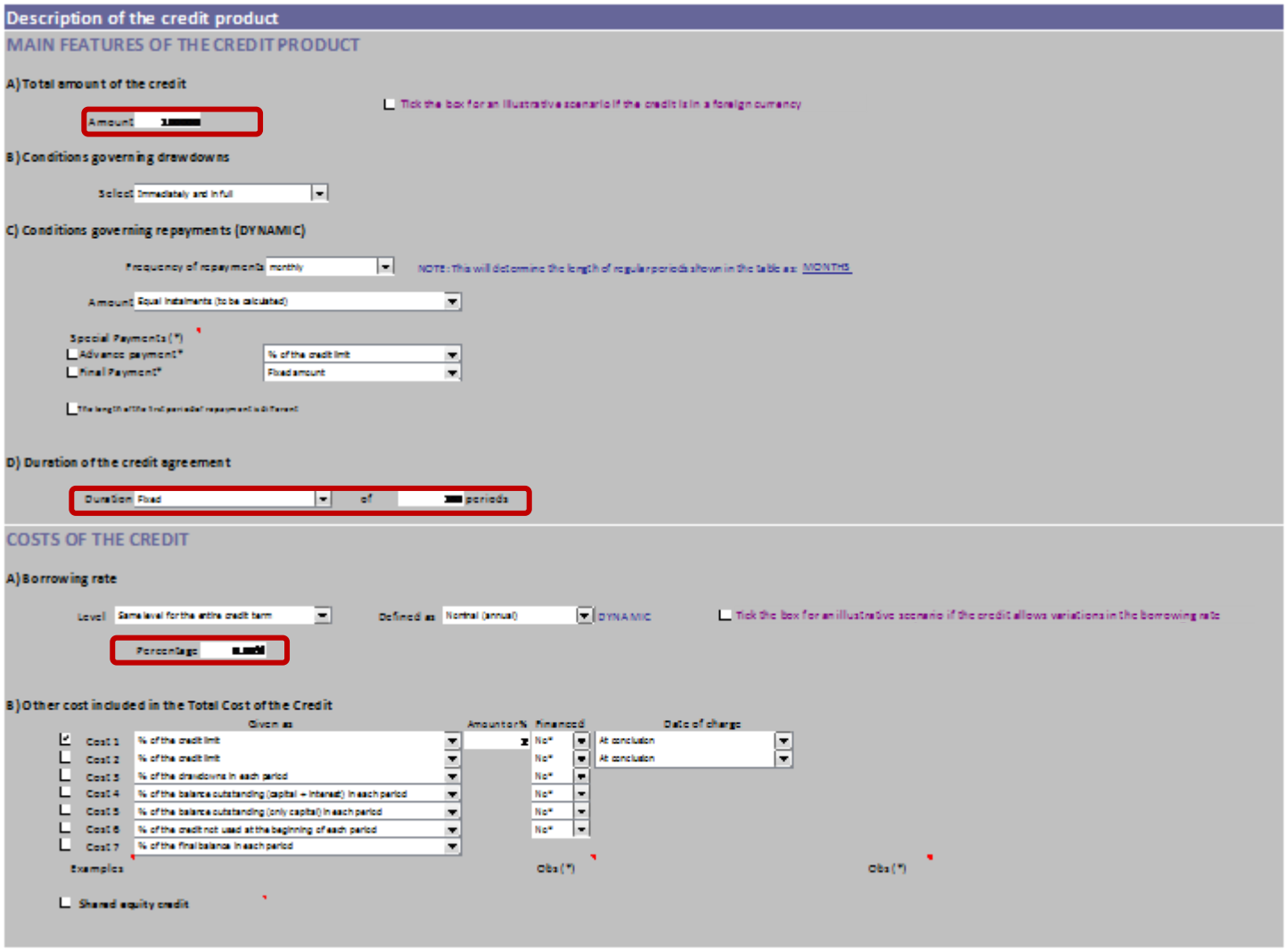
EXAMPLE 26

This example requires changing manually the values in the amortisation table.

The two parts of the credit, the fixed-rate part and the variable-rate part, are dealt separately to obtain all the relevant amounts which are subsequently added up to obtain the APR figures.

<u>Fixed-rate part</u>

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the the amortisation table of this part of the credit.

Copy the column with the *Total* of *Repayment of the credit* from period 1 (disregard period 0) to another sheet, as it will be used later.

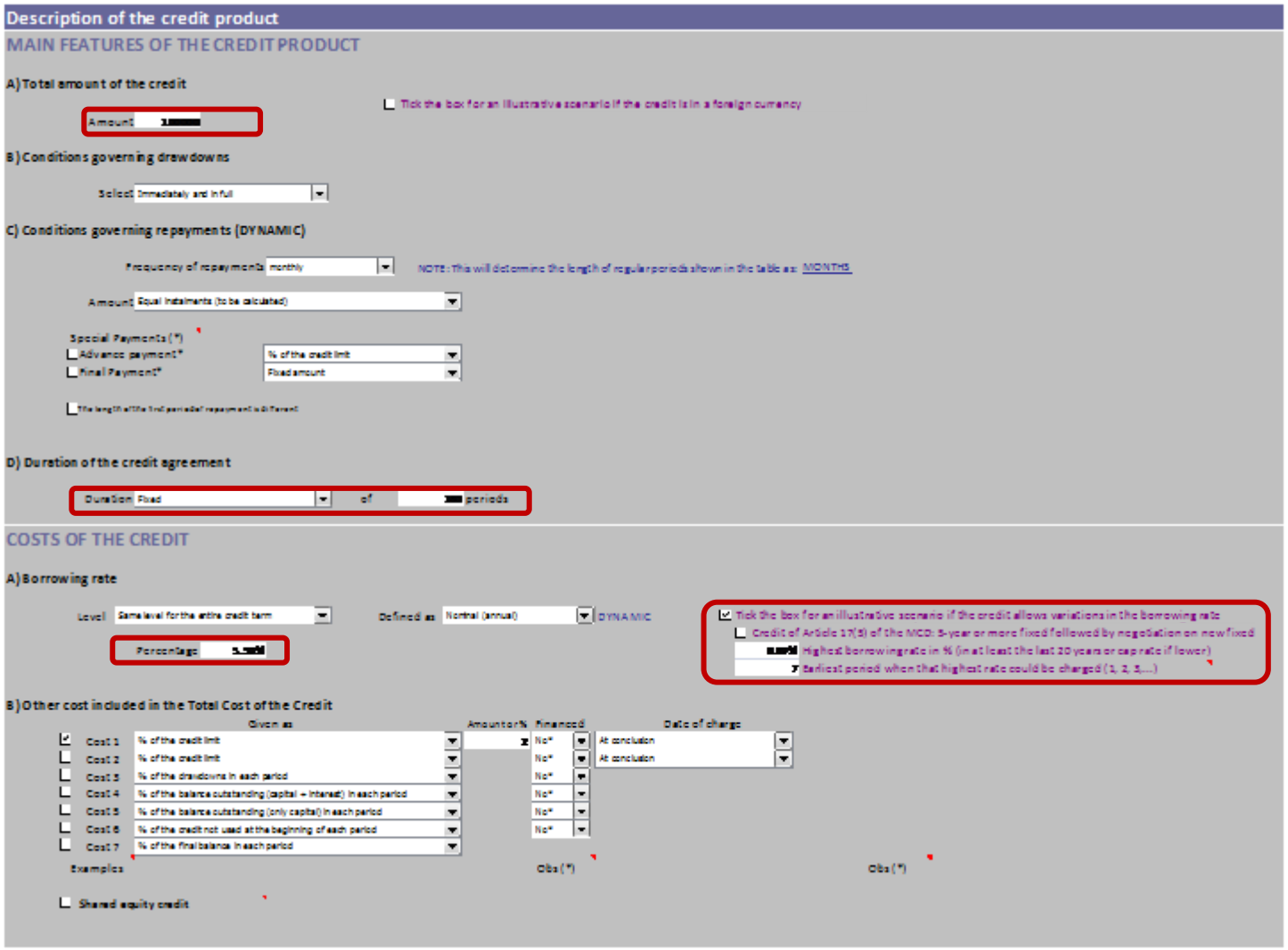
Main results

Final balance in the last period	0.00		
Amount of the first repayment	843.86		Recalculate
Duration of the credit	180	MONTHS	
Present value of the cash flows	0.00		
Annual Percentage Rate of Charge	6.5%	DYNAMIC	Recalculate
Total cost of the credit	53894.80		
Total amount of credit	100000.00		
Total amount payable	153894.80		

		Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	100000.00				100000.00			2000.00					2000.00	2000.00	98000.00	98000.00		
1		100000.00	100000.00	100500.00	99656.14	6.00%	500.00			343.86	500.00	843.86	0.00	843.86	-843.86	-839.44		
2		99656.14	99656.14	100154.42	99310.57	6.00%	498.28			345.58	498.28	843.86	0.00	843.86	-843.86	-835.05		
3		99310.57	99310.57	99807.12	98963.26	6.00%	496.55			347.30	496.55	843.86	0.00	843.86	-843.86	-830.67		
4		98963.26	98963.26	99458.08	98614.22	6.00%	494.82			349.04	494.82	843.86	0.00	843.86	-843.86	-826.32		
5		98614.22	98614.22	99107.29	98263.44	6.00%	493.07			350.79	493.07	843.86	0.00	843.86	-843.86	-822.00		
6		98263.44	98263.44	98754.75	97910.90	6.00%	491.32			352.54	491.32	843.86	0.00	843.86	-843.86	-817.69		
7		97910.90	97910.90	98400.45	97556.59	6.00%	489.55			354.30	489.55	843.86	0.00	843.86	-843.86	-813.41		
8		97556.59	97556.59	98044.38	97200.52	6.00%	487.78			356.07	487.78	843.86	0.00	843.86	-843.86	-809.15		
9		97200.52	97200.52	97686.52	96842.67	6.00%	486.00			357.85	486.00	843.86	0.00	843.86	-843.86	-804.91		
10		96842.67	96842.67	97326.88	96483.02	6.00%	484.21			359.64	484.21	843.86	0.00	843.86	-843.86	-800.70		
11		96483.02	96483.02	96965.44	96121.58	6.00%	482.42			361.44	482.42	843.86	0.00	843.86	-843.86	-796.50		
12		96121.58	96121.58	96602.19	95758.33	6.00%	480.61			363.25	480.61	843.86	0.00	843.86	-843.86	-792.33		
Sums																		
Year 1	100000.00						5884.61	2000.00	0.00	4241.67	5884.61	10126.28	2000.00	12126.32	87873.68	88211.83		
Year 2	0.00						5623.00	0.00	0.00	4503.28	5623.00	10126.28	0.00	10126.32	-10126.32	-9190.49		
Year 3	0.00						5345.25	0.00	0.00	4781.04	5345.25	10126.28	0.00	10126.32	-10126.32	-8629.31		
Year 4	0.00						5050.36	0.00	0.00	5075.92	5050.36	10126.28	0.00	10126.32	-10126.32	-8102.40		
Year 5	0.00						4737.29	0.00	0.00	5388.99	4737.29	10126.28	0.00	10126.32	-10126.32	-7607.66		
Year 6	0.00						4404.91	0.00	0.00	5721.37	4404.91	10126.28	0.00	10126.32	-10126.32	-7143.13		
Year 7	0.00						4052.03	0.00	0.00	6074.26	4052.03	10126.28	0.00	10126.32	-10126.32	-6706.96		
Year 8	0.00						3677.38	0.00	0.00	6448.90	3677.38	10126.28	0.00	10126.32	-10126.32	-6297.42		
Year 9	0.00						3279.63	0.00	0.00	6846.66	3279.63	10126.28	0.00	10126.32	-10126.32	-5912.90		
Year 10	0.00						2857.34	0.00	0.00	7268.94	2857.34	10126.28	0.00	10126.32	-10126.32	-5551.85		
Year 11	0.00						2409.01	0.00	0.00	7717.28	2409.01	10126.28	0.00	10126.32	-10126.32	-5212.85		
Year 12	0.00						1933.02	0.00	0.00	8193.26	1933.02	10126.28	0.00	10126.32	-10126.32	-4894.55		
Year 13	0.00						1427.68	0.00	0.00	8698.60	1427.68	10126.28	0.00	10126.32	-10126.32	-4595.68		
Year 14	0.00						891.17	0.00	0.00	9235.11	891.17	10126.28	0.00	10126.32	-10126.32	-4315.06		
Year 15	0.00						321.57	0.00	0.00	9804.72	321.57	10126.28	0.00	10126.32	-10126.32	-4051.58		
Total	100000.00						51894.23	2000.00	0.00	100000.00	51894.23	151894.23	2000.00	153894.80	-53894.80	0.00		

Variable-rate part

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the the amortisation table of this part of the credit.

Copy the columns with the *Total* of *Repayment of the credit* and the *Payments if highest borrowing rate* of the *Illustrative scenario* from period 1 (disregard period 0) to another sheet, as they will be used in the following.

Main results

Final balance in the last period	0.00		
Amount of the first repayment	817.08		Recalculate
Duration of the credit	180	MONTHS	
Present value of the cash flows	0.00		
Annual Percentage Rate of Charge	6.0%	DYNAMIC	Recalculate
Total cost of the credit	49074.40		
Total amount of credit	100000.00		
Total amount payable	149074.40		

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

7.3%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	100000.00				100000.00			2000.00					2000.00	2000.00	98000.00	98000.00	2000.00	
1		100000.00	100000.00	100458.33	99641.25	5.50%	458.33			358.75	458.33	817.08	0.00	817.08	-817.08	-813.14	817.08	
2		99641.25	99641.25	100097.94	99280.86	5.50%	456.69			360.39	456.69	817.08	0.00	817.08	-817.08	-809.22	817.08	
3		99280.86	99280.86	99735.89	98918.81	5.50%	455.04			362.05	455.04	817.08	0.00	817.08	-817.08	-805.32	817.08	
4		98918.81	98918.81	99372.19	98555.10	5.50%	453.38			363.71	453.38	817.08	0.00	817.08	-817.08	-801.44	817.08	
5		98555.10	98555.10	99006.81	98189.73	5.50%	451.71			365.37	451.71	817.08	0.00	817.08	-817.08	-797.58	817.08	
6		98189.73	98189.73	98639.77	97822.68	5.50%	450.04			367.05	450.04	817.08	0.00	817.08	-817.08	-793.73	817.08	
7		97822.68	97822.68	98271.04	97453.95	5.50%	448.35			368.73	448.35	817.08	0.00	817.08	-817.08	-789.91	890.52	
8		97453.95	97453.95	97900.62	97083.53	5.50%	446.66			370.42	446.66	817.08	0.00	817.08	-817.08	-786.10	890.52	
9		97083.53	97083.53	97528.50	96711.42	5.50%	444.97			372.12	444.97	817.08	0.00	817.08	-817.08	-782.31	890.52	
10		96711.42	96711.42	97154.68	96337.59	5.50%	443.26			373.82	443.26	817.08	0.00	817.08	-817.08	-778.54	890.52	
11		96337.59	96337.59	96779.14	95962.06	5.50%	441.55			375.54	441.55	817.08	0.00	817.08	-817.08	-774.78	890.52	
12		95962.06	95962.06	96401.88	95584.80	5.50%	439.83			377.26	439.83	817.08	0.00	817.08	-817.08	-771.05	890.52	
Sums																		
Year 1	100000.00						5389.80	2000.00	0.00	4415.20	5389.80	9805.00	2000.00	11804.96	88195.04	88496.88	12245.60	
Year 2	0.00						5140.75	0.00	0.00	4664.25	5140.75	9805.00	0.00	9804.96	-9804.96	-8967.76	10686.24	
Year 3	0.00						4877.65	0.00	0.00	4927.35	4877.65	9805.00	0.00	9804.96	-9804.96	-8462.57	10686.24	
Year 4	0.00						4599.71	0.00	0.00	5205.29	4599.71	9805.00	0.00	9804.96	-9804.96	-7985.83	10686.24	
Year 5	0.00						4306.09	0.00	0.00	5498.91	4306.09	9805.00	0.00	9804.96	-9804.96	-7535.95	10686.24	
Year 6	0.00						3995.91	0.00	0.00	5809.09	3995.91	9805.00	0.00	9804.96	-9804.96	-7111.42	10686.24	
Year 7	0.00						3668.23	0.00	0.00	6136.77	3668.23	9805.00	0.00	9804.96	-9804.96	-6710.80	10686.24	
Year 8	0.00						3322.07	0.00	0.00	6482.93	3322.07	9805.00	0.00	9804.96	-9804.96	-6332.75	10686.24	
Year 9	0.00						2956.38	0.00	0.00	6848.62	2956.38	9805.00	0.00	9804.96	-9804.96	-5975.99	10686.24	
Year 10	0.00						2570.06	0.00	0.00	7234.94	2570.06	9805.00	0.00	9804.96	-9804.96	-5639.34	10686.24	
Year 11	0.00						2161.96	0.00	0.00	7643.05	2161.96	9805.00	0.00	9804.96	-9804.96	-5321.65	10686.24	
Year 12	0.00						1730.83	0.00	0.00	8074.17	1730.83	9805.00	0.00	9804.96	-9804.96	-5021.85	10686.24	
Year 13	0.00						1275.38	0.00	0.00	8529.62	1275.38	9805.00	0.00	9804.96	-9804.96	-4738.95	10686.24	
Year 14	0.00						794.24	0.00	0.00	9010.76	794.24	9805.00	0.00	9804.96	-9804.96	-4471.98	10686.24	
Year 15	0.00						285.97	0.00	0.00	9519.04	285.97	9805.00	0.00	9804.96	-9804.96	-4220.06	10686.24	
Total	100000.00						47075.02	2000.00	0.00	100000.00	47075.02	147075.02	2000.00	149074.40	-49074.40	0.00	161852.96	

Integrating the two parts

Delete the cells highlighted in red, corresponding to the *Amount of the first repayment* and the values of the columns of the amortisation table titled in black font. Be aware of not deleting the cells under variables titled in red font (*Period, Costs not financed, Total*, and the two columns of *Cash flows*), as these cells cannot be changed under any circumstance.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	817.08	Recalculate
Duration of the credit	180	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.0%	DYNAMIC — Recalculate
Total cost of the credit	49074.40	
Total amount of credit	100000.00	
Total amount payable	149074.40	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

7.3%

		Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	100000.00				100000.00			2000.00					2000.00	2000.00	98000.00	98000.00	2000.00	
1		100000.00	100000.00	100458.33	99641.25	5.50%	458.33			358.75	458.33	817.08	0.00	817.08	-817.08	-813.14	817.08	
2		99641.25	99641.25	100097.94	99280.86	5.50%	456.69			360.39	456.69	817.08	0.00	817.08	-817.08	-809.22	817.08	
3		99280.86	99280.86	99735.89	98918.81	5.50%	455.04			362.05	455.04	817.08	0.00	817.08	-817.08	-805.32	817.08	
4		98918.81	98918.81	99372.19	98555.10	5.50%	453.38			363.71	453.38	817.08	0.00	817.08	-817.08	-801.44	817.08	
5		98555.10	98555.10	99006.81	98189.73	5.50%	451.71			365.37	451.71	817.08	0.00	817.08	-817.08	-797.58	817.08	
6		98189.73	98189.73	98639.77	97822.68	5.50%	450.04			367.05	450.04	817.08	0.00	817.08	-817.08	-793.73	817.08	
7		97822.68	97822.68	98271.04	97453.95	5.50%	448.35			368.73	448.35	817.08	0.00	817.08	-817.08	-789.91	890.52	
8		97453.95	97453.95	97900.62	97083.53	5.50%	446.66			370.42	446.66	817.08	0.00	817.08	-817.08	-786.10	890.52	
9		97083.53	97083.53	97528.50	96711.42	5.50%	444.97			372.12	444.97	817.08	0.00	817.08	-817.08	-782.31	890.52	
10		96711.42	96711.42	97154.68	96337.59	5.50%	443.26			373.82	443.26	817.08	0.00	817.08	-817.08	-778.54	890.52	
11		96337.59	96337.59	96779.14	95962.06	5.50%	441.55			375.54	441.55	817.08	0.00	817.08	-817.08	-774.78	890.52	
12		95962.06	95962.06	96401.88	95584.80	5.50%	439.83			377.26	439.83	817.08	0.00	817.08	-817.08	-771.05	890.52	
Sums																		
Year 1	100000.00						5389.80	2000.00	0.00	4415.20	5389.80	9805.00	2000.00	11804.96	88195.04	88496.88	12245.60	
Year 2	0.00						5140.75	0.00	0.00	4664.25	5140.75	9805.00	0.00	9804.96	-9804.96	-8967.76	10686.24	
Year 3	0.00						4877.65	0.00	0.00	4927.35	4877.65	9805.00	0.00	9804.96	-9804.96	-8462.57	10686.24	
Year 4	0.00						4599.71	0.00	0.00	5205.29	4599.71	9805.00	0.00	9804.96	-9804.96	-7985.83	10686.24	
Year 5	0.00						4306.09	0.00	0.00	5498.91	4306.09	9805.00	0.00	9804.96	-9804.96	-7535.95	10686.24	
Year 6	0.00						3995.91	0.00	0.00	5809.09	3995.91	9805.00	0.00	9804.96	-9804.96	-7111.42	10686.24	
Year 7	0.00						3668.23	0.00	0.00	6136.77	3668.23	9805.00	0.00	9804.96	-9804.96	-6710.80	10686.24	
Year 8	0.00						3322.07	0.00	0.00	6482.93	3322.07	9805.00	0.00	9804.96	-9804.96	-6332.75	10686.24	
Year 9	0.00						2956.38	0.00	0.00	6848.62	2956.38	9805.00	0.00	9804.96	-9804.96	-5975.99	10686.24	
Year 10	0.00						2570.06	0.00	0.00	7234.94	2570.06	9805.00	0.00	9804.96	-9804.96	-5639.34	10686.24	
Year 11	0.00						2161.96	0.00	0.00	7643.05	2161.96	9805.00	0.00	9804.96	-9804.96	-5321.65	10686.24	
Year 12	0.00						1730.83	0.00	0.00	8074.17	1730.83	9805.00	0.00	9804.96	-9804.96	-5021.85	10686.24	
Year 13	0.00						1275.38	0.00	0.00	8529.62	1275.38	9805.00	0.00	9804.96	-9804.96	-4738.95	10686.24	
Year 14	0.00						794.24	0.00	0.00	9010.76	794.24	9805.00	0.00	9804.96	-9804.96	-4471.98	10686.24	
Year 15	0.00						285.97	0.00	0.00	9519.04	285.97	9805.00	0.00	9804.96	-9804.96	-4220.06	10686.24	
Total	100000.00						47075.02	2000.00	0.00	100000.00	47075.02	147075.02	2000.00	149074.40	-49074.40	0.00	161852.96	

In the row for period 0, duplicate the amount of the drawdown and the costs in order to reproduce the characteristics of the multi-part credit.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	180	MONTHS
Present value of the cash flows	98813.14	Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	6.0%	DYNAMIC Recalculate
Total cost of the credit	-49742.68	
Total amount of credit	200000.00	
Total amount payable	150257.32	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

7.3%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00							4000.00					4000.00	4000.00	196000.00	196000.00	2000.00	
1												0.00	0.00	0.00	0.00	0.00	817.08	
2												817.08	0.00	817.08	-817.08	-809.22	817.08	
3												817.08	0.00	817.08	-817.08	-805.32	817.08	
4												817.08	0.00	817.08	-817.08	-801.44	817.08	
5												817.08	0.00	817.08	-817.08	-797.58	817.08	
6												817.08	0.00	817.08	-817.08	-793.73	817.08	
7												817.08	0.00	817.08	-817.08	-789.91	890.52	
8												817.08	0.00	817.08	-817.08	-786.10	890.52	
9												817.08	0.00	817.08	-817.08	-782.31	890.52	
10												817.08	0.00	817.08	-817.08	-778.54	890.52	
11												817.08	0.00	817.08	-817.08	-774.78	890.52	
12												817.08	0.00	817.08	-817.08	-771.05	890.52	
Sums																		
Year 1	200000.00							4000.00				8987.92	4000.00	12987.88	187012.12	187310.03	12245.60	
Year 2	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-8967.76	10686.24	
Year 3	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-8462.57	10686.24	
Year 4	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-7985.83	10686.24	
Year 5	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-7535.95	10686.24	
Year 6	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-7111.42	10686.24	
Year 7	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-6710.80	10686.24	
Year 8	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-6332.75	10686.24	
Year 9	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-5975.99	10686.24	
Year 10	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-5639.34	10686.24	
Year 11	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-5321.65	10686.24	
Year 12	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-5021.85	10686.24	
Year 13	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-4738.95	10686.24	
Year 14	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-4471.98	10686.24	
Year 15	0.00							0.00				9805.00	0.00	9804.96	-9804.96	-4220.06	10686.24	
Total	200000.00							4000.00				146257.94	4000.00	150257.32	49742.68	98813.14	161852.96	

To obtain the data of the illustrative scenario, copy to the column with the *Total* of the *Repayment of the credit* the following two columns from period 1 (period 0 should be kept empty): the *Total* of the *Repayment of the credit* corresponding to the fixed-rate part of the credit and the *Payments if highest borrowing rate* corresponding to the variable-rate part of the credit.

Then, click on the button *Recalculate* next to the cell showing the *Annual Percentage Rate of Charge*.

Main results

Final balance in the last period	0.00	
Amount of the first repayment		Recalculate
Duration of the credit	180	MONTHS
Present value of the cash flows	-11587.05	Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	6.0%	DYNAMIC Recalculate
Total cost of the credit	115747.76	
Total amount of credit	200000.00	
Total amount payable	315747.76	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

7.3%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00							4000.00					4000.00	4000.00	196000.00	196000.00	2000.00	
1												1660.94	0.00	1660.94	-1660.94	-1652.93	817.08	
2												1660.94	0.00	1660.94	-1660.94	-1644.97	817.08	
3												1660.94	0.00	1660.94	-1660.94	-1637.04	817.08	
4												1660.94	0.00	1660.94	-1660.94	-1629.15	817.08	
5												1660.94	0.00	1660.94	-1660.94	-1621.29	817.08	
6												1660.94	0.00	1660.94	-1660.94	-1613.48	817.08	
7												1734.38	0.00	1734.38	-1734.38	-1676.70	890.52	
8												1734.38	0.00	1734.38	-1734.38	-1668.62	890.52	
9												1734.38	0.00	1734.38	-1734.38	-1660.57	890.52	
10												1734.38	0.00	1734.38	-1734.38	-1652.57	890.52	
11												1734.38	0.00	1734.38	-1734.38	-1644.60	890.52	
12												1734.38	0.00	1734.38	-1734.38	-1636.67	890.52	
Sums																		
Year 1	200000.00							4000.00				20371.92	4000.00	24371.92	175628.08	176261.42	12245.60	
Year 2	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-19035.47	10686.24	
Year 3	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-17963.12	10686.24	
Year 4	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-16951.17	10686.24	
Year 5	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-15996.23	10686.24	
Year 6	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-15095.09	10686.24	
Year 7	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-14244.71	10686.24	
Year 8	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-13442.24	10686.24	
Year 9	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-12684.98	10686.24	
Year 10	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-11970.38	10686.24	
Year 11	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-11296.03	10686.24	
Year 12	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-10659.67	10686.24	
Year 13	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-10059.16	10686.24	
Year 14	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-9492.48	10686.24	
Year 15	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-8957.73	10686.24	
Total	200000.00							4000.00				311747.76	4000.00	315747.76	-115747.76	-11587.05	161852.96	

The APR so obtained is the additional illustrative APR of the illustrative scenario, and the column *Total* of *Payments* from period 0 are the *Payments if highest borrowing rate* of the *Illustrative scenarios*. Copy these data to another sheet to avoid losing them in the next steps.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	180	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.9%	YNAMIC Recalculate
Total cost of the credit	115747.76	
Total amount of credit	200000.00	
Total amount payable	315747.76	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00							4000.00					4000.00	4000.00	196000.00	196000.00		
1												1660.94	0.00	1660.94	-1660.94	-1651.70		
2												1660.94	0.00	1660.94	-1660.94	-1642.51		
3												1660.94	0.00	1660.94	-1660.94	-1633.37		
4												1660.94	0.00	1660.94	-1660.94	-1624.28		
5												1660.94	0.00	1660.94	-1660.94	-1615.24		
6												1660.94	0.00	1660.94	-1660.94	-1606.25		
7												1734.38	0.00	1734.38	-1734.38	-1667.94		
8												1734.38	0.00	1734.38	-1734.38	-1658.66		
9												1734.38	0.00	1734.38	-1734.38	-1649.43		
10												1734.38	0.00	1734.38	-1734.38	-1640.26		
11												1734.38	0.00	1734.38	-1734.38	-1631.13		
12												1734.38	0.00	1734.38	-1734.38	-1622.05		
Sums																		
Year 1	200000.00							4000.00				20371.92	4000.00	24371.92	175628.08	176357.17		
Year 2	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-18774.81		
Year 3	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-17558.85		
Year 4	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-16421.65		
Year 5	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-15358.10		
Year 6	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-14363.43		
Year 7	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-13433.18		
Year 8	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-12563.18		
Year 9	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-11749.52		
Year 10	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-10988.56		
Year 11	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-10276.89		
Year 12	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-9611.30		
Year 13	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-8988.83		
Year 14	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-8406.66		
Year 15	0.00							0.00				20812.56	0.00	20812.56	-20812.56	-7862.20		
Total	200000.00							4000.00				311747.76	4000.00	315747.76	-115747.76	0.00		

To obtain the payments and the APR of the multi-part credit, copy to the column with the *Total* of the *Repayment of the credit* the following two columns from period 1 (period 0 should be kept empty): the *Total* of the *Repayment of the credit* corresponding to the fixed-rate part of the credit and the *Total* of the *Repayment of the credit* corresponding to the variable-rate part of the credit.

Then, click on the button *Recalculate* next to the cell showing the *Annual Percentage Rate of Charge* to obtain the APR of the multi-part credit.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	180	MONTHS
Present value of the cash flows	7885.52	Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	6.9%	DYNAMIC Recalculate
Total cost of the credit	102969.20	
Total amount of credit	200000.00	
Total amount payable	302969.20	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit currency)	Highest exchange rate (domestic currency)
0	200000.00							4000.00					4000.00	4000.00	196000.00	196000.00		
1												1660.94	0.00	1660.94	-1660.94	-1651.70		
2												1660.94	0.00	1660.94	-1660.94	-1642.51		
3												1660.94	0.00	1660.94	-1660.94	-1633.37		
4												1660.94	0.00	1660.94	-1660.94	-1624.28		
5												1660.94	0.00	1660.94	-1660.94	-1615.24		
6												1660.94	0.00	1660.94	-1660.94	-1606.25		
7												1660.94	0.00	1660.94	-1660.94	-1597.32		
8												1660.94	0.00	1660.94	-1660.94	-1588.43		
9												1660.94	0.00	1660.94	-1660.94	-1579.59		
10												1660.94	0.00	1660.94	-1660.94	-1570.80		
11												1660.94	0.00	1660.94	-1660.94	-1562.06		
12												1660.94	0.00	1660.94	-1660.94	-1553.37		
Sums																		
Year 1	200000.00							4000.00				19931.28	4000.00	23931.28	176068.72	176775.08		
Year 2	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-17979.81		
Year 3	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-16815.35		
Year 4	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-15726.30		
Year 5	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-14707.78		
Year 6	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-13755.23		
Year 7	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-12864.37		
Year 8	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-12031.21		
Year 9	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-11252.01		
Year 10	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-10523.27		
Year 11	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-9841.73		
Year 12	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-9204.33		
Year 13	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-8608.21		
Year 14	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-8050.69		
Year 15	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-7529.29		
Total	200000.00							4000.00				298969.20	4000.00	302969.20	-102969.20	7885.52		

Complete the amortisation table and the area of 'Main results' with the results of the illustrative scenario. Specifically, copy to cell R89 the value of the additional illustrative APR and fill the column with the *Payments if highest borrowing rate* with the data saved before. Finally, extend the formulas of the annual and overall totals to obtain the totals for the column.

Note: The procedure described is general and can be used for a wide variety of multi-part credits. It can be simplified for the example if instead of copying columns the different instalments are identified and added up appropriately.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	180	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.2%	DYNAMIC Recalculate
Total cost of the credit	102969.20	
Total amount of credit	200000.00	
Total amount payable	302969.20	

Illustrative scenario of change in the borrowing rate

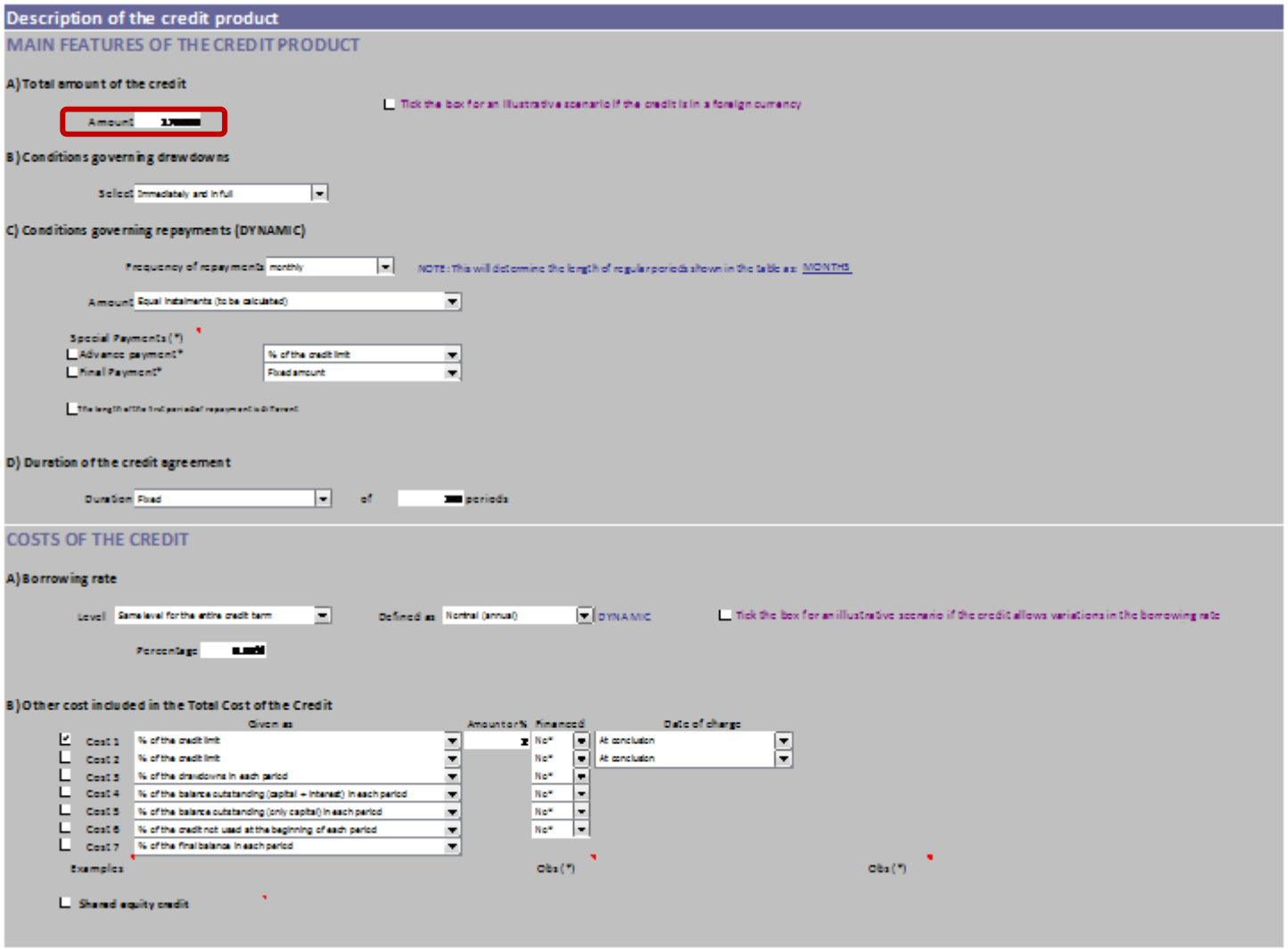
If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

6.9%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00							4000.00					4000.00	4000.00	196000.00	196000.00	4000.00	
1												1660.94	0.00	1660.94	-1660.94	-1652.59	1660.94	
2												1660.94	0.00	1660.94	-1660.94	-1644.27	1660.94	
3												1660.94	0.00	1660.94	-1660.94	-1636.00	1660.94	
4												1660.94	0.00	1660.94	-1660.94	-1627.78	1660.94	
5												1660.94	0.00	1660.94	-1660.94	-1619.59	1660.94	
6												1660.94	0.00	1660.94	-1660.94	-1611.44	1660.94	
7												1660.94	0.00	1660.94	-1660.94	-1603.34	1734.38	
8												1660.94	0.00	1660.94	-1660.94	-1595.28	1734.38	
9												1660.94	0.00	1660.94	-1660.94	-1587.25	1734.38	
10												1660.94	0.00	1660.94	-1660.94	-1579.27	1734.38	
11												1660.94	0.00	1660.94	-1660.94	-1571.33	1734.38	
12												1660.94	0.00	1660.94	-1660.94	-1563.42	1734.38	
Sums																		
Year 1	200000.00							4000.00				19931.28	4000.00	23931.28	176068.72	176708.44	24371.92	
Year 2	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-18158.93	20812.56	
Year 3	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-17092.79	20812.56	
Year 4	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-16089.24	20812.56	
Year 5	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-15144.62	20812.56	
Year 6	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-14255.45	20812.56	
Year 7	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-13418.49	20812.56	
Year 8	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-12630.67	20812.56	
Year 9	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-11889.11	20812.56	
Year 10	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-11191.08	20812.56	
Year 11	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-10534.03	20812.56	
Year 12	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-9915.56	20812.56	
Year 13	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-9333.41	20812.56	
Year 14	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-8785.43	20812.56	
Year 15	0.00							0.00				19931.28	0.00	19931.28	-19931.28	-8269.62	152716.04	
Total	200000.00							4000.00				298969.20	4000.00	302969.20	-102969.20	0.00	315747.76	

EXAMPLE 27

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1217.93	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.4%	DYNAMIC Recalculate
Total cost of the credit	125703.20	
Total amount of credit	170000.00	
Total amount payable	295703.20	

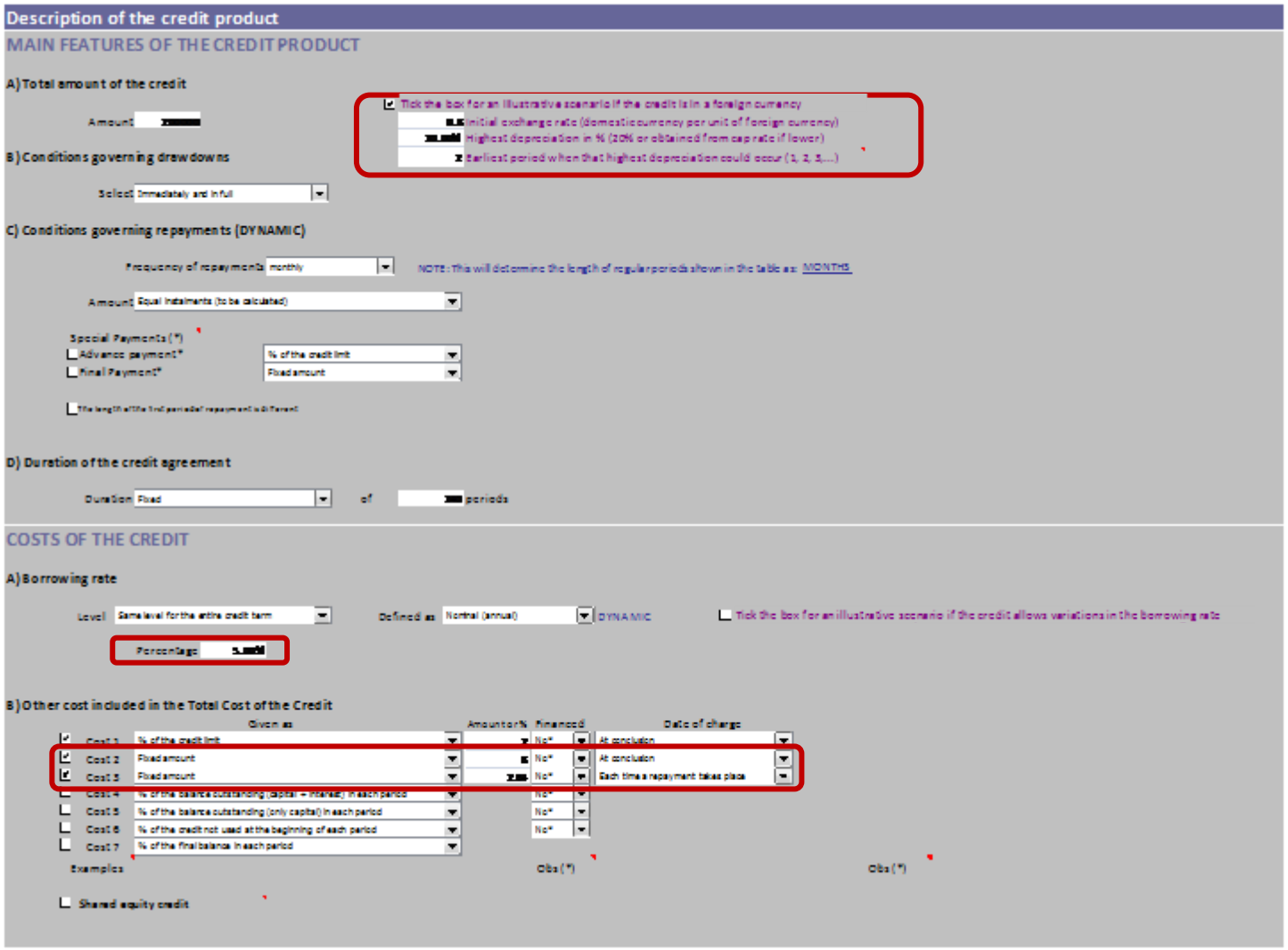
Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit currency)	Highest exchange rate (domestic currency)
0	170000.00				170000.00			3400.00					3400.00	3400.00	166600.00	166600.00		
1		170000.00	170000.00	170850.00	169632.07	6.00%	850.00			367.93	850.00	1217.93	0.00	1217.93	-1217.93	-1211.62		
2		169632.07	169632.07	170480.23	169262.29	6.00%	848.16			369.77	848.16	1217.93	0.00	1217.93	-1217.93	-1205.34		
3		169262.29	169262.29	170108.61	168890.67	6.00%	846.31			371.62	846.31	1217.93	0.00	1217.93	-1217.93	-1199.09		
4		168890.67	168890.67	169735.13	168517.19	6.00%	844.45			373.48	844.45	1217.93	0.00	1217.93	-1217.93	-1192.88		
5		168517.19	168517.19	169359.78	168141.85	6.00%	842.59			375.35	842.59	1217.93	0.00	1217.93	-1217.93	-1186.69		
6		168141.85	168141.85	168982.56	167764.62	6.00%	840.71			377.22	840.71	1217.93	0.00	1217.93	-1217.93	-1180.54		
7		167764.62	167764.62	168603.45	167385.51	6.00%	838.82			379.11	838.82	1217.93	0.00	1217.93	-1217.93	-1174.42		
8		167385.51	167385.51	168222.44	167004.51	6.00%	836.93			381.01	836.93	1217.93	0.00	1217.93	-1217.93	-1168.34		
9		167004.51	167004.51	167839.53	166621.60	6.00%	835.02			382.91	835.02	1217.93	0.00	1217.93	-1217.93	-1162.28		
10		166621.60	166621.60	167454.71	166236.77	6.00%	833.11			384.82	833.11	1217.93	0.00	1217.93	-1217.93	-1156.26		
11		166236.77	166236.77	167067.96	165850.02	6.00%	831.18			386.75	831.18	1217.93	0.00	1217.93	-1217.93	-1150.26		
12		165850.02	165850.02	166679.27	165461.34	6.00%	829.25			388.68	829.25	1217.93	0.00	1217.93	-1217.93	-1144.30		
Sums																		
Year 1	170000.00						10076.54	3400.00	0.00	4538.66	10076.54	14615.19	3400.00	18015.16	151984.84	152467.99		
Year 2	0.00						9796.60	0.00	0.00	4818.59	9796.60	14615.19	0.00	14615.16	-14615.16	-13277.67		
Year 3	0.00						9499.40	0.00	0.00	5115.79	9499.40	14615.19	0.00	14615.16	-14615.16	-12474.98		
Year 4	0.00						9183.87	0.00	0.00	5431.32	9183.87	14615.19	0.00	14615.16	-14615.16	-11720.82		
Year 5	0.00						8848.88	0.00	0.00	5766.32	8848.88	14615.19	0.00	14615.16	-14615.16	-11012.25		
Year 6	0.00						8493.22	0.00	0.00	6121.97	8493.22	14615.19	0.00	14615.16	-14615.16	-10346.51		
Year 7	0.00						8115.63	0.00	0.00	6499.56	8115.63	14615.19	0.00	14615.16	-14615.16	-9721.02		
Year 8	0.00						7714.76	0.00	0.00	6900.44	7714.76	14615.19	0.00	14615.16	-14615.16	-9133.34		
Year 9	0.00						7289.15	0.00	0.00	7326.04	7289.15	14615.19	0.00	14615.16	-14615.16	-8581.20		
Year 10	0.00						6837.30	0.00	0.00	7777.90	6837.30	14615.19	0.00	14615.16	-14615.16	-8062.43		
Year 11	0.00						6357.57	0.00	0.00	8257.62	6357.57	14615.19	0.00	14615.16	-14615.16	-7575.02		
Year 12	0.00						5848.26	0.00	0.00	8766.93	5848.26	14615.19	0.00	14615.16	-14615.16	-7117.08		
Year 13	0.00						5307.54	0.00	0.00	9307.66	5307.54	14615.19	0.00	14615.16	-14615.16	-6686.82		
Year 14	0.00						4733.46	0.00	0.00	9881.73	4733.46	14615.19	0.00	14615.16	-14615.16	-6282.58		
Year 15	0.00						4123.98	0.00	0.00	10491.22	4123.98	14615.19	0.00	14615.16	-14615.16	-5902.77		
Year 16	0.00						3476.90	0.00	0.00	11138.29	3476.90	14615.19	0.00	14615.16	-14615.16	-5545.92		
Year 17	0.00						2789.92	0.00	0.00	11825.28	2789.92	14615.19	0.00	14615.16	-14615.16	-5210.65		
Year 18	0.00						2060.56	0.00	0.00	12554.63	2060.56	14615.19	0.00	14615.16	-14615.16	-4895.64		
Year 19	0.00						1286.22	0.00	0.00	13328.98	1286.22	14615.19	0.00	14615.16	-14615.16	-4599.68		
Year 20	0.00						464.12	0.00	0.00	14151.08	464.12	14615.19	0.00	14615.16	-14615.16	-4321.61		
Total	170000.00						122303.87	3400.00	0.00	170000.00	122303.87	292303.87	3400.00	295703.20	-125703.20	0.00		

EXAMPLE 28

Click on the button *Reset* and then enter the information highlighted in red.

Note that the exchange rate entered at the top is expressed as domestic currency per unit of foreign currency, and hence its value is 1/1.25=0.8.

Also note that cost number 2 corresponds to the currency conversion cost linked to the single sum cost of 2% of the total amount of credit (i.e., 200000x0.02x0.002=$8), which is payable at the conclusion of the agreement, and cost number 3 corresponds to the currency conversion cost linked to the monthly instalments (i.e., 1319.91x0.002=$2.64), which is payable each time a repayment takes place. If such instalments are not known in advance, it will be necessary to obtain them for this same credit but excluding the cost number 3. Once obtained, the cost can be quantified.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1319.91	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	5.4%	DYNAMIC Recalculate
Total cost of the credit	121420.00	
Total amount of credit	200000.00	
Total amount payable	321420.00	

Illustrative scenario of change in the exchange rate

If the value of the domestic currency fells the high depreciation rate entered above at the earliest possible opportunity , the payments would be as shown in the last column of amortisation table and the amount of capital would increase to (in terms of the domestic currency):

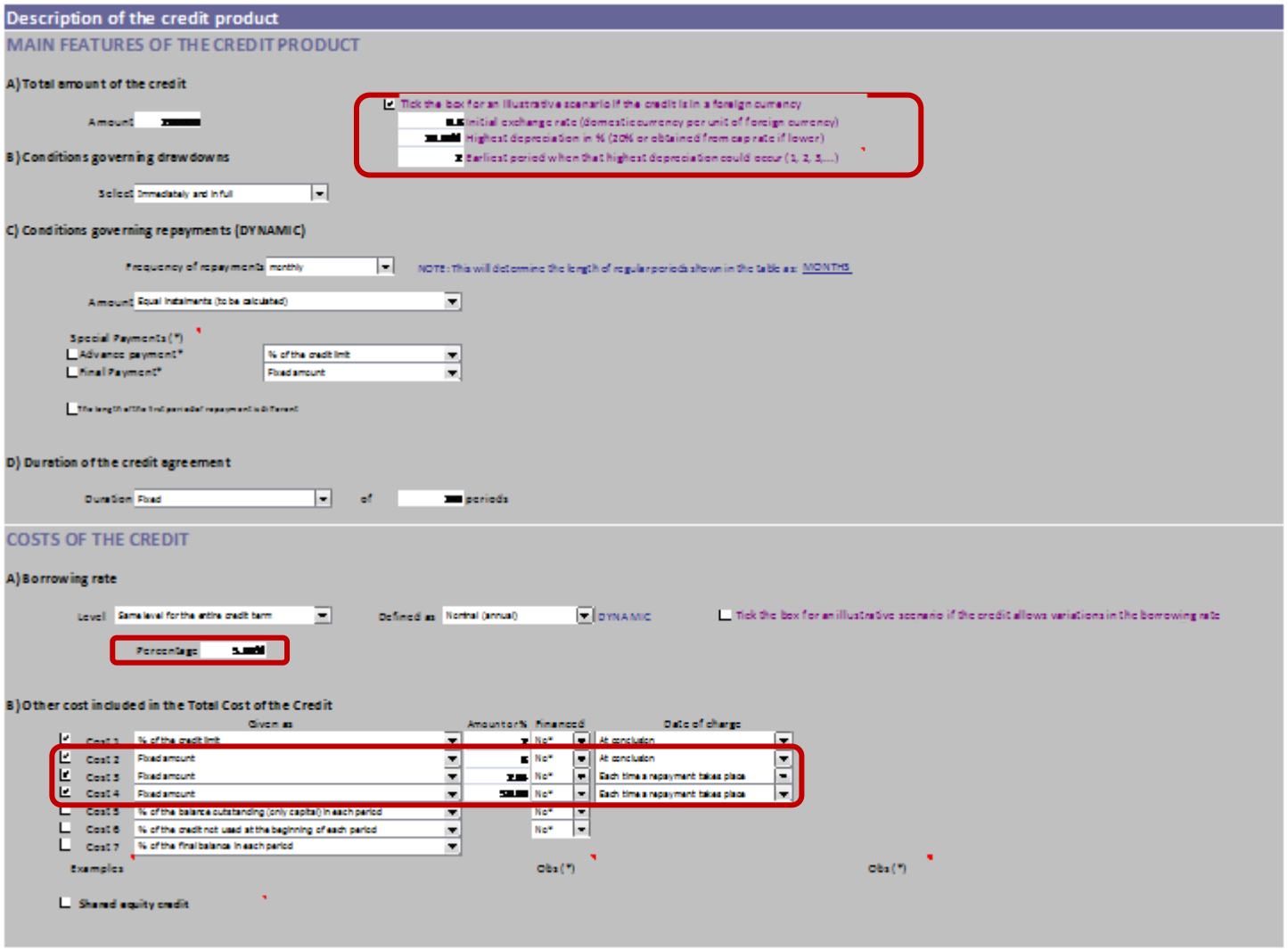
191922.15

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00				200000.00			4008.00					4008.00	4008.00	195992.00	195992.00		3206.40
1		200000.00	200000.00	200833.33	199513.42	5.00%	833.33	2.64		486.58	833.33	1319.91	2.64	1322.55	-1322.55	-1316.77		1058.04
2		199513.42	199513.42	200344.73	199024.82	5.00%	831.31	2.64		488.61	831.31	1319.91	2.64	1322.55	-1322.55	-1311.02		1269.65
3		199024.82	199024.82	199854.09	198534.17	5.00%	829.27	2.64		490.64	829.27	1319.91	2.64	1322.55	-1322.55	-1305.29		1269.65
4		198534.17	198534.17	199361.40	198041.49	5.00%	827.23	2.64		492.69	827.23	1319.91	2.64	1322.55	-1322.55	-1299.58		1269.65
5		198041.49	198041.49	198866.66	197546.75	5.00%	825.17	2.64		494.74	825.17	1319.91	2.64	1322.55	-1322.55	-1293.90		1269.65
6		197546.75	197546.75	198369.86	197049.95	5.00%	823.11	2.64		496.80	823.11	1319.91	2.64	1322.55	-1322.55	-1288.25		1269.65
7		197049.95	197049.95	197870.99	196551.08	5.00%	821.04	2.64		498.87	821.04	1319.91	2.64	1322.55	-1322.55	-1282.62		1269.65
8		196551.08	196551.08	197370.04	196050.13	5.00%	818.96	2.64		500.95	818.96	1319.91	2.64	1322.55	-1322.55	-1277.01		1269.65
9		196050.13	196050.13	196867.01	195547.10	5.00%	816.88	2.64		503.04	816.88	1319.91	2.64	1322.55	-1322.55	-1271.43		1269.65
10		195547.10	195547.10	196361.88	195041.96	5.00%	814.78	2.64		505.13	814.78	1319.91	2.64	1322.55	-1322.55	-1265.88		1269.65
11		195041.96	195041.96	195854.64	194534.73	5.00%	812.67	2.64		507.24	812.67	1319.91	2.64	1322.55	-1322.55	-1260.35		1269.65
12		194534.73	194534.73	195345.29	194025.38	5.00%	810.56	2.64		509.35	810.56	1319.91	2.64	1322.55	-1322.55	-1254.84		1269.65
Sums																		
Year 1	200000.00						9864.32	4039.68	0.00	5974.62	9864.32	15838.94	4039.68	19878.60	180121.40	180565.06		18230.57
Year 2	0.00						9558.64	31.68	0.00	6280.30	9558.64	15838.94	31.68	15870.60	-15870.60	-14637.10		15235.78
Year 3	0.00						9237.33	31.68	0.00	6601.61	9237.33	15838.94	31.68	15870.60	-15870.60	-13887.71		15235.78
Year 4	0.00						8899.58	31.68	0.00	6939.36	8899.58	15838.94	31.68	15870.60	-15870.60	-13176.68		15235.78
Year 5	0.00						8544.55	31.68	0.00	7294.39	8544.55	15838.94	31.68	15870.60	-15870.60	-12502.06		15235.78
Year 6	0.00						8171.35	31.68	0.00	7667.58	8171.35	15838.94	31.68	15870.60	-15870.60	-11861.98		15235.78
Year 7	0.00						7779.07	31.68	0.00	8059.87	7779.07	15838.94	31.68	15870.60	-15870.60	-11254.66		15235.78
Year 8	0.00						7366.71	31.68	0.00	8472.23	7366.71	15838.94	31.68	15870.60	-15870.60	-10678.44		15235.78
Year 9	0.00						6933.25	31.68	0.00	8905.69	6933.25	15838.94	31.68	15870.60	-15870.60	-10131.73		15235.78
Year 10	0.00						6477.62	31.68	0.00	9361.32	6477.62	15838.94	31.68	15870.60	-15870.60	-9613.00		15235.78
Year 11	0.00						5998.68	31.68	0.00	9840.26	5998.68	15838.94	31.68	15870.60	-15870.60	-9120.83		15235.78
Year 12	0.00						5495.23	31.68	0.00	10343.71	5495.23	15838.94	31.68	15870.60	-15870.60	-8653.86		15235.78
Year 13	0.00						4966.03	31.68	0.00	10872.91	4966.03	15838.94	31.68	15870.60	-15870.60	-8210.80		15235.78
Year 14	0.00						4409.75	31.68	0.00	11429.19	4409.75	15838.94	31.68	15870.60	-15870.60	-7790.42		15235.78
Year 15	0.00						3825.01	31.68	0.00	12013.93	3825.01	15838.94	31.68	15870.60	-15870.60	-7391.56		15235.78
Year 16	0.00						3210.35	31.68	0.00	12628.58	3210.35	15838.94	31.68	15870.60	-15870.60	-7013.13		15235.78
Year 17	0.00						2564.25	31.68	0.00	13274.69	2564.25	15838.94	31.68	15870.60	-15870.60	-6654.07		15235.78
Year 18	0.00						1885.09	31.68	0.00	13953.84	1885.09	15838.94	31.68	15870.60	-15870.60	-6313.39		15235.78
Year 19	0.00						1171.19	31.68	0.00	14667.75	1171.19	15838.94	31.68	15870.60	-15870.60	-5990.16		15235.78
Year 20	0.00						420.76	31.68	0.00	15418.18	420.76	15838.94	31.68	15870.60	-15870.60	-5683.47		15235.78
Total	200000.00						116778.75	4641.60	0.00	200000.00	116778.75	316778.75	4641.60	321420.00	-121420.00	0.00		307710.31

EXAMPLE 29

Click on the button *Reset* and then enter the information highlighted in red.

Note that the exchange rate entered at the top is expressed as domestic currency per unit of foreign currency, and hence its value is 1/1.25=0.8. Also note that cost number 2 corresponds to the currency conversion cost linked to the single sum cost of 2% of the total amount of credit (i.e., 200000x0.02x0.002=$8), which is payable at the conclusion of the agreement, the cost number 3 corresponds to the currency conversion cost linked to the monthly instalments* (i.e., 1319.91x0.002=$2.64), which is payable each time a repayment takes place, and the cost number 3 corresponds to the monthly cost of the cap and its currency conversion costs (i.e. 360/12x1.002=$30.06), which is also payable each time a repayment takes place (as they are monthly).



*If such instalments are not known in advance, it will be necessary to obtain them for this same credit but excluding the cost number 3. Once obtained, the cost can be quantified.

Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	1319.91	Recalculate
Duration of the credit	240	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	5.7%	DYNAMIC Recalculate
Total cost of the credit	128634.40	
Total amount of credit	200000.00	
Total amount payable	328634.40	

Illustrative scenario of change in the exchange rate

If the value of the domestic currency fells the high depreciation rate entered above at the earliest possible opportunity , the payments would be as shown in the last column of amortisation table and the amount of capital would increase to (in terms of the domestic currency):

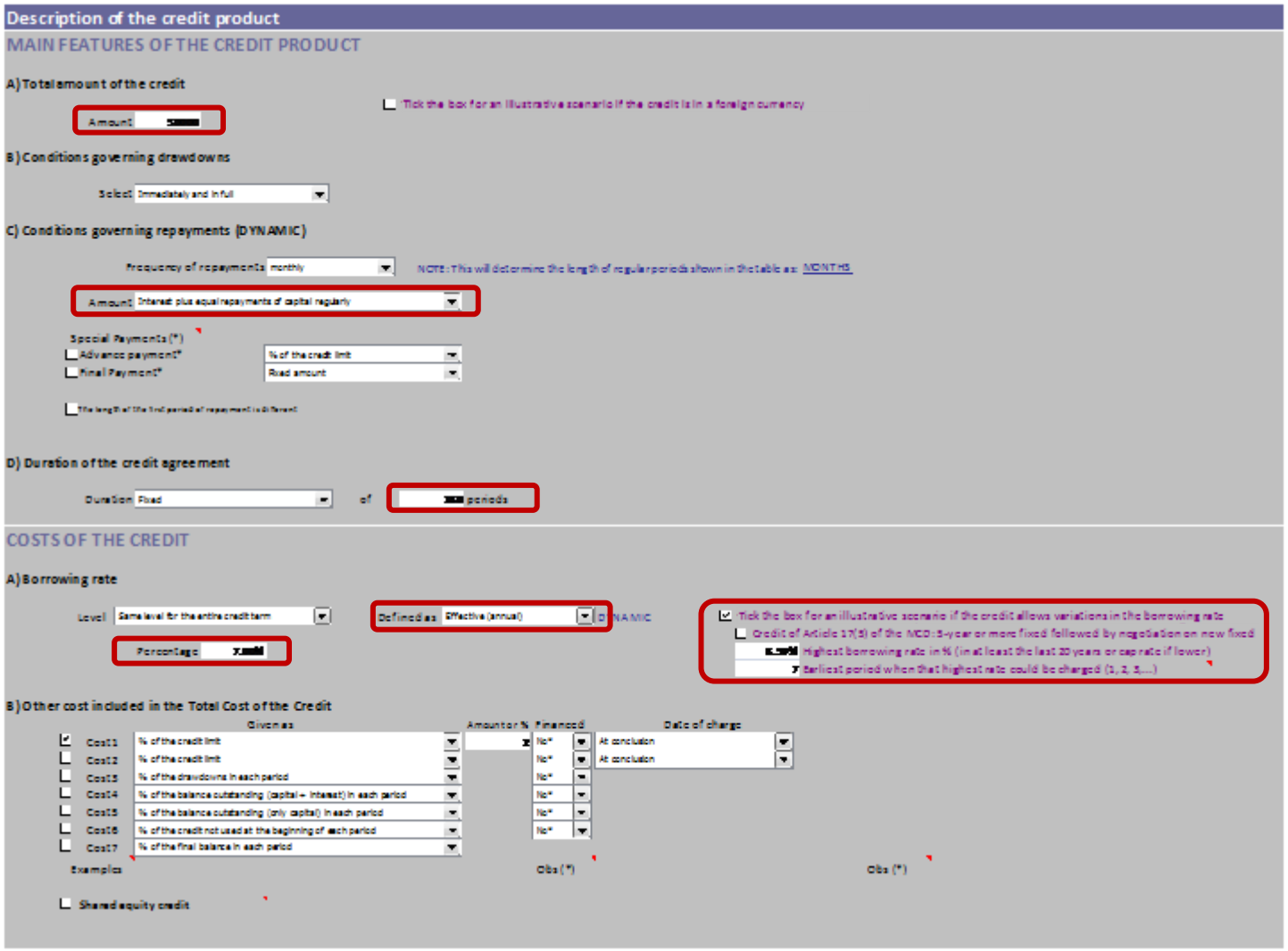
175961.07

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	200000.00				200000.00			4008.00					4008.00	4008.00	195992.00	195992.00		3206.40
1		200000.00	200000.00	200833.33	199513.42	5.00%	833.33	32.70		486.58	833.33	1319.91	32.70	1352.61	-1352.61	-1346.39		1082.09
2		199513.42	199513.42	200344.73	199024.82	5.00%	831.31	32.70		488.61	831.31	1319.91	32.70	1352.61	-1352.61	-1340.21		1190.30
3		199024.82	199024.82	199854.09	198534.17	5.00%	829.27	32.70		490.64	829.27	1319.91	32.70	1352.61	-1352.61	-1334.05		1190.30
4		198534.17	198534.17	199361.40	198041.49	5.00%	827.23	32.70		492.69	827.23	1319.91	32.70	1352.61	-1352.61	-1327.92		1190.30
5		198041.49	198041.49	198866.66	197546.75	5.00%	825.17	32.70		494.74	825.17	1319.91	32.70	1352.61	-1352.61	-1321.82		1190.30
6		197546.75	197546.75	198369.86	197049.95	5.00%	823.11	32.70		496.80	823.11	1319.91	32.70	1352.61	-1352.61	-1315.74		1190.30
7		197049.95	197049.95	197870.99	196551.08	5.00%	821.04	32.70		498.87	821.04	1319.91	32.70	1352.61	-1352.61	-1309.70		1190.30
8		196551.08	196551.08	197370.04	196050.13	5.00%	818.96	32.70		500.95	818.96	1319.91	32.70	1352.61	-1352.61	-1303.68		1190.30
9		196050.13	196050.13	196867.01	195547.10	5.00%	816.88	32.70		503.04	816.88	1319.91	32.70	1352.61	-1352.61	-1297.69		1190.30
10		195547.10	195547.10	196361.88	195041.96	5.00%	814.78	32.70		505.13	814.78	1319.91	32.70	1352.61	-1352.61	-1291.72		1190.30
11		195041.96	195041.96	195854.64	194534.73	5.00%	812.67	32.70		507.24	812.67	1319.91	32.70	1352.61	-1352.61	-1285.79		1190.30
12		194534.73	194534.73	195345.29	194025.38	5.00%	810.56	32.70		509.35	810.56	1319.91	32.70	1352.61	-1352.61	-1279.88		1190.30
Sums																		
Year 1	200000.00						9864.32	4400.40	0.00	5974.62	9864.32	15838.94	4400.40	20239.32	179760.68	180237.42		17381.75
Year 2	0.00						9558.64	392.40	0.00	6280.30	9558.64	15838.94	392.40	16231.32	-16231.32	-14907.45		14283.56
Year 3	0.00						9237.33	392.40	0.00	6601.61	9237.33	15838.94	392.40	16231.32	-16231.32	-14105.87		14283.56
Year 4	0.00						8899.58	392.40	0.00	6939.36	8899.58	15838.94	392.40	16231.32	-16231.32	-13347.39		14283.56
Year 5	0.00						8544.55	392.40	0.00	7294.39	8544.55	15838.94	392.40	16231.32	-16231.32	-12629.69		14283.56
Year 6	0.00						8171.35	392.40	0.00	7667.58	8171.35	15838.94	392.40	16231.32	-16231.32	-11950.58		14283.56
Year 7	0.00						7779.07	392.40	0.00	8059.87	7779.07	15838.94	392.40	16231.32	-16231.32	-11307.99		14283.56
Year 8	0.00						7366.71	392.40	0.00	8472.23	7366.71	15838.94	392.40	16231.32	-16231.32	-10699.96		14283.56
Year 9	0.00						6933.25	392.40	0.00	8905.69	6933.25	15838.94	392.40	16231.32	-16231.32	-10124.61		14283.56
Year 10	0.00						6477.62	392.40	0.00	9361.32	6477.62	15838.94	392.40	16231.32	-16231.32	-9580.21		14283.56
Year 11	0.00						5998.68	392.40	0.00	9840.26	5998.68	15838.94	392.40	16231.32	-16231.32	-9065.07		14283.56
Year 12	0.00						5495.23	392.40	0.00	10343.71	5495.23	15838.94	392.40	16231.32	-16231.32	-8577.64		14283.56
Year 13	0.00						4966.03	392.40	0.00	10872.91	4966.03	15838.94	392.40	16231.32	-16231.32	-8116.42		14283.56
Year 14	0.00						4409.75	392.40	0.00	11429.19	4409.75	15838.94	392.40	16231.32	-16231.32	-7679.99		14283.56
Year 15	0.00						3825.01	392.40	0.00	12013.93	3825.01	15838.94	392.40	16231.32	-16231.32	-7267.03		14283.56
Year 16	0.00						3210.35	392.40	0.00	12628.58	3210.35	15838.94	392.40	16231.32	-16231.32	-6876.28		14283.56
Year 17	0.00						2564.25	392.40	0.00	13274.69	2564.25	15838.94	392.40	16231.32	-16231.32	-6506.54		14283.56
Year 18	0.00						1885.09	392.40	0.00	13953.84	1885.09	15838.94	392.40	16231.32	-16231.32	-6156.68		14283.56
Year 19	0.00						1171.19	392.40	0.00	14667.75	1171.19	15838.94	392.40	16231.32	-16231.32	-5825.63		14283.56
Year 20	0.00						420.76	392.40	0.00	15418.18	420.76	15838.94	392.40	16231.32	-16231.32	-5512.38		14283.56
Total	200000.00						116778.75	11856.00	0.00	200000.00	116778.75	316778.75	11856.00	328634.40	-128634.40	0.00		288769.42

EXAMPLE 30

This example requires changing manually the values in the amortisation table.

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

As shown, the simulator has obtained the results for a credit with equal repayments of the capital from period 1, while the credit of the example restrict those payments to take place from the 6th year (period 61).

Main results

Final balance in the last period	0.00	
Amount of the first repayment		Recalculate
Duration of the credit	180	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	7.4%	DYNAMIC Recalculate
Total cost of the credit	15951.01	
Total amount of credit	30000.00	
Total amount payable	45951.01	

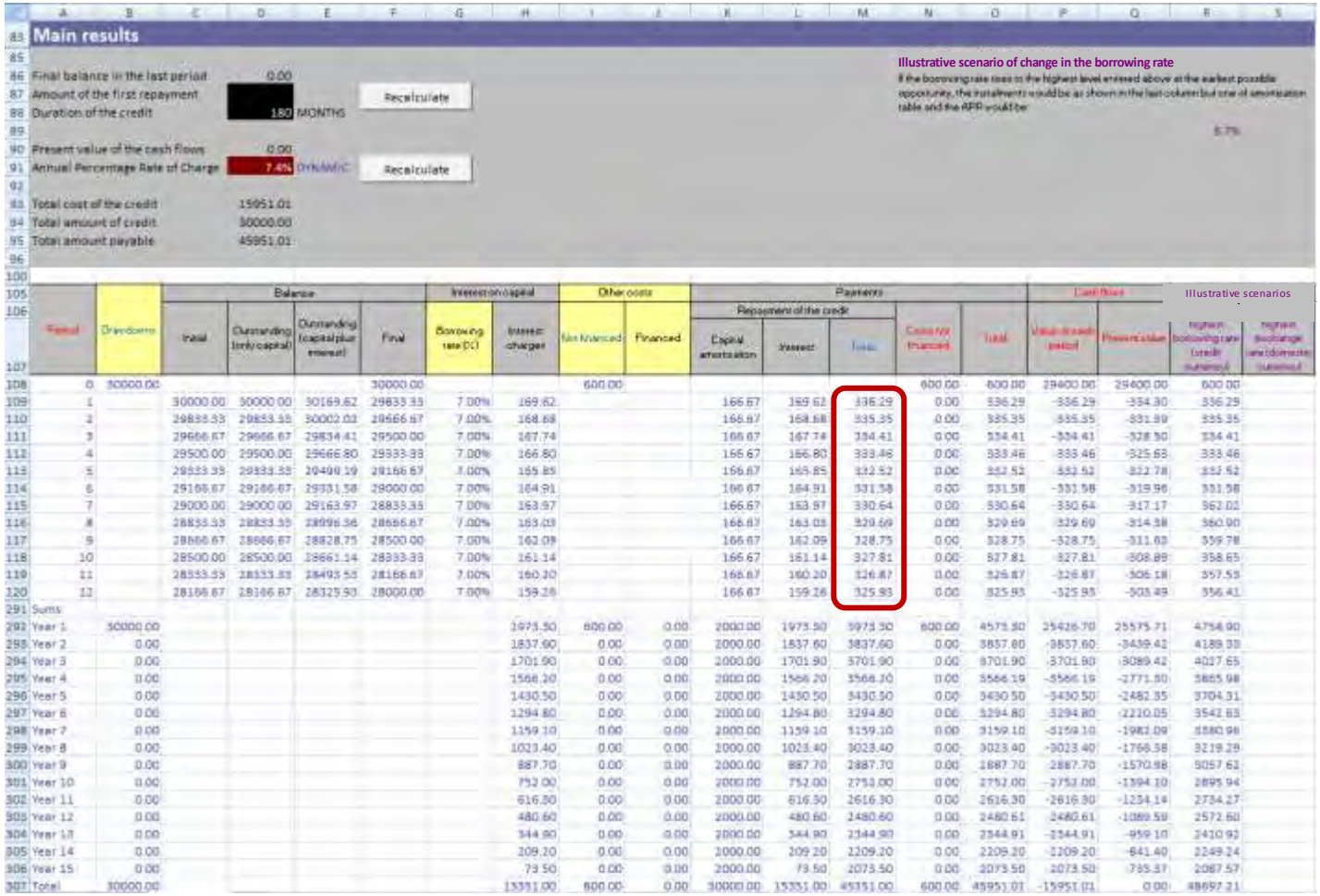
Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

8.7%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	30000.00				30000.00			600.00					600.00	600.00	29400.00	29400.00	600.00	
1		30000.00	30000.00	30169.62	29833.33	7.00%	169.62			166.67	169.62	336.29	0.00	336.29	-336.29	-334.30	336.29	
2		29833.33	29833.33	30002.02	29666.67	7.00%	168.68			166.67	168.68	335.35	0.00	335.35	-335.35	-331.39	335.35	
3		29666.67	29666.67	29834.41	29500.00	7.00%	167.74			166.67	167.74	334.41	0.00	334.41	-334.41	-328.50	334.41	
4		29500.00	29500.00	29666.80	29333.33	7.00%	166.80			166.67	166.80	333.46	0.00	333.46	-333.46	-325.63	333.46	
5		29333.33	29333.33	29499.19	29166.67	7.00%	165.85			166.67	165.85	332.52	0.00	332.52	-332.52	-322.78	332.52	
6		29166.67	29166.67	29331.58	29000.00	7.00%	164.91			166.67	164.91	331.58	0.00	331.58	-331.58	-319.96	331.58	
7		29000.00	29000.00	29163.97	28833.33	7.00%	163.97			166.67	163.97	330.64	0.00	330.64	-330.64	-317.17	362.02	
8		28833.33	28833.33	28996.36	28666.67	7.00%	163.03			166.67	163.03	329.69	0.00	329.69	-329.69	-314.38	360.90	
9		28666.67	28666.67	28828.75	28500.00	7.00%	162.09			166.67	162.09	328.75	0.00	328.75	-328.75	-311.63	359.78	
10		28500.00	28500.00	28661.14	28333.33	7.00%	161.14			166.67	161.14	327.81	0.00	327.81	-327.81	-308.89	358.65	
11		28333.33	28333.33	28493.53	28166.67	7.00%	160.20			166.67	160.20	326.87	0.00	326.87	-326.87	-306.18	357.53	
12		28166.67	28166.67	28325.93	28000.00	7.00%	159.26			166.67	159.26	325.93	0.00	325.93	-325.93	-303.49	356.41	
Sums																		
Year 1	30000.00						1973.30	600.00	0.00	2000.00	1973.30	3973.30	600.00	4573.30	25426.70	25575.71	4758.90	
Year 2	0.00						1837.60	0.00	0.00	2000.00	1837.60	3837.60	0.00	3837.60	-3837.60	-3439.42	4189.33	
Year 3	0.00						1701.90	0.00	0.00	2000.00	1701.90	3701.90	0.00	3701.90	-3701.90	-3089.42	4027.65	
Year 4	0.00						1566.20	0.00	0.00	2000.00	1566.20	3566.20	0.00	3566.19	-3566.19	-2771.30	3865.98	
Year 5	0.00						1430.50	0.00	0.00	2000.00	1430.50	3430.50	0.00	3430.50	-3430.50	-2482.35	3704.31	
Year 6	0.00						1294.80	0.00	0.00	2000.00	1294.80	3294.80	0.00	3294.80	-3294.80	-2220.05	3542.63	
Year 7	0.00						1159.10	0.00	0.00	2000.00	1159.10	3159.10	0.00	3159.10	-3159.10	-1982.09	3380.96	
Year 8	0.00						1023.40	0.00	0.00	2000.00	1023.40	3023.40	0.00	3023.40	-3023.40	-1766.38	3219.29	
Year 9	0.00						887.70	0.00	0.00	2000.00	887.70	2887.70	0.00	2887.70	-2887.70	-1570.98	3057.62	
Year 10	0.00						752.00	0.00	0.00	2000.00	752.00	2752.00	0.00	2752.00	-2752.00	-1394.10	2895.94	
Year 11	0.00						616.30	0.00	0.00	2000.00	616.30	2616.30	0.00	2616.30	-2616.30	-1234.14	2734.27	
Year 12	0.00						480.60	0.00	0.00	2000.00	480.60	2480.60	0.00	2480.61	-2480.61	-1089.59	2572.60	
Year 13	0.00						344.90	0.00	0.00	2000.00	344.90	2344.90	0.00	2344.91	-2344.91	-959.10	2410.92	
Year 14	0.00						209.20	0.00	0.00	2000.00	209.20	2209.20	0.00	2209.20	-2209.20	-841.40	2249.24	
Year 15	0.00						73.50	0.00	0.00	2000.00	73.50	2073.50	0.00	2073.50	-2073.50	-735.37	2087.57	
Total	30000.00						15351.00	600.00	0.00	30000.00	15351.00	45351.00	600.00	45951.01	-15951.01	0.00	48697.21	

To solve this, first replace the formulas in the column *Total* of *Repayment of the credit* (column M; the title is in a blue font, and hence can be changed after clicking on the button Calculate) by proper formulas. Specifically, the cells for periods 1 to 60 should be equated to the cells with *Interest charges* in column H, and the cells for the rest of periods should add to the interest charges equal amounts of capital given as 30000/120=250. For example, the cell M109 (corresponding to the first period) should have the formula =H109 and the cell M169 (corresponding to period 61) is the first one which includes the repayment of capital and should have the formula =H169+30000/120.



Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	180	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	7.4%	DYNAMIC — Recalculate
Total cost of the credit	15951.01	
Total amount of credit	30000.00	
Total amount payable	45951.01	

Illustrative scenario of change in the borrowing rate

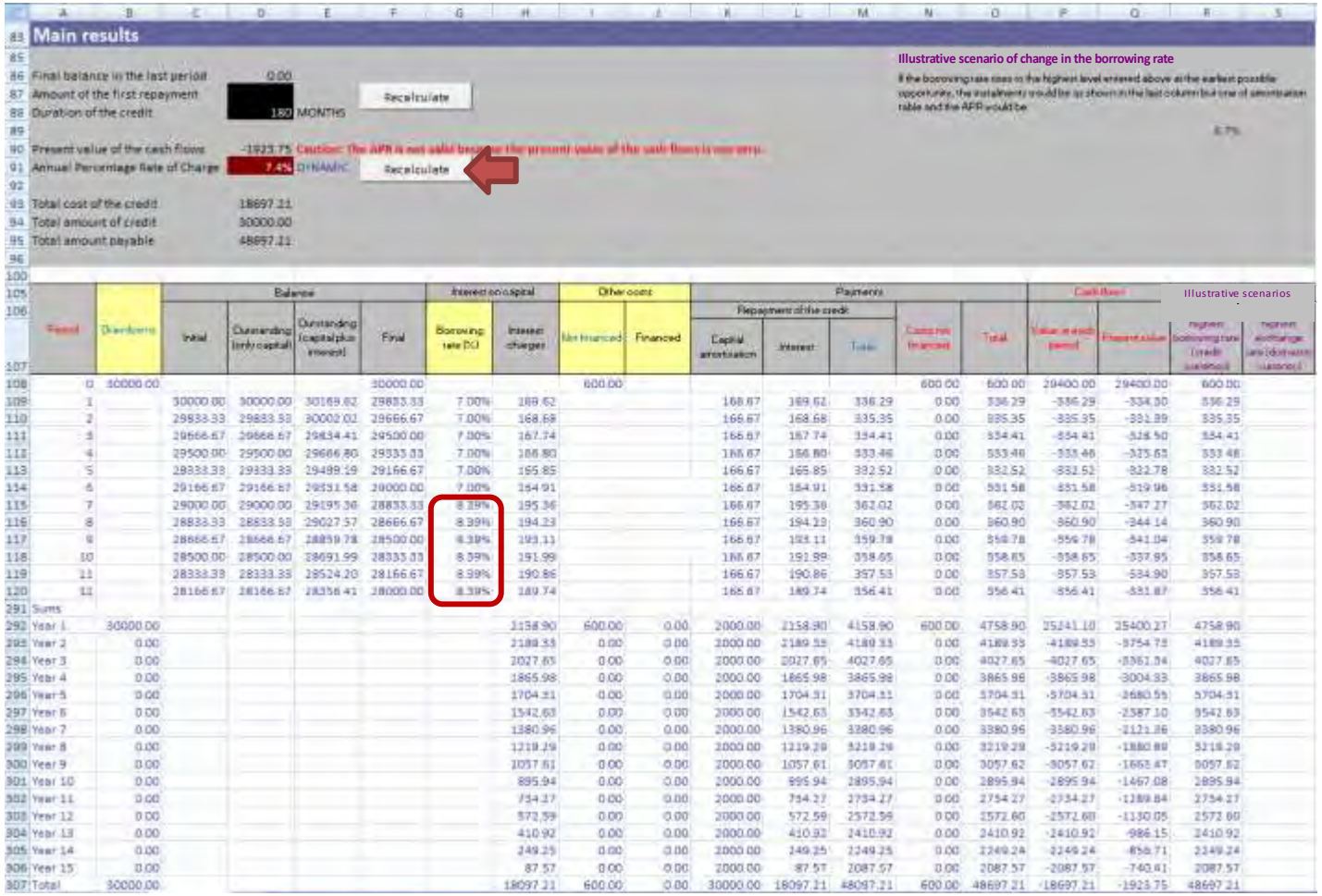
If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be

8.7%

	Period	Drawdowns	Balance: Initial	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charges	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortisation	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Total	Payments: Costs not financed	Payments: Total	Cash flows: Value drawn period	Cash flows: Present value	Illustrative scenarios: Highest borrowing rate (credit currency)	Illustrative scenarios: Highest exchange rate (domestic currency)
108	0	30000.00				30000.00			600.00					600.00	600.00	29400.00	29400.00	600.00	
109	1		30000.00	30000.00	30169.62	29833.33	7.00%	169.62			166.67	169.62	336.29	0.00	336.29	-336.29	-334.30	336.29	
110	2		29833.33	29833.33	30002.02	29666.67	7.00%	168.68			166.67	168.68	335.35	0.00	335.35	-335.35	-331.89	335.35	
111	3		29666.67	29666.67	29834.41	29500.00	7.00%	167.74			166.67	167.74	334.41	0.00	334.41	-334.41	-328.50	334.41	
112	4		29500.00	29500.00	29666.80	29333.33	7.00%	166.80			166.67	166.80	333.46	0.00	333.46	-333.46	-325.63	333.46	
113	5		29333.33	29333.33	29499.19	29166.67	7.00%	165.85			166.67	165.85	332.52	0.00	332.52	-332.52	-322.78	332.52	
114	6		29166.67	29166.67	29331.58	29000.00	7.00%	164.91			166.67	164.91	331.58	0.00	331.58	-331.58	-319.96	331.58	
115	7		29000.00	29000.00	29163.97	28833.33	7.00%	163.97			166.67	163.97	330.64	0.00	330.64	-330.64	-317.17	562.02	
116	8		28833.33	28833.33	28996.36	28666.67	7.00%	163.03			166.67	163.03	329.69	0.00	329.69	-329.69	-314.38	560.00	
117	9		28666.67	28666.67	28828.75	28500.00	7.00%	162.09			166.67	162.09	328.75	0.00	328.75	-328.75	-311.63	559.78	
118	10		28500.00	28500.00	28661.14	28333.33	7.00%	161.14			166.67	161.14	327.81	0.00	327.81	-327.81	-308.89	358.65	
119	11		28333.33	28333.33	28493.53	28166.67	7.00%	160.20			166.67	160.20	326.87	0.00	326.87	-326.87	-306.18	357.53	
120	12		28166.67	28166.67	28325.93	28000.00	7.00%	159.26			166.67	159.26	325.93	0.00	325.93	-325.93	-303.49	356.41	
291	Sums																		
292	Year 1	30000.00						1973.50	600.00	0.00	2000.00	1973.50	3973.50	600.00	4573.50	25426.70	25575.71	4758.90	
293	Year 2	0.00						1837.60	0.00	0.00	2000.00	1837.60	3837.60	0.00	3837.60	-3837.60	-3439.42	4188.33	
294	Year 3	0.00						1701.90	0.00	0.00	2000.00	1701.90	3701.90	0.00	3701.90	-3701.90	-3089.42	4027.65	
295	Year 4	0.00						1566.20	0.00	0.00	2000.00	1566.20	3566.20	0.00	3566.19	-3566.19	-2771.50	3865.98	
296	Year 5	0.00						1430.50	0.00	0.00	2000.00	1430.50	3430.50	0.00	3430.50	-3430.50	-2482.35	3704.31	
297	Year 6	0.00						1294.80	0.00	0.00	2000.00	1294.80	3294.80	0.00	3294.80	-3294.80	-2210.05	3542.63	
298	Year 7	0.00						1159.10	0.00	0.00	2000.00	1159.10	3159.10	0.00	3159.10	-3159.10	-1982.09	3380.96	
299	Year 8	0.00						1023.40	0.00	0.00	2000.00	1023.40	3023.40	0.00	3023.40	-3023.40	-1766.38	3219.28	
300	Year 9	0.00						887.70	0.00	0.00	2000.00	887.70	2887.70	0.00	2887.70	-2887.70	-1570.98	3057.61	
301	Year 10	0.00						752.00	0.00	0.00	2000.00	752.00	2752.00	0.00	2752.00	-2752.00	-1394.10	2895.94	
302	Year 11	0.00						616.30	0.00	0.00	2000.00	616.30	2616.30	0.00	2616.30	-2616.30	-1234.14	2734.27	
303	Year 12	0.00						480.60	0.00	0.00	2000.00	480.60	2480.61	0.00	2480.61	-2480.61	-1089.59	2572.60	
304	Year 13	0.00						344.90	0.00	0.00	2000.00	344.90	2344.90	0.00	2344.91	-2344.91	-959.10	2410.92	
305	Year 14	0.00						209.20	0.00	0.00	2000.00	209.20	2209.20	0.00	2209.20	-2209.20	-841.40	2249.24	
306	Year 15	0.00						73.50	0.00	0.00	2000.00	73.50	2073.50	0.00	2073.50	-2073.50	-735.37	2087.57	
307	Total	30000.00						15951.00	600.00	0.00	30000.00	15951.00	45951.01	600.00	45951.01	-15951.01	0.00	48697.21	

Next, obtain the payments of the credit in the illustrative scenario by changing the borrowing rates from periods 7 to 180 by the highest level of 8.39%. These payments are displayed in the column *Total* of *Payments* (column O).

Also obtain the illustrative APR of this scenario by clicking on the button *Recalculate* next to the cell showing the *Annual Percentage Rate of Charge*.



Main results

Final balance in the last period	0.00
Amount of the first repayment	[redacted]
Duration of the credit	180 MONTHS
Present value of the cash flows	-1923.75 Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	7.4% DYNAMIC
Total cost of the credit	18697.21
Total amount of credit	30000.00
Total amount payable	48697.21

Recalculate

Recalculate

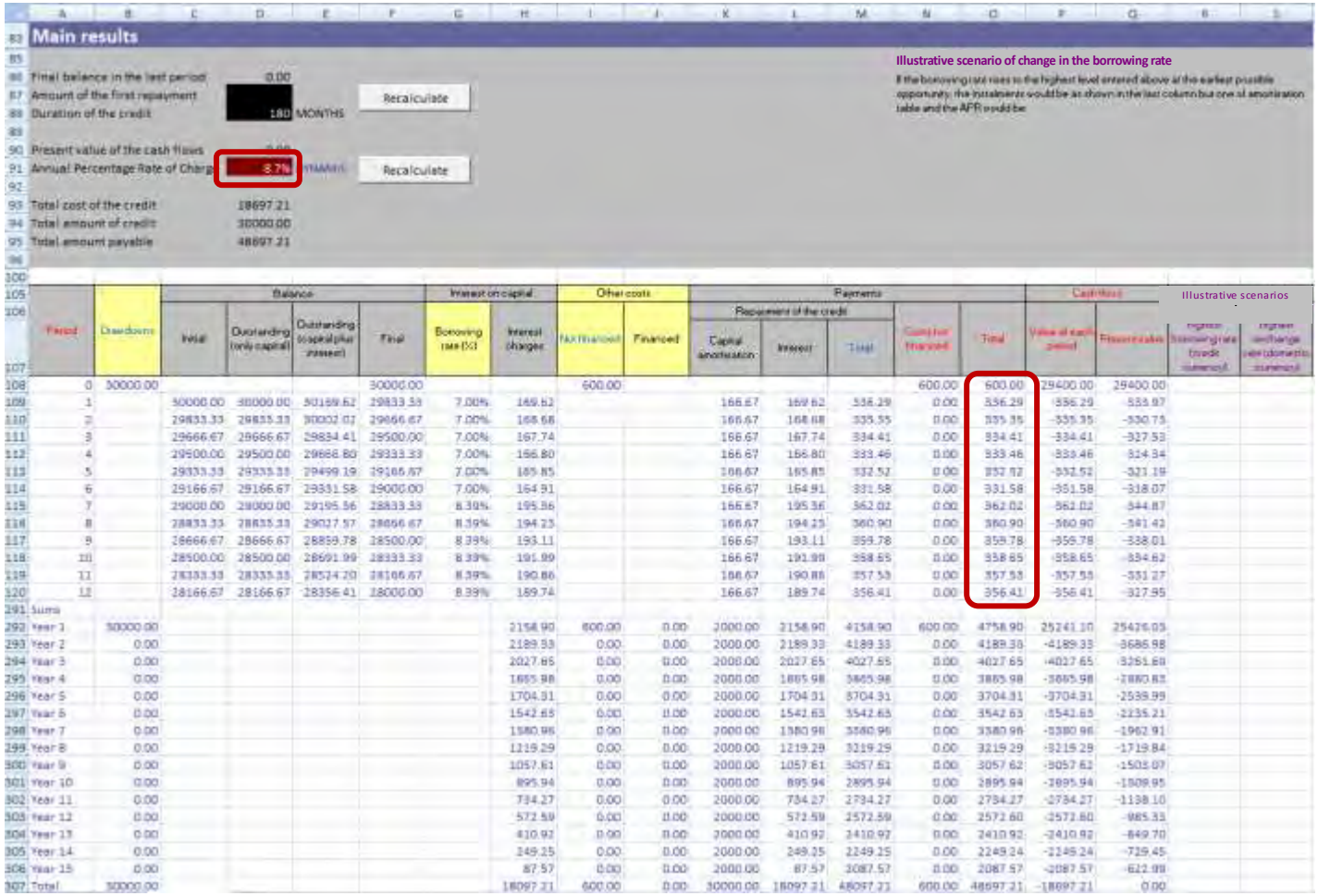
Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be

8.7%

Period	Drawdowns	Balance: Initial	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charged	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortisation	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Total	Payments: Costs not financed	Payments: Total	Cash flows: Value at each period	Cash flows: Present value	Illustrative scenarios: Highest borrowing rate (credit unchanged)	Illustrative scenarios: Highest exchange rate (domestic currency)
0	30000.00				30000.00			600.00					600.00	600.00	29400.00	29400.00	600.00	
1		30000.00	30000.00	30169.62	29833.33	7.00%	169.62			166.67	169.62	336.29	0.00	336.29	-336.29	-334.30	336.29	
2		29833.33	29833.33	30002.02	29666.67	7.00%	168.68			166.67	168.68	335.35	0.00	335.35	-335.35	-331.39	335.35	
3		29666.67	29666.67	29834.41	29500.00	7.00%	167.74			166.67	167.74	334.41	0.00	334.41	-334.41	-328.50	334.41	
4		29500.00	29500.00	29666.80	29333.33	7.00%	166.80			166.67	166.80	333.46	0.00	333.46	-333.46	-325.63	333.46	
5		29333.33	29333.33	29499.19	29166.67	7.00%	165.85			166.67	165.85	332.52	0.00	332.52	-332.52	-322.78	332.52	
6		29166.67	29166.67	29331.58	29000.00	7.00%	164.91			166.67	164.91	331.58	0.00	331.58	-331.58	-319.96	331.58	
7		29000.00	29000.00	29195.36	28833.33	8.39%	195.36			166.67	195.36	362.02	0.00	362.02	-362.02	-347.27	362.02	
8		28833.33	28833.33	29027.57	28666.67	8.39%	194.23			166.67	194.23	360.90	0.00	360.90	-360.90	-344.14	360.90	
9		28666.67	28666.67	28859.78	28500.00	8.39%	193.11			166.67	193.11	359.78	0.00	359.78	-359.78	-341.04	359.78	
10		28500.00	28500.00	28691.99	28333.33	8.39%	191.99			166.67	191.99	358.65	0.00	358.65	-358.65	-337.95	358.65	
11		28333.33	28333.33	28524.20	28166.67	8.39%	190.86			166.67	190.86	357.53	0.00	357.53	-357.53	-334.90	357.53	
12		28166.67	28166.67	28356.41	28000.00	8.39%	189.74			166.67	189.74	356.41	0.00	356.41	-356.41	-331.87	356.41	
Sums																		
Year 1	30000.00						2158.90	600.00	0.00	2000.00	2158.90	4158.90	600.00	4758.90	25241.10	25400.27	4758.90	
Year 2	0.00						2189.33	0.00	0.00	2000.00	2189.33	4189.33	0.00	4189.33	-4189.33	-3754.73	4189.33	
Year 3	0.00						2027.65	0.00	0.00	2000.00	2027.65	4027.65	0.00	4027.65	-4027.65	-3361.34	4027.65	
Year 4	0.00						1865.98	0.00	0.00	2000.00	1865.98	3865.98	0.00	3865.98	-3865.98	-3004.33	3865.98	
Year 5	0.00						1704.31	0.00	0.00	2000.00	1704.31	3704.31	0.00	3704.31	-3704.31	-2680.55	3704.31	
Year 6	0.00						1542.63	0.00	0.00	2000.00	1542.63	3542.63	0.00	3542.63	-3542.63	-2387.10	3542.63	
Year 7	0.00						1380.96	0.00	0.00	2000.00	1380.96	3380.96	0.00	3380.96	-3380.96	-2121.36	3380.96	
Year 8	0.00						1219.29	0.00	0.00	2000.00	1219.29	3219.29	0.00	3219.29	-3219.29	-1880.89	3219.29	
Year 9	0.00						1057.61	0.00	0.00	2000.00	1057.61	3057.61	0.00	3057.62	-3057.62	-1665.47	3057.62	
Year 10	0.00						895.94	0.00	0.00	2000.00	895.94	2895.94	0.00	2895.94	-2895.94	-1467.08	2895.94	
Year 11	0.00						734.27	0.00	0.00	2000.00	734.27	2734.27	0.00	2734.27	-2734.27	-1289.84	2734.27	
Year 12	0.00						572.59	0.00	0.00	2000.00	572.59	2572.59	0.00	2572.60	-2572.60	-1130.05	2572.60	
Year 13	0.00						410.92	0.00	0.00	2000.00	410.92	2410.92	0.00	2410.92	-2410.92	-986.15	2410.92	
Year 14	0.00						249.25	0.00	0.00	2000.00	249.25	2249.25	0.00	2249.24	-2249.24	-856.71	2249.24	
Year 15	0.00						87.57	0.00	0.00	2000.00	87.57	2087.57	0.00	2087.57	-2087.57	-740.61	2087.57	
Total	30000.00						18697.21	600.00	0.00	30000.00	18697.21	48697.21	600.00	48697.21	-18697.21	-1923.75	48697.21	

Copy the payments and the illustrative APR of the illustrative scenario to another sheet as they will be used later.



Main results

Final balance in the last period: 0.00
Amount of the first repayment: [redacted]
Duration of the credit: 180 MONTHS
Recalculate

Present value of the cash flows: [redacted]
Annual Percentage Rate of Charge: 8.7% (TAMAR)
Recalculate

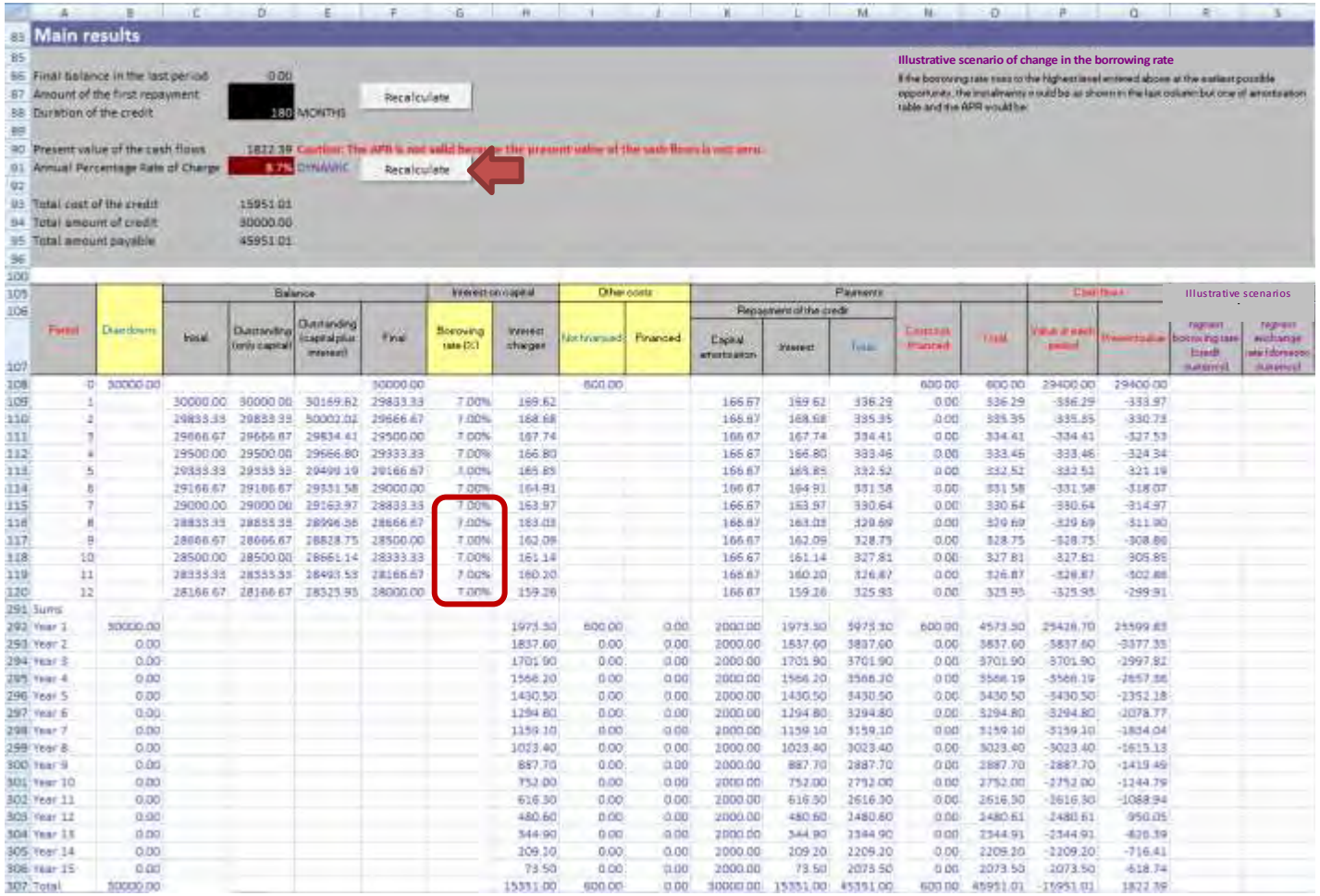
Total cost of the credit: 18697.21
Total amount of credit: 30000.00
Total amount payable: 48697.21

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortization table and the APR would be:

			Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
											Repayment of the credit								
	Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortization	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (trade currency)	Highest exchange rate (domestic currency)
108	0	30000.00				30000.00			600.00					600.00	600.00	29400.00	29400.00		
109	1		30000.00	30000.00	30169.62	29833.33	7.00%	169.62			166.67	169.62	336.29	0.00	336.29	-336.29	-333.97		
110	2		29833.33	29833.33	30002.01	29666.67	7.00%	168.68			166.67	168.68	335.35	0.00	335.35	-335.35	-330.73		
111	3		29666.67	29666.67	29834.41	29500.00	7.00%	167.74			166.67	167.74	334.41	0.00	334.41	-334.41	-327.53		
112	4		29500.00	29500.00	29666.80	29333.33	7.00%	166.80			166.67	166.80	333.46	0.00	333.46	-333.46	-324.34		
113	5		29333.33	29333.33	29499.19	29166.67	7.00%	165.85			166.67	165.85	332.52	0.00	332.52	-332.52	-321.19		
114	6		29166.67	29166.67	29331.58	29000.00	7.00%	164.91			166.67	164.91	331.58	0.00	331.58	-331.58	-318.07		
115	7		29000.00	29000.00	29195.56	28833.33	8.39%	195.56			166.67	195.56	362.02	0.00	362.02	-362.02	-344.87		
116	8		28833.33	28833.33	29027.57	28666.67	8.39%	194.23			166.67	194.23	360.90	0.00	360.90	-360.90	-341.42		
117	9		28666.67	28666.67	28859.78	28500.00	8.39%	193.11			166.67	193.11	359.78	0.00	359.78	-359.78	-338.01		
118	10		28500.00	28500.00	28691.99	28333.33	8.39%	191.99			166.67	191.99	358.65	0.00	358.65	-358.65	-334.62		
119	11		28333.33	28333.33	28524.20	28166.67	8.39%	190.86			166.67	190.86	357.53	0.00	357.53	-357.53	-331.27		
120	12		28166.67	28166.67	28356.41	28000.00	8.39%	189.74			166.67	189.74	356.41	0.00	356.41	-356.41	-327.95		
291	Sums																		
292	Year 1	30000.00						2158.90	600.00	0.00	2000.00	2158.90	4158.90	600.00	4758.90	25241.10	25426.03		
293	Year 2	0.00						2189.33	0.00	0.00	2000.00	2189.33	4189.33	0.00	4189.33	-4189.33	-3686.98		
294	Year 3	0.00						2027.65	0.00	0.00	2000.00	2027.65	4027.65	0.00	4027.65	-4027.65	-3261.68		
295	Year 4	0.00						1865.98	0.00	0.00	2000.00	1865.98	3865.98	0.00	3865.98	-3865.98	-2880.83		
296	Year 5	0.00						1704.31	0.00	0.00	2000.00	1704.31	3704.31	0.00	3704.31	-3704.31	-2539.99		
297	Year 6	0.00						1542.65	0.00	0.00	2000.00	1542.65	3542.65	0.00	3542.65	-3542.65	-2235.21		
298	Year 7	0.00						1380.98	0.00	0.00	2000.00	1380.98	3380.98	0.00	3380.98	-3380.98	-1962.91		
299	Year 8	0.00						1219.29	0.00	0.00	2000.00	1219.29	3219.29	0.00	3219.29	-3219.29	-1719.84		
300	Year 9	0.00						1057.61	0.00	0.00	2000.00	1057.61	3057.61	0.00	3057.62	-3057.62	-1503.07		
301	Year 10	0.00						895.94	0.00	0.00	2000.00	895.94	2895.94	0.00	2895.94	-2895.94	-1309.95		
302	Year 11	0.00						734.27	0.00	0.00	2000.00	734.27	2734.27	0.00	2734.27	-2734.27	-1138.10		
303	Year 12	0.00						572.59	0.00	0.00	2000.00	572.59	2572.59	0.00	2572.60	-2572.60	-985.33		
304	Year 13	0.00						410.92	0.00	0.00	2000.00	410.92	2410.92	0.00	2410.92	-2410.92	-849.70		
305	Year 14	0.00						249.25	0.00	0.00	2000.00	249.25	2249.25	0.00	2249.24	-2249.24	-729.45		
306	Year 15	0.00						87.57	0.00	0.00	2000.00	87.57	2087.57	0.00	2087.57	-2087.57	-622.99		
307	Total	30000.00						18697.21	600.00	0.00	30000.00	18697.21	48697.21	600.00	48697.21	-18697.21	0.00		

Next, obtain the main results and the amortisation table of the credit by changing the borrowing rates from periods 7 to 180 by the normal level of 7% and clicking on the button *Recalculate* next to the cell showing the *Annual Percentage Rate of Charge*.



Main results

Final balance in the last period	0.00
Amount of the first repayment	[redacted]
Duration of the credit	180 MONTHS
Present value of the cash flows	1822.39 Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	8.7% DYNAMIC
Total cost of the credit	15951.01
Total amount of credit	30000.00
Total amount payable	45951.01

Recalculate

Recalculate

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

	Period	Drawdowns	Balance: Initial	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charges	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortisation	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Total	Payments: Commission financed	Payments: Total	Cash flows: Value at each period	Cash flows: Present value	Illustrative scenarios: Higher borrowing rate (credit customer)	Illustrative scenarios: Higher exchange rate (foreign currency)
108	0	30000.00				30000.00			600.00					600.00	600.00	29400.00	29400.00		
109	1		30000.00	30000.00	30169.62	29833.33	7.00%	169.62			166.67	169.62	336.29	0.00	336.29	-336.29	-333.97		
110	2		29833.33	29833.33	30002.02	29666.67	7.00%	168.68			166.67	168.68	335.35	0.00	335.35	-335.35	-330.73		
111	3		29666.67	29666.67	29834.41	29500.00	7.00%	167.74			166.67	167.74	334.41	0.00	334.41	-334.41	-327.53		
112	4		29500.00	29500.00	29666.80	29333.33	7.00%	166.80			166.67	166.80	333.46	0.00	333.46	-333.46	-324.34		
113	5		29333.33	29333.33	29499.19	29166.67	7.00%	165.85			166.67	165.85	332.52	0.00	332.52	-332.52	-321.19		
114	6		29166.67	29166.67	29331.58	29000.00	7.00%	164.91			166.67	164.91	331.58	0.00	331.58	-331.58	-318.07		
115	7		29000.00	29000.00	29163.97	28833.33	7.00%	163.97			166.67	163.97	330.64	0.00	330.64	-330.64	-314.97		
116	8		28833.33	28833.33	28996.36	28666.67	7.00%	163.03			166.67	163.03	329.69	0.00	329.69	-329.69	-311.90		
117	9		28666.67	28666.67	28828.75	28500.00	7.00%	162.09			166.67	162.09	328.75	0.00	328.75	-328.75	-308.86		
118	10		28500.00	28500.00	28661.14	28333.33	7.00%	161.14			166.67	161.14	327.81	0.00	327.81	-327.81	-305.85		
119	11		28333.33	28333.33	28493.53	28166.67	7.00%	160.20			166.67	160.20	326.87	0.00	326.87	-326.87	-302.88		
120	12		28166.67	28166.67	28325.93	28000.00	7.00%	159.26			166.67	159.26	325.93	0.00	325.93	-325.93	-299.91		
291	Sums																		
292	Year 1	30000.00						1973.50	600.00	0.00	2000.00	1973.50	3973.50	600.00	4573.50	29426.70	25599.83		
293	Year 2	0.00						1837.60	0.00	0.00	2000.00	1837.60	3837.60	0.00	3837.60	-3837.60	-3377.35		
294	Year 3	0.00						1701.90	0.00	0.00	2000.00	1701.90	3701.90	0.00	3701.90	-3701.90	-2997.82		
295	Year 4	0.00						1566.20	0.00	0.00	2000.00	1566.20	3566.20	0.00	3566.19	-3566.19	-2657.86		
296	Year 5	0.00						1430.50	0.00	0.00	2000.00	1430.50	3430.50	0.00	3430.50	-3430.50	-2352.18		
297	Year 6	0.00						1294.80	0.00	0.00	2000.00	1294.80	3294.80	0.00	3294.80	-3294.80	-2078.77		
298	Year 7	0.00						1159.10	0.00	0.00	2000.00	1159.10	3159.10	0.00	3159.10	-3159.10	-1834.04		
299	Year 8	0.00						1023.40	0.00	0.00	2000.00	1023.40	3023.40	0.00	3023.40	-3023.40	-1615.13		
300	Year 9	0.00						887.70	0.00	0.00	2000.00	887.70	2887.70	0.00	2887.70	-2887.70	-1419.49		
301	Year 10	0.00						752.00	0.00	0.00	2000.00	752.00	2752.00	0.00	2752.00	-2752.00	-1244.79		
302	Year 11	0.00						616.30	0.00	0.00	2000.00	616.30	2616.30	0.00	2616.30	-2616.30	-1088.94		
303	Year 12	0.00						480.60	0.00	0.00	2000.00	480.60	2480.61	0.00	2480.61	-2480.61	-950.05		
304	Year 13	0.00						344.90	0.00	0.00	2000.00	344.90	2344.91	0.00	2344.91	-2344.91	-828.39		
305	Year 14	0.00						209.20	0.00	0.00	2000.00	209.20	2209.20	0.00	2209.20	-2209.20	-716.41		
306	Year 15	0.00						73.50	0.00	0.00	2000.00	73.50	2073.50	0.00	2073.50	-2073.50	-618.74		
307	Total	30000.00						15351.00	600.00	0.00	30000.00	15351.00	45351.00	600.00	45951.01	-15951.01	1822.39		

Complete the amortisation table and the area of 'Main results' with the results of the illustrative scenario. Specifically, copy to cell R89 the value of the illustrative APR and fill the column with the *Payments if highest borrowing rate* with the data saved before. Finally, extend the formulas of the annual and overall totals to obtain the totals for the column.

Main results

86	Final balance in the last period	0.00	
87	Amount of the first repayment	[redacted]	Recalculate
88	Duration of the credit	MONTHS	
90	Present value of the cash flows	0.00	
91	Annual Percentage Rate of Charge	7.8% DYNAMIC	Recalculate
93	Total cost of the credit	11039.46	
94	Total amount of credit	30000.00	
96	Total amount payable	41039.46	

Illustrative scenario of change in the borrowing rate

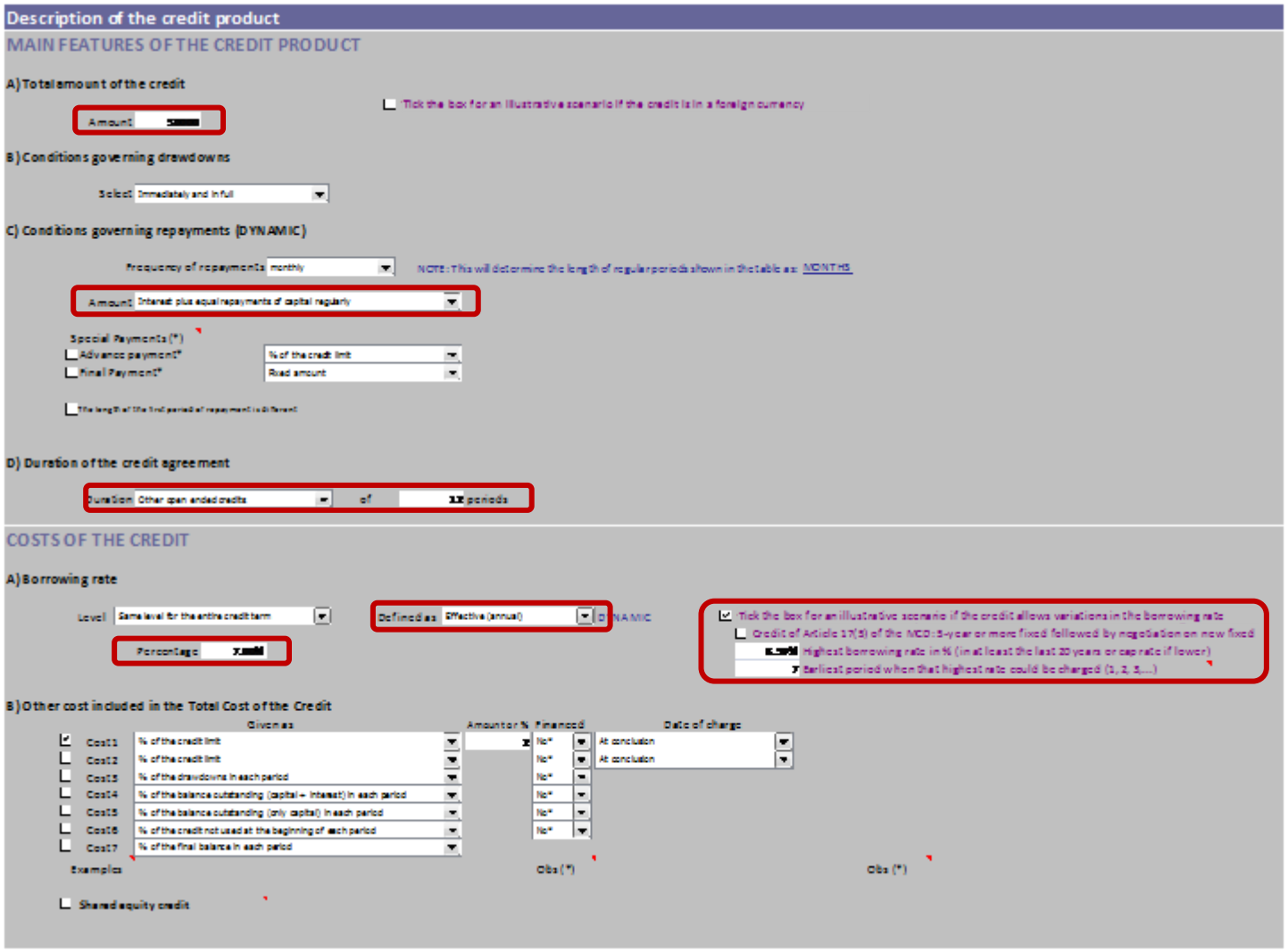
If the borrowing rate rises to the highest level arrived above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

8.6%

	Period	Drawdowns	Balance: Initial	Balance: Outstanding (only capital)	Balance: Outstanding (capital plus interest)	Balance: Final	Interest on capital: Borrowing rate (%)	Interest on capital: Interest charges	Other costs: Not financed	Other costs: Financed	Payments: Repayment of the credit: Capital amortisation	Payments: Repayment of the credit: Interest	Payments: Repayment of the credit: Total	Payments: Costs not financed	Payments: Total	Cash flows: Value of each period	Cash flows: Present value	Illustrative scenarios: Highest borrowing rate (credit numerator)	Illustrative scenarios: Highest exchange rate (denominator numerator)
108	0	30000.00				30000.00			600.00					600.00	600.00	29400.00	29400.00	600.00	
109	1		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-168.65	169.62	
110	2		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-167.64	169.62	
111	3		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-166.66	169.62	
112	4		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-165.68	169.62	
113	5		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-164.71	169.62	
114	6		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-163.75	169.62	
115	7		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-162.79	202.09	
116	8		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-161.83	202.09	
117	9		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-160.89	202.09	
118	10		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-159.94	202.09	
119	11		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-159.01	202.09	
120	12		30000.00	30000.00	30169.62	30000.00	7.00%	169.62			0.00	169.62	169.62	0.00	169.62	-169.62	-158.08	202.09	
291	Sums																		
292	Year 1	30000.00						2035.49	600.00	0.00	0.00	2035.49	2035.49	600.00	2635.44	27364.56	27440.41	2850.28	
293	Year 2	0.00						2035.49	0.00	0.00	0.00	2035.49	2035.49	0.00	2035.44	-2035.44	-1826.23	2425.08	
294	Year 3	0.00						2035.49	0.00	0.00	0.00	2035.49	2035.49	0.00	2035.44	-2035.44	-1701.95	2425.08	
295	Year 4	0.00						2035.49	0.00	0.00	0.00	2035.49	2035.49	0.00	2035.44	-2035.44	-1586.10	2425.08	
296	Year 5	0.00						2035.49	0.00	0.00	0.00	2035.49	2035.49	0.00	2035.44	-2035.44	-1478.15	2425.08	
297	Year 6	0.00						1942.20	0.00	0.00	3000.00	1942.20	4942.20	0.00	4942.20	-4942.20	-3345.80	5513.95	
298	Year 7	0.00						1738.65	0.00	0.00	3000.00	1738.65	4738.65	0.00	4738.64	-4738.64	-2989.51	5071.44	
299	Year 8	0.00						1535.10	0.00	0.00	3000.00	1535.10	4535.10	0.00	4535.10	-4535.10	-2666.41	4828.93	
300	Year 9	0.00						1331.55	0.00	0.00	3000.00	1331.55	4331.55	0.00	4331.56	-4331.56	-2373.44	4586.42	
301	Year 10	0.00						1128.00	0.00	0.00	3000.00	1128.00	4128.00	0.00	4128.00	-4128.00	-2107.98	4343.91	
302	Year 11	0.00						924.45	0.00	0.00	3000.00	924.45	3924.45	0.00	3924.45	-3924.45	-1867.67	4101.40	
303	Year 12	0.00						720.90	0.00	0.00	3000.00	720.90	3720.90	0.00	3720.90	-3720.90	-1650.31	3858.89	
304	Year 13	0.00						517.35	0.00	0.00	3000.00	517.35	3517.35	0.00	3517.36	-3517.36	-1453.89	3616.38	
305	Year 14	0.00						313.81	0.00	0.00	3000.00	313.81	3313.81	0.00	3313.80	-3313.80	-1276.55	3373.87	
306	Year 15	0.00						110.26	0.00	0.00	3000.00	110.26	3110.26	0.00	3110.25	-3110.25	-1116.62	3131.36	
307	Total	30000.00						0.00	600.00	0.00	0.00	0.00	0.00	600.00	600.00	29400.00	29400.00	600.00	

EXAMPLE 31

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	12	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	11.2%	DYNAMIC Recalculate
Total cost of the credit	1702.56	
Total amount of credit	30000.00	
Total amount payable	31702.56	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

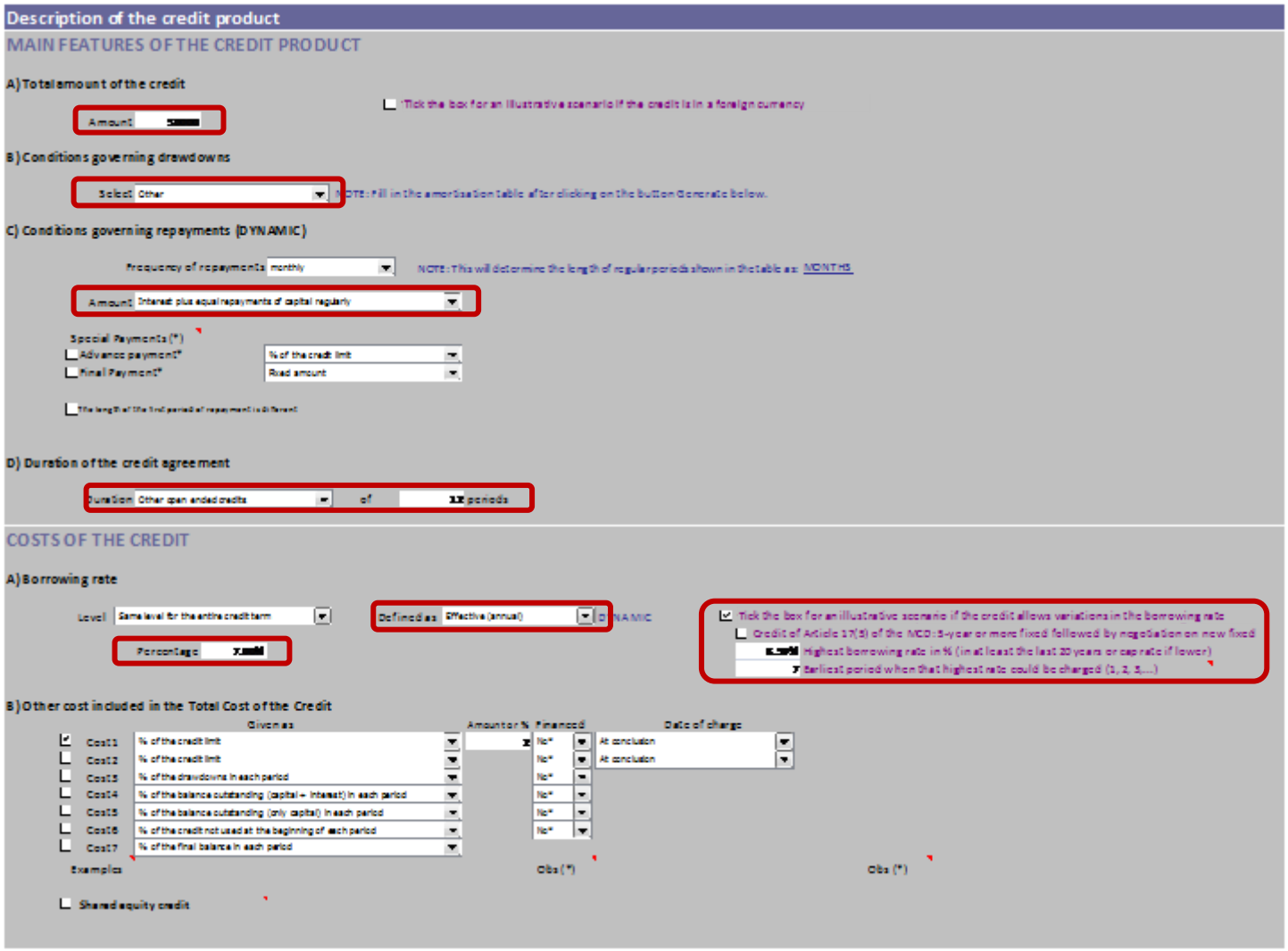
11.5%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	30000.00				30000.00			600.00					600.00	600.00	29400.00	29400.00	600.00	
1		30000.00	30000.00	30169.62	27500.00	7.00%	169.62			2500.00	169.62	2669.62	0.00	2669.62	-2669.62	-2646.18	2669.62	
2		27500.00	27500.00	27655.49	25000.00	7.00%	155.49			2500.00	155.49	2655.49	0.00	2655.49	-2655.49	-2609.06	2655.49	
3		25000.00	25000.00	25141.35	22500.00	7.00%	141.35			2500.00	141.35	2641.35	0.00	2641.35	-2641.35	-2572.37	2641.35	
4		22500.00	22500.00	22627.22	20000.00	7.00%	127.22			2500.00	127.22	2627.22	0.00	2627.22	-2627.22	-2536.14	2627.22	
5		20000.00	20000.00	20113.08	17500.00	7.00%	113.08			2500.00	113.08	2613.08	0.00	2613.08	-2613.08	-2500.34	2613.08	
6		17500.00	17500.00	17598.95	15000.00	7.00%	98.95			2500.00	98.95	2598.95	0.00	2598.95	-2598.95	-2464.99	2598.95	
7		15000.00	15000.00	15084.81	12500.00	7.00%	84.81			2500.00	84.81	2584.81	0.00	2584.81	-2584.81	-2430.05	2601.05	
8		12500.00	12500.00	12570.68	10000.00	7.00%	70.68			2500.00	70.68	2570.68	0.00	2570.68	-2570.68	-2395.54	2584.20	
9		10000.00	10000.00	10056.54	7500.00	7.00%	56.54			2500.00	56.54	2556.54	0.00	2556.54	-2556.54	-2361.44	2567.36	
10		7500.00	7500.00	7542.41	5000.00	7.00%	42.41			2500.00	42.41	2542.41	0.00	2542.41	-2542.41	-2327.77	2550.52	
11		5000.00	5000.00	5028.27	2500.00	7.00%	28.27			2500.00	28.27	2528.27	0.00	2528.27	-2528.27	-2294.49	2533.68	
12		2500.00	2500.00	2514.14	0.00	7.00%	14.14			2500.00	14.14	2514.14	0.00	2514.14	-2514.14	-2261.63	2516.84	
Sums																		
Year 1	30000.00						1102.56	600.00	0.00	30000.00	1102.56	31102.56	600.00	31702.56	-1702.56	0.00	31759.36	
Total	30000.00						1102.56	600.00	0.00	30000.00	1102.56	31102.56	600.00	31702.56	-1702.56	0.00	31759.36	

EXAMPLE 32

Click on the button *Reset* and then enter the information highlighted in red.

As explained in the note in blue font which appears after selecting *Other* in the *Conditions governing drawdowns*, this choice implies that drawdowns should be entered manually in the amortisation table once the button *Generate* is clicked on.



Click on the button *Generate* to obtain this incomplete amortisation table

Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	[redacted]	MONTHS
Present value of the cash flows	-600.00	Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	[redacted]	DYNAMIC Recalculate
Total cost of the credit	600.00	
Total amount of credit	0.00	
Total amount payable	600.00	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0					0.00			600.00					600.00	600.00	-600.00	-600.00		
1		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
2		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
3		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
4		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
5		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
6		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
7		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
8		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
9		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
10		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
11		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
12		0.00	0.00	0.00	0.00	7.00%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		

Then enter the drawdowns in the column *Drawdowns*, as shown.

Main results

Final balance in the last period	31431.52	Caution: The credit is not repaid in full because the final balance in the last period is not zero.
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit		MONTHS
Present value of the cash flows	29400.00	Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	[redacted]	DYNAMIC Recalculate
Total cost of the credit	-29400.00	
Total amount of credit	30000.00	
Total amount payable	600.00	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit currency)	Highest exchange rate (domestic currency)
0	7500.00				7500.00			600.00					600.00	600.00	6900.00	6900.00		
1		7500.00	7500.00	7542.41	7542.41	7.00%	42.41			-42.41	42.41		0.00	0.00	0.00	0.00		
2		7542.41	7542.41	7585.05	7585.05	7.00%	42.65			-42.65	42.65		0.00	0.00	0.00	0.00		
3	7500.00	7585.05	15085.05	15127.94	15127.94	7.00%	42.89			-42.89	42.89		0.00	0.00	7500.00	7500.00		
4		15127.94	15127.94	15213.47	15213.47	7.00%	85.54			-85.54	85.54		0.00	0.00	0.00	0.00		
5		15213.47	15213.47	15299.49	15299.49	7.00%	86.02			-86.02	86.02		0.00	0.00	0.00	0.00		
6	15000.00	15299.49	30299.49	30386.00	30386.00	7.00%	86.51			-86.51	86.51		0.00	0.00	15000.00	15000.00		
7		30386.00	30386.00	30557.81	30557.81	7.00%	171.81			-171.81	171.81		0.00	0.00	0.00	0.00		
8		30557.81	30557.81	30730.58	30730.58	7.00%	172.78			-172.78	172.78		0.00	0.00	0.00	0.00		
9		30730.58	30730.58	30904.34	30904.34	7.00%	173.76			-173.76	173.76		0.00	0.00	0.00	0.00		
10		30904.34	30904.34	31079.08	31079.08	7.00%	174.74			-174.74	174.74		0.00	0.00	0.00	0.00		
11		31079.08	31079.08	31254.80	31254.80	7.00%	175.73			-175.73	175.73		0.00	0.00	0.00	0.00		
12		31254.80	31254.80	31431.52	31431.52	7.00%	176.72			-176.72	176.72		0.00	0.00	0.00	0.00		

Finally, click on the button *Calculate* to obtain the repayments and the APR of the credit.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	12	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	13.1%	DYNAMIC Recalculate
Total cost of the credit	1384.52	
Total amount of credit	30000.00	
Total amount payable	31384.52	

Illustrative scenario of change in the borrowing rate

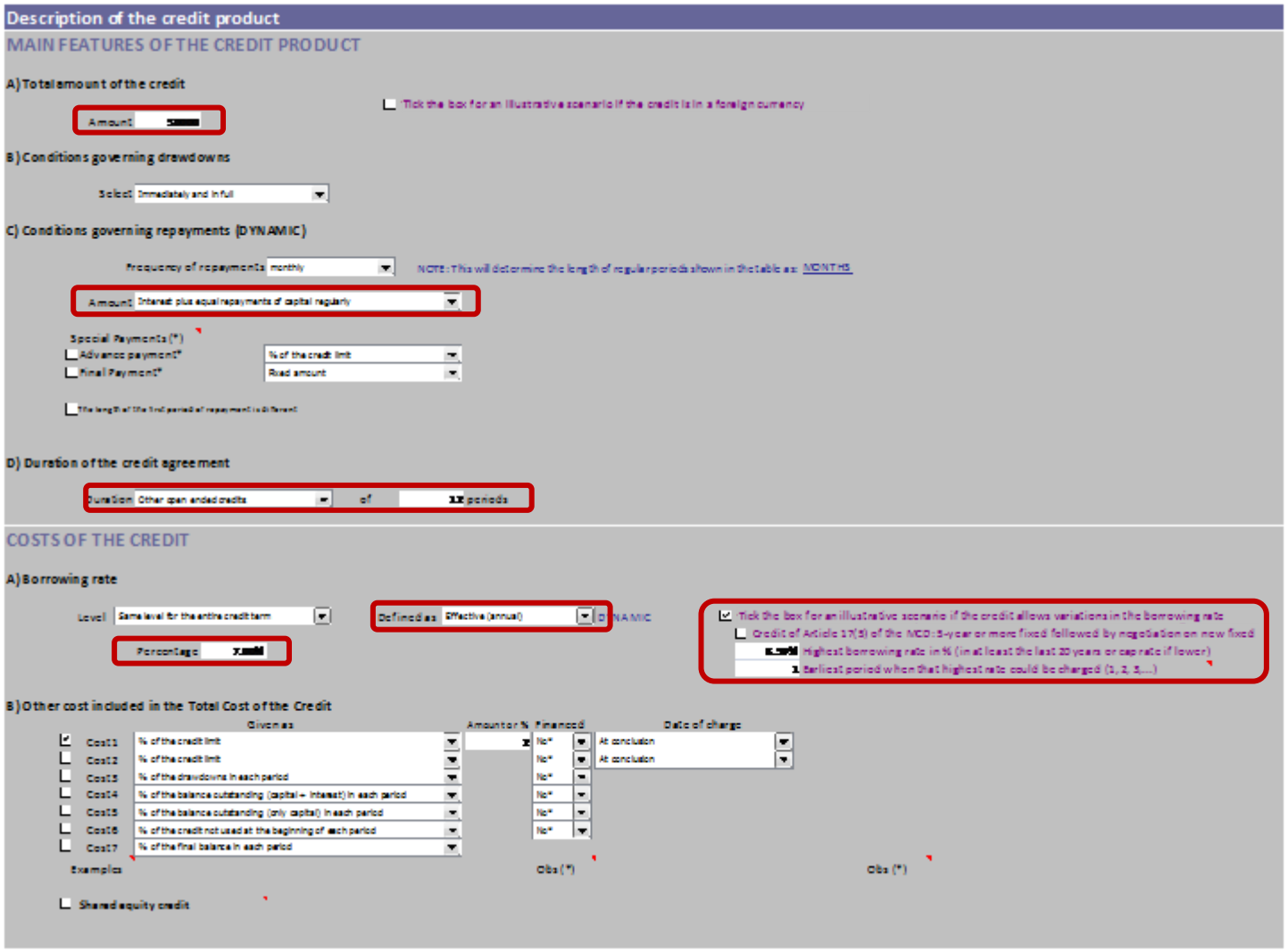
If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

13.9%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	7500.00				7500.00			600.00					600.00	600.00	6900.00	6900.00	600.00	
1		7500.00	7500.00	7542.41	6875.00	7.00%	42.41			625.00	42.41	667.41	0.00	667.41	-667.41	-660.62	667.41	
2		6875.00	6875.00	6913.87	6250.00	7.00%	38.87			625.00	38.87	663.87	0.00	663.87	-663.87	-650.42	663.87	
3	7500.00	6250.00	13750.00	13785.34	13125.00	7.00%	35.34			625.00	35.34	660.34	0.00	660.34	6839.66	6632.90	660.34	
4		13125.00	13125.00	13199.21	11666.67	7.00%	74.21			1458.33	74.21	1532.54	0.00	1532.54	-1532.54	-1471.08	1532.54	
5		11666.67	11666.67	11732.63	10208.33	7.00%	65.97			1458.33	65.97	1524.30	0.00	1524.30	-1524.30	-1448.28	1524.30	
6	15000.00	10208.33	25208.33	25266.05	23750.00	7.00%	57.72			1458.33	57.72	1516.05	0.00	1516.05	13483.95	12681.05	1516.05	
7		23750.00	23750.00	23884.29	19791.67	7.00%	134.29			3958.33	134.29	4092.62	0.00	4092.62	-4092.62	-3809.75	4118.32	
8		19791.67	19791.67	19903.57	15833.33	7.00%	111.90			3958.33	111.90	4070.24	0.00	4070.24	-4070.24	-3750.34	4091.66	
9		15833.33	15833.33	15922.86	11875.00	7.00%	89.52			3958.33	89.52	4047.86	0.00	4047.86	-4047.86	-3691.75	4064.99	
10		11875.00	11875.00	11942.14	7916.67	7.00%	67.14			3958.33	67.14	4025.48	0.00	4025.48	-4025.48	-3633.97	4038.33	
11		7916.67	7916.67	7961.43	3958.33	7.00%	44.76			3958.33	44.76	4003.10	0.00	4003.10	-4003.10	-3576.98	4011.66	
12		3958.33	3958.33	3980.71	0.00	7.00%	22.38			3958.33	22.38	3980.71	0.00	3980.71	-3980.71	-3520.76	3985.00	

EXAMPLE 33

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	12	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	11.2%	DYNAMIC Recalculate
Total cost of the credit	1702.56	
Total amount of credit	30000.00	
Total amount payable	31702.56	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

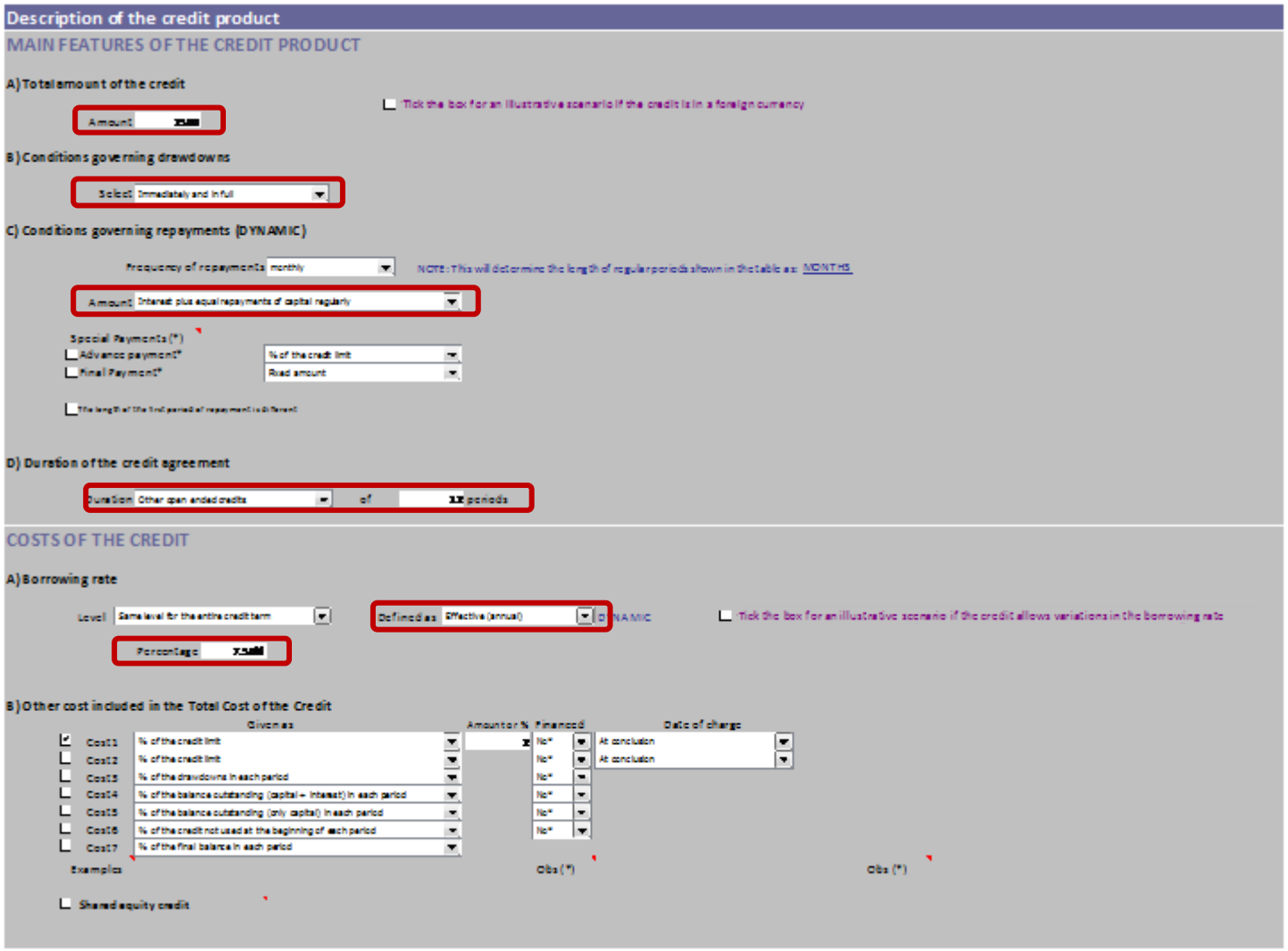
12.6%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	30000.00				30000.00			600.00					600.00	600.00	29400.00	29400.00	600.00	
1		30000.00	30000.00	30169.62	27500.00	7.00%	169.62			2500.00	169.62	2669.62	0.00	2669.62	-2669.62	-2646.18	2702.09	
2		27500.00	27500.00	27655.49	25000.00	7.00%	155.49			2500.00	155.49	2655.49	0.00	2655.49	-2655.49	-2609.06	2685.25	
3		25000.00	25000.00	25141.35	22500.00	7.00%	141.35			2500.00	141.35	2641.35	0.00	2641.35	-2641.35	-2572.37	2668.41	
4		22500.00	22500.00	22627.22	20000.00	7.00%	127.22			2500.00	127.22	2627.22	0.00	2627.22	-2627.22	-2536.14	2651.57	
5		20000.00	20000.00	20113.08	17500.00	7.00%	113.08			2500.00	113.08	2613.08	0.00	2613.08	-2613.08	-2500.34	2634.73	
6		17500.00	17500.00	17598.95	15000.00	7.00%	98.95			2500.00	98.95	2598.95	0.00	2598.95	-2598.95	-2464.99	2617.89	
7		15000.00	15000.00	15084.81	12500.00	7.00%	84.81			2500.00	84.81	2584.81	0.00	2584.81	-2584.81	-2430.05	2601.05	
8		12500.00	12500.00	12570.68	10000.00	7.00%	70.68			2500.00	70.68	2570.68	0.00	2570.68	-2570.68	-2395.54	2584.20	
9		10000.00	10000.00	10056.54	7500.00	7.00%	56.54			2500.00	56.54	2556.54	0.00	2556.54	-2556.54	-2361.44	2567.36	
10		7500.00	7500.00	7542.41	5000.00	7.00%	42.41			2500.00	42.41	2542.41	0.00	2542.41	-2542.41	-2327.77	2550.52	
11		5000.00	5000.00	5028.27	2500.00	7.00%	28.27			2500.00	28.27	2528.27	0.00	2528.27	-2528.27	-2294.49	2533.68	
12		2500.00	2500.00	2514.14	0.00	7.00%	14.14			2500.00	14.14	2514.14	0.00	2514.14	-2514.14	-2261.63	2516.84	

EXAMPLE 34

This example requires changing manually the values in the amortisation table.

As a first step, click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the preliminary results and amortisation table.

As shown, the simulator has considered a single drawdown of the amount of the credit and equal monthly repayments of capital within the 1-year period.

Main results

Final balance in the last period	0.00	
Amount of the first repayment		Recalculate
Duration of the credit	12	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	11.7%	DYNAMIC Recalculate
Total cost of the credit	88.94	
Total amount of credit	1500.00	
Total amount payable	1588.94	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit currency)	Highest exchange rate (domestic currency)
0	1500.00				1500.00			30.00					30.00	30.00	1470.00	1470.00		
1		1500.00	1500.00	1509.07	1375.00	7.50%	9.07			125.00	9.07	134.07	0.00	134.07	-134.07	-132.84		
2		1375.00	1375.00	1383.31	1250.00	7.50%	8.31			125.00	8.31	133.31	0.00	133.31	-133.31	-130.88		
3		1250.00	1250.00	1257.56	1125.00	7.50%	7.56			125.00	7.56	132.56	0.00	132.56	-132.56	-128.95		
4		1125.00	1125.00	1131.80	1000.00	7.50%	6.80			125.00	6.80	131.80	0.00	131.80	-131.80	-127.03		
5		1000.00	1000.00	1006.04	875.00	7.50%	6.04			125.00	6.04	131.04	0.00	131.04	-131.04	-125.14		
6		875.00	875.00	880.29	750.00	7.50%	5.29			125.00	5.29	130.29	0.00	130.29	-130.29	-123.28		
7		750.00	750.00	754.53	625.00	7.50%	4.53			125.00	4.53	129.53	0.00	129.53	-129.53	-121.44		
8		625.00	625.00	628.78	500.00	7.50%	3.78			125.00	3.78	128.78	0.00	128.78	-128.78	-119.63		
9		500.00	500.00	503.02	375.00	7.50%	3.02			125.00	3.02	128.02	0.00	128.02	-128.02	-117.83		
10		375.00	375.00	377.27	250.00	7.50%	2.27			125.00	2.27	127.27	0.00	127.27	-127.27	-116.07		
11		250.00	250.00	251.51	125.00	7.50%	1.51			125.00	1.51	126.51	0.00	126.51	-126.51	-114.32		
12		125.00	125.00	125.76	0.00	7.50%	0.76			125.00	0.76	125.76	0.00	125.76	-125.76	-112.60		
Sums																		
Year 1	1500.00						58.94	30.00	0.00	1500.00	58.94	1558.94	30.00	1588.94	-88.94	0.00		
Total	1500.00						58.94	30.00	0.00	1500.00	58.94	1558.94	30.00	1588.94	-88.94	0.00		

Changes should be done in order to provide full repayment of the amount of credit in period 9, and then a new drawdown of the total amount of credit repaid during the remaining 3 months.

Specifically, enter the new drawdown in the column *Drawdowns* for month 9, and change the formulas in the column *Total* of the *Repayment of the credit* as shown. The new formulas imply that the payment each month consists of interest plus equal amounts of capital of 1500/9=€166.67 for the first 9 months and 1500/3=€500 for the remaining 3 months.

Note that due to these changes, the area of *Main results* reports the error that *the APR is not valid because the present value of the cash flows is not zero*.

Main results

Final balance in the last period	0,00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	12	MONTHS
Present value of the cash flows	2,03	Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	11,7%	DYNAMIC Recalculate
Total cost of the credit	93,46	
Total amount of credit	3000,00	
Total amount payable	3093,46	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	1500,00				1500,00			30,00					30,00	30,00	1470,00	1470,00		
1		1500,00	1500,00	1509,07	1333,33	7,50%	9,07			166,67	9,07	=1500/9+H109	0,00	175,73	-175,73	-174,12		
2		1333,33	1333,33	1341,39	1166,67	7,50%	8,06			166,67	8,05	=1500/9+H110	0,00	174,73	-174,73	-171,54		
3		1166,67	1166,67	1173,72	1000,00	7,50%	7,05			166,67	7,05	=1500/9+H111	0,00	173,72	-173,72	-168,98		
4		1000,00	1000,00	1006,04	833,33	7,50%	6,04			166,67	6,04	=1500/9+H112	0,00	172,71	-172,71	-166,46		
5		833,33	833,33	838,37	666,67	7,50%	5,04			166,67	5,04	=1500/9+H113	0,00	171,70	-171,70	-163,97		
6		666,67	666,67	670,70	500,00	7,50%	4,03			166,67	4,03	=1500/9+H114	0,00	170,70	-170,70	-161,52		
7		500,00	500,00	503,02	333,33	7,50%	3,02			166,67	3,02	=1500/9+H115	0,00	169,69	-169,69	-159,09		
8		333,33	333,33	335,35	166,67	7,50%	2,01			166,67	2,01	=1500/9+H116	0,00	168,68	-168,68	-156,69		
9	1500,00	166,67	1666,67	1667,67	1500,00	7,50%	1,01			166,67	1,01	=1500/9+H117	0,00	167,67	1332,33	1226,31		
10		1500,00	1500,00	1509,07	1000,00	7,50%	9,07			500,00	9,07	=1500/3+H118	0,00	509,07	-509,07	-464,26		
11		1000,00	1000,00	1006,04	500,00	7,50%	6,04			500,00	6,04	=1500/3+H119	0,00	506,04	-506,04	-457,27		
12		500,00	500,00	503,02	0,00	7,50%	3,02			500,00	3,02	=1500/3+H120	0,00	503,02	-503,02	-450,37		
Sums																		
Year 1	3000,00						63,47	30,00	0,00	3000,00	63,47	3063,47	30,00	3093,46	-93,46	2,03		
Total	3000,00						63,47	30,00	0,00	3000,00	63,47	3063,47	30,00	3093,46	-93,46	2,03		

To obtain the correct APR, click on the button *Recalculate* next to the cell showing the *Annual Percentage Rate of Charge*. A new APR of 11.4% is obtained and the error message disappears.

Main results

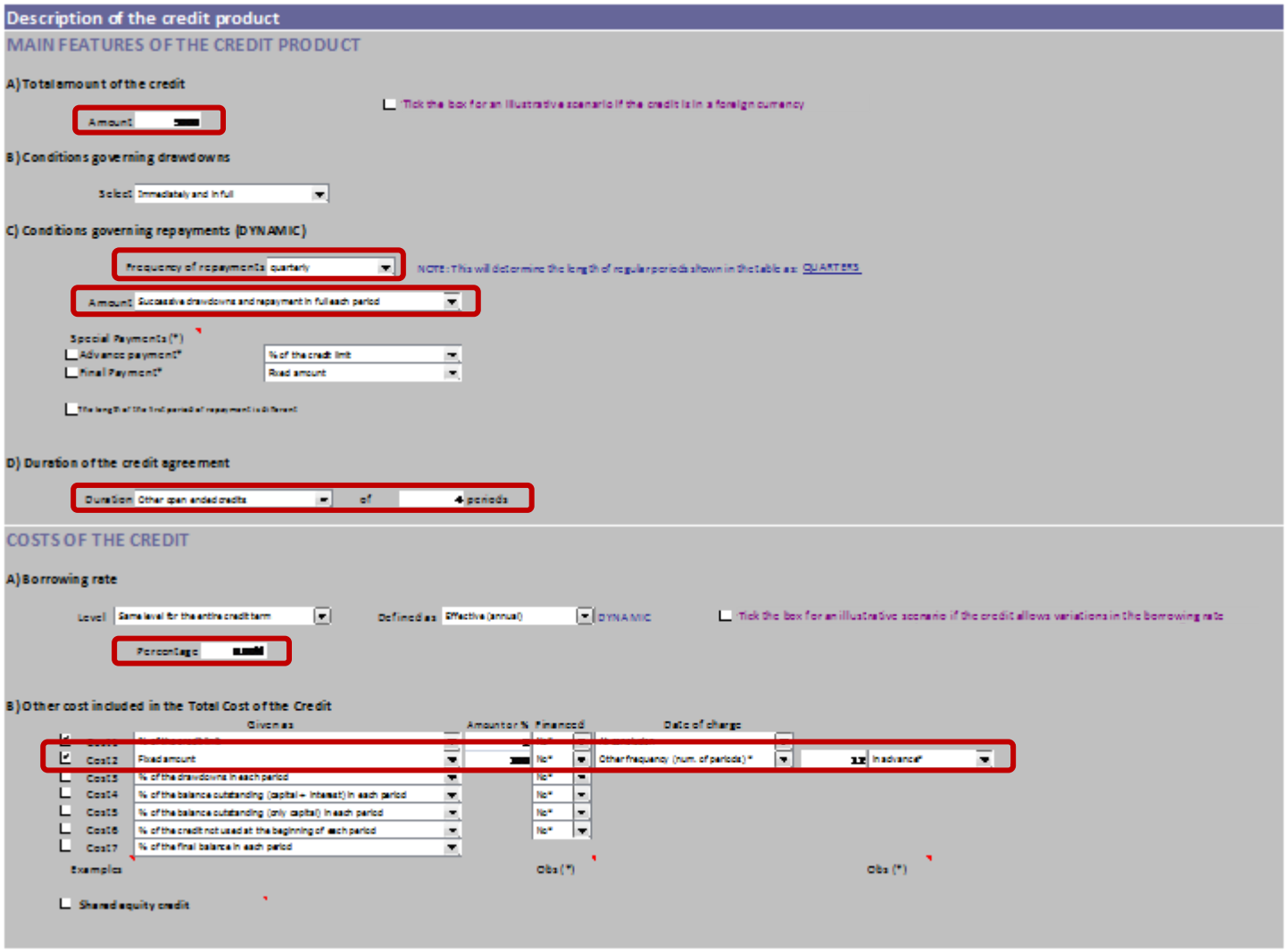
Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	12	MONTHS
Present value of the cash flows	2.03	Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	11.7%	DYNAMIC Recalculate
Total cost of the credit	93.46	
Total amount of credit	3000.00	
Total amount payable	3093.46	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	1500.00				1500.00			30.00					30.00	30.00	1470.00	1470.00		
1		1500.00	1500.00	1509.07	1333.33	7.50%	9.07			166.67	9.07	175.73	0.00	175.73	-175.73	-174.12		
2		1333.33	1333.33	1341.39	1166.67	7.50%	8.06			166.67	8.06	174.73	0.00	174.73	-174.73	-171.54		
3		1166.67	1166.67	1173.72	1000.00	7.50%	7.05			166.67	7.05	173.72	0.00	173.72	-173.72	-168.98		
4		1000.00	1000.00	1006.04	833.33	7.50%	6.04			166.67	6.04	172.71	0.00	172.71	-172.71	-166.46		
5		833.33	833.33	838.37	666.67	7.50%	5.04			166.67	5.04	171.70	0.00	171.70	-171.70	-163.97		
6		666.67	666.67	670.70	500.00	7.50%	4.03			166.67	4.03	170.70	0.00	170.70	-170.70	-161.52		
7		500.00	500.00	503.02	333.33	7.50%	3.02			166.67	3.02	169.69	0.00	169.69	-169.69	-159.09		
8		333.33	333.33	335.35	166.67	7.50%	2.01			166.67	2.01	168.68	0.00	168.68	-168.68	-156.69		
9	1500.00	166.67	1666.67	1667.67	1500.00	7.50%	1.01			166.67	1.01	167.67	0.00	167.67	1332.33	1226.31		
10		1500.00	1500.00	1509.07	1000.00	7.50%	9.07			500.00	9.07	509.07	0.00	509.07	-509.07	-464.26		
11		1000.00	1000.00	1006.04	500.00	7.50%	6.04			500.00	6.04	506.04	0.00	506.04	-506.04	-457.27		
12		500.00	500.00	503.02	0.00	7.50%	3.02			500.00	3.02	503.02	0.00	503.02	-503.02	-450.37		
Sums																		
Year 1	3000.00						63.47	30.00	0.00	3000.00	63.47	3063.47	30.00	3093.46	-93.46	2.03		
Total	3000.00						63.47	30.00	0.00	3000.00	63.47	3063.47	30.00	3093.46	-93.46	2.03		

EXAMPLE 35

Click on the button *Reset* and then enter the information highlighted in red.

Note that the explanations in Obs(*) under the *Date of charge* of other costs indicate that 'costs paid in advance are payable at the beginning of the interval assuming that the first payment coincides with the first repayment of the credit'. This is the case of the example and thus, it is the option to choose.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Note that in the amortisation table two intermediate balances amount to 6000 euros in several periods. This high amount which doubles the amount of credit is due to the definition of these balances. As explained in the instructions of the simulator, these two intermediate balances take into account the drawdowns made during the period but not the repayment of the balance of the previous period.

Main results

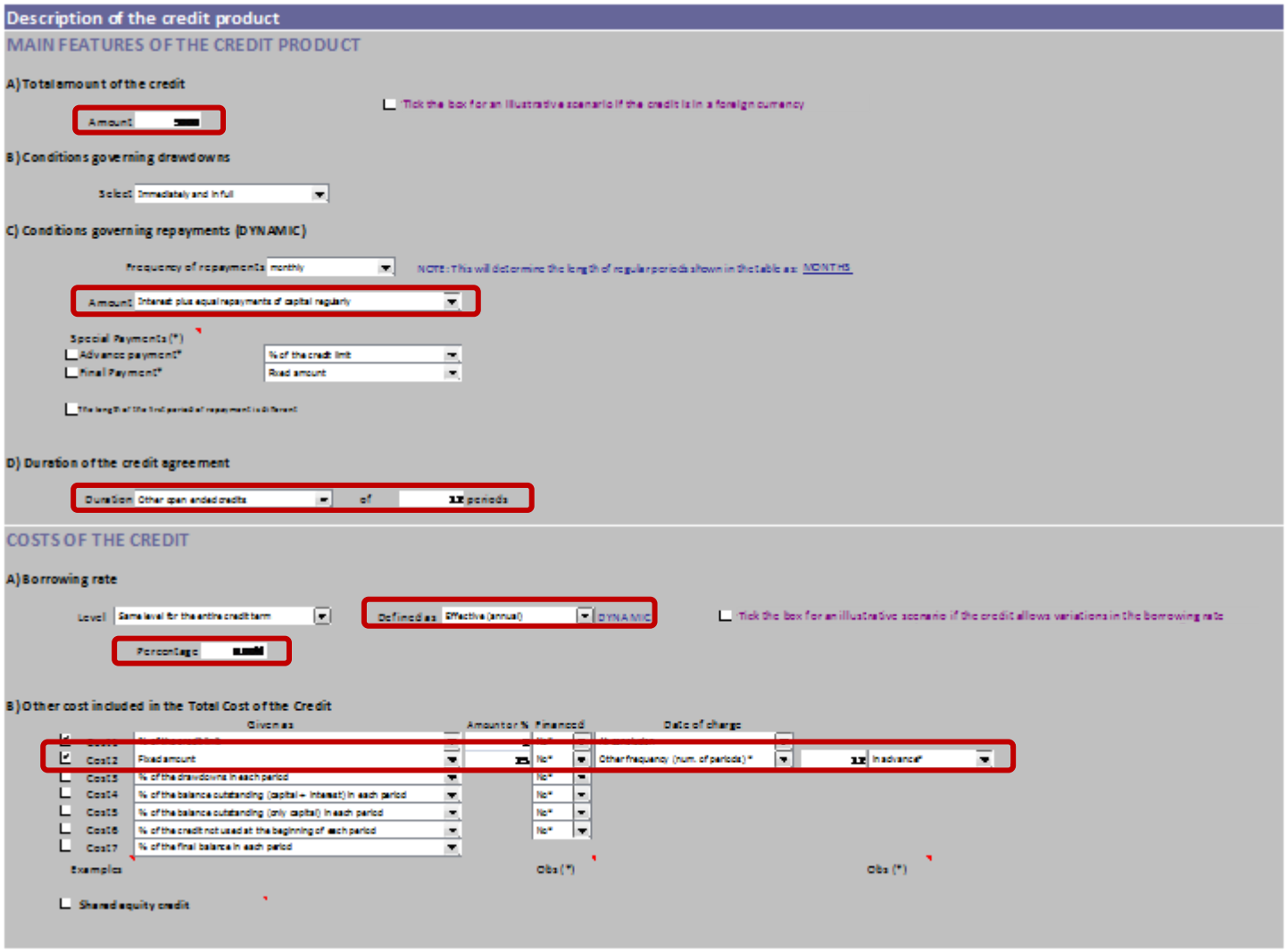
Final balance in the last period	0.00		
Amount of the first repayment			Recalculate
Duration of the credit	4	QUARTERS	
Present value of the cash flows	0.00		
Annual Percentage Rate of Charge	5.6%	DYNAMIC	Recalculate
Total cost of the credit	160.00		
Total amount of credit	3000.00		
Total amount payable	3160.00		

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	3000.00				3000.00			60.00					60.00	60.00	2940.00	2940.00		
1	3000.00	3000.00	6000.00	6000.00	3000.00	0.00%	0.00	100.00		3000.00	0.00	3000.00	100.00	3100.00	-100.00	-98.65		
2	3000.00	3000.00	6000.00	6000.00	3000.00	0.00%	0.00			3000.00	0.00	3000.00	0.00	3000.00	0.00	0.00		
3	3000.00	3000.00	6000.00	6000.00	3000.00	0.00%	0.00			3000.00	0.00	3000.00	0.00	3000.00	0.00	0.00		
4		3000.00	3000.00	3000.00	0.00	0.00%	0.00			3000.00	0.00	3000.00	0.00	3000.00	-3000.00	-2841.35		
Sums																		
Year 1	12000.00						0.00	160.00	0.00	12000.00	0.00	12000.00	160.00	12160.00	-160.00	0.00		
Total	12000.00						0.00	160.00	0.00	12000.00	0.00	12000.00	160.00	12160.00	-160.00	0.00		

EXAMPLE 36

Click on the button *Reset* and then enter the information highlighted in red.

Note that the explanations in Obs(*) under the *Date of charge* of other costs indicate that 'costs paid in advance are payable at the beginning of the interval assuming that the first payment coincides with the first repayment of the credit'. This is coherent with the treatment of the regular costs in this example by virtue of assumption (h)(iii); therefore, payment *in advance* is the option to choose for these costs.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

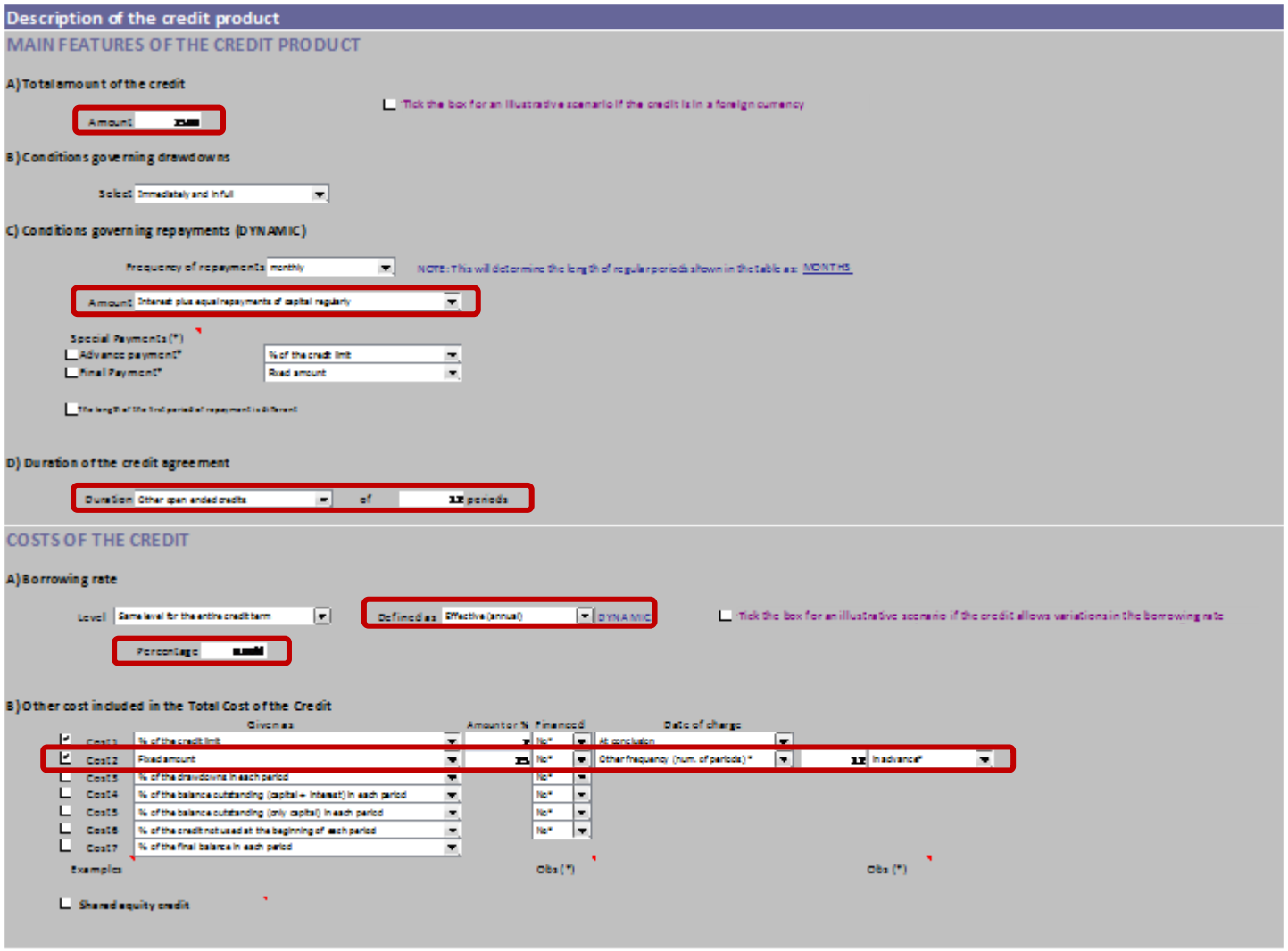
Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	12	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	15.1%	DYNAMIC Recalculate
Total cost of the credit	225.54	
Total amount of credit	3000.00	
Total amount payable	3225.54	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit currency)	Highest exchange rate (domestic currency)
0	3000.00				3000.00			60.00					60.00	60.00	2940.00	2940.00		
1		3000.00	3000.00	3021.62	2750.00	9.00%	21.62	25.00		250.00	21.62	271.62	25.00	296.62	-296.62	-293.16		
2		2750.00	2750.00	2769.82	2500.00	9.00%	19.82			250.00	19.82	269.82	0.00	269.82	-269.82	-263.57		
3		2500.00	2500.00	2518.02	2250.00	9.00%	18.02			250.00	18.02	268.02	0.00	268.02	-268.02	-258.76		
4		2250.00	2250.00	2266.22	2000.00	9.00%	16.22			250.00	16.22	266.22	0.00	266.22	-266.22	-254.02		
5		2000.00	2000.00	2014.41	1750.00	9.00%	14.41			250.00	14.41	264.41	0.00	264.41	-264.41	-249.36		
6		1750.00	1750.00	1762.61	1500.00	9.00%	12.61			250.00	12.61	262.61	0.00	262.61	-262.61	-244.77		
7		1500.00	1500.00	1510.81	1250.00	9.00%	10.81			250.00	10.81	260.81	0.00	260.81	-260.81	-240.26		
8		1250.00	1250.00	1259.01	1000.00	9.00%	9.01			250.00	9.01	259.01	0.00	259.01	-259.01	-235.82		
9		1000.00	1000.00	1007.21	750.00	9.00%	7.21			250.00	7.21	257.21	0.00	257.21	-257.21	-231.45		
10		750.00	750.00	755.41	500.00	9.00%	5.41			250.00	5.41	255.41	0.00	255.41	-255.41	-227.15		
11		500.00	500.00	503.60	250.00	9.00%	3.60			250.00	3.60	253.60	0.00	253.60	-253.60	-222.92		
12		250.00	250.00	251.80	0.00	9.00%	1.80			250.00	1.80	251.80	0.00	251.80	-251.80	-218.75		
Sums																		
Year 1	3000.00						140.54	85.00	0.00	3000.00	140.54	3140.54	85.00	3225.54	-225.54	0.00		
Total	3000.00						140.54	85.00	0.00	3000.00	140.54	3140.54	85.00	3225.54	-225.54	0.00		

EXAMPLE 37

Click on the button *Reset* and then enter the information highlighted in red.

Note that the explanations in Obs(*) under the *Date of charge* of other costs indicate that 'costs paid in advance are payable at the beginning of the interval assuming that the first payment coincides with the first repayment of the credit'. This is coherent with the treatment of the regular costs in this example by virtue of assumption (h)(iii); therefore, payment *in advance* is the option to choose for these costs.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

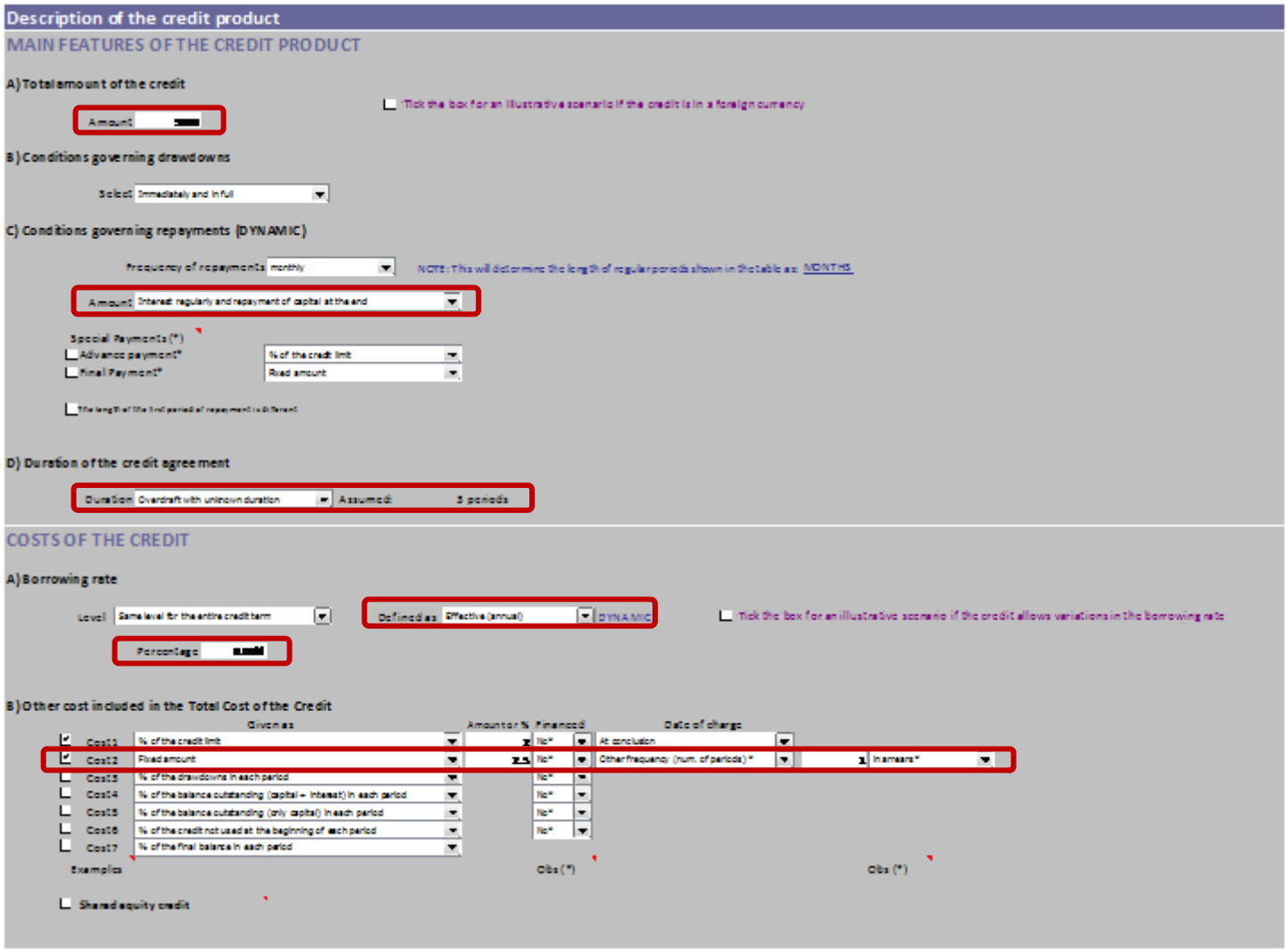
Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	12	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	17.0%	DYNAMIC Recalculate
Total cost of the credit	125.27	
Total amount of credit	1500.00	
Total amount payable	1625.27	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Highest borrowing rate (credit currency)	Highest exchange rate (domestic currency)
0	1500.00				1500.00			30.00					30.00	30.00	1470.00	1470.00		
1		1500.00	1500.00	1510.81	1375.00	9.00%	10.81	25.00		125.00	10.81	135.81	25.00	160.81	-160.81	-158.72		
2		1375.00	1375.00	1384.91	1250.00	9.00%	9.91			125.00	9.91	134.91	0.00	134.91	-134.91	-131.43		
3		1250.00	1250.00	1259.01	1125.00	9.00%	9.01			125.00	9.01	134.01	0.00	134.01	-134.01	-128.85		
4		1125.00	1125.00	1133.11	1000.00	9.00%	8.11			125.00	8.11	133.11	0.00	133.11	-133.11	-126.33		
5		1000.00	1000.00	1007.21	875.00	9.00%	7.21			125.00	7.21	132.21	0.00	132.21	-132.21	-123.84		
6		875.00	875.00	881.31	750.00	9.00%	6.31			125.00	6.31	131.31	0.00	131.31	-131.31	-121.40		
7		750.00	750.00	755.41	625.00	9.00%	5.41			125.00	5.41	130.41	0.00	130.41	-130.41	-119.00		
8		625.00	625.00	629.50	500.00	9.00%	4.50			125.00	4.50	129.50	0.00	129.50	-129.50	-116.64		
9		500.00	500.00	503.60	375.00	9.00%	3.60			125.00	3.60	128.60	0.00	128.60	-128.60	-114.32		
10		375.00	375.00	377.70	250.00	9.00%	2.70			125.00	2.70	127.70	0.00	127.70	-127.70	-112.05		
11		250.00	250.00	251.80	125.00	9.00%	1.80			125.00	1.80	126.80	0.00	126.80	-126.80	-109.81		
12		125.00	125.00	125.90	0.00	9.00%	0.90			125.00	0.90	125.90	0.00	125.90	-125.90	-107.61		
Sums																		
Year 1	1500.00						70.27	55.00	0.00	1500.00	70.27	1570.27	55.00	1625.27	-125.27	0.00		
Total	1500.00						70.27	55.00	0.00	1500.00	70.27	1570.27	55.00	1625.27	-125.27	0.00		

EXAMPLE 38

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

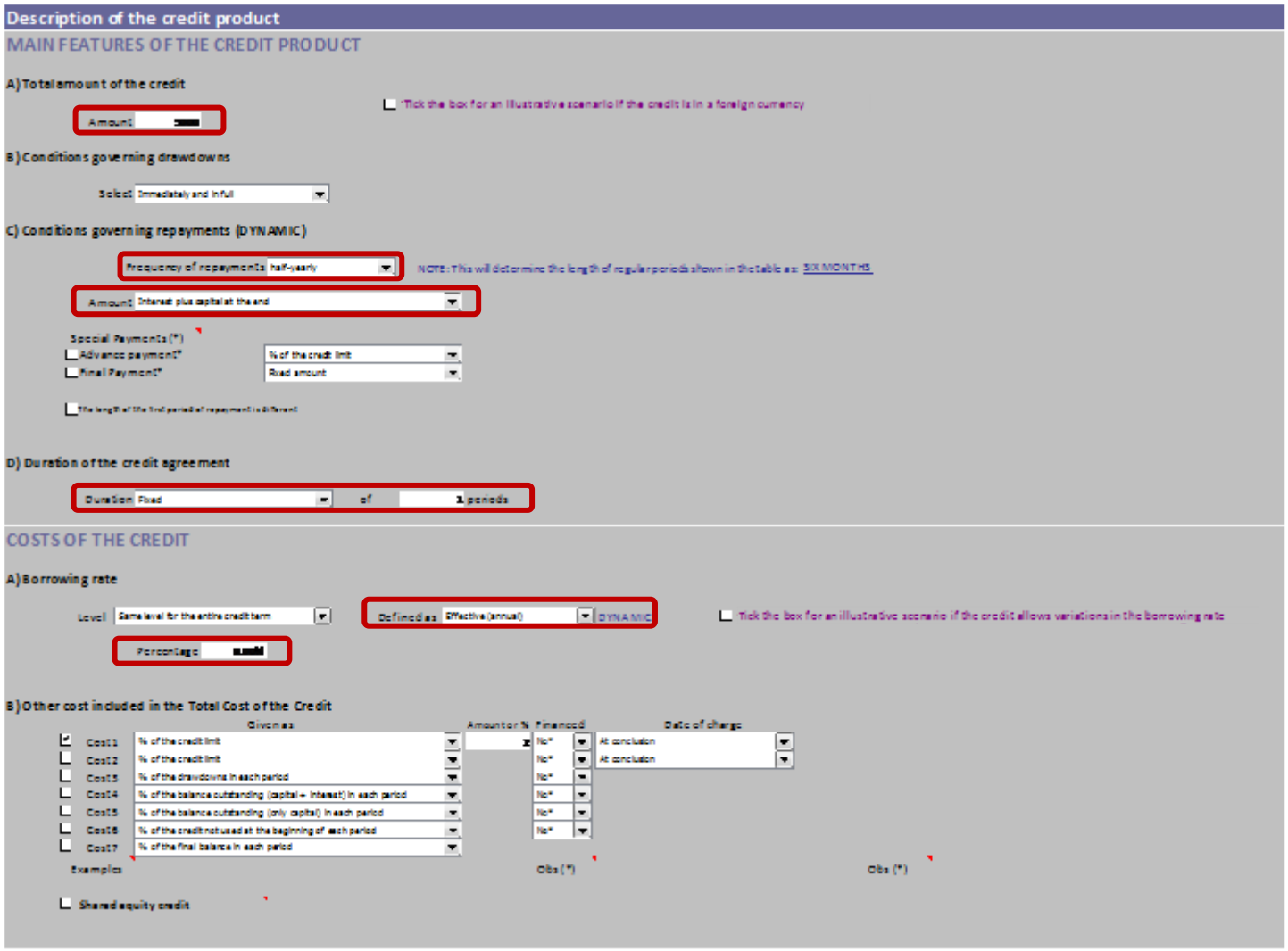
Main results

Final balance in the last period	0.00		
Amount of the first repayment	[redacted]		Recalculate
Duration of the credit	3	MONTHS	
Present value of the cash flows	0.00		
Annual Percentage Rate of Charge	19.4%	DYNAMIC	Recalculate
Total cost of the credit	132.36		
Total amount of credit	3000.00		
Total amount payable	3132.36		

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	3000.00				3000.00			60.00					60.00	60.00	2940.00	2940.00		
1		3000.00	3000.00	3021.62	3000.00	9.00%	21.62	2.50		0.00	21.62	21.62	2.50	24.12	-24.12	-23.77		
2		3000.00	3000.00	3021.62	3000.00	9.00%	21.62	2.50		0.00	21.62	21.62	2.50	24.12	-24.12	-23.42		
3		3000.00	3000.00	3021.62	0.00	9.00%	21.62	2.50		3000.00	21.62	3021.62	2.50	3024.12	-3024.12	-2892.82		
Sums																		
Year 1	3000.00						64.87	67.50	0.00	3000.00	64.87	3064.87	67.50	3132.36	-132.36	0.00		
Total	3000.00						64.87	67.50	0.00	3000.00	64.87	3064.87	67.50	3132.36	-132.36	0.00		

EXAMPLE 39

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

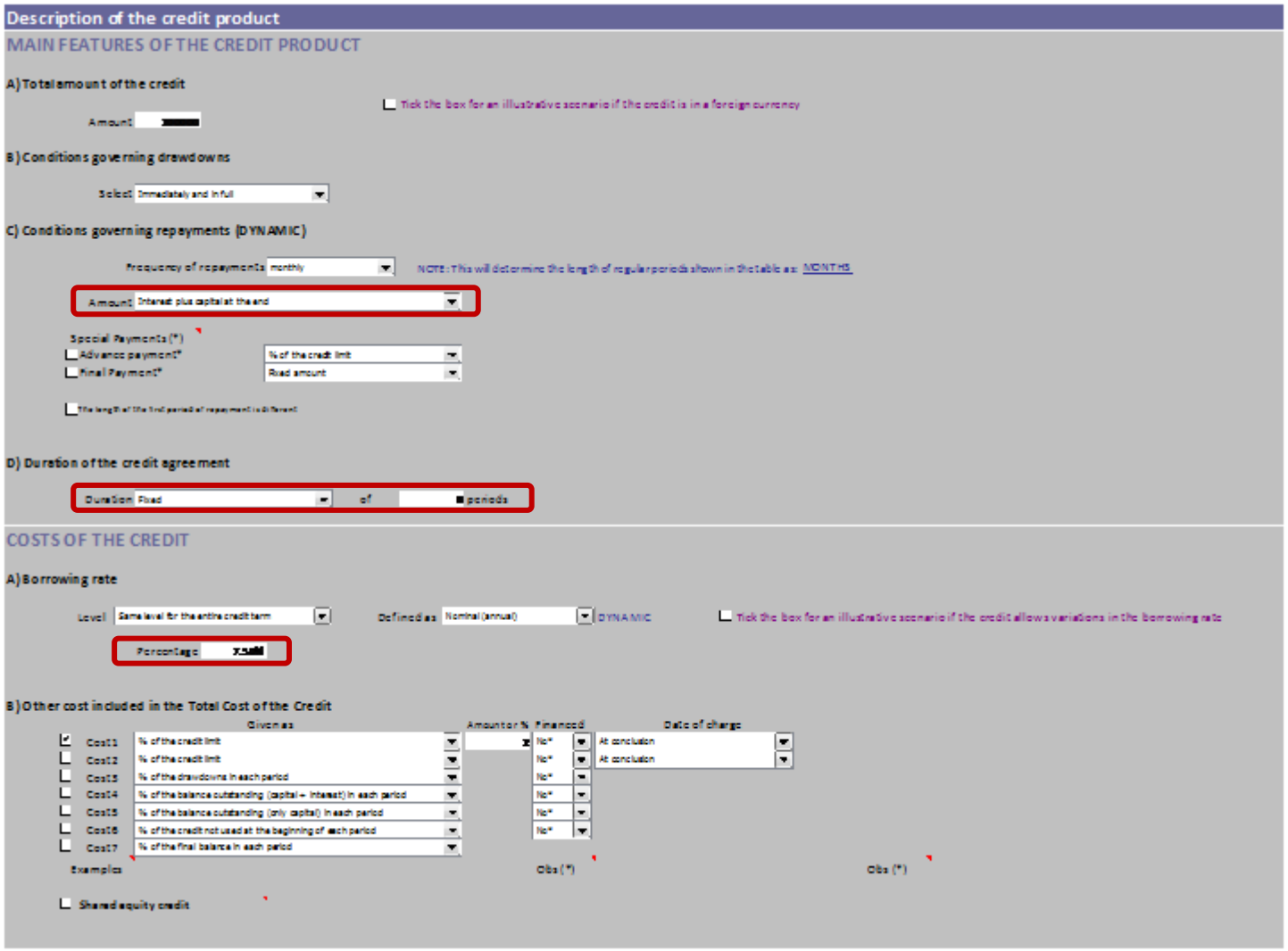
Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	1	SIX MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	13.5%	DYNAMIC Recalculate
Total cost of the credit	192.09	
Total amount of credit	3000.00	
Total amount payable	3192.09	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
0	3000.00				3000.00			60.00					60.00	60.00	2940.00	2940.00		
1		3000.00	3000.00	3132.09	0.00	9.00%	132.09			3000.00	132.09	3132.09	0.00	3132.09	-3132.09	-2940.00		
Sums																		
Year 1	3000.00						132.09	60.00	0.00	3000.00	132.09	3132.09	60.00	3192.09	-192.09	0.00		
Total	3000.00						132.09	60.00	0.00	3000.00	132.09	3132.09	60.00	3192.09	-192.09	0.00		

EXAMPLE 40

Click on the button *Reset* and then enter the information highlighted in red.

Although there is only a single repayment at the end of the agreement (in 6 months), keep the *Frequency of repayments* as *monthly* as this is the frequency used for charging interest. Coherently, keep the *Duration of the credit agreement* as 6 monthly periods.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

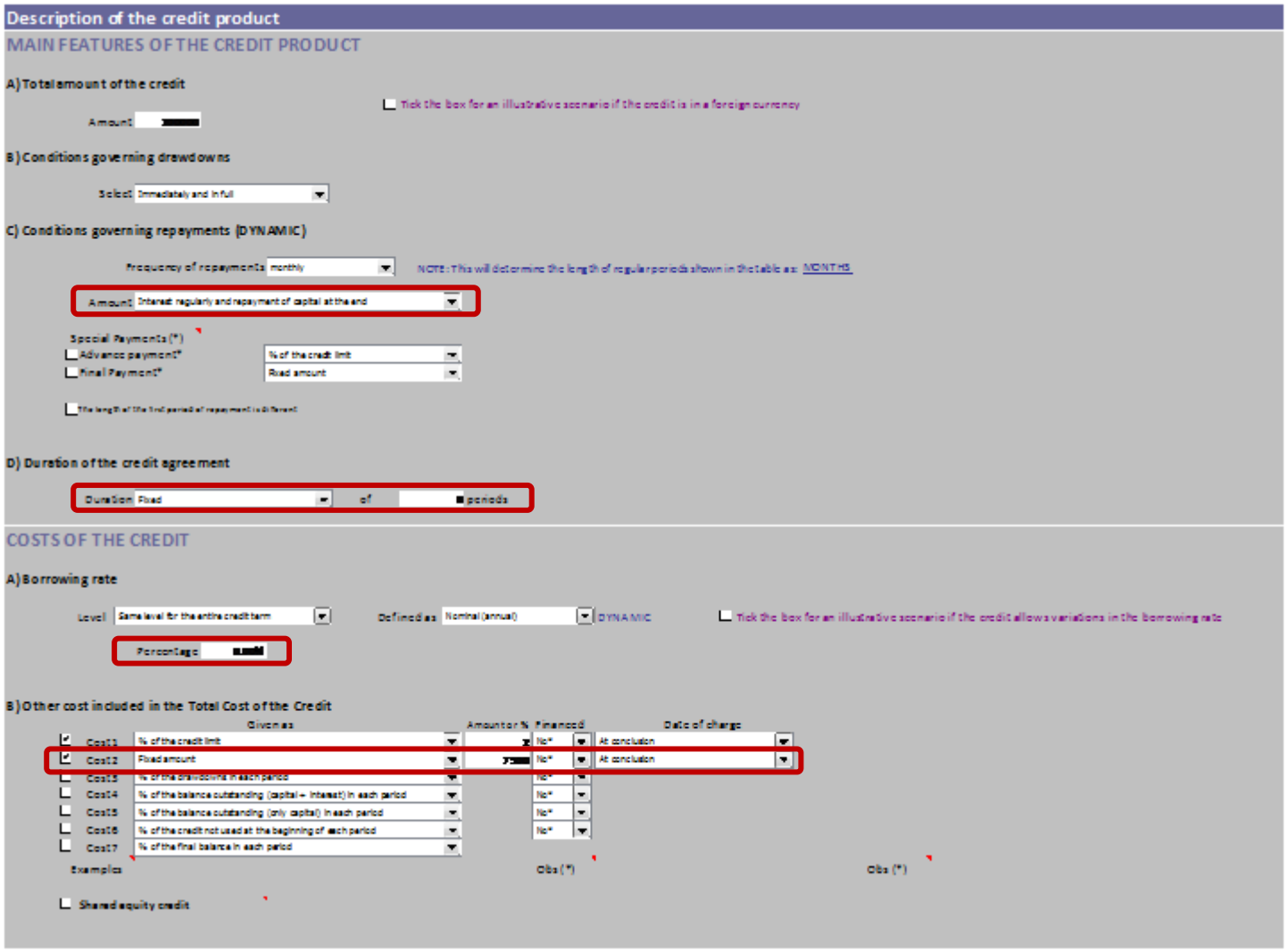
Final balance in the last period	0.00	
Amount of the first repayment		Recalculate
Duration of the credit	6 MONTHS	
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	12.2% DYNAMIC	Recalculate
Total cost of the credit	11618.17	
Total amount of credit	200000.00	
Total amount payable	211618.17	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201250.00	201250.00	7.50%	1250.00			-1250.00	1250.00	0.00	0.00	0.00	0.00	0.00		
2		201250.00	201250.00	202507.81	202507.81	7.50%	1257.81			-1257.81	1257.81	0.00	0.00	0.00	0.00	0.00		
3		202507.81	202507.81	203773.49	203773.49	7.50%	1265.67			-1265.67	1265.67	0.00	0.00	0.00	0.00	0.00		
4		203773.49	203773.49	205047.07	205047.07	7.50%	1273.58			-1273.58	1273.58	0.00	0.00	0.00	0.00	0.00		
5		205047.07	205047.07	206328.61	206328.61	7.50%	1281.54			-1281.54	1281.54	0.00	0.00	0.00	0.00	0.00		
6		206328.61	206328.61	207618.17	0.00	7.50%	1289.55			206328.61	1289.55	207618.17	0.00	207618.17	-207618.17	-196000.00		
Sums																		
Year 1	200000.00						7618.17	4000.00	0.00	200000.00	7618.17	207618.17	4000.00	211618.17	-11618.17	0.00		
Total	200000.00						7618.17	4000.00	0.00	200000.00	7618.17	207618.17	4000.00	211618.17	-11618.17	0.00		

EXAMPLE 41

Click on the button *Reset* and then enter the information highlighted in red.

The scheme of retained interest is not foreseen in the simulator. However, it is equivalent to credit with an initial cost given as the amount of retained interest and no other interest charges. The amount of retained interest in this example can be obtained by multiplying the amount of credit by the monthly interest rate by the number of monthly periods (i.e. 200000 x 0.075/12 x 6 = €7500). This amount is entered as a cost of *Fixed amount* payable at the conclusion of the agreement and the lack of further interest charges is ensured by entering a borrowing rate of 0.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

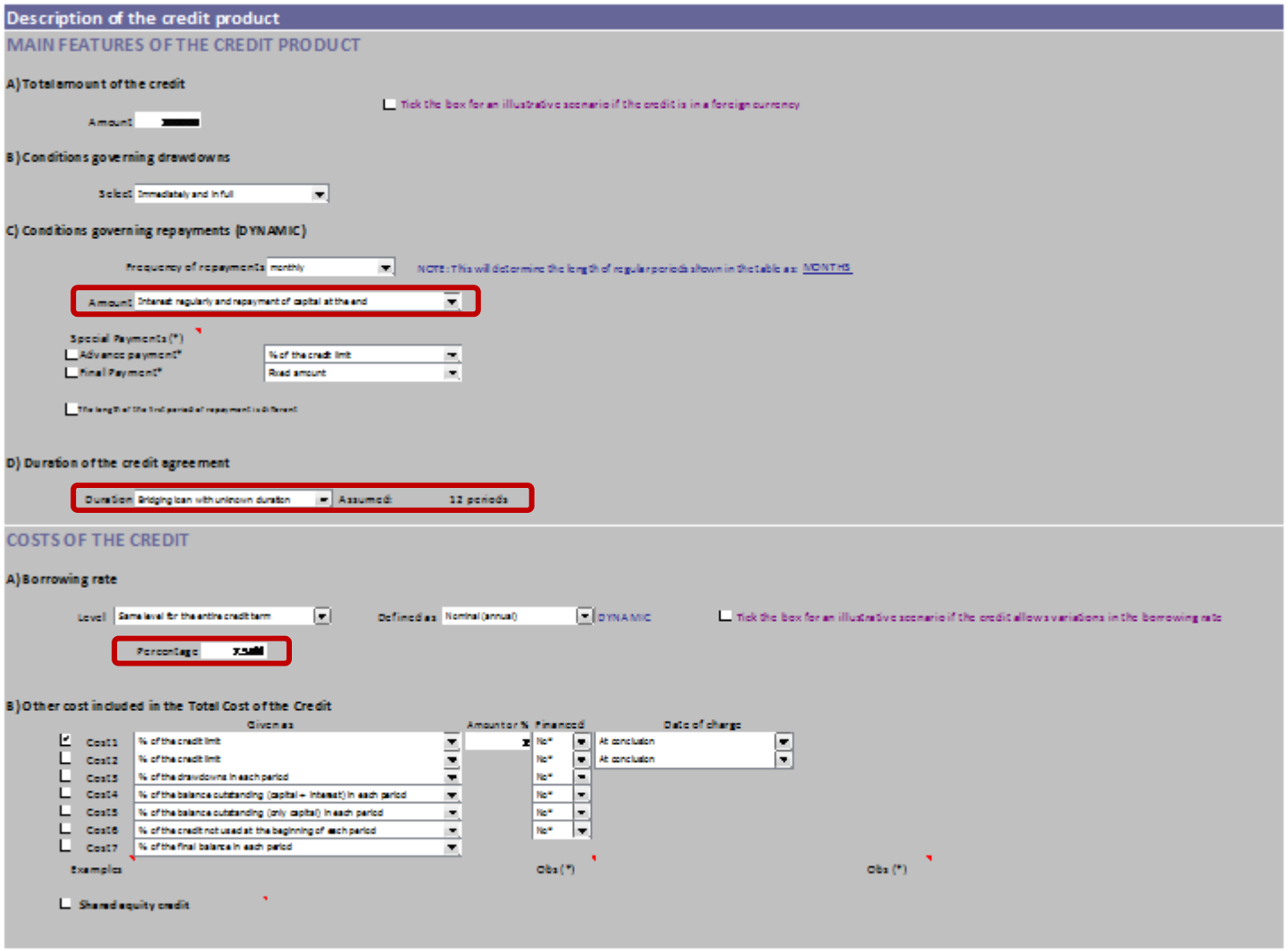
Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	6	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	12.6%	DYNAMIC Recalculate
Total cost of the credit	11500.00	
Total amount of credit	200000.00	
Total amount payable	211500.00	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			11500.00					11500.00	11500.00	188500.00	188500.00		
1		200000.00	200000.00	200000.00	200000.00	0.00%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2		200000.00	200000.00	200000.00	200000.00	0.00%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3		200000.00	200000.00	200000.00	200000.00	0.00%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
4		200000.00	200000.00	200000.00	200000.00	0.00%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
5		200000.00	200000.00	200000.00	200000.00	0.00%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
6		200000.00	200000.00	200000.00	0.00	0.00%	0.00			200000.00	0.00	200000.00	0.00	200000.00	-200000.00	-188500.00		
Sums																		
Year 1	200000.00						0.00	11500.00	0.00	200000.00	0.00	200000.00	11500.00	211500.00	-11500.00	0.00		
Total	200000.00						0.00	11500.00	0.00	200000.00	0.00	200000.00	11500.00	211500.00	-11500.00	0.00		

EXAMPLE 42

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

Final balance in the last period	0.00		
Amount of the first repayment			Recalculate
Duration of the credit	12	MONTHS	
Present value of the cash flows	0.00		
Annual Percentage Rate of Charge	10.0%	DYNAMIC	Recalculate
Total cost of the credit	19000.00		
Total amount of credit	200000.00		
Total amount payable	219000.00		

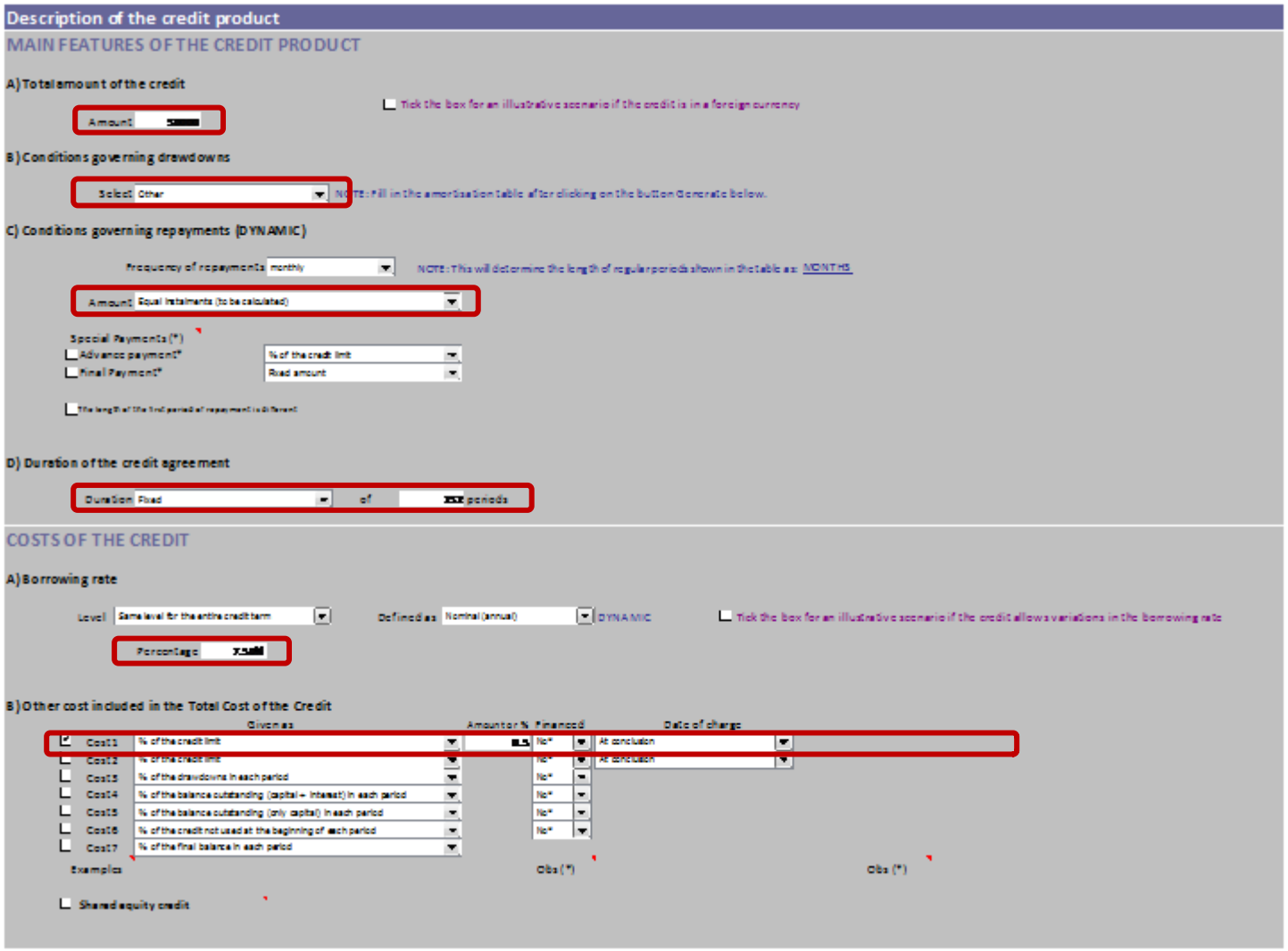
Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
1		200000.00	200000.00	201250.00	200000.00	7.50%	1250.00			0.00	1250.00	1250.00	0.00	1250.00	-1250.00	-1240.07		
2		200000.00	200000.00	201250.00	200000.00	7.50%	1250.00			0.00	1250.00	1250.00	0.00	1250.00	-1250.00	-1230.23		
3		200000.00	200000.00	201250.00	200000.00	7.50%	1250.00			0.00	1250.00	1250.00	0.00	1250.00	-1250.00	-1220.46		
4		200000.00	200000.00	201250.00	200000.00	7.50%	1250.00			0.00	1250.00	1250.00	0.00	1250.00	-1250.00	-1210.77		
5		200000.00	200000.00	201250.00	200000.00	7.50%	1250.00			0.00	1250.00	1250.00	0.00	1250.00	-1250.00	-1201.15		
6		200000.00	200000.00	201250.00	200000.00	7.50%	1250.00			0.00	1250.00	1250.00	0.00	1250.00	-1250.00	-1191.61		
7		200000.00	200000.00	201250.00	200000.00	7.50%	1250.00			0.00	1250.00	1250.00	0.00	1250.00	-1250.00	-1182.15		
8		200000.00	200000.00	201250.00	200000.00	7.50%	1250.00			0.00	1250.00	1250.00	0.00	1250.00	-1250.00	-1172.76		
9		200000.00	200000.00	201250.00	200000.00	7.50%	1250.00			0.00	1250.00	1250.00	0.00	1250.00	-1250.00	-1163.45		
10		200000.00	200000.00	201250.00	200000.00	7.50%	1250.00			0.00	1250.00	1250.00	0.00	1250.00	-1250.00	-1154.21		
11		200000.00	200000.00	201250.00	200000.00	7.50%	1250.00			0.00	1250.00	1250.00	0.00	1250.00	-1250.00	-1145.04		
12		200000.00	200000.00	201250.00	0.00	7.50%	1250.00			200000.00	1250.00	201250.00	0.00	201250.00	-201250.00	-182888.10		
Sums																		
Year 1	200000.00						15000.00	4000.00	0.00	200000.00	15000.00	215000.00	4000.00	219000.00	-19000.00	0.00		
Total	200000.00						15000.00	4000.00	0.00	200000.00	15000.00	215000.00	4000.00	219000.00	-19000.00	0.00		

EXAMPLE 43

Click on the button *Reset* and then enter the information highlighted in red.

As explained in the note in blue font which appears after selecting *Other* in the *Conditions governing drawdowns*, this choice implies that drawdowns should be entered manually in the amortisation table once the button *Generate* is clicked on.

For the duration of the credit specify the duration as fixed and equal to 120+12=132 periods in order to take into account the year (12 months) elapsed between the conclusion of the agreement and the drawdown of the total amount of credit and the following 120 months of repayment of the credit.



Click on the button *Generate* to obtain this incomplete amortisation table.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit		MONTHS
Present value of the cash flows	-150.00	**Caution: The APR is not valid because the present value of the cash flows is not zero.**
Annual Percentage Rate of Charge	[redacted]	DYNAMIC Recalculate
Total cost of the credit	150.00	
Total amount of credit	0.00	
Total amount payable	150.00	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0					0.00			150.00					150.00	150.00	-150.00	-150.00		
1		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
2		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
3		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
4		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
5		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
6		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
7		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
8		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
9		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
10		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
11		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
12		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
13		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
14		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
15		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
16		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
17		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
18		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
19		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
20		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
21		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
22		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
23		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
24		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		

Then enter the drawdown and the cost related to it for the 12th month in the columns *Drawdowns* and *Other costs not financed*, as shown.

Main results

Final balance in the last period	63361.94	Caution: The credit is not repaid in full because the final balance in the last period is not zero.
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit		MONTHS
Present value of the cash flows	29400.00	Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	[redacted]	DYNAMIC Recalculate
Total cost of the credit	-29400.00	
Total amount of credit	30000.00	
Total amount payable	600.00	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0					0.00			150.00					150.00	150.00	-150.00	-150.00		
1		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
2		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
3		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
4		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
5		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
6		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
7		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
8		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
9		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
10		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
11		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00		0.00	0.00	0.00	0.00		
12	30000.00	0.00	30000.00	30000.00	30000.00	7.50%	0.00	450.00		0.00	0.00		450.00	450.00	29550.00	29550.00		
13		30000.00	30000.00	30187.50	30187.50	7.50%	187.50			-187.50	187.50		0.00	0.00	0.00	0.00		
14		30187.50	30187.50	30376.17	30376.17	7.50%	188.67			-188.67	188.67		0.00	0.00	0.00	0.00		
15		30376.17	30376.17	30566.02	30566.02	7.50%	189.85			-189.85	189.85		0.00	0.00	0.00	0.00		
16		30566.02	30566.02	30757.06	30757.06	7.50%	191.04			-191.04	191.04		0.00	0.00	0.00	0.00		
17		30757.06	30757.06	30949.29	30949.29	7.50%	192.23			-192.23	192.23		0.00	0.00	0.00	0.00		
18		30949.29	30949.29	31142.73	31142.73	7.50%	193.43			-193.43	193.43		0.00	0.00	0.00	0.00		
19		31142.73	31142.73	31337.37	31337.37	7.50%	194.64			-194.64	194.64		0.00	0.00	0.00	0.00		
20		31337.37	31337.37	31533.23	31533.23	7.50%	195.86			-195.86	195.86		0.00	0.00	0.00	0.00		
21		31533.23	31533.23	31730.31	31730.31	7.50%	197.08			-197.08	197.08		0.00	0.00	0.00	0.00		
22		31730.31	31730.31	31928.62	31928.62	7.50%	198.31			-198.31	198.31		0.00	0.00	0.00	0.00		
23		31928.62	31928.62	32128.18	32128.18	7.50%	199.55			-199.55	199.55		0.00	0.00	0.00	0.00		
24		32128.18	32128.18	32328.98	32328.98	7.50%	200.80			-200.80	200.80		0.00	0.00	0.00	0.00		

Finally, click on the button *Calculate* to obtain the repayments and the APR of the credit.

Main results

Final balance in the last period	0.00	
Amount of the first repayment	0.00	
Duration of the credit	132	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	8.3%	DYNAMIC
Total cost of the credit	13333.20	
Total amount of credit	30000.00	
Total amount payable	43333.20	

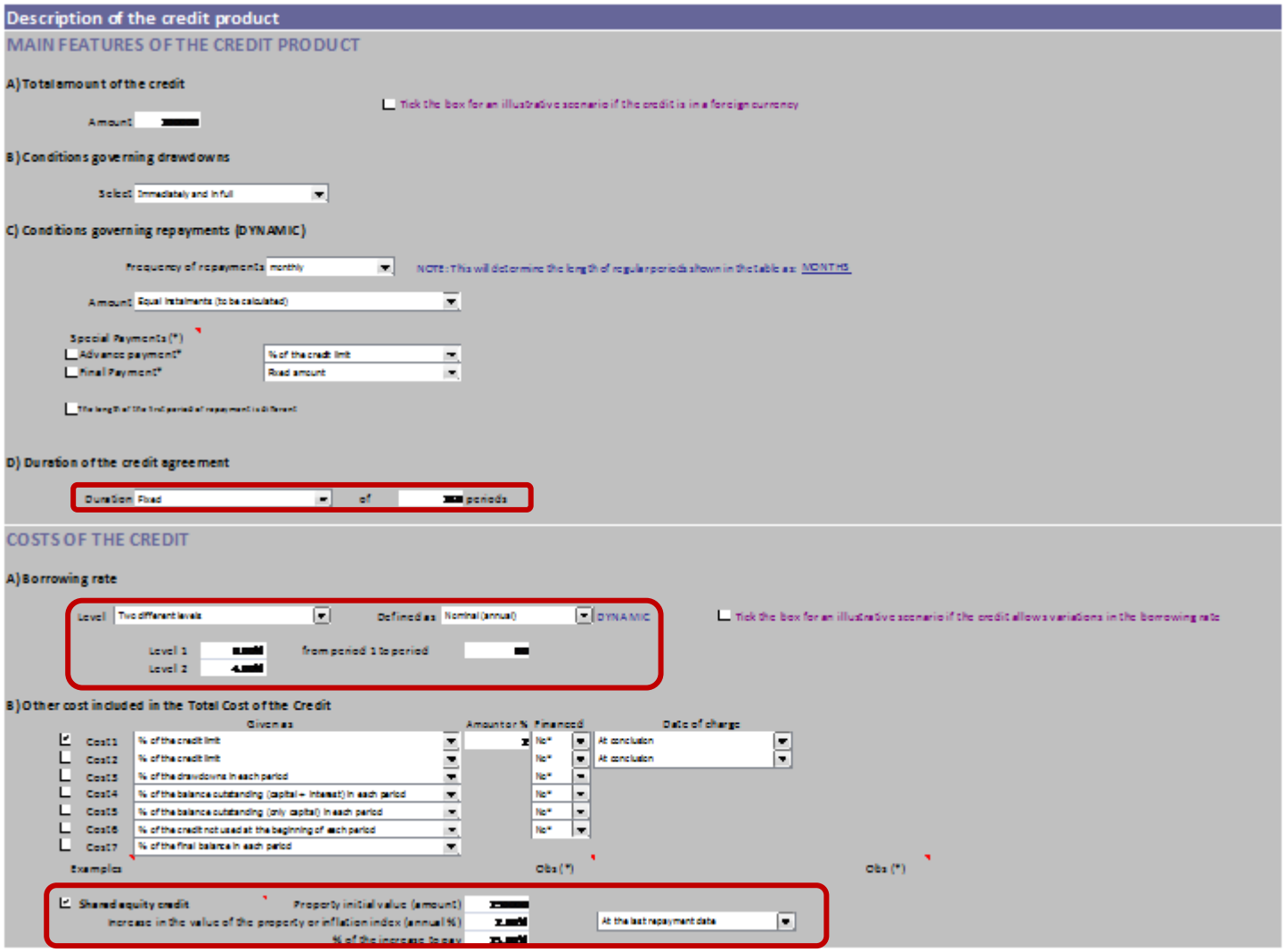
Recalculate

Recalculate

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0					0.00			150.00					150.00	150.00	-150.00	-150.00		
1		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
2		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
3		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
4		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
5		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
6		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
7		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
8		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
9		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
10		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
11		0.00	0.00	0.00	0.00	7.50%	0.00			0.00	0.00	0.00	0.00	0.00	0.00	0.00		
12	30000.00	0.00	30000.00	30000.00	30000.00	7.50%	0.00	450.00		0.00	0.00	0.00	450.00	450.00	29550.00	27293.06		
13		30000.00	30000.00	30187.50	29831.39	7.50%	187.50			168.61	187.50	356.11	0.00	356.11	-356.11	-326.74		
14		29831.39	29831.39	30017.84	29661.74	7.50%	186.45			169.66	186.45	356.11	0.00	356.11	-356.11	-324.58		
Sums																		
Year 1	30000.00						0.00	600.00	0.00	0.00	0.00	0.00	600.00	600.00	29400.00	27143.06		
Year 2	0.00						2178.98	0.00	0.00	2094.28	2178.98	4273.26	0.00	4273.32	-4273.32	-3781.67		
Year 3	0.00						2016.40	0.00	0.00	2256.87	2016.40	4273.26	0.00	4273.32	-4273.32	-3492.83		
Year 4	0.00						1841.19	0.00	0.00	2432.07	1841.19	4273.26	0.00	4273.32	-4273.32	-3226.06		
Year 5	0.00						1652.38	0.00	0.00	2620.88	1652.38	4273.26	0.00	4273.32	-4273.32	-2979.67		
Year 6	0.00						1448.92	0.00	0.00	2824.35	1448.92	4273.26	0.00	4273.32	-4273.32	-2752.09		
Year 7	0.00						1229.65	0.00	0.00	3043.61	1229.65	4273.26	0.00	4273.32	-4273.32	-2541.89		
Year 8	0.00						993.37	0.00	0.00	3279.89	993.37	4273.26	0.00	4273.32	-4273.32	-2347.75		
Year 9	0.00						738.74	0.00	0.00	3534.52	738.74	4273.26	0.00	4273.32	-4273.32	-2168.44		
Year 10	0.00						464.35	0.00	0.00	3808.91	464.35	4273.26	0.00	4273.32	-4273.32	-2002.82		
Year 11	0.00						168.65	0.00	0.00	4104.61	168.65	4273.26	0.00	4273.32	-4273.32	-1849.85		
Total	30000.00						12732.64	600.00	0.00	30000.00	12732.64	42732.64	600.00	43333.20	-13333.20	0.00		

EXAMPLE 44

Click on the button *Reset* and then enter the information highlighted in red.



Click on the buttons *Generate* and then *Calculate* to obtain the main results and the amortisation table.

Main results

85			
86	Final balance in the last period	0.00	
87	Amount of the first repayment	1111.11	Recalculate
88	Duration of the credit	180	MONTHS
89			
90	Present value of the cash flows	0.00	
91	Annual Percentage Rate of Charge	3.5%	DYNAMIC Recalculate
92			
93	Total cost of the credit	64734.48	
94	Total amount of credit	100000.00	
95	Total amount payable	164734.48	

			Balance				Interest on capital		Other costs		Payments					Cash flows		Business statistics	
											Repayment of the credit								
107	Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Non-financed	Financed	Capital amortisation	Interest	Total	Commission financed	Total	Value in each period	Present value	Payments if higher borrowing rate (credit currency)	Payments if higher exchange rate (domestic currency)
108	0	200000.00				200000.00			4000.00					4000.00	4000.00	196000.00	196000.00		
109	1		200000.00	200000.00	200000.00	198888.89	0.00%	0.00	0.00		1111.11	0.00	1111.11	0.00	1111.11	-1111.11	-1107.98		
110	2		198888.89	198888.89	198888.89	197777.78	0.00%	0.00	0.00		1111.11	0.00	1111.11	0.00	1111.11	-1111.11	-1104.81		
111	3		197777.78	197777.78	197777.78	196666.67	0.00%	0.00	0.00		1111.11	0.00	1111.11	0.00	1111.11	-1111.11	-1101.67		
112	4		196666.67	196666.67	196666.67	195555.56	0.00%	0.00	0.00		1111.11	0.00	1111.11	0.00	1111.11	-1111.11	-1098.55		
284	176		6682.70	6682.70	6704.98	5355.04	4.00%	22.28	0.00		1327.66	22.28	1349.94	0.00	1349.94	-1349.94	-818.55		
285	177		5355.04	5355.04	5372.89	4022.96	4.00%	17.85	0.00		1332.09	17.85	1349.94	0.00	1349.94	-1349.94	-816.20		
286	178		4022.96	4022.96	4036.37	2686.43	4.00%	13.41	0.00		1336.53	13.41	1349.94	0.00	1349.94	-1349.94	-813.89		
287	179		2686.43	2686.43	2695.39	1345.45	4.00%	8.95	0.00		1340.98	8.95	1349.94	0.00	1349.94	-1349.94	-811.58		
288	180		1345.45	1345.45	1349.94	0.00	4.00%	4.48	32075.08		1345.45	4.48	1349.94	32075.08	33425.02	-33425.02	-20037.86		
290																			
291	Sums																		
292	Year 1	200000.00						0.00	4000.00	0.00	13333.33	0.00	13333.33	4000.00	17333.32	182666.68	182910.15		
293	Year 2	0.00						0.00	0.00	0.00	13333.33	0.00	13333.33	0.00	13333.32	-13333.32	-12650.86		
294	Year 3	0.00						0.00	0.00	0.00	13333.33	0.00	13333.33	0.00	13333.32	-13333.32	-12216.59		
295	Year 4	0.00						0.00	0.00	0.00	13333.33	0.00	13333.33	0.00	13333.32	-13333.32	-11816.55		
296	Year 5	0.00						0.00	0.00	0.00	13333.33	0.00	13333.33	0.00	13333.32	-13333.32	-11420.26		
297	Year 6	0.00						5131.90	0.00	0.00	11067.33	5131.90	16199.22	0.00	16199.28	-16199.28	-13409.68		
298	Year 7	0.00						4681.00	0.00	0.00	11518.23	4681.00	16199.22	0.00	16199.28	-16199.28	-12959.97		
299	Year 8	0.00						4211.72	0.00	0.00	11987.50	4211.72	16199.22	0.00	16199.28	-16199.28	-12525.33		
300	Year 9	0.00						3723.34	0.00	0.00	12475.89	3723.34	16199.22	0.00	16199.28	-16199.28	-12105.27		
301	Year 10	0.00						3215.05	0.00	0.00	12984.17	3215.05	16199.22	0.00	16199.28	-16199.28	-11699.30		
302	Year 11	0.00						2686.05	0.00	0.00	13513.17	2686.05	16199.22	0.00	16199.28	-16199.28	-11306.94		
303	Year 12	0.00						2135.51	0.00	0.00	14063.72	2135.51	16199.22	0.00	16199.28	-16199.28	-10927.74		
304	Year 13	0.00						1562.53	0.00	0.00	14636.69	1562.53	16199.22	0.00	16199.28	-16199.28	-10561.26		
305	Year 14	0.00						966.21	0.00	0.00	15233.01	966.21	16199.22	0.00	16199.28	-16199.28	-10207.07		
306	Year 15	0.00						345.59	32075.08	0.00	15853.63	345.59	16199.22	32075.08	48274.36	-48274.36	-29093.35		
307	Total	200000.00						28658.89	36075.08	0.00	200000.00	28658.89	228658.89	36075.08	264734.48	-64734.48	0.00		

3. EXCEL SIMULATOR FOR THE CALCULATION OF THE APR

This section provides the instructions of the Excel simulator for the calculation of the APR, tailored to Directives 2008/48/EC ('Consumer Credit Directive, or CCD) and Directive 2014/17/EU ('Mortgage Credit Directive', or MCD). The first version of the simulator was prepared in the framework of the 'Study on the calculation of the Annual Percentage Rate of Charge for consumer credit agreements' in 2010, and further elaborated on the basis of Directive 2008/48/EC, and which provided a set of examples for the calculation of the APR in consumer credits. Subsequent amendment of this Directive by Directive 2011/90/EU, which introduced significant changes in the assumptions for the calculation of the APR, and the publication of the Guidelines on the application of Directive 2008/48/EC as amended by Directive 2011/90/EU, which clarified the application of both Directives, motivated an update of the Study, the examples and the Excel simulator. Finally, the approval of Directive 2014/17/EU has motivated an adaptation of the simulator in order to cover both Directives in a separated but coherent way, and the creation of a new set of examples for the calculation of the APR that illustrate the application of this Directive. The version of the simulator presented in this section is the one resulting from such an adaptation.

The simulator shows the amortisation table of a credit agreement according to the characteristics entered by the user and calculates the APR of the credit. The simulator can deal with a large variety of credit agreements both in the consumer and the mortgage area, although not with all type of agreements or features. This is because it is aimed to be a user-friendly tool which accompanies the examples for the calculation of the APR tailored to each Directive, making it possible to replicate the examples, obtain new examples and analyse the effect of different variables and parameters of the credit on the APR; therefore, there might be practices not covered by the simulator. The simulator is not aimed at providing creditors with a tool for their commercial activities as a substitute of their own internal systems. The simulator is not compulsory in commercial use. It is up to the creditors to ensure adequate tools (among others, IT) to comply with the requirements of the EU legislation in the field of consumer credit.

3.1. SOFTWARE REQUIREMENTS

- Excel XP or higher version. Many popular spreadsheet programs are able of reading Microsoft Excel files. However, Microsoft Excel is required to run the simulator.
- You must Enable Macros when the Excel file is open.

3.2. MAIN FEATURES

The main features of the simulator are:

- *Directives compliance*: The input area is organised into several sections and ensures that the characteristics of the credit agreement conforms to the relevant Directive (Directive 2008/48/EC - CCD or Directive 2014/17/EU - MCD). Where assumptions for the calculation of the APR may apply, this is indicated by 'balloon' messages in cells

with the text *Assumptions applicable*. It should be highlighted that *the user is deemed to follow these indications to obtain the APR*. Whenever feasible, the simulator informs as to discrepancies with those assumptions. Internally, the APR calculated by the simulator uses the rules and conventions established by the Directives.

- *Consistent layout*: The Directive to be applied is chosen by the user, and this have an effect on several aspects of the simulator, including some texts, balloon messages, inputs, lists, product characteristics or the provision of certain analysis. Despite this tailoring to the specific Directive which is relevant for the credit, the general layout of the simulator is the same, which contributes to easier handling and a better understanding of its features and capabilities.

- *Ample coverage*: Given the large number of characteristics and options available to the user, the simulator is able to cover a wide variety of credit agreements, with few limitations.

- *Simplicity*: The characteristics of the credit are entered by the user through simple menus and by entering numbers in specific cells. Consequently, no special training or financial knowledge is required to use the simulator. Some sections also include *Notes* with relevant explanations and a box with brief instructions is provided. Finally, once the data is entered, the simulator identifies possible errors and inconsistencies.

- *Flexibility*: When the menus and cells are insufficient to describe the credit agreement, the user can, in most cases, enter their own data into the amortisation table. The user can complete, change or replace the formulas in the amortisation table. However, in this case, the user should exercise caution with regards the accuracy of the result.

- *Interactivity*: Given that the amortisation table includes formulas instead of values, the user can see the relationships between most of the variables. Also, the user can change some characteristics of the credit and see immediately the effects of these changes on the amortisation table without creating a new table. The sections, characteristics and cells with this feature are marked by the word "DYNAMIC".

- *Multilingual usage*: The user can select the desired language from a list which includes all the official languages of the European Union.

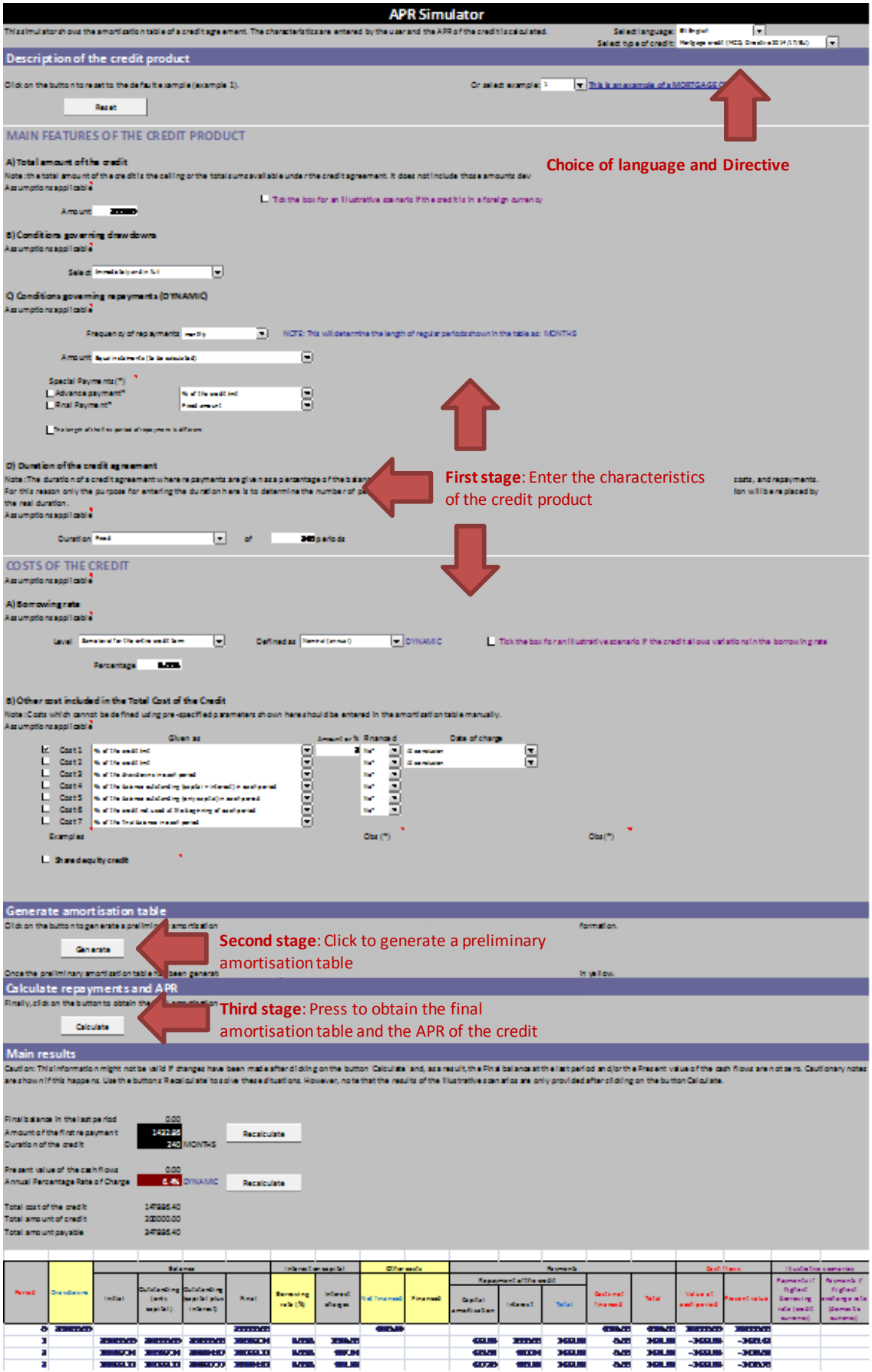
3.3. INSTRUCTIONS

The use of the simulator starts by selecting the desired language and the relevant Directive from the two lists situated at the upper-right corner of the sheet of the simulator. Once this choice is made, obtaining the amortisation table and the APR of a credit agreement consists of three stages, shown in Figure 1.

In the **first stage** the user is required to enter the characteristics of the credit product in the area 'Description of the credit product'. In the **second stage**, clicking on the button *Generate* in the area 'Generate amortisation table' generates a preliminary amortisation table from the information provided in the first stage. Some of the fields of the amortisation table can be changed by the user, thus providing additional flexibility in the treatment of characteristics of

the credit agreement. Finally, in the **third stage**, clicking on the button *Calculate* in the area 'Calculate repayments and APR' returns the final amortisation table and the APR of the credit. These three stages are explained in more detail below.

Figure 1. Stages of the simulator



FIRST STAGE

In the first stage the user is required to enter the characteristics of the credit product in the area 'Description of the credit product'. As shown in Figure 1, at the top, the button 'Reset' allows to initialize the simulator, which automatically resets to the default example of the set of examples for the calculation of the APR of each Directive (example 3 for the CCD and example 1 for the MCD). The user can use this button to obtain such an example or when the simulator is not working properly, as a bad functioning might be due to wrong data introduced previously. Other examples of the sets are available from the list at the right, by selecting the number of the desired example[21]. Once the selection is made, the simulator replaces any information by that corresponding to the example and also provides the amortisation table of the example.

Below the button and the list, the area to enter information by the user is displayed. This area is comprised of two parts: 'Main features of the credit product' and 'Costs of the credit'. The first part includes the total amount of the credit (section A), the conditions governing the drawdowns (section B), the conditions governing repayments (section C; all the data in this section is dynamic), and the duration of the credit agreement (section D). The second part is devoted to costs, and includes the borrowing rate (section A, where the definition of the borrowing rate allows interactivity) and other costs included in the total cost of the credit (section B).

It is advisable to fill these areas and sections in order. In this case, the user would start from the area 'Main features of the credit product' and then:

- Specify the amount of the credit as a number. In the case of the MCD, a box at the right allows selecting the calculation and display of an illustrative scenario if the credit is in a foreign currency, based on the initial level of the exchange rate, its highest depreciation in accordance with the provisions of the MCD and the earliest period when such depreciation could occur.

- Select the conditions governing drawdowns among the options 'Immediately and in full' and 'Other'. In the later case, the user will have to fill manually the column of drawdowns in the amortisation table in the second stage.

- Define the conditions governing repayments. These include:

    - The frequency of repayments, which can be specified as weekly, monthly, quarterly, half-yearly or yearly. Note that this frequency determines the length of the periods shown in the amortisation table.

[21] The simulator includes all the examples for the calculation of the APR provided for both Directives. These examples illustrate the use of the assumptions and some particulars of use of the simulator. For step-by-step explanations on how to obtain the solutions of these examples using the simulator see the section 'Credit information and amortisation tables'.

- The amount of the repayments. This amount refers to the amount devoted to interest charges and capital amortisation. The options are[22]:
    - Equal instalments (to be calculated).
    - Increasing or decreasing instalments.
    - % of outstanding balance (capital + interest).
    - Interest plus a % of outstanding balance (only capital).
    - Constant amount known in advance.
    - Interest plus constant amount known in advance.
    - Interest regularly and repayment of capital at the end.
    - Interest plus capital at the end.
    - Interest plus equal repayments of capital regularly.
    - Successive drawdowns and repayment in full each period.
    - Interest-only credit[23].
- Special payments, that is, payments which are different from the regular payments specified before. These include:
    - An advance payment, which is a sum payable when the agreement is signed. Note that this payment is not a part of the financing operation and hence will be deducted from the amount of credit specified above to obtain the amount of credit shown in the area 'Main results' and the amortisation table. This type of payment has been included in the simulator for completeness.
    - A final payment, which is a sum payable at the last period and in substitution of any regular repayment. Note that a final payment is not allowed under certain schemes of repayment (e.g. when the capital is repaid only in full or in equal payments).

- There is also the option to specify a first payment period of a length different to that of the regular payment periods. To this end, the user should tick the box 'The length of the first period of repayment is different' and specify that first payment period as a number of regular periods in combination with a number of days. An auxiliary period

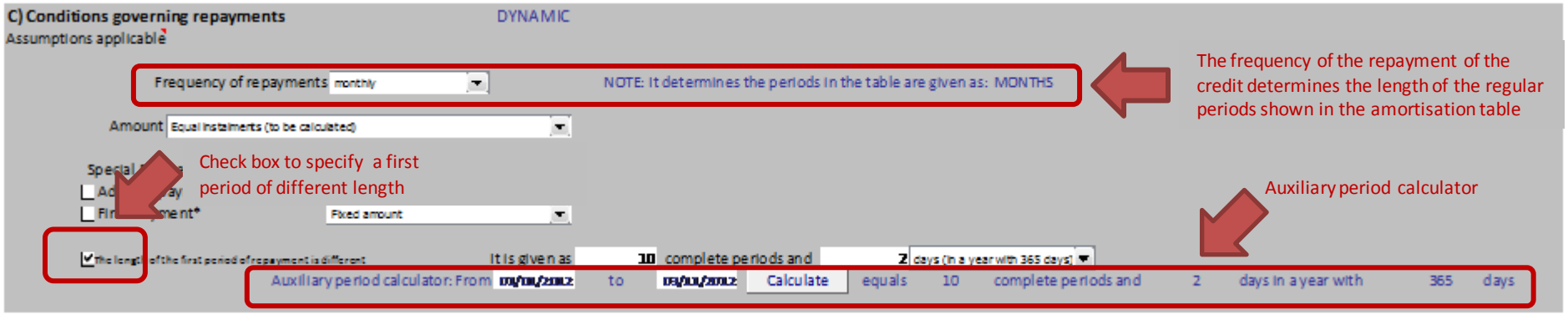
[22] The examples for the calculation of the APR cover all these schemes of repayment.

[23] When this scheme is selected, the user is warned to change to a scheme of repayments where the capital is repaid at the end of the credit term because although in interest-only credits the capital is still owed at that time, the calculation of the APR requires such repayment.

calculator allows the user to obtain these numbers from calendar days[24]. For example, using regular periods of one month, Figure 2 shows that the period from January 1 2012 to November 3 2012 is comprised of 10 months and 2 days in a year with 365 days. These numbers can be entered by the user in the previous row to define the length of the first period of repayment; the following periods would be of regular length.

[24] The measurement of time intervals follows the rules provided in the Guidelines on the Application of Directive 2008/48/EC in the case of the CCD and remark (c) of Annex I of the Directive 2014/17/EU in the case of the MCD.

Figure 2. Specifying a first payment period of different length



- Specify the duration of the credit agreement. This duration can be defined as 'Fixed', in which case the user must enter the number of periods until full repayment, or is entered automatically by the simulator in the other cases, which corresponds to credits whose duration is specifically regulated by assumptions of the Directives[25]. For example, the choice of an 'Open-end credit other than overdraft' for the CCD (or Other open ended credits' for the MCD) implies that the duration is assumed to be 12 periods (or 12 periods or 240 periods under the MCD). This derives from assumption (e) of Directive 2011/30/EU for the CCD (or assumption (k) for the MCD). These assumptions also forces monthly repayments and are compatible only with two schemes of repayments: 'Interest plus equal repayments of capital regularly' and 'Successive drawdowns and repayments in full each period'. The choice of any other frequency or other scheme of repayments will lead to an error message. On the other hand, when an 'Overdraft with unknown duration' is chosen for any Directive, the simulator assumes that the duration is 3 months. This derives from assumption (d) of the CCD and assumption (i) of the MCD. These assumptions also imply that the entire capital should be repaid at the end of the agreement, for which reason this choice is compatible with two schemes of repayments only: 'Interest regularly and repayment of capital at the end' and 'Interest plus capital at the end'. The choice of frequencies of repayment not coherent with the assumed duration of 3 months (e.g. half-yearly or yearly) or other scheme of repayments will lead to an error message. Finally, when the duration is defined as 'Fixed', the user must enter the number of periods until full repayment of the credit (e.g., for a credit for a period of 1 year and monthly repayments, the number of periods is 12). This duration will be respected by the simulator, except for those credits whose repayments are given as a percentage of the balance outstanding or as a constant amount known in advance. This is because for these credits, the real duration is given implicitly by the drawdowns, costs and repayments (e.g., if a credit for a total amount of €1000 should be repaid in monthly repayments of €500 plus interest charges, the duration will be 2 months necessarily, as this is the period until full repayment). For these credits, the user should enter, as duration of the credit agreement, an estimation of the real duration. This estimated duration will determine the number of periods to display in the preliminary amortisation table in the second stage and will be replaced by the real duration in the third stage, once the simulator obtains the final amortisation table. If the user plans to make manual changes in the preliminary amortisation table in the second stage, the estimated duration should be large enough to ensure that the table will not be extended by the simulator to further periods in the third stage. This is because if the table needs to be extended in the third stage to ensure full repayment of the credit at the last period, the variables in the new periods are obtained from the characteristics of the credit entered in the first stage only.

[25] These other cases include 'Overdraft with unknown duration' and 'Open-end credit other than overdraft' for the CCD, and 'Overdraft with unknown duration', 'Bridging loan with unknown duration' and 'Other open ended credits' for the MCD.

- Specify the level and type of the borrowing rate. If the level is specified as 'Fixed for the entire duration of the credit' the user will be required to enter such a value in terms of an annual percentage; if it is specified as 'Two different levels' the user will be required to enter two percentages and also the last period where the first borrowing rate is applied; the third option 'Other' requires the user to fill manually the column 'Borrowing rate (%)' with the individual rates for each period in the preliminary amortisation table in the second stage. As to the definition of the borrowing rate, it can be expressed as a 'Nominal (annual)' or an 'Effective (annual)' rate. Nominal rates are charged periodically using a proportional conversion method and effective rates are charged periodically using the corresponding compounding frequency (e.g. a nominal rate of 9% implies monthly interest charges of 9/12=0.750% on capital, and an effective rate of 12% implies monthly interest charges of (1+0.12)^(1/12)-1=0.949% on capital). In the case of the MCD, a box at the right allows selecting the calculation and display of an illustrative scenario if the credit allows for variations in the borrowing rate in accordance with the provisions of the MCD, based on a specific level of the borrowing rate and the earliest period when the relevant event (negotiation on a new fixed rate or the reach of that level) could occur.

- Enter other costs included in the total cost of the credit. For each cost, tick the box at the right, then choose the option which describes it among the following options and specify the amount in euros or the percentage:

    - Fixed amount.
    - % of the credit limit.
    - % of the drawdowns in each period.
    - % of the balance outstanding (capital + interest) in each period.
    - % of the balance outstanding (only capital) in each period.
    - % of the credit not used at the beginning of each period.
    - % of the final balance in each period.

  Then, indicate whether the cost is financed with the credit or not:

    - If a cost is not financed, it is paid when it is charged.
    - If a cost is financed, it is not paid when it is charged but, instead, it is added to the amount owed, thus generating interest and being repaid within the repayments of the credit over the duration of the agreement.

  Finally, choose the dates of charge, being the options:

    - At conclusion, that is, when the agreement is signed (period 0).
    - At the last repayment date, that is, when the credit is fully repaid.

- Each time a drawdown takes place.
- Each time a repayment takes place.
- Other frequency (num. of periods). In this case, the number of periods between payments should be specified, and also if the cost is paid in arrears (at the end of each time interval) or in advance (at the beginning of each time interval, assuming that the first payment coincides with the first repayment of the credit)[26].

The combination of these features allows a huge variety of costs. For example, a single sum (lump sum) cost of €60 payable at the conclusion of the agreement is specified as a cost of *fixed amount* of €60, *not financed* and with a date of charge given as *at conclusion*, as seen in Figure 3:

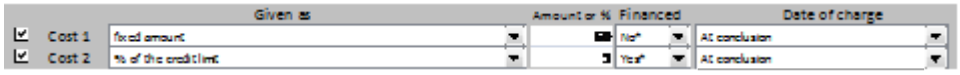
Figure 3. Single sum cost

As an example of a regular cost, administrative charges of €60 in total spread over 24 monthly repayments of a credit are specified as costs of *fixed amount* of 60/24=€2.5, *not financed* and with a date of charge given as *each time a repayment takes place*, as seen in Figure 4:

Figure 4. Regular costs

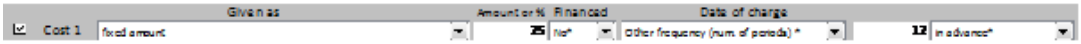
The combination of the preceding single sum cost of €60 payable at the conclusion of the agreement and a cost of 5% of the total amount of credit which is financed with the credit is entered as shown:

Figure 5. Combination of costs



And an annual charge of a credit card of €25 payable at the beginning of each year is specified a cost of *fixed amount* of €25, *not financed*, with a date of charge given as *other frequency* with a number of 12 periods (of one month) and payable *in advance*, as below:

Figure 6. Cost of a credit card



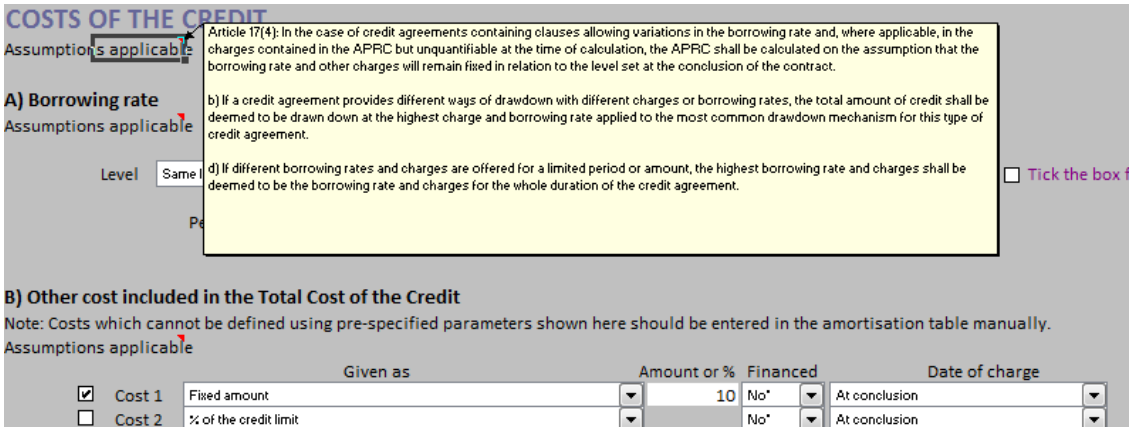
[26] If payment periods are expressed in months, and a cost is payable every month, there is no distinction between payment in advance and in arrears.

If the cost cannot be defined using these pre-specified parameters, then it should be entered manually in the preliminary amortisation table in the second stage.

In addition, for the MCD the user can specify the costs of a shared equity credit, that is, a credit where the payments include a contractually set percentage of the value (or the increase of value) of the immovable property, by ticking the box 'Shared equity credit' and entering the required data. It includes the initial value of the property, the assumed increase of price according to assumption (m) of the MCD, and the percentage of the increase to pay. As usual, the assumptions and other clarification notes are displayed in the simulator.

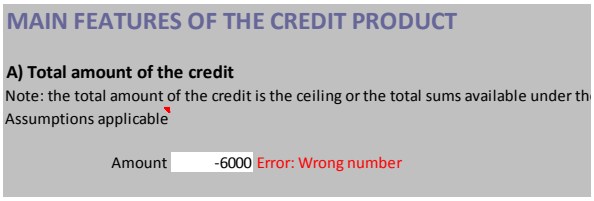
Indeed, throughout the process of introduction of all the previous data, the user should read the explanatory notes and the assumptions applicable displayed in balloon messages, and provide information consistent with them in order to obtain the APR at the third stage. The simulator is able to detect some of these inconsistencies and will inform the user accordingly, but there are cases where this is not feasible.

Figure 7. Balloon message



Finally, if the data entered is wrong, in the sense that it might imply an expected break down of the simulator, the user is also informed. The inconsistencies and errors are displayed in message boxes and error messages next to the cells affected by the errors or inconsistencies. They should be solved before proceeding.

Figure 8. Error message



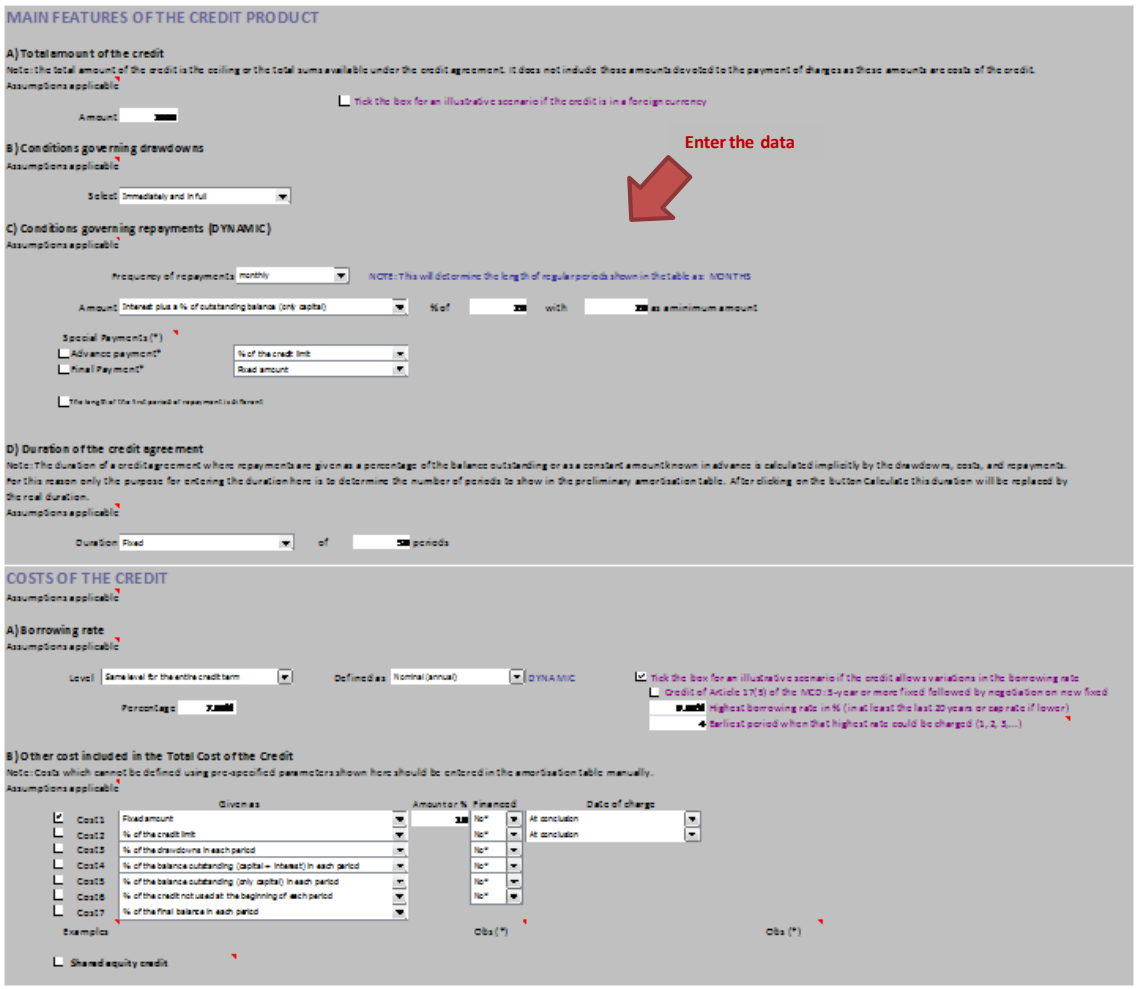
By way of illustration of this stage, let's consider a credit agreement for a total amount of credit of €1000 to be draw down immediately and in full at the conclusion of the agreement. The credit agreement provides for payment of interest every month plus a monthly payment

of 20% of the outstanding balance of capital with a minimum of €20. The borrowing rate (nominal rate) is quarterly adjusted according to the 1-year Euribor rate plus a spread of 3%. The 1-year Euribor rate is 4% at the time of calculating the APR, which implies that the APR will be calculated on the basis of a borrowing rate of 3+4=7%. There is a single sum (lump sum) cost of €10 payable at the conclusion of the agreement.

In our example the agreement is a secured credit that falls within the scope of the MCD and according to the Directive, the results of an illustrative scenario based on the highest value of the borrowing rate in at least the last 20 years should be provided. For this highest rate we consider a value of 9% which might be applied to the credit from the beginning of the fourth month, as the borrowing rate is quarterly adjusted.

Enter the data as shown in Figure 9. The duration of the credit of 30 periods entered is an estimation of the real duration, which will be obtained by the simulator on the basis of the amounts of repayment in the third stage. This estimated duration is considered to be large enough to ensure that the preliminary amortisation table which will be obtained in the second stage will include all the periods of repayment.

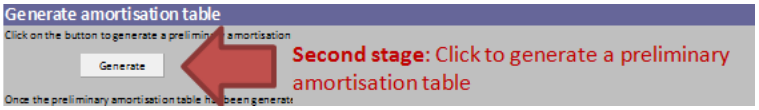
Figure 9. First stage: An example



SECOND STAGE

In the second stage the user obtains the preliminary amortisation table of the credit agreement specified in the first stage by clicking on the *Generate* button in the area 'Generate amortisation table', as shown in Figure 10.

Figure 10. Second stage: Button Generate



The internal procedures set off by this button first check that the data introduced in the first stage is error free and if errors are detected, the procedure is aborted. Otherwise the preliminary amortisation table is generated.

Figure 11 shows the preliminary amortisation of the example where, as mentioned above, an estimated duration of 30 periods is used. Note that the table is not completed; the column with the *Total* of *Repayment of the credit* is empty, revealing that the repayments have not been calculated yet. Note that the column of the *illustrative scenario* with the *Payments if highest borrowing rate* is empty. Both columns will be calculated in the third stage. Also note that the characteristics of the credit entered in the first stage are reproduced in the table. For example, the amount of credit of €1000 appears as a drawdown in period 0 (i.e. at the conclusion of the agreement), the borrowing rate is always 7%, and the cost of €25 appears as a cost not financed and due on period 0.

Figure 11. Second stage: An example

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	1000.00				1000.00			10.00					10.00	10.00	990.00	990.00		
1		1000.00	1000.00	1005.83	1005.83	7.00%	5.83			-5.83	5.83		0.00	0.00	0.00	0.00		
2		1005.83	1005.83	1011.70	1011.70	7.00%	5.87			-5.87	5.87		0.00	0.00	0.00	0.00		
3		1011.70	1011.70	1017.60	1017.60	7.00%	5.90			-5.90	5.90		0.00	0.00	0.00	0.00		
4		1017.60	1017.60	1023.54	1023.54	7.00%	5.94			-5.94	5.94		0.00	0.00	0.00	0.00		
5		1023.54	1023.54	1029.51	1029.51	7.00%	5.97			-5.97	5.97		0.00	0.00	0.00	0.00		
6		1029.51	1029.51	1035.51	1035.51	7.00%	6.01			-6.01	6.01		0.00	0.00	0.00	0.00		
7		1035.51	1035.51	1041.55	1041.55	7.00%	6.04			-6.04	6.04		0.00	0.00	0.00	0.00		
8		1041.55	1041.55	1047.63	1047.63	7.00%	6.08			-6.08	6.08		0.00	0.00	0.00	0.00		
9		1047.63	1047.63	1053.74	1053.74	7.00%	6.11			-6.11	6.11		0.00	0.00	0.00	0.00		
10		1053.74	1053.74	1059.89	1059.89	7.00%	6.15			-6.15	6.15		0.00	0.00	0.00	0.00		
11		1059.89	1059.89	1066.07	1066.07	7.00%	6.18			-6.18	6.18		0.00	0.00	0.00	0.00		
12		1066.07	1066.07	1072.29	1072.29	7.00%	6.22			-6.22	6.22		0.00	0.00	0.00	0.00		
13		1072.29	1072.29	1078.55	1078.55	7.00%	6.26			-6.26	6.26		0.00	0.00	0.00	0.00		
14		1078.55	1078.55	1084.84	1084.84	7.00%	6.29			-6.29	6.29		0.00	0.00	0.00	0.00		
15		1084.84	1084.84	1091.16	1091.16	7.00%	6.33			-6.33	6.33		0.00	0.00	0.00	0.00		
16		1091.16	1091.16	1097.53	1097.53	7.00%	6.37			-6.37	6.37		0.00	0.00	0.00	0.00		
17		1097.53	1097.53	1103.93	1103.93	7.00%	6.40			-6.40	6.40		0.00	0.00	0.00	0.00		
18		1103.93	1103.93	1110.37	1110.37	7.00%	6.44			-6.44	6.44		0.00	0.00	0.00	0.00		
19		1110.37	1110.37	1116.85	1116.85	7.00%	6.48			-6.48	6.48		0.00	0.00	0.00	0.00		
20		1116.85	1116.85	1123.36	1123.36	7.00%	6.51			-6.51	6.51		0.00	0.00	0.00	0.00		
21		1123.36	1123.36	1129.92	1129.92	7.00%	6.55			-6.55	6.55		0.00	0.00	0.00	0.00		
22		1129.92	1129.92	1136.51	1136.51	7.00%	6.59			-6.59	6.59		0.00	0.00	0.00	0.00		
23		1136.51	1136.51	1143.14	1143.14	7.00%	6.63			-6.63	6.63		0.00	0.00	0.00	0.00		
24		1143.14	1143.14	1149.81	1149.81	7.00%	6.67			-6.67	6.67		0.00	0.00	0.00	0.00		
25		1149.81	1149.81	1156.51	1156.51	7.00%	6.71			-6.71	6.71		0.00	0.00	0.00	0.00		
26		1156.51	1156.51	1163.26	1163.26	7.00%	6.75			-6.75	6.75		0.00	0.00	0.00	0.00		
27		1163.26	1163.26	1170.05	1170.05	7.00%	6.79			-6.79	6.79		0.00	0.00	0.00	0.00		
28		1170.05	1170.05	1176.87	1176.87	7.00%	6.83			-6.83	6.83		0.00	0.00	0.00	0.00		
29		1176.87	1176.87	1183.74	1183.74	7.00%	6.87			-6.87	6.87		0.00	0.00	0.00	0.00		
30		1183.74	1183.74	1190.64	1190.64	7.00%	6.91			-6.91	6.91		0.00	0.00	0.00	0.00		

Once the preliminary amortisation table has been obtained, the user can overwrite manually the values in the table for all those variables with a title shaded in yellow (drawdowns, borrowing rate and other costs). That is to say, the user can manually add, change or delete drawdowns at specific periods, change the borrowing rate, add new costs or replace or change existing costs. However, the rest of the variables should not be changed manually (i.e. period, balances, interest charges, payments, and cash flows) because the consistency of the table

would be at risk and the simulator might provide incorrect information at this stage and at the third stage. In order to obtain the APR, the manual changes introduced by the user should still conform to the assumptions for the calculation of the APR indicated in the area 'Description of the credit product'.

By way of illustration, consider that a second drawdown of €500 is allowed at the end of the first year, and that a new cost of €10 is charged then. The changes needed in the amortisation table are highlighted in red in Figure 12.

Figure 12. Second stage: An example with manual changes

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	1000.00				1000.00			10.00					10.00	10.00	990.00	990.00		
1		1000.00	1000.00	1005.83	1005.83	7.00%	5.83			-5.83	5.83		0.00	0.00	0.00	0.00		
2		1005.83	1005.83	1011.70	1011.70	7.00%	5.87			-5.87	5.87		0.00	0.00	0.00	0.00		
3		1011.70	1011.70	1017.60	1017.60	7.00%	5.90			-5.90	5.90		0.00	0.00	0.00	0.00		
4		1017.60	1017.60	1023.54	1023.54	7.00%	5.94			-5.94	5.94		0.00	0.00	0.00	0.00		
5		1023.54	1023.54	1029.51	1029.51	7.00%	5.97			-5.97	5.97		0.00	0.00	0.00	0.00		
6		1029.51	1029.51	1035.51	1035.51	7.00%	6.01			-6.01	6.01		0.00	0.00	0.00	0.00		
7		1035.51	1035.51	1041.55	1041.55	7.00%	6.04			-6.04	6.04		0.00	0.00	0.00	0.00		
8		1041.55	1041.55	1047.63	1047.63	7.00%	6.08			-6.08	6.08		0.00	0.00	0.00	0.00		
9		1047.63	1047.63	1053.74	1053.74	7.00%	6.11			-6.11	6.11		0.00	0.00	0.00	0.00		
10		1053.74	1053.74	1059.89	1059.89	7.00%	6.15			-6.15	6.15		0.00	0.00	0.00	0.00		
11		1059.89	1059.89	1066.07	1066.07	7.00%	6.18			-6.18	6.18		0.00	0.00	0.00	0.00		
12	500.00	1066.07	1566.07	1572.29	1572.29	7.00%	6.22	10.00		-6.22	6.22		10.00	10.00	490.00	490.00		
13		1572.29	1572.29	1581.46	1581.46	7.00%	9.17			-9.17	9.17		0.00	0.00	0.00	0.00		
14		1581.46	1581.46	1590.69	1590.69	7.00%	9.23			-9.23	9.23		0.00	0.00	0.00	0.00		
15		1590.69	1590.69	1599.97	1599.97	7.00%	9.28			-9.28	9.28		0.00	0.00	0.00	0.00		
16		1599.97	1599.97	1609.30	1609.30	7.00%	9.33			-9.33	9.33		0.00	0.00	0.00	0.00		
17		1609.30	1609.30	1618.69	1618.69	7.00%	9.39			-9.39	9.39		0.00	0.00	0.00	0.00		
18		1618.69	1618.69	1628.13	1628.13	7.00%	9.44			-9.44	9.44		0.00	0.00	0.00	0.00		
19		1628.13	1628.13	1637.63	1637.63	7.00%	9.50			-9.50	9.50		0.00	0.00	0.00	0.00		
20		1637.63	1637.63	1647.18	1647.18	7.00%	9.55			-9.55	9.55		0.00	0.00	0.00	0.00		
21		1647.18	1647.18	1656.79	1656.79	7.00%	9.61			-9.61	9.61		0.00	0.00	0.00	0.00		
22		1656.79	1656.79	1666.45	1666.45	7.00%	9.66			-9.66	9.66		0.00	0.00	0.00	0.00		
23		1666.45	1666.45	1676.17	1676.17	7.00%	9.72			-9.72	9.72		0.00	0.00	0.00	0.00		
24		1676.17	1676.17	1685.95	1685.95	7.00%	9.78			-9.78	9.78		0.00	0.00	0.00	0.00		
25		1685.95	1685.95	1695.79	1695.79	7.00%	9.83			-9.83	9.83		0.00	0.00	0.00	0.00		
26		1695.79	1695.79	1705.68	1705.68	7.00%	9.89			-9.89	9.89		0.00	0.00	0.00	0.00		
27		1705.68	1705.68	1715.63	1715.63	7.00%	9.95			-9.95	9.95		0.00	0.00	0.00	0.00		
28		1715.63	1715.63	1725.64	1725.64	7.00%	10.01			-10.01	10.01		0.00	0.00	0.00	0.00		
29		1725.64	1725.64	1735.70	1735.70	7.00%	10.07			-10.07	10.07		0.00	0.00	0.00	0.00		
30		1735.70	1735.70	1745.83	1745.83	7.00%	10.12			-10.12	10.12		0.00	0.00	0.00	0.00		

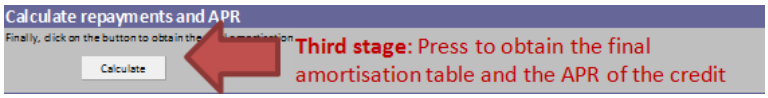
As stated above, the new information entered by the user will be considered in the third stage as long as the periods covered in the preliminary amortisation table also appear in the final amortisation table. That is, in credit agreements with repayments given as a percentage of the balance outstanding or as a constant amount known in advance, new periods could be added in the third stage or existing periods could be removed in order to guarantee a full repayment of the credit in the last period. Obviously, the new periods will not include information other than that entered in the first stage, and the periods deleted will be removed together with the values entered by the user in the second stage in respect to these periods. In our example, the duration of 30 periods was considered large enough (longer than the real duration) and hence, we expect that some of these periods will be deleted.

This flexibility of the simulator is beneficial, not only for the user, who can enter specific data that would be difficult to contemplate using lists and menus, but also for internal procedures carried out by the simulator, such as the elaboration of the illustrative scenario required by the MCD for foreign currency loans and credits allowing for variations in the borrowing rate.

THIRD STAGE

In the third stage the internal procedures run by the simulator allow obtaining the final amortisation table of the credit, the APR, and in the case of the MCD the results of the illustrative scenario. These procedures are launched by clicking on the button *Calculate* in the area 'Calculate repayments and APR'.

Figure 13. Third stage: Button Calculate



As in the second stage, a check for errors in the information provided in the first stage is carried out at the beginning. If errors in this information are detected the procedures are aborted. However, the changes in the preliminary amortisation table entered by the user in the second stage are not checked for consistency because of the infinite number of potential variations.

The action following the errors check consists of:

- If the credit is repaid by constant, increasing or decreasing instalments, the duration of the credit entered by the user in the first stage is respected, and the simulator obtains the instalments which pay off the credit in the last period (i.e., the final balance of the credit in the last period is zero). The amortisation table is updated and the amount of the first repayment of the credit is shown in the area 'Main results' as *Amount of the first repayment*.

- For credit agreements with repayment given as a percentage of the balance outstanding or as a constant amount known in advance, the scheme and definition of repayments entered by the user in the first stage are respected, and the simulator increases or decreases the number of periods in order to ensure full repayment of the credit in the last period (i.e., the final balance of the credit in the last period is zero). If it requires reducing the amount of the last repayment (or the previous one if the credit agreement includes a given final payment), the simulator does it automatically. The amortisation table is updated and the duration of the credit is shown in the area 'Main results' as *Duration of the credit*; also, it is copied to the cell with the duration of the credit agreement in the area 'Description of the credit product', in order to facilitate the design of new credit agreements with similar characteristics. Note that for these credits the cell *Amount of the first repayment* is kept empty because this amount is not confirmed nor determined by the simulator.

- For other credit agreements, all the features of the credit entered by the user in the previous stages are respected, including the duration of the credit and, as in the previous case, the cell *Amount of the first repayment* is kept empty.

For all types of credit agreements the simulator calculates the APR and other relevant information of the credit, which is shown in the area 'Main results'. These other pieces of information include the total cost of the credit, the total amount of the credit and the total amount payable by the consumer (defined as the sum of these two last amounts), which are provided below the APR figure. And, at the right, if illustrative scenarios have been required under the MCD, some of their results; the rest are shown in the last two columns of the amortisation table, as they are the payments to be made by the consumer if the scenario occurs. Finally, below the amortisation table and for all types of credit agreements, the

simulator provides annual subtotals and an overall total of the relevant amounts of the amortisation table.

Our example was that of a credit agreement with repayments given as a percentage of the balance outstanding. Hence, the simulator determines the number of periods and adapts the amortisation table accordingly. As expected, the final number of periods is lower than 30; specifically it is 24, as shown in Figure 14. Thus, periods 25 to 30 have been deleted, including any information that might have been introduced manually for these periods. However, the additional drawdown and cost entered manually at the end of the first year are kept. Also note that the last repayment determined by the simulator, amounting to €18.40, is lower than the minimum payment of €20 because a lower amount is due.

The area of 'Main results' reveals that the APR of the credit is 11.1%, the total amount of credit is €1500, and the total cost of the credit is €59.67, which gives a total amount payable by the consumer of €1559.67. The final rows with subtotals provide additional information in respect to costs and payments. For example, it can be seen that around two thirds of the capital is amortised during the first year (€1031.28 out of €1500) because the scheme of repayments implies higher payments in the earlier periods, and that interest charges of the credit amount to €39.67 during the two years and other costs amount to €20. Also, it can be confirmed that the total amount payable by the consumer is €1559.67.

As to the results of the illustrative scenario, the area of 'Main result' shows that if the borrowing rate rises to its highest level (9%) at the earliest possible opportunity (the fourth month), the APR would increase to 12.5%. The payments to be made by the consumer in this case would be those shown in the last column but one of amortisation table. Given that these payments are higher than those of the original credit since the fourth month, the total amount that the consumer would have to pay in the illustrative scenario would be also higher, amounting to €1566.94. The increases, however, are moderate (1.4% in the APR and €7.27 in the amount payable) because the increase of 2% in the borrowing rate applies when a significant part of the credit has been paid (in the first 3 months, the capital amortised amounts to €488).

Figure 14. Third stage: An example with manual changes

Main results

Caution: This information might not be valid if changes have been made after clicking on the button 'Calculate' and, as a result, the Final balance at the last period and/or the Present value of the cash flows are not zero. Cautionary notes are shown if this happens. Use the buttons 'Recalculate' to solve these situations. However, note that the results of the illustrative scenarios are only provided after clicking on the button Calculate.

Final balance in the last period	0.00	
Amount of the first repayment	[redacted]	Recalculate
Duration of the credit	24	MONTHS
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	11.1%	DYNAMIC Recalculate
Total cost of the credit	59.67	
Total amount of credit	1500.00	
Total amount payable	1559.67	

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

12.5%

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	1000.00				1000.00			10.00					10.00	10.00	990.00	990.00	10.00	
1		1000.00	1000.00	1005.83	800.00	7.00%	5.83			200.00	5.83	205.83	0.00	205.83	-205.83	-204.03	205.83	
2		800.00	800.00	804.67	640.00	7.00%	4.67			160.00	4.67	164.67	0.00	164.67	-164.67	-161.80	164.67	
3		640.00	640.00	643.73	512.00	7.00%	3.73			128.00	3.73	131.73	0.00	131.73	-131.73	-128.30	131.73	
4		512.00	512.00	514.99	409.60	7.00%	2.99			102.40	2.99	105.39	0.00	105.39	-105.39	-101.75	106.24	
5		409.60	409.60	411.99	327.68	7.00%	2.39			81.92	2.39	84.31	0.00	84.31	-84.31	-80.69	84.99	
6		327.68	327.68	329.59	262.14	7.00%	1.91			65.54	1.91	67.45	0.00	67.45	-67.45	-63.99	67.99	
7		262.14	262.14	263.67	209.72	7.00%	1.53			52.43	1.53	53.96	0.00	53.96	-53.96	-50.74	54.39	
8		209.72	209.72	210.94	167.77	7.00%	1.22			41.94	1.22	43.17	0.00	43.17	-43.17	-40.24	43.52	
9		167.77	167.77	168.75	134.22	7.00%	0.98			33.55	0.98	34.53	0.00	34.53	-34.53	-31.91	34.81	
10		134.22	134.22	135.00	107.37	7.00%	0.78			26.84	0.78	27.63	0.00	27.63	-27.63	-25.31	27.85	
11		107.37	107.37	108.00	85.90	7.00%	0.63			21.47	0.63	22.10	0.00	22.10	-22.10	-20.06	22.28	
12	500.00	85.90	585.90	586.40	468.72	7.00%	0.50	10.00		117.18	0.50	117.68	10.00	127.68	372.32	335.07	127.82	
13		468.72	468.72	471.45	374.98	7.00%	2.73			93.74	2.73	96.48	0.00	96.48	-96.48	-86.07	97.26	
14		374.98	374.98	377.16	299.98	7.00%	2.19			75.00	2.19	77.18	0.00	77.18	-77.18	-68.25	77.81	
15		299.98	299.98	301.73	239.98	7.00%	1.75			60.00	1.75	61.75	0.00	61.75	-61.75	-54.13	62.25	
16		239.98	239.98	241.38	191.99	7.00%	1.40			48.00	1.40	49.40	0.00	49.40	-49.40	-42.92	49.80	
17		191.99	191.99	193.11	153.59	7.00%	1.12			38.40	1.12	39.52	0.00	39.52	-39.52	-34.04	39.84	
18		153.59	153.59	154.49	122.87	7.00%	0.90			30.72	0.90	31.61	0.00	31.61	-31.61	-26.99	31.87	
19		122.87	122.87	123.59	98.30	7.00%	0.72			24.57	0.72	25.29	0.00	25.29	-25.29	-21.40	25.50	
20		98.30	98.30	98.87	78.30	7.00%	0.57			20.00	0.57	20.57	0.00	20.57	-20.57	-17.26	20.74	
21		78.30	78.30	78.75	58.30	7.00%	0.46			20.00	0.46	20.46	0.00	20.46	-20.46	-17.01	20.59	
22		58.30	58.30	58.64	38.30	7.00%	0.34			20.00	0.34	20.34	0.00	20.34	-20.34	-16.77	20.44	
23		38.30	38.30	38.52	18.30	7.00%	0.22			20.00	0.22	20.22	0.00	20.22	-20.22	-16.52	20.29	
24		18.30	18.30	18.40	0.00	7.00%	0.11			18.30	0.11	18.40	0.00	18.40	-18.40	-14.90	18.43	
Sums																		
Year 1	1500.00						27.16	20.00	0.00	1031.28	27.16	1058.44	20.00	1078.45	421.55	416.25	1082.12	
Year 2	0.00						12.50	0.00	0.00	468.72	12.50	481.22	0.00	481.22	-481.22	-416.25	484.82	
Total	1500.00						39.67	20.00	0.00	1500.00	39.67	1539.67	20.00	1559.67	-59.67	0.00	1566.94	

Once the actions have been carried out, the user still has control over the characteristics of the credit and the amortisation table. That is, the user can still change the dynamic cells in the input area and the variables with a title shaded in yellow in the amortisation table, and so see the effect of these changes on the credit. In the area of 'Main results' the cell *Annual Percentage Rate of Charge* is, besides, a dynamic cell, meaning that the user can change the APR and see immediately the effects of this change on the present value of cash flows. Finally, the repayments of the credit obtained after clicking on the button *Calculate* can also be changed (column Payments/Repayment of the credit/Total; its title is in a blue font).

However, it should be noted that any change made after clicking on the button *Calculate* might mean that the credit is not fully repaid in the last period and/or the present value of cash flows is not zero and hence, neither the amortisation table nor the information shown in the area 'Main results' are valid any longer.

In order to report these situations and address them, in the area of 'Main results', the *Final balance in the last period* and the *Present value of cash flows* are shown and two additional buttons are provided. When the changes made after clicking on the button *Calculate* imply that the credit is not repaid exactly at the last period, an error message in red font appears next to the *Final balance in the last period*, which obviously becomes non zero. To solve this situation, the button *Recalculate* next to the cell with the *Amount of the first repayment* is able to provide a new value of the first repayment which makes the *Final balance in the last period* equal to zero (thus assuring a full repayment of the credit) in credits with constant, increasing or decreasing instalments (the types of credit for which this first repayment is reported). For

other credits the solution should be achieved manually. When the changes make the APR obtained no longer valid, then an error message in red font appears next to the *Present value of cash flows*, which does not become zero. The button *Recalculate* next to the cell with the *Annual Percentage Rate of Charge* allows a new valid APR to be obtained which makes the *Present value of cash flows* equal to zero in any type of credit. In both cases, the number of periods of the credit remains the same. However, it should be noted that the results of the illustrative scenarios will be deleted because they are not longer valid; they are only provided after clicking on the button *Calculate* in the area 'Calculate repayments and APR'.

As an illustration, Figure 15 shows the outcome of increasing the borrowing rate for periods 13 to 24 up to 8%. The final balance in the last period and the present value of the cash flows does not become zero, and the two error messages appear.

Figure 15. Third stage: Changes after clicking on the button Calculate (I)

Main results

Caution: This information might not be valid if changes have been made after clicking on the button 'Calculate' and, as a result, the Final balance at the last period and/or the Present value of the cash flows are not zero. Cautionary notes are shown if this happens. Use the buttons 'Recalculate' to solve these situations. However, note that the results of the illustrative scenarios are only provided after clicking on the button Calculate.

Final balance in the last period	0.02	Caution: The credit is not repaid in full because the final balance in the last period is not zero.
Amount of the first repayment		Recalculate
Duration of the credit	24	MONTHS
Present value of the cash flows	-1.55	Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	11.1%	DYNAMIC Recalculate
Total cost of the credit	61.45	
Total amount of credit	1500.00	
Total amount payable	1561.45	

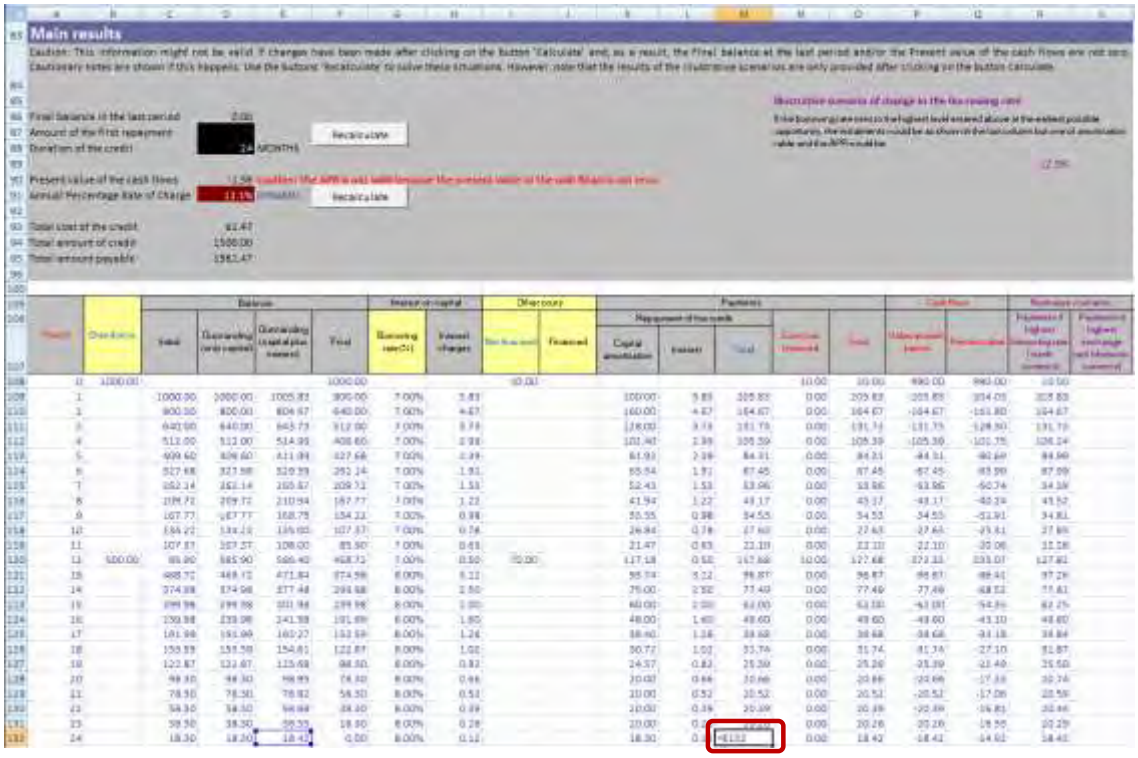
Error message about repayment

Error message about APR

		Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
Period	Drawdowns	Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	1000.00				1000.00			10.00					10.00	10.00	990.00	990.00	10.00	
1		1000.00	1000.00	1005.83	800.00	7.00%	5.83			200.00	5.83	205.83	0.00	205.83	-205.83	-204.03	205.83	
2		800.00	800.00	804.67	640.00	7.00%	4.67			160.00	4.67	164.67	0.00	164.67	-164.67	-161.80	164.67	
3		640.00	640.00	643.73	512.00	7.00%	3.73			128.00	3.73	131.73	0.00	131.73	-131.73	-128.30	131.73	
4		512.00	512.00	514.99	409.60	7.00%	2.99			102.40	2.99	105.39	0.00	105.39	-105.39	-101.75	106.24	
5		409.60	409.60	411.99	327.68	7.00%	2.39			81.92	2.39	84.31	0.00	84.31	-84.31	-80.69	84.99	
6		327.68	327.68	329.59	262.14	7.00%	1.91			65.54	1.91	67.45	0.00	67.45	-67.45	-63.99	67.99	
7		262.14	262.14	263.67	209.72	7.00%	1.53			52.43	1.53	53.96	0.00	53.96	-53.96	-50.74	54.39	
8		209.72	209.72	210.94	167.77	7.00%	1.22			41.94	1.22	43.17	0.00	43.17	-43.17	-40.24	43.52	
9		167.77	167.77	168.75	134.22	7.00%	0.98			33.55	0.98	34.53	0.00	34.53	-34.53	-31.91	34.81	
10		134.22	134.22	135.00	107.37	7.00%	0.78			26.84	0.78	27.63	0.00	27.63	-27.63	-25.31	27.85	
11		107.37	107.37	108.00	85.90	7.00%	0.63			21.47	0.63	22.10	0.00	22.10	-22.10	-20.06	22.28	
12	500.00	85.90	585.90	586.40	468.72	7.00%	0.50	10.00		117.18	0.50	117.68	10.00	127.68	372.32	335.07	127.82	
13		468.72	468.72	471.84	374.98	8.00%	3.12			93.74	3.12	96.87	0.00	96.87	-96.87	-86.42	97.26	
14		374.98	374.98	377.48	299.98	8.00%	2.50			75.00	2.50	77.49	0.00	77.49	-77.49	-68.52	77.81	
15		299.98	299.98	301.98	239.98	8.00%	2.00			60.00	2.00	62.00	0.00	62.00	-62.00	-54.35	62.25	
16		239.98	239.98	241.58	191.99	8.00%	1.60			48.00	1.60	49.60	0.00	49.60	-49.60	-43.10	49.80	
17		191.99	191.99	193.27	153.59	8.00%	1.28			38.40	1.28	39.68	0.00	39.68	-39.68	-34.18	39.84	
18		153.59	153.59	154.61	122.87	8.00%	1.02			30.72	1.02	31.74	0.00	31.74	-31.74	-27.10	31.87	
19		122.87	122.87	123.69	98.30	8.00%	0.82			24.57	0.82	25.39	0.00	25.39	-25.39	-21.49	25.50	
20		98.30	98.30	98.95	78.30	8.00%	0.66			20.00	0.66	20.66	0.00	20.66	-20.66	-17.33	20.74	
21		78.30	78.30	78.82	58.30	8.00%	0.52			20.00	0.52	20.52	0.00	20.52	-20.52	-17.06	20.59	
22		58.30	58.30	58.69	38.30	8.00%	0.39			20.00	0.39	20.39	0.00	20.39	-20.39	-16.81	20.44	
23		38.30	38.30	38.55	18.30	8.00%	0.26			20.00	0.26	20.26	0.00	20.26	-20.26	-16.55	20.29	
24		18.30	18.30	18.42	0.02	8.00%	0.12			18.28	0.12	18.40	0.00	18.40	-18.40	-14.90	18.43	

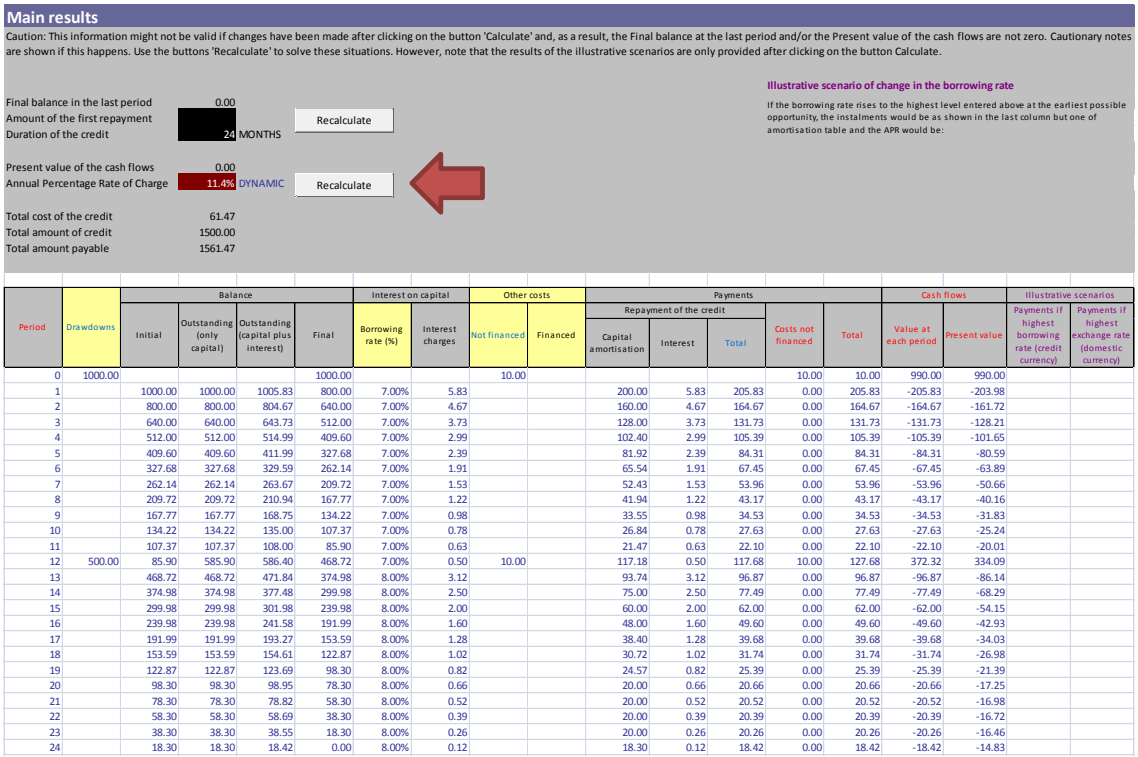
To solve the errors, first change the amount of the last repayment manually, as shown in Figure 16. To provide full repayment of the credit in the last period, for this period substitute the amount of the last payment in the column with the *Total* of *Repayment of the credit* (its title is in a blue font and their values can be changed after clicking on the button *Calculate*, as stated before) by the reference to the cell where the amount of €18.42 of *Balance Outstanding (capital plus interest)* appears. That is, enter the formula =E132 in cell M132. As a result, the last payment coincides with the amount which is due and hence the *Final Balance* becomes 0, meaning that the credit is repaid exactly, and the first error message disappears.

Figure 16. Third stage: Changes after clicking on the button Calculate (II)



Afterwards, to obtain the correct APR, click on the button *Recalculate* next to the cell showing the *Annual Percentage Rate of Charge*. A new APR of 11.4% is obtained and the second error message disappears, as shown in Figure 17. Now the amortisation table is coherent.

Figure 17. Third stage: Changes after clicking on the button Calculate (III)



Main results

Caution: This information might not be valid if changes have been made after clicking on the button 'Calculate' and, as a result, the Final balance at the last period and/or the Present value of the cash flows are not zero. Cautionary notes are shown if this happens. Use the buttons 'Recalculate' to solve these situations. However, note that the results of the illustrative scenarios are only provided after clicking on the button Calculate.

Final balance in the last period 0.00
Amount of the first repayment [redacted]
Duration of the credit 24 MONTHS
Recalculate

Present value of the cash flows 0.00
Annual Percentage Rate of Charge 11.4% DYNAMIC
Recalculate

Total cost of the credit 61.47
Total amount of credit 1500.00
Total amount payable 1561.47

Illustrative scenario of change in the borrowing rate

If the borrowing rate rises to the highest level entered above at the earliest possible opportunity, the instalments would be as shown in the last column but one of amortisation table and the APR would be:

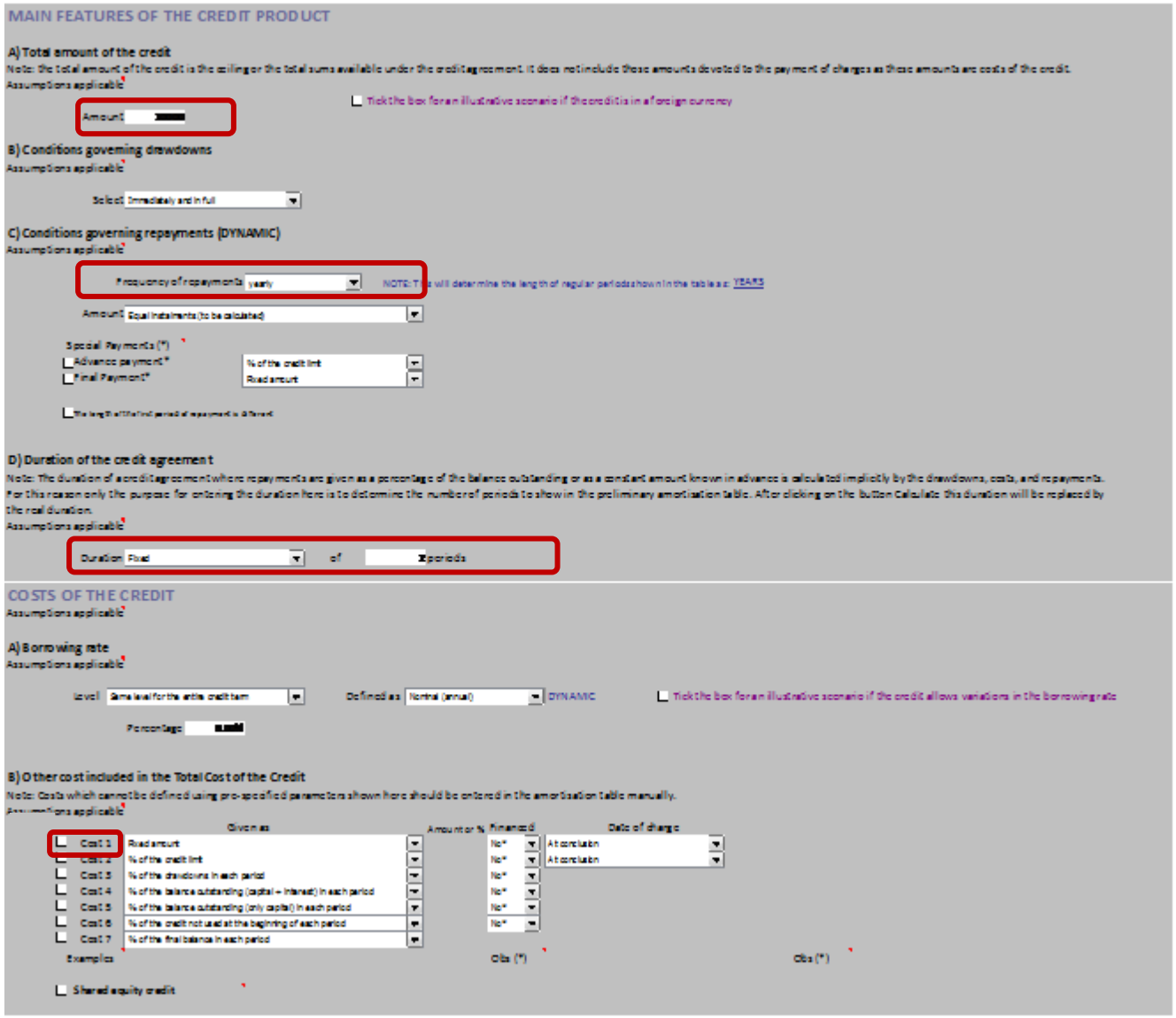
Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	1000.00				1000.00			10.00					10.00	10.00	990.00	990.00		
1		1000.00	1000.00	1005.83	800.00	7.00%	5.83			200.00	5.83	205.83	0.00	205.83	-205.83	-203.98		
2		800.00	800.00	804.67	640.00	7.00%	4.67			160.00	4.67	164.67	0.00	164.67	-164.67	-161.72		
3		640.00	640.00	643.73	512.00	7.00%	3.73			128.00	3.73	131.73	0.00	131.73	-131.73	-128.21		
4		512.00	512.00	514.99	409.60	7.00%	2.99			102.40	2.99	105.39	0.00	105.39	-105.39	-101.65		
5		409.60	409.60	411.99	327.68	7.00%	2.39			81.92	2.39	84.31	0.00	84.31	-84.31	-80.59		
6		327.68	327.68	329.59	262.14	7.00%	1.91			65.54	1.91	67.45	0.00	67.45	-67.45	-63.89		
7		262.14	262.14	263.67	209.72	7.00%	1.53			52.43	1.53	53.96	0.00	53.96	-53.96	-50.66		
8		209.72	209.72	210.94	167.77	7.00%	1.22			41.94	1.22	43.17	0.00	43.17	-43.17	-40.16		
9		167.77	167.77	168.75	134.22	7.00%	0.98			33.55	0.98	34.53	0.00	34.53	-34.53	-31.83		
10		134.22	134.22	135.00	107.37	7.00%	0.78			26.84	0.78	27.63	0.00	27.63	-27.63	-25.24		
11		107.37	107.37	108.00	85.90	7.00%	0.63			21.47	0.63	22.10	0.00	22.10	-22.10	-20.01		
12	500.00	85.90	585.90	586.40	468.72	7.00%	0.50	10.00		117.18	0.50	117.68	10.00	127.68	372.32	334.09		
13		468.72	468.72	471.84	374.98	8.00%	3.12			93.74	3.12	96.87	0.00	96.87	-96.87	-86.14		
14		374.98	374.98	377.48	299.98	8.00%	2.50			75.00	2.50	77.49	0.00	77.49	-77.49	-68.29		
15		299.98	299.98	301.98	239.98	8.00%	2.00			60.00	2.00	62.00	0.00	62.00	-62.00	-54.15		
16		239.98	239.98	241.58	191.99	8.00%	1.60			48.00	1.60	49.60	0.00	49.60	-49.60	-42.93		
17		191.99	191.99	193.27	153.59	8.00%	1.28			38.40	1.28	39.68	0.00	39.68	-39.68	-34.03		
18		153.59	153.59	154.61	122.87	8.00%	1.02			30.72	1.02	31.74	0.00	31.74	-31.74	-26.98		
19		122.87	122.87	123.69	98.30	8.00%	0.82			24.57	0.82	25.39	0.00	25.39	-25.39	-21.39		
20		98.30	98.30	98.95	78.30	8.00%	0.66			20.00	0.66	20.66	0.00	20.66	-20.66	-17.25		
21		78.30	78.30	78.82	58.30	8.00%	0.52			20.00	0.52	20.52	0.00	20.52	-20.52	-16.98		
22		58.30	58.30	58.69	38.30	8.00%	0.39			20.00	0.39	20.39	0.00	20.39	-20.39	-16.72		
23		38.30	38.30	38.55	18.30	8.00%	0.26			20.00	0.26	20.26	0.00	20.26	-20.26	-16.46		
24		18.30	18.30	18.42	0.00	8.00%	0.12			18.30	0.12	18.42	0.00	18.42	-18.42	-14.83		

As another functionality of the simulator, the user might only want to obtain the APR from the value of drawdowns and the value of repayments and payments of charges. In this case, the user should follow the three stages (this is necessary to define the repayment periods and the number of periods shown in the amortisation table) and then delete all the columns of the amortisation table except for those columns whose titles are in red font; then the user enters his or her own data at least in the columns whose titles are in blue font; finally he clicks on the button *Recalculate* next to the cell with the value of the APR to obtain a valid APR which equates the present value of drawdowns to the present value of repayments and payments of charges. This is illustrated in Figure 18, which shows the step-by-step explanations to obtain the APR of a credit agreement for a total amount of credit of €10000 repayable in two instalments of €5000 after one year and €7000 after two years. The total amount of the credit is drawn down immediately and in full at the conclusion of the agreement.

Figure 18. Obtaining the APR from the value of drawdowns and the value of repayments and payments of charges

As a first step, click on the button *Reset* and then enter the information highlighted in red.

Do not specify the *Amount* of the repayments, as they will be entered manually in the amortisation table.



Click on the buttons *Generate* and then *Calculate* to obtain the preliminary results and amortisation table.

Main results

Caution: This information might not be valid if changes have been made after clicking on the button 'Calculate' and, as a result, the Final balance at the last period and/or the Present value of the cash flows are not zero. Cautionary notes are shown if this happens. Use the buttons 'Recalculate' to solve these situations. However, note that the results of the illustrative scenarios are only provided after clicking on the button Calculate.

Final balance in the last period	0.00	
Amount of the first repayment	5454.37	Recalculate
Duration of the credit	2 YEARS	
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.0% DYNAMIC	Recalculate
Total cost of the credit	908.74	
Total amount of credit	10000.00	
Total amount payable	10908.74	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	10000.00				10000.00								0.00	0.00	10000.00	10000.00		
1		10000.00	10000.00	10600.00	5145.63	6.00%	600.00			4854.37	600.00	5454.37	0.00	5454.37	-5454.37	-5145.63		
2		5145.63	5145.63	5454.37	0.00	6.00%	308.74			5145.63	308.74	5454.37	0.00	5454.37	-5454.37	-4854.37		

In the amortisation table, delete the cells highlighted in red. Be aware of not deleting the cells under variables titled in red font (*Period, Costs not financed, Total*, and the two columns of *Cash flows*), as these cells cannot be changed under any circumstance.

Main results

Caution: This information might not be valid if changes have been made after clicking on the button 'Calculate' and, as a result, the Final balance at the last period and/or the Present value of the cash flows are not zero. Cautionary notes are shown if this happens. Use the buttons 'Recalculate' to solve these situations. However, note that the results of the illustrative scenarios are only provided after clicking on the button Calculate.

Final balance in the last period	0.00	
Amount of the first repayment	5454.37	Recalculate
Duration of the credit	2 YEARS	
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	6.0% DYNAMIC	Recalculate
Total cost of the credit	908.74	
Total amount of credit	10000.00	
Total amount payable	10908.74	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	10000.00				10000.00								0.00	0.00	10000.00	10000.00		
1		10000.00	10000.00	10600.00	5145.63	6.00%	600.00			4854.37	600.00	5454.37	0.00	5454.37	-5454.37	-5145.63		
2		5145.63	5145.63	5454.37	0.00	6.00%	308.74			5145.63	308.74	5454.37	0.00	5454.37	-5454.37	-4854.37		

Now enter the two repayments of €5000 and €7000 in the rows corresponding to periods 1 and 2 of the amortisation table.

Note that due to these changes, the area of *Main results* reports the error that *the APR is not valid because the present value of the cash flows is not zero*.

Main results

Caution: This information might not be valid if changes have been made after clicking on the button 'Calculate' and, as a result, the Final balance at the last period and/or the Present value of the cash flows are not zero. Cautionary notes are shown if this happens. Use the buttons 'Recalculate' to solve these situations. However, note that the results of the illustrative scenarios are only provided after clicking on the button Calculate.

Final balance in the last period	0.00	
Amount of the first repayment		Recalculate
Duration of the credit	2 YEARS	
Present value of the cash flows	-946.95	Caution: The APR is not valid because the present value of the cash flows is not zero.
Annual Percentage Rate of Charge	6.0% DYNAMIC	Recalculate
Total cost of the credit	2000.00	
Total amount of credit	10000.00	
Total amount payable	12000.00	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	10000.00												0.00	0.00	10000.00	10000.00		
1												5000.00	0.00	5000.00	-5000.00	-4716.98		
2												7000.00	0.00	7000.00	-7000.00	-6229.97		

To obtain the correct APR, click on the button *Recalculate* next to the cell showing the *Annual Percentage Rate of Charge*. A new APR of 12.3% is obtained and the error message disappears.

Main results

Caution: This information might not be valid if changes have been made after clicking on the button 'Calculate' and, as a result, the Final balance at the last period and/or the Present value of the cash flows are not zero. Cautionary notes are shown if this happens. Use the buttons 'Recalculate' to solve these situations. However, note that the results of the illustrative scenarios are only provided after clicking on the button Calculate.

Final balance in the last period	0.00	
Amount of the first repayment		Recalculate
Duration of the credit	2 YEARS	
Present value of the cash flows	0.00	
Annual Percentage Rate of Charge	12.3% DYNAMIC	Recalculate
Total cost of the credit	2000.00	
Total amount of credit	10000.00	
Total amount payable	12000.00	

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows		Illustrative scenarios	
										Repayment of the credit								
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	Payments if highest borrowing rate (credit currency)	Payments if highest exchange rate (domestic currency)
0	10000.00												0.00	0.00	10000.00	10000.00		
1												5000.00	0.00	5000.00	-5000.00	-4451.52		
2												7000.00	0.00	7000.00	-7000.00	-5548.48		

Finally, the simulator allows for other possibilities through the Excel tool Goal Seek. This tool varies the value in one specific cell until a formula that's dependent on that cell returns the result the user requires.

For example, the amount of the last repayment of the credit with the borrowing rates of 8% for periods 13 to 24 could be obtained using this tool as shown in Figure 19. Run Goal Seek with *Set cell*=Final balance in the last period cell (cell F132), *To value* = 0, and *By changing cell* = cell with the last repayment (cell M132). A final repayment of €18.42 will be obtained, as previously.

Figure 19. Using the tool Goal Seek

3.4. THE AMORTISATION TABLE

The amortisation table provides a set of variables which describe the evolution of the credit over time with respect to drawdowns, balances, financed and non-financed charges, repayments and net cash flows. This information goes beyond what is required by the CCD or the MCD for amortisation tables to be provided to consumers.

Figure 20. The amortisation table (left)

Period	Drawdowns	Balance				Interest on capital		Other costs	
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed
0	1000.00				1000.00			10.00	
1		1000.00	1000.00	1005.83	800.00	7.00%	5.83		
2		800.00	800.00	804.67	640.00	7.00%	4.67		

Figure 21. The amortisation table (right)

Payments					Cash flows		Illustrative scenarios	
Repayment of the credit								
Capital ar amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value	highest borrowing rate (credit currency)	highest exchange rate (domestic currency)
			10.00	10.00	990.00	990.00	10.00	
200.00	5.83	205.83	0.00	205.83	-205.83	-204.03	205.83	
160.00	4.67	164.67	0.00	164.67	-164.67	-161.80	164.67	

The description of the variables is as follows:

- Period: Each time interval within the duration of the credit. Period 0 refers to the starting date of the credit. Except for the first period (which may be specified as different by the user), the lengths of the periods are equal and are assumed to be given by the frequency of repayments of the credit (e.g. weekly, monthly, annually).

- Drawdown: The sum of drawdowns of the credit in each period. When an advance payment to the creditor is required by the agreement, the amount of this payment is deducted from drawdowns in period 0, so that this amount is not included in the financing process.

- Balance: Balance of the credit, according to different definitions:

    - *Initial balance* is the balance at the end of the previous period.

    - *Outstanding balance (only capital)* is the balance prior to repayment and payment of the charge of any costs, and hence it includes the initial balance plus drawdowns in the period.

    - *Outstanding balance (capital + interest)* is the outstanding balance of only capital plus interest charges over the period.

    - *Final balance* is the amount owed at the end of the period and hence it is defined as the outstanding balance of capital plus interest charges minus the repayment of the credit including capital and interest made in the period (or, alternatively, the balance outstanding of only capital minus capital amortisation) plus the costs financed with the credit in the period (that is, costs charged but not paid from other resources of the consumer).

The use of different definitions for the balance of the credit is justified by the numerous ways in which costs are defined. For example, maintenance fees in credit cards are usually given as 'Fixed amount' payable at 'Regular' intervals of 1 year 'in advance'; maintenance fees of lines of credit are usually given as a '% of the credit limit' payable at 'Regular' intervals of 1 month or 1 year and 'in arrears'; payment protection insurance (PPI) in revolving credit agreements is usually given as a '% of the final balance in each period', or PPI in instalment credit agreements is usually given as a 'Fixed amount' payable 'At conclusion' and 'Financed'.

In this regard also note that: i) non-financed non-interest costs are excluded from any definition of outstanding balance because it is assumed that they are paid in full when they are charged and hence, they never imply a change of the amount owed; ii) financed costs imply a change in the amount owed at the end of the period (thus, they are included in the final balance).

- Interest: This includes
    - *Borrowing rate*: annual borrowing rate which applies to the amount owed at the beginning of each period (initial balance) expressed as a percentage and defined according to the information entered by the user.
    - *Interest charges:* charges of the credit generated in the period and calculated on the basis of the borrowing rate[27].
- Other costs: Costs other than interest charged in each period. These can be:
    - *Not financed*: If a cost is not financed, it means that it is paid when it is charged, being added to the amount of the repayment of the credit to obtain the total payment made by the consumer.
    - *Financed*: If a cost is financed, when it is charged it is added to the amount owed. It is assumed that financed costs are charged after the repayment in the period, and hence they are included in the final balance of the period. Given this dependence between financed cost and the final balance, costs given as a percentage of the final balance cannot be financed (in order to avoid circular references), and in the last period of repayment of the credit (where the final balance should be zero) financed costs are omitted (they are assumed to be zero; to avoid this, the user should define the cost payable at the date of the last repayment as a new cost not financed). Similarly, if for a financed cost the user defines the date of charge as the last repayment date, then the simulator will change the nature of the cost to a cost not financed.
- Payments: Payments made by the borrower in each period in respect of:
    - *Repayment of the credit*: This includes the payments for interest and capital amortisation made by the borrower according to the repayment scheme defined by the user. It should be highlighted that if the repayment of the credit is not enough to pay the interest charges, the part of these charges unpaid implies an increase in the capital of the credit, and so the capital amortisation will be negative, meaning that instead of an amortisation (reduction) of the capital there is an increase in the capital owed.

[27] The simulator assumes that these charges depend on the length of each period and hence, a first payment period of different length will imply different interest charges for such a period. Other cases might be covered by the simulator manually.

- *Other costs not financed*: they are a part of the payments in the period because, as stated above, they are paid as soon as (in the same period) they are charged.
- *Total*: Sum of the repayment of the credit and the cost not financed, rounded to two decimals (euro cents).

- Cash flows:
  - *Value at each period*: Net amount received by the borrower in each period, defined as the sum of drawdowns of the credit minus the sum of total payments for the credit (for repayment of the credit and costs not financed).
  - *Present value*: The previous net amounts valued (discounted) at period 0 using the APR.

- Illustrative scenarios (only available for the MCD):
  - *Payments if highest borrowing rate (credit currency)*: Payments to be made by the borrower if the borrowing rate of the credit rises to the highest level at the earliest possible opportunity. This column is filled by the simulator when an illustrative scenario of change in the borrowing rate is requested by the user for a credit where Article 17(5) of the MCD does not apply.
  - *Payments if highest exchange rate (domestic currency)*: Payments to be made by the borrower expressed in domestic currency[28] for a foreign currency loan if the value of the domestic currency fells the high depreciation rate at the earliest possible opportunity. This column is filled by the simulator when an illustrative scenario of change in exchange rate is requested by the user.

Other relevant comments about the amortisation table are the following:

- Except for borrowing rates and periods, all the values in the amortisation table refer to amounts.
- Values are assumed to refer to end of period values, except for the borrowing rate. As stated above, the borrowing rate specified for a period is the rate used to calculate interest charges over that period. Note that assuming values for end of periods implies that the simulator is unable to treat cash flows which take place before a period ends.

Finally, it should be noted that titles in the amortisation table are shaded in different colors and also use different font colors to indicate the possibility of changing the information at different stages as follows:

[28] The term 'domestic currency' is used because it fits in with the definition of foreign currency loan of Article 4(28).

- If a title is shaded in yellow: the values can be changed by the user after obtaining the preliminary amortisation table (second stage, i.e. button *Generate*) and before calculating repayments and APR (third stage, i.e. button *Calculate*), as these value will be respected to obtain the repayments and APR. They can also be changed after calculating the repayments and APR, together with the values of the repayments of the credit (column Payments/Repayment of the credit/Total; its title is in a blue font) and any dynamic cell in the input area, but in this case it might be necessary to click on the buttons *Recalculate* to obtain a coherent amortisation table.

- If a title is in red font: the values cannot be changed under any circumstance.

- If a title is in blue font: information needed to obtain the APR only from drawdowns, repayments and payments of charges. In this case, all the columns in the table can be deleted except for those columns with a title in red font, then the user enter manually the information on drawdowns, repayments and payment of charges and finally he clicks on the button *Recalculate* next to the cell with the value of the APR to obtain a valid APR which equates the present value of drawdowns to the present value of repayments and payments of charges.

3.5. BRIEF INSTRUCTIONS

Obtaining the amortisation table and the APR of a credit agreement using this simulator consists of three stages.

During the three stages, the user should read the explanatory notes and the assumptions applicable and provide consistent information in order to obtain the APR. Any errors highlighted in red should be resolved before proceeding.

STAGE 1

Enter the characteristics of the credit product in the area 'Description of the credit product'.

Notes:

- The frequency of the repayment of the credit determines the length of the regular periods shown in the amortisation table.
- All the periods are assumed to have the same duration except for the first period of repayment if specified so.
- For credits with repayments given as a percentage of the balance outstanding or as a constant amount known in advance, the duration entered in this stage can be a rough estimation of the duration of the credit or just the number of periods the user wishes to see in the preliminary amortisation table which will be obtained in stage 2. This is because for these credits, the real duration is given implicitly by the drawdowns, costs and repayments (e.g., if a credit for a total amount of €1000 should be repaid in monthly repayments of €500 plus interest charges, the duration will be 2 months, as this is the period until full repayment). The real duration of the credit will be obtained by the simulator in stage 3. If the user plans to make manual changes in the preliminary amortisation table obtained in stage 2, the duration to be entered should be long

enough to ensure that the table will not be extended by the simulator to further periods in stage 3.

STAGE 2

Click on the button *Generate* in the area 'Generate amortisation table' to obtain a preliminary amortisation table from the information provided in stage 1.

Notes:

- The new table will replace any existing information in the table by the information provided in stage 1.
- Once the preliminary amortisation table has been generated, the user can change manually the information in the table for all those variables with a title shaded in yellow (drawdowns, borrowing rate and other costs). The rest of the variables should not be changed for consistency of the simulator. The information introduced in this way will be considered in stage 3 as long as the periods covered in the preliminary amortisation table also appear in the final amortisation table.

STAGE 3

Click on the button *Calculate* in the area 'Calculate repayments and APR' to obtain the APR and other relevant information about the credit. This includes the results of illustrative scenarios in the case of Directive 2014/17/EU (MCD).

Notes:

- For credits payable in equal, increasing or decreasing instalments, the simulator will obtain the instalments which pays off the credit in the last period according to the duration specified by the user. In stage 3 the amortisation table is updated and the amount of the first repayment of the credit is shown in the area 'Main results'.
- For credits with repayment given as a percentage of the balance outstanding or as a constant amount known in advance, the simulator respects the scheme and definition of repayments entered in stage 1 and increases or decreases the number of periods in order to ensure full repayment of the credit in the last period. In stage 3 the amortisation table is updated and the duration of the credit is shown in the area 'Main results'; the duration is also copied to the cell with the duration of the credit agreement in the area 'Description of the credit product' in order to facilitate the design of new credit agreements with similar characteristics.
- For all credit agreements the simulator displays the APR and other relevant information of the credit in the area 'Main results'.

AFTER STAGE 3

Once stage 3 is finished, the user has control of the characteristics of the credit and the amortisation table. That is, it is possible to change the dynamic cells in the input area and the variables with a title shaded in yellow and also the repayments of the credit in the column ‘Payments/Repayment of the credit/Total ‘in the amortisation table. This allows the user to view the effect of these changes on the credit.

Since these changes might mean that the credit is not fully repaid in the last period or the present value of cash flows is not equal to zero, the user should be aware of any message in

red next to the buttons Recalculate in the area of 'Main results'. If a message appears, it will be necessary to recalculate the amount of the first repayment or the APR by clicking on the corresponding button.

3.6. Q&A

Following there is a list of frequent Q&A on the simulator.

- *Protection:* The simulator is locked to preserve its integrity and functionality; it is not anticipated to provide an unlocked version.

- *Calculation of interest charges by the simulator uses compound interest:* Yes, the simulator uses a nominal annual rate which is charged periodically using a proportional conversion method OR an effective annual rate which is charged periodically using the corresponding compounding frequency. Other rules or practices are not considered, but can be entered manually by the user (e.g. simple interest).

- *Frequency of payments/capitalization of interest*: The simulator uses five different frequencies for payments and capitalization of interest, namely weekly, monthly, quarterly, half-yearly and yearly. Other frequencies are not foreseen. However, credits with other frequencies might be solved using equivalences and manual changes. For example, daily capitalization of interest can be addressed converting nominal rates to effective rates (see approach 2 of example 10 of the CCD) and a single payment in some days can be addressed using a first period of different length (see approach 1 of the same example).

- *Interest charged on a fee*: Whether interest is charged, or not, on any fee can be specified in the two places shown in Figure 22: before generating the preliminary amortisation table by choosing No/Yes in the column *Financed* corresponding to the fee, or after generating this table by entering manually the fee (without interest charges) in the columns *Not financed*/*Financed* of *Other costs* in the amortisation table.

Figure 22. Financed costs

Period	Drawdowns	Balance				Interest on capital		Other costs		Payments					Cash flows	
										Repayment of the credit						
		Initial	Outstanding (only capital)	Outstanding (capital plus interest)	Final	Borrowing rate (%)	Interest charges	Not financed	Financed	Capital amortisation	Interest	Total	Costs not financed	Total	Value at each period	Present value
0	6000,00				6000,00								0,00	0,00	6000,00	6000,00
1		6000,00	6000,00	6045,00	5770,89	9,00%	45,00			229,11	45,00	274,11	0,00	274,11	-274,11	-272,07

- *Manual changes*: As explained in previous sections of these instructions, manual changes in the amortisation table allows a large range of variations, such as enter

specific drawdowns and payments at specific periods, apply several borrowing rates, calculate interest charges using user-specific methods, include other costs financed or not, deal with repayments and costs at different frequencies, or consider grace periods, among others.

3.7. FINAL REMARKS

- To cancel any procedure, press the ESC (escape) key.
- The button *Reset* at the top of the simulator clears the input area and enters the characteristics of the default example. Clicking on this button is advisable to delete user-specific information and start from scratch.
- If the user writes on the area below the amortisation table, the information will be deleted if the *Calculate* button is clicked on.
- The simulator uses the tool Goal Seek of Excel to obtain the APR or any other results which need iterative calculations. The precision of the calculations using Goal Seek can be controlled by the user by the "Maximum Change" setting. In Excel 2013, choose File > Options > Formulas > (Calculation options) Maximum Change. The default precision setting is 0.001, and this is the value used in the calculations provided in this document. A lower value (e.g. 0.0001) will increase the precision of the calculations.