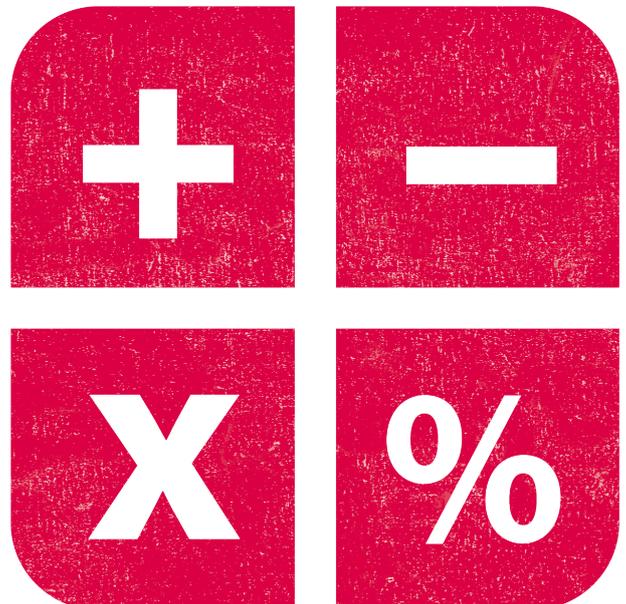


# MFRS Hot Topics

## Loans with early repayment options

JUNE 2015

Welcome to MFRS Hot Topics - a publication from SJ Grant Thornton. This issue provides guidance on accounting for debt instruments that include options allowing the borrower to repay the debt before the end of its full contractual term. It is written from the perspective of the borrower, although much of the guidance is equally applicable to the lender.



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# Guidance

An option allowing the borrower to repay a debt instrument before the end of its full contractual term (a prepayment option) is an *embedded derivative*. This embedded derivative should be accounted for separately from the underlying 'host debt' unless it is **closely related** (to the host debt instrument). The prepayment option is closely related if:

- a) its *exercise price* is **approximately equal** to the **amortised cost of the host debt** at each date on which the option can be exercised; or
- b) the *exercise price* of a prepayment option **reimburses** the lender for an amount up to the approximate present value of lost interest for the remaining term of the host contract (MFRS 139.AG30(g)(i) and (ii)).

For this purpose:

- we consider that the exercise price usually includes all the payments due as a result of exercising the option. This also includes payments that are described as 'penalty interest' or 'early repayment fee'
- the amortised cost of the host debt instrument should be determined on the basis of the expected cash flows and term excluding potential effects of the prepayment option (ie. on the basis of an otherwise identical instrument that does not include the prepayment option)
- an understanding of the specific provisions of the debt instrument related to the calculation of the exercise price is necessary to assess whether the exercise price is intended to reimburse the lender for the value of the lost interest.

An alternative approach permitted in some circumstances is to designate the entire instrument at fair value through profit or loss. The 'fair value option' is available for debt with prepayment options if

- (i) the option could significantly modify the cash flows and
- (ii) it is not readily evident that the option is closely related (MFRS 139.11A).

Although the fair value designation removes the need to separate the embedded derivative, determining the fair value of the combined debt contract may not be straightforward (except for debt instruments traded in an active market). For example, the fair value of the instrument would need to take account of changes in the borrower's credit standing.

### Prepayment option is determined to be closely related

If the prepayment option is closely related, the combined debt instrument is accounted for as a single instrument. Accordingly, and assuming the debt is measured at amortised cost using the effective interest method:

- the combined debt instrument is initially recorded at fair value (plus or minus any directly attributable transaction costs) (MFRS 139.43)
- in determining the effective interest rate (EIR), the expected cash flows and expected life of the instrument are estimated taking account of the prepayment option (see MFRS 139.9). Accordingly:
  - if (at inception) the option is expected to be exercised, the expected cash flows would include payments of interest and principal to the exercise date along with the exercise price of the option or
  - if the option is not expected to be exercised, the expected cash flows would include payments of interest and principal over the full contractual term
- subsequently the assessment of the likelihood of the option being exercised may change. This will affect the expected cash flows and expected life of the instrument. The change in expected cash flows and life is accounted for by discounting the revised cash flows at the original EIR. The effect on the carrying value is reported in profit or loss (MFRS 139.AG8).

### Prepayment option is determined not to be closely related

If the prepayment option is not closely related, the debt instrument should be split into a host contract and an embedded derivative. Each component is then accounted for separately. Assuming again that the host debt is measured at amortised cost using the effective interest method:

- the terms of the host debt instrument and prepayment option are determined consistently with the MFRS 139.AG30(g) 'test' described above
- on initial recognition, the fair value of the combined instrument is split into:
  - the fair value of the host debt
  - the fair value of the prepayment option
- any directly attributable transaction costs are allocated to the host debt
- the EIR of the host debt is determined based on the expected cash flows excluding any effects of the prepayment option. Subsequently, amortised cost is measured on the same basis and using this EIR
- the carrying value of the host debt is not affected by changes in the probability of exercising the prepayment option
- the prepayment option is measured at fair value through profit and loss.

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# Discussion

## General

Entities and individuals sometimes issue debt instruments (ie. borrow money) for a fixed term but also include an option (or options) to repay early. Such prepayment options are common in mortgage products and in many commercial loans. In MFRS 139 terms, these options (sometimes referred to as prepayment options) are usually embedded derivatives because if exercised they will or may modify the cash flows of the debt instrument.

Applying the concept of embedded derivatives in practice can be challenging. It is necessary to:

- determine whether or not the contract includes an embedded derivative
- determine whether or not the economic characteristics of the embedded derivative are closely related to those of the host contract
- if they are not closely related, separate the contract. This involves identifying the terms and conditions of the host component and the embedded derivative. This in turn can require judgement, since the terms of the two components are not normally stated expressly.

MFRS 139.10 defines embedded derivatives as: “. . . a component of a hybrid (combined) instrument that also includes a non-derivative host contract - with the effect that some of the cash flows of the combined instrument vary in a way similar to a stand-alone derivative. An embedded derivative causes some or all of the cash flows that otherwise would be required by the contract to be modified according to a specified interest rate, financial instrument price . . . “

It may not seem immediately apparent that an option to repay a (say) fixed rate loan early meets this definition because:

- (i) the option affects cash flows only if exercised; and
- (ii) the cash flows of fixed rate debt do not vary with interest rates.

However, in this context a variation in cash flows should be interpreted as a possible change in the fair value of expected cash flows. A fixed price option to prepay a fixed rate loan will increase in value as interest rates decline (and vice versa). Accordingly, the option's expected cash flows vary according to interest rates in a similar way as a separate option to purchase a fixed rate debt asset at a fixed price. The application guidance to MFRS 139 also makes clear that put, call or prepayment options in debt contracts are embedded derivatives (MFRS 139. AG30(g)).



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## The 'closely related' test

MFRS 139 does not contain any general principle for assessing whether or not embedded derivatives are closely related. However, MFRS 139.AG30(g) includes specific 'tests' for put, call or prepayment options in debt contracts. The embedded option is closely related only if a) the exercise price is approximately equal to the amortised cost of the host debt on each exercise date or b) the exercise price of a prepayment option reimburses the lender for an amount up to the approximate present value of lost interest for the remaining term of the host contract.

The outcome of the closely related test is dependent on how the combined contract is analysed into the host and embedded derivative. Although this may seem obvious in many cases, this can be problematic. Two areas of difficulty are that:

- the fair value of the host debt at inception is not equal to the fair value of the combined contract (ie. the loan proceeds, assuming the transaction is 'at market'). This is because the option itself has value. The Example section illustrates this point. However, for straightforward loans repayable at the principal amount we consider that it is acceptable to analyse the host contract on the basis of the stated terms of the combined contract
- the treatment of some fees payable on early repayment.

### Approximately equal'

MFRS 139 does not interpret the term 'approximately equal' as used in MFRS 139.AG.30(i) to determine whether the exercise price of the prepayment option is sufficiently close to the amortised cost of the host debt or the present value of the lost interest resulting from early repayment. As a very general indication we suggest that 'within 5%' should be the upper limit for interpretation of this term. However, it is for management to make this judgement based on the specific facts and circumstances in each case. If the effect of the judgement is significant, disclosure should be provided in accordance with MFRS 101.122.

### 'Exercise price reimburses the lender for lost interest'

Alternatively, the prepayment option is considered closely related if the exercise price reimburses the lender for an amount up to the approximate present value of lost interest for the remaining term of the host contract. This test is performed by reviewing the specific provisions of the debt instrument in relation to the formula to be used for the calculation of the exercise price. For this purpose, the lost interest is determined as the product of the principal amount prepaid multiplied by the interest rate differential. The interest rate differential is the excess of the effective interest rate of the host contract over the effective interest rate the entity would receive at the

prepayment date if it reinvested the principal amount prepaid in a similar contract for the remaining term of the host contract (MFRS 139.AG30(g)(ii)). As above, we suggest that 'within 5%' should be the upper limit for interpretation of the term 'approximate present value'.

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### Prepayment versus extension options

Another area of interpretation is distinguishing between an option to:

- repay a loan early
- extend the term of a loan (a term extending feature).

For example, a 10 year loan with an option to repay at par after 5 years is the same economically as a 5 year loan with an option to extend for 5 years on the same terms. However, MFRS 139 includes a different test of whether an embedded term extending feature is closely related to the host contract. Broadly, a term extending feature is regarded as closely related only if the interest rate is reset to approximate market rates at extension (MFRS 139.AG30(c)).

Because of this different approach, a judgement needs to be made as to the substance of the embedded option. Indicators that the option is a term extending feature might include that:

- at inception, the expected outcome is that the loan will be repaid before its full term (ie. it is probable that a prepayment option will be exercised or an extension option will not be exercised)
- the terms of the loan are amended in the secondary period.

In the absence of substantive indicators one way or the other, the legal form of the contract should be followed.

### Straightforward situations

The closely related test should be straightforward for many types of prepayable loan. Examples of debt instruments for which it should be readily evident that the prepayment option is closely related include the following (in both cases assuming transaction costs are insignificant):

fixed interest loan prepayable at the principal amount (plus accrued interest)  
- the amortised cost of the debt will always approximate the principal amount (plus accrued interest) which in turn equals the exercise price of the option

floating rate loans prepayable at the principal amount (plus accrued interest)  
- although expected cash flows vary with interest rates, the effect of altering the EIR in accordance with MFRS 139.AG7 is usually that the amortised cost approximates the principal amount (plus accrued interest).

With on-demand debt (such as a bank overdraft), the borrower is usually able to repay the loan before the lender demands payment. However, there is no embedded prepayment option (because the borrower has no ability to continue the loan if the lender demands immediate repayment). Similarly, there is no substantive prepayment option in a short-term trade payable.

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## Valuing the prepayment option

The fair value of the embedded prepayment option reacts to various contractual and economic factors. Depending on the specific facts and circumstances, the involvement of a valuation specialist should be considered to ensure a robust valuation of the option as market prices for prepayment options or similar instruments are usually not readily obtainable. However, in assessing whether separate accounting for a prepayment option may exceed materiality levels, its key value drivers should be considered. Typical factors include, but are not limited to:

- the exercise price
- the interest rate of the host debt instrument
- the risk free-rate of interest, the entity's specific credit spread and their volatilities
- the contractual terms of the prepayment option, which limit its exercise
- the expected term of the option.

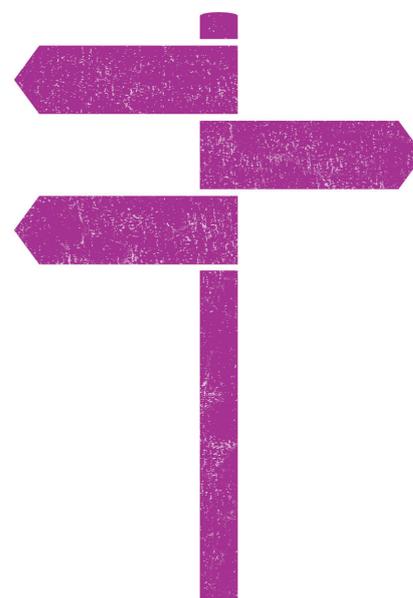
One of the key inputs to any valuation model used to determine the option's fair value is its exercise price, sometimes referred to as 'penalty interest' or 'early repayment fee'. Prepayment options correlate positively to any spread between the interest rate of the host debt instrument and the exercise price. Longer contractual and expected terms of the option also increase the fair value of the option, as it becomes more likely to be exercised

by the entity. The probability of the prepayment option to be exercised is also sensitive to the spread between the interest rate of the host debt instrument and current market interest rates. In addition to any changes in risk-free interest rates, the entity-specific interest rate may also react to the entity's credit rating.

These features are reflected in MFRS 139.AG30(g)(ii), which was inserted as part of the 2009 Annual Improvements to FRSs. This notes that the prepayment option is closely related to the host contract if the exercise price reimburses the lender for an amount up to the approximate present value of lost interest for the remaining term of the host contract. MFRS 139.AG30(g)(ii) further states that:

- lost interest is the product of the principal amount prepaid multiplied by the interest rate differential
- interest rate differential is the excess of the effective interest rate of the host contract over the effective interest rate the entity would receive at the prepayment date if it reinvested the principal amount prepaid in a similar contract for the remaining term of the host contract.

As the determination of whether the prepayment option is closely related to the host debt is made at inception of the contract, an entity will have to use judgement in identifying the appropriate interest rates to be used in the above calculation.



# Example

An entity borrows CU1,000,000 from a bank on 1 January X1. Interest is charged at 10% payable annually in arrears. The loan is repayable in 5 years (on 31 December X5). The loan includes an option to prepay on 1 January each year for CU1,050,000.

The bank indicates that, without the prepayment option, it would lend at 9%. Transaction costs are insignificant.

## Step 1: determine terms of host and embedded derivative

The combined contract can be analysed into:

- a debt host comprising the annual interest payments of CU0.1m and the repayment of principal of CU1m
- an embedded derivative comprising an option to exchange the future amounts payable under the loan for CU1.05m.

## Step 2: determine amortised cost of host debt at each exercise date

In substance, the borrower is borrowing at 9% (not 10%). The additional interest of 1% is in substance a payment for the prepayment option. The EIR for the host debt contract is therefore 9%. The contractual payments under the loan agreement discounted at 9% have a fair value of CU1,038,897. This amount is the initial carrying value of the host debt. By implication, the embedded derivative has a fair value of CU38,897 (asset) (such that the combined fair value of the host and embedded derivative equal the fair value of the combined contract, ie. CU1,000,000).

Alternatively, if the fair value of the prepayment option were known to be CU38,897, the fair value of the debt host could be determined as the sum of this and the fair value of the host. The EIR is then derived as the interest rate that discounts the future cash flows to the fair value of the debt host.

## Step 3: compare the exercise price of the option with the amortised cost of the debt

This comparison is shown below.

	Opening amortised cost	Interest at 9%	Payments	Closing amortised cost	Exercise price of option	Difference %
<b>20X1</b>	1,038,897	93,501	(100,000)	1,032,397	1,050,000	1.7%
<b>20X2</b>	1,032,397	92,916	(100,000)	1,025,313	1,050,000	2.4%
<b>20X3</b>	1,025,313	92,278	(100,000)	1,017,591	1,050,000	3.2%
<b>20X4</b>	1,017,591	91,583	(100,000)	1,009,174	1,050,000	4.0%
<b>20X5</b>	1,009,174	90,826	(1,100,000)	0	N/A	

In this case, it is debatable whether the exercise price is 'approximately equal' to the amortised cost of the debt host at each date. The assessment should be made by management based on the entity's specific facts and circumstances (including the significance of the transaction to the entity). The accounting implications of both separating and not separating the prepayment option are discussed next.

#### Step 4A: account separately for the debt host and embedded option

In this case, the debt host is reported as set out above. The respective entries on initial recognition are as follows:

1 Jan X1	Debit	Credit
Cash	CU1,000,000	
Derivative asset - prepayment option	CU38,897	
Loan payable		CU1,038,897

Subsequently, the prepayment option derivative is reported at fair value through profit or loss.

#### Step 4B: account for the combined contract with no separation

In this case, there is a further step to determine the expected cash flows. If management does not expect to exercise the option, the loan is reported initially at CU1,000,000 and subsequently measured at amortised cost using an EIR of 10%.

If management expects to exercise the option, the expected cash flows and life of the loan are determined on this basis. For illustrative purposes, if the option is expected to be exercised in four years, the expected cash flows, EIR and amortised cost would be as follows:

	Cash flows	Interest at 11.06%	Amortised cost
1 Jan X1	1,000,000	N/A	1,000,000
31 Dec X1	(100,000)	110,607	1,010,607
31 Dec X2	(100,000)	111,780	1,022,387
31 Dec X3	(100,000)	113,083	1,035,470
31 Dec X4	(1,150,000)	114,530	1,050,000
<b>EIR</b>	<b>11.06%</b>		

If management expectations change subsequent to initial recognition, the revised estimated cash flows are discounted at the EIR determined at inception. The effect is reported as a gain or loss in the income statement.

Note: The example above only illustrates the first test under (MFRS 139.AG30(g)(i) and (ii)). As noted in the discussion section, the alternative second test is not expected to require a similar detailed calculation but rather require a review of the specific provisions of the debt instrument to determine whether the embedded derivative is closely related to the host contract. The accounting implication for the embedded derivative whether it is closely related or not will be the same as those illustrated in Steps 4A and 4B.



#### KUALA LUMPUR

Level 11, Sheraton Imperial Court  
Jalan Sultan Ismail  
50774 Kuala Lumpur

T +603 2692 4022  
F +603 2721 5229  
E [info@my.gt.com](mailto:info@my.gt.com)

#### PENANG

51-8-A,  
Menara BHL Bank  
Jalan Sultan Ahmad Shah  
10500 Penang

T +604 228 7828  
F +604 227 9828  
E [info.pg@my.gt.com](mailto:info.pg@my.gt.com)

#### KUANTAN

A-105A, 1st Floor  
Sri Dagangan, Jalan Tun Ismail  
25000 Kuantan  
Pahang

T +609 515 6124  
F +609 515 6126  
E [info.ktn@my.gt.com](mailto:info.ktn@my.gt.com)

#### JOHOR BAHRU

Unit 29-08, Level 29  
Menara Landmark  
12 Jalan Ngee Heng  
80000 Johor Bahru, Johor

T +607 223 11848  
F +607 224 9848  
E [info.jb@my.gt.com](mailto:info.jb@my.gt.com)

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