Pricing of Financial Products and the Credit Contracts Act

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It can be difficult for a layperson to evaluate the true cost of a loan, and to compare the costs of loans specifying different conditions. The duration of the loan, the timing of interest and capital payments, and additional charges, all add to the complexity of the evaluation. The Credit Contracts Act provides a standard method for calculating a summary measure of the cost of a loan and gives protection for prospective borrowers who were previously faced with measures calculated using different methods, depending on the preference of the lending institution. However, there are some deficiencies in the Act. In particular, the formula specified in the Act for converting a periodic interest rate to an annual rate does not allow for the cost of more frequent payments. The Act should be amended by replacing the specified method with a suggested readily available and easily applied method.

Keywords: Credit Contracts Act, consumer protection legislation

Introduction

Consumers do not fully investigate every purchase they make. Instead they rely on the people they deal with to describe their products in enough truthful detail to be able to confidently proceed with the transaction. It is usually in the interests of the marketer to maintain this level of trust; customers who have had their trust abused will not be back to buy more and may spread a bad word about. Besides this, a certain standard of basic honesty is expected of traders.

Not every marketer is an honest trader and, in case their moral sense or self interest lets them down, the common law and various pieces of legislation protect consumers from misleading descriptions. The Fair Trading Act is an example of an attempt to keep traders honest by legislation.

The description of some goods and services requires expertise in preparation and interpretation. Financial products fall into this class. When borrowers take out a loan they want to know what they will be up for in terms of loan servicing costs and repayment requirements. Depositors want to know what their deposit will return in the way of interest, and when they will get their money back. But any description is complicated by the timing of payments. For instance, someone buying a refrigerator for $1120 may want to decide between two hire purchase agreements requiring a $220 deposit, with the one agreement requiring monthly payments of $92 over twelve months and the other requiring quarterly payments of $164 over two years. The cash flow situation for the two year agreement is better but the total outgoings are greater. Many considerations will enter the decision to take up one or the other agreement, including a consideration of the value of the extra time given by the two year agreement, but it is not clear, from the information given, what the cost is.

The calculation of the cost is complicated and while financial institutions can be expected to have the expertise to make the calculations, consumers, in general, can not. Consumers rely on experts to come up with a single figure that takes account of both the interest rate and the timing of the payments, that will allow them to compare the cost of the available options. Institutions may not be honest, and anyway experts do not agree on a method, but the Credit

Contracts Act 1981 provides a standard method that institutions must use if they want to avoid the prescribed penalties.

Before the Credit Contracts Act was passed most credit contracts used the interest rate as a summary measure of the cost of servicing a loan. Lenders were not required to use a standard summary measure and the quoted interest rate had a variety of meanings. It was common, for instance, for hire purchase agreements to quote what is now called the 'flat' rate, where the annual amount of interest was expressed as a percentage of the initial debt.

The Credit Contracts Act requires that lenders use a standard summary measure called the 'finance rate'. The Act claims, in section 6, that the finance rate expresses "the total cost of credit as a percentage per annum of the amount of credit" on a "uniform basis". However, the formula given in the Act to calculate the finance rate does not, in fact, give a uniform measure of the cost of credit between options specifying different frequency of payments. As defined in the Act, the finance rate understates the cost of loans when interest must be paid more than once a year. This paper criticises this aspect of the method specified by the Act and suggests a different me thod that more accurately calculates the cost of earlier, as against later, payments. The purpose of proposing an alternative formula to that specified by the Act is to make the summary measure more nearly "uniform". In addition, there are other flaws and omissions in the Act which, for completeness, the paper also addresses.

The Purpose of the Act

The purpose of the Credit Contracts Act 1981 is apparent from the Long Title. The Long Title states that it is:

> "An Act to reform the law relating to the provision of credit under contracts of various kinds in order to:
>
> a)   Prevent oppressive contracts and conduct;
> b)   Ensure that all the terms of the contract are disclosed to debtors before they become irrevocably committed to them;
> c)   Ensure that the cost of credit is disclosed on a uniform basis in order to prevent deception and encourage competition; and
> d)   Prevent misleading credit advertisements; and repeal the Moneylenders Act 1908."

It appears from paragraph (c) that one purpose of the Act is to require commercial lenders, who can be expected to have the necessary financial expertise to make the calculations, to publish the cost of credit in a way that allows borrowers, who may not have the expertise, to make comparisons between loans of different durations and with different timing of interest and capital payments. The way in which the cost of credit is to be calculated, and the particular form of disclosure that is required, are laid down in Sections 5 and 6. Section 5 defines the cost of credit and Section 6 defines the finance rate.

Principles to be Followed to Fulfil the Purpose of the Act

If the purpose of the Act is to be fulfilled there are three aspects of a loan that should make the finance rate different from the amount paid in interest over the course of a year, as a percentage of the amount outstanding at a particular time. First, some additional charges,

such as an application fee, should be regarded as part of the cost of credit. This is required by the Act but no explicit instructions are given as to how to incorporate the additional charges in the calculation of the finance rate.

Second, the finance rate should allow for the cost of more frequent, as against less frequent, interest payments. This is not required by the Act.

Third, when capital repayments are made during the term of the loan, interest should not be charged on the repaid capital. This is required by the Act too, and the required calculation is specified. However, because the cost of more frequent interest payments is not allowed for, the interest on the repaid capital is not fully rebated by the specified calculation. These three aspects are now addressed in more detail.

(i) Additional Charges

The Act says that all charges, excluding those associated with enforcing the contract, should be regarded as part of the cost of credit. However, the Act does not give a method for incorporating the charges in the finance rate calculation. The logical method is to deduct the charge from the amount of the credit, and add the charge to the cost. For example if $100,000 is borrowed and an application fee of 1% is charged, then the borrower effectively receives $99,000 but has to pay back $100,000. In the calculation to determine the finance rate, $99,000 should therefore be the amount of the credit, and the cost is the interest and the extra $1,000, which comes on top of the interest and has to be paid back, together with the $99,000, by the end of the term. For a table mortgage the extra $1,000 is paid back progressively over the term and is thus accounted for in the formula specified by the Act. But for an interest-only loan, over a period of more than one year, a separate calculation is required.

An interest-only loan of $100,000 for one year at 10% interest with a 1% application fee would require payment of $110,000 at the end of the year; exactly the same payment that would be required for a $99,000 loan at 11.11%' that required no application fee. Hence the finance rate should be 11.11% for both loans. A loan of $100,000 for two years at 10% with a 1% application fee would incur an interest charge of $10,000 at the end of the first year and repayment and interest charges of $110,000 at the end of the second year; exactly the same charges that would be incurred by a borrower of $99,000 who paid interest at 10.10%[2] in the first year and 11.11% in the second year. To obtain one summary figure, enabling borrowers to compare different loans, it is necessary to regard the loan as having two components, one of $99,000 at 10.10% for each year, and another at 1.01% (1000/99,000) over two years. The two year rate must then be converted to an equivalent one year rate, by a method presented in the next section, and that rate, 0.5%[3] in this example, added to the annual rate, giving 10.60%.

(ii) Frequency of Interest Payments

Schedule 1 of the Act contains the formula for the calculation of the interest rate to be used when interest payments are made during the year. If a rate 'r'% is the annual finance rate and 'n' is the number of periods in the year, then the interest per period is required to be calculated from the fraction:

$$a = r/100xn$$

This formula ensures that the amount of interest paid is the same, whether it is paid annually or more frequently. But it does not take account of early payment of interest compared to payment at the end of the year. For instance, consider two loans, each of $100,000 with the capital to be repaid after one year. The first agreement requires interest of $12,000 to be paid at the end of the year. The second agreement requires payment of $1,000 at the end of each month. In the first case the borrower has had the use of the $12,000 during the whole year while in the second case the borrower has progressively foregone the use of this money during the year.

It is clear that the first loan is better from the borrower's point of view than the second. Yet according to the formula in Schedule 1 the finance rate would be 12% in each case. The formula given would not meet the objective of disclosing the cost of credit on a uniform basis.

In order to meet the stated objective it is necessary to compound each periodic interest payment forward to the end of the year. Such a formula is easily derived in the same way that the standard compounding formula is derived for annual payments over a number of years.

The proposed formula is:

$$a = (1 + r/100)^{1/n} - 1$$

where $1/n$ indicates that the nth root of the expression in brackets is to be taken. For a given finance rate, calculated using this formula, the outgoings would be the same for a borrower who had to make (say) monthly payments, as for a borrower who had to make annual payments but who, each month, deposited the amount required by the monthly option in an account which earned interest at the rate of 'a' per month and who used the amount accumulated in the account at the end of the year for the annual payment.

In the Act, the Government Actuary is required to publish formulae for various lending options and the same formula, which does not take account of the frequency of interest payments, is the basis for all the equations published in the Gazette.

The extent of the difference in the rates as calculated according to the Credit Contracts Act and as calculated by the proposed formula depends on the rates themselves, and on the intervals between the payments. Thus the difference when calculated on a daily basis rather than a weekly basis is minimal, but the difference when calculated on a daily basis rather than an annual basis is quite large, and the difference is larger for a higher rate.

Table 1 gives the rates calculated by the proposed formula, corresponding to rates of 10%, 15% and 20% calculated according to the Act, for daily and yearly intervals, and for intervals between. For example, a loan where the interest has to be paid monthly, which has a finance rate calculated according to the Act of 10%, would have a finance rate, calculated by the proposed formula, of 10.47%.

Table 1. Comparison of rates based on the different formulae

Payment Frequency		Rates based on the Act		
		10.00%	**15.00%**	**20.00%**
Payment Frequency		Rates base on the proposed formulae		
1	(yearly)	10.00%	15.00%	20.00%
2		10.25%	15.56%	21.00%
3		10.34%	15.76%	21.36%
4		10.38%	15.87%	21.55%
6		10.43%	15.97%	21.74%
12	(monthly)	10.47%	16.08%	21.94%
26		10.50%	16.13%	22.05%
52	(weekly)	10.51%	16.16%	22.09%
365	(daily)	10.52%	16.18%	22.13%

Note.
The rates calculated by the proposed formula are given in the body of the table under columns headed by rates calculated according to the Act.

iii. Frequency of Capital Repayments

Section 6(b) specifies that the finance rate should be "calculated from a formula published by the Government Actuary". The various formulae for different options were published in the NZ Gazette in 1982. The formula for calculating the equal periodic amounts required to pay interest and pay off a loan over its course was published in the form of a standard amortisation equation by the Government Actuary (1982, page 1849). In the gazetted equation the periodic interest rate in the standard formula is replaced by:

$$r/(100 \times n)$$

in accordance with Schedule 1. As demonstrated earlier this formula fails to take account of early payment of interest when calculating the periodic rate from the finance rate. Thus the equation given by the Government Actuary understates the cost of early repayment of capital also.

Table 2. Comparison of periodic payments required for a $100,000 loan for 20 years

Payment Frequency		Finance Rate					
		10%		15%		20%	
		A	B	A	B	A	B
1	(yearly)	11746	11746	15976	15976	20536	20536
2		5828	5733	7940	7709	10226	9800
3		3875	3792	5283	5079	6808	6434
4		2903	2832	3958	3787	5103	4788
5		1933	1881	2636	2510	3400	3168
12	(monthly)	965	937	1317	1248	1699	1572
26		445	431	607	574	784	723
52	(weekly)	222	215	304	287	392	361
365	(daily)	32	31	43	41	56	51

Note:
The periodic payments listed under 'A' are calculated according to the Act. Those listed under 'B' are calculated with the proposed formula.

Table 2 compares the periodic payments calculated by the formula in the Act, with those calculated by the proposed formula, that are required to pay the interest and repay the capital for a $100,000 loan taken out for 20 years with no additional charges.

A borrower choosing between two table mortgages with the same finance rate, one requiring yearly payments and the other requiring monthly payments, would expect the sum of twelve monthly payments to be less than the annual payments because interest does not have to be paid on the capital that is repaid during the year. For instance, a 25 year table mortgage for $100,000 with a finance rate of 14.25% would require yearly payments of $14,779. A monthly payment of $1,175 would have a finance rate of 14.50% if the early interest payments were taken into account, but a rate of 13.62% if they were not. Twelve times the monthly payment is $14,100 some $600 less than the annual payment, hence the borrower may be led into believing that all aspects of the more frequent payment had been taken into account and that the monthly option was the better, whereas, in fact, only the repayment of capital has been allowed for, and the contract with the yearly payment option is actually the better.

Other Formulae and Requirements of the Act

If the Act is to be amended there are other deficiencies that could be attended to at the same time.

Revolving credit arrangements escape the injunction to disclose the finance rate unless it is requested. Thus on a bank statement showing an overdraft, the words:

> *"the base rate for lending is currently xx.xxx percent per annum and this rate is not (and is less than) the finance rate within the meaning of the Credit Contracts Act 1981",*

absolves the institution from the disclosure required for other types of loans, unless disclosure is requested by the borrower. There appears to be no reason why disclosure is not required for revolving credit contracts as it is for other types of credit contract. Moreover, the revolving credit contract formula specified for a request disclosure includes an approximation to make a tedious calculation easier. With ready access to a computer it is no longer necessary to rely on the approximation and the exact formula should be quoted.

There is no legislation requiring financial institutions to disclose the returns on deposits, or other forms of investment, on a uniform basis. It seems just as important to protect investors, who may not have the expertise to evaluate investment alternatives, as it does to protect borrowers who may not have the expertise to evaluate borrowing alternatives. The calculations required for disclosure of the returns on deposits are the same as those for disclosure of the cost of borrowing.

Discussion

Marketers are constantly faced with ethical decisions when promoting products by description of their attributes. In the case of financial products and services, where the description relies on technical expertise to formulate but yet must be readily understood by prospective customers, even the most honest will be inclined to rely on the letter of the law for guidance. The law embodied in the Credit Contracts Act 1981 eliminated the most flagrant abuses made feasible because of the limited possession of expertise and provided valuable guidance for honest traders. The situation would be further improved by adopting the recommendations that follow.

Recommendations

If the Act is to achieve the objectives stated in the long title, and protect depositors in the same way, it should be amended by:

1. Specifying the proposed method for incorporating non-interest charges;
2. Replacing the formula for periodic interest rates in Schedule 1;
3. Requiring disclosure of the finance rate for revolving credit contracts;
4. Removing the gazetted approximation for revolving credit contracts and;
5. Requiring disclosure of the finance rate for all financial contracts.

Reference

Government Actuary (1982). New Zealand Gazette, 10 June (60), 1849.

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