

HIRE PURCHASE REPAYMENTS, TAX AND THE CASHFLOW

Bill Liley

INTRODUCTION

Hire purchase agreements involve equal monthly repayments. The proportions of interest and principal within each repayment alter during the term of the agreement. There is a corresponding change in tax liability and therefore, in turn, implications for the cash flow. This Report examines these implications.

THE NATURE OF HIRE PURCHASE AGREEMENTS

With most hire purchase agreements in the logging industry :

- the contractor makes a deposit on the machine
- the finance company contributes the balance and takes title to the machine
- the contractor pays the finance company in equal instalments which include both principal and interest. He takes title to the machine when the repayments are complete.

Although the repayments are equal, the proportions of principal and interest are not. This effect can be demonstrated for loans of any duration, as the following example shows :

Principal sum = \$50,000. Repayment to be made in three equal monthly payments. The finance rate is quoted as 25% per annum, which corresponds to 25/12 or 2.08% monthly. The monthly payment can be calculated, using the appropriate formula, and equals \$17,364.76:

Month	Principal Outstanding	Monthly Repayment	Interest Repaid	Principal Repaid
	\$	\$	\$	\$
1	50,000.00	17,364.76	$50,000.00 \times 2.08\% = 1,040.00$	16,324.76
2	33,675.24	17,364.76	$33,675.24 \times 2.08\% = 700.44$	16,664.32
3	17,010.92	17,364.76	$17,010.92 \times 2.08\% = 353.83$	17,010.92
4	0.0			

Where the loan extends over several years, then the changing proportions of principal and interest may become more marked, e.g. \$40,000 for 3 years at 21% per annum, monthly replpayments :

Year	Total Interest Paid	Principal Repaid
	\$	\$
1	7,411.34	10,672.69
2	4,941.26	13,142.78
3	1,899.50	16,184.53

"Rule of 78"

The proportions of interest and principal repaid in any year can be derived from thorough calculations, as used in the above examples.

More commonly, Accountants use a more convenient but less accurate method, the "Rule of 78". The name of the rule results from the sum of all digits up to and including 12 being 78. For a 12 month term, the rule is applied as shown in the following example :

*Principal \$50,000, Finance Rate = 25%,
Term = 12 months. Monthly repayment = \$4,751.
Total repayments = \$4,751 x 12 = \$57,012*

*Total interest repaid = \$57,012 - \$50,000
= \$7,012*

Interest repaid in :

*first month = $12/78 \times \$7,012 = \$1,078$
second month = $11/78 \times \$7,012 = 989$*

*third month = $10/78 \times \$7,012 = 898$
fourth month = $9/78 \times \$7,012 = 807$
fifth month = $8/78 \times \$7,012 = 716$
sixth month = $7/78 \times \$7,012 = 625$
seventh month = $6/78 \times \$7,012 = 534$
eighth month = $5/78 \times \$7,012 = 443$
ninth month = $4/78 \times \$7,012 = 352$
tenth month = $3/78 \times \$7,012 = 261$
eleventh month = $2/78 \times \$7,012 = 170$
twelfth month = $1/78 \times \$7,012 = 90$*

\$ 7,012

If the term is other than 12 months, then the appropriate sum of digits is used. For a 6 month term, the first month's interest would be 6/21 of the total; and for 36 months, 36/666 of the total. The values obtained are reasonable approximations of the theoretically derived amounts.

HIRE PURCHASE AND TAXATION

In assessing taxable income, interest is treated as an expense and is deductible in the year it is incurred. Principal repayments, by contrast, are treated as capital. Capital investments are spread over the working life of the machine through depreciation (Liley, 1987).

Machine depreciation for tax determination is calculated using a Diminishing Value (D.V.) method. In any year, the depreciation is a set percentage of the opening book value, as the following example shows :

Year	Opening Value	Depreciation at 20% D.V.	Closing Value
	\$	\$	\$
1	100,000	20% x 100,000 = 20,000	80,000
2	80,000	20% x 80,000 = 16,000	64,000
3	64,000	20% x 64,000 = 12,800	51,200

Of the two components within each hire purchase instalment - principal and interest - both have much greater tax deductibility in the first years of the machine's life. Depending on the contractor's circumstances, this may create difficulties in the cash flow. To assess the effect, it is first necessary to review the contractor's overall tax situation.

Provisional Tax

A logging contractor will be a provisional taxpayer. In any current year, he pays three tax instalments based on the previous year's income. Because these are based only on estimates of what his income will really be, at a later stage there is a "terminal" tax to tidy things up.

The system can be explained with a time line as illustrated in Figure 1.

The result of the "provisional" and "terminal" taxation system is a delaying, or "staggering" of the tax impact. If the previous year was very profitable, then large provisional and terminal payments will be due in the current year, regardless of present profitability.

Figure 1 - Time Line

<u>YEAR 1</u>				Because the contractor has just started his business, the previous year's income was nil. No tax is payable.
TAXABLE INCOME 1				
<u>YEAR 2</u>				
JULY	PT 1			One-third of the tax due on the first year's income is payable in each of July, November and March. This is the "provisional" tax and is being paid in the expectation that year 2 taxable income will be similar to year 1. The tax on year 1 income is finally payable in February as "terminal" tax.
NOVEMBER	PT 1			
FEBRUARY	TT 1			
MARCH	PT 1			
<u>YEAR 3</u>				
JULY	PT 2			Again the provisional payments are based on the income of the year before. To determine terminal tax, the actual tax due on year 2 income is taken. From this is deducted the provisional tax which was actually paid. If there is any difference this is paid as terminal tax.
NOVEMBER	PT 2			
FEBRUARY	TT 2 (3 x PT1)			
MARCH	PT 2			
<u>YEAR 4</u>				
JULY	PT 3			As before, terminal tax on year 3 income may be payable if it was more profitable than year 2. If it was less profitable, a refund may be due in February, and if both years 2 and 3 were equally profitable, no terminal tax is payable at all.
NOVEMBER	PT 3			
FEBRUARY	TT 3 (3 x PT2)			
MARCH	PT 3			

Cashflow

The example cashflow in Figure 2 illustrates the interaction of the various factors. The logging gang used in the example has the following features :

Machinery - 1 skidder - purchase value \$200,000; resale value \$30,000 after five years. This machine is replaced in month 61 by another exactly the same.

Finance agreement - Down payment \$30,000. Capital to repay \$170,000. 60 monthly payments of \$4,599.07 (finance rate 21%).

All other costs - \$6,200 per month.

Revenue - \$14,000 per month.

It is assumed that funds from the resale of the first machine will be used as a deposit for the second. For simplicity, the effect of inflation has been ignored.

As the graph indicates, although the gang's gross revenue remains steady, the taxable income rises significantly from years 1 to 5. This is entirely due to the reduced deductibility of interest and depreciation charges. With the increase in taxable

income, the amount of tax paid also rises, but with a delayed response. This results in year 6 having the lowest taxable income and yet the highest tax paid. As a result, a substantial correction is necessary in year 7 when a sizeable rebate results.

Years 5 and 6 are clearly the most critical as far as the cash balance is concerned. Year 5 is the final year of the first machine's use. Repair and maintenance costs are likely to be high at this stage and so the business may be particularly vulnerable (as it again becomes in year 10). By year 6 the new machine is established and hopefully offers greater reliability.

Reduction in Provisional Tax Payment

The system of calculating provisional tax is not necessarily inflexible. The situation can to some extent be alleviated. Where a contractor has clear reason for expecting a reduction in taxable income for any year, he may reduce his provisional tax payments. Instead of basing provisional tax on last year's income, it is assessed on the anticipated income for the current year. This may be calculated from a prepared budget or derived from the first few months of trading in the current year or both. By re-assessing tax in this manner, the need for a tax rebate in year 7 could be largely avoided.

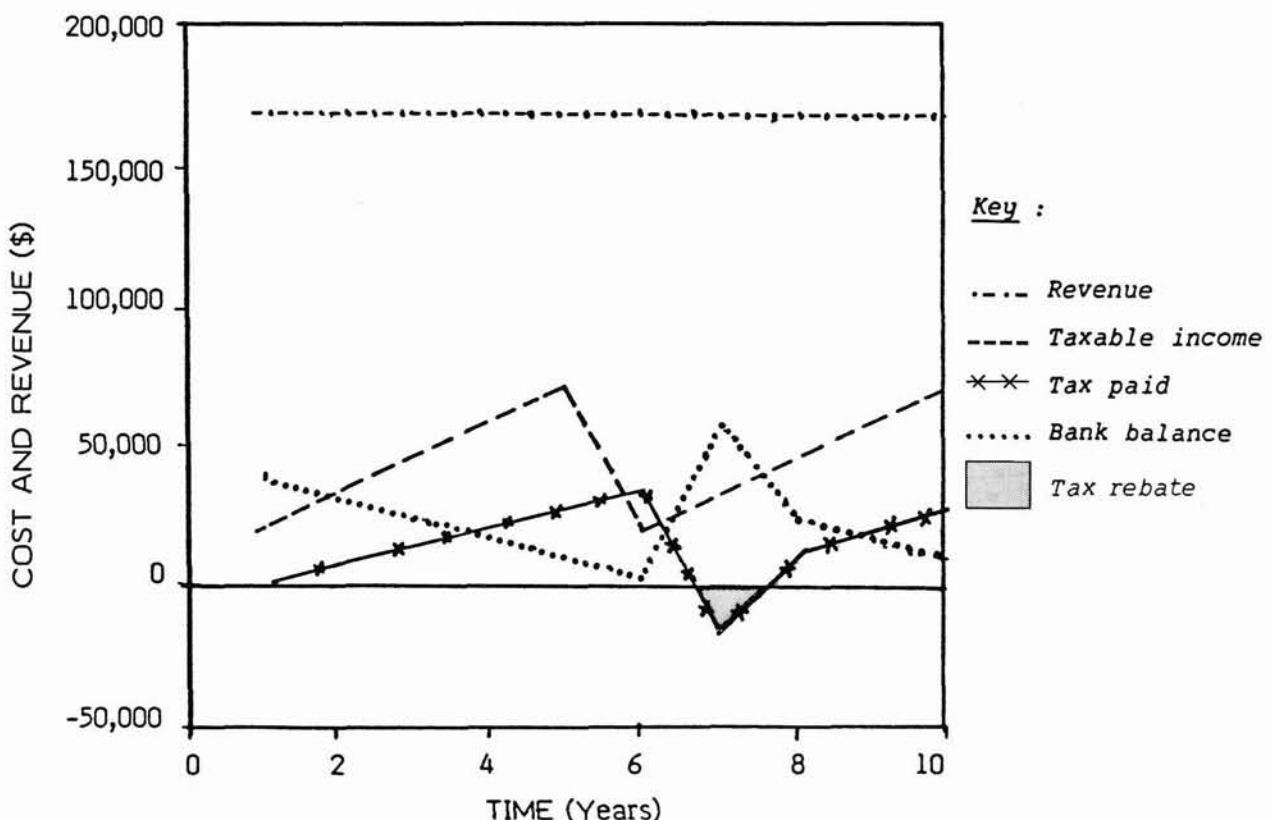


Figure 2 - CASH FLOW : Example 1

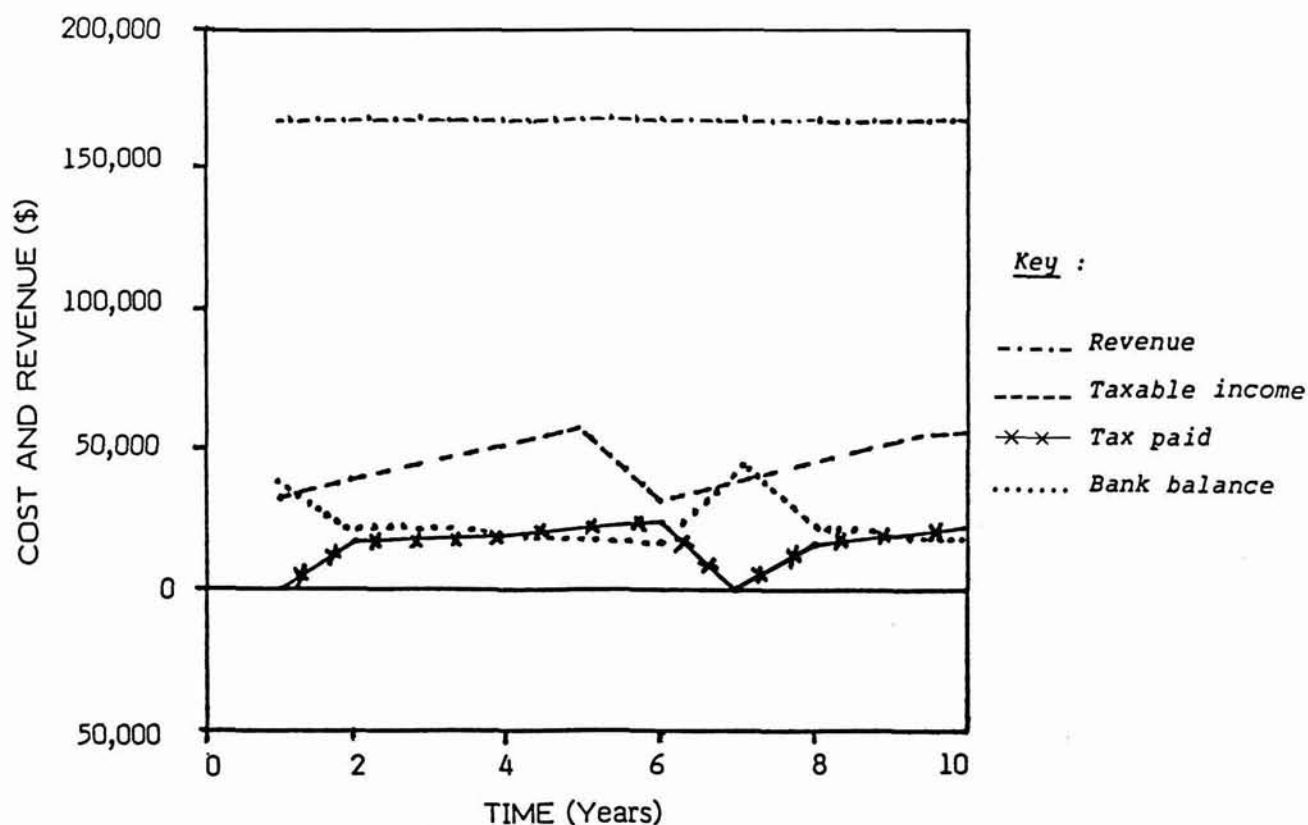


Figure 3 - CASH FLOW - Example 2

An Alternative Treatment of Interest

The taxpayer can elect to spread the total interest cost of the hire purchase agreement evenly over its term.

Figure 3 demonstrates the result of this change on the cash flow. The taxable income still rises between years 1 and 5, but less steeply since it is now only the deductibility of depreciation which declines. The tax paid shows a much reduced variation and most importantly the cash balance remains fairly steady.

Which Alternative to Use

Only one simplified trading situation has been examined in the example and therefore the results must be interpreted with care. Individual circumstances which must be considered, include :

- if there is more than one machine in the business then "staggered" replacement may produce a more even tax liability
- it may be preferable to have higher interest tax deductions in the first few years. Repair and maintenance costs tend

to increase later in the machine life, providing a counterbalancing effect. The contractor may also find other opportunities for tax deductibility by that stage.

Where, however, the contractor is in a situation of a large investment in machinery, 3-5 year loans and a high proportion of outgoings in finance charges, then the alternative treatment of interest may be worth evaluating.

Regardless of the circumstances, it is essential for a logging contractor to review his long term budget for machine replacement and tax liabilities.

REFERENCE

Liley, W.B. 1987: "Depreciation in the Logging Business", LIRA Report, Vol. 12, No.8.

For further information, contact:

N.Z. LOGGING INDUSTRY RESEARCH ASSOC. INC.
P.O. Box 147,
ROTORUA, NEW ZEALAND.

Fax: (073) 462-886

Telephone (073) 487-168