

DEPRECIATION AND THE LOGGING BUSINESS

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INTRODUCTION

Depreciation describes the way in which a machine's purchase cost is spread over its life.

As an example, consider a tractor bought by a logging contractor for \$100,000. The contractor works it for five years, and then sells it for \$20,000.



Over the five years that he has owned it, the tractor has cost him \$80,000 in lost value.

In the financial reports for his business, accepted practice is to apportion this cost over the tractor's life. For instance :

	Year 1	Year 2	Year 3	Year 4	Year 5
	\$	\$	\$	\$	\$
Gross revenue from machine hire	50,000	50,000	50,000	50,000	50,000
All other expenses	30,000	30,000	30,000	30,000	30,000
Depreciation $80,000 \div 5 =$	16,000	16,000	16,000	16,000	16,000
Profit	4,000	4,000	4,000	4,000	4,000

In this example, the loss in value of \$80,000 has been spread evenly. This is one means of determining depreciation.

This Report describes several recognised ways of spreading such costs.

ASSET LIFE AND LOSS OF VALUE

A logging business may own a variety of assets. Some, such as buildings and machines, have a long life, whereas others, like chainsaws, may last no more than a year. Still other "consumable" assets such as fuel, files or welding rods are used up on a daily basis. Depreciation is typically derived for those items with a working life greater than one year.

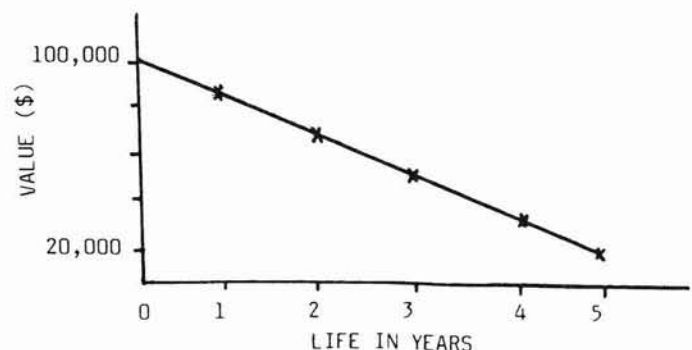
Depreciation is applied because the asset undergoes a loss in value. This loss may be from a combination of causes :

- work related. The machine becomes worn out from the work it must perform. The harder it is worked, the quicker it wears out.
- age related. Machines do not have to work to deteriorate, especially if storage is inadequate. Paint fades, metal rusts and fatigues, and rubber decays.
- technical obsolescence. A machine may lose value very quickly once it becomes outdated technology. The resale value of a "B" series skidder may drop substantially when the "C" series is announced; an "A" series machine suffers even more, regardless of how low its total hours.

TWO COMMON WAYS OF CALCULATING DEPRECIATION

Straight Line Method

The loss in value over the working life is divided by the life in years. The result is an equal depreciation cost of each year. The graph of a machine's declining value is a straight line.



Purchase price	=	\$100,000
Resale value	=	\$ 20,000
Working life	=	5 years
Annual depreciation	=	$(\$100,000 - \$20,000) \div 5 = \$16,000$

Diminishing or Declining Value (D.V.) Method

The asset value decreases by a constant percentage of the previous year's value (not the original value).

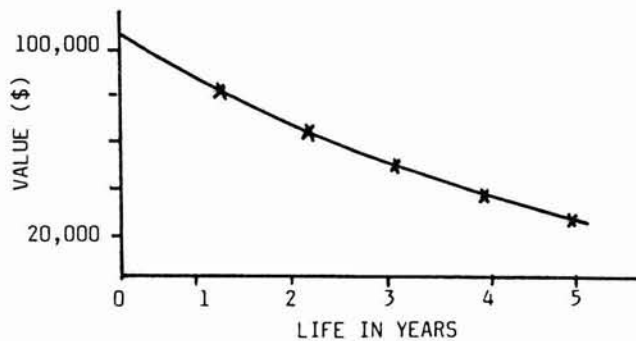
For example, if the D.V. rate was 20% and the initial value was \$100,000, the machine's value would change as follows :

Age	Depreciation	Value
	\$	\$
0	-	100,000
1	$100,000 \times 20\% = 20,000$	80,000
2	$80,000 \times 20\% = 16,000$	64,000
3	$64,000 \times 20\% = 12,800$	51,200
4	$51,200 \times 20\% = 10,240$	40,960
5	$40,960 \times 20\% = 8,192$	32,768

The example demonstrates two important features of the D.V. method :

- the depreciation becomes less each year
- the resale value of the machine does not enter the calculations, unlike the straight line method.

As a consequence, however many years the D.V. method is applied, the machine value never reaches zero.



Two other methods of calculating depreciation are described in basic accounting text books. These include the Unit of Output method and the Sum of Digits method.

WHICH METHOD TO USE?

By convention, machine rate calculations use the straight line method. It has the advantage of simplicity and ensures that the full expected decline in value is recognised. The law, however, requires that the declining value method must be used for taxation accounting. G.S.T. returns may include a combination of both methods.

Depreciation and Machine Rate Calculations

The depreciation cost is usually a large part of any machine rate (Figure 1). Most calculation formats use the straight line method. In traditional accounting theory, depreciation is a means of spreading the

actual purchase value of the machine over its working life. By contrast, in the machine rate, "depreciation" is generally interpreted as "replacement fund" and this is an important conceptual difference. It leads to the recommendation, for instance, that machine rates be calculated using equivalent new machine values and that these be revised annually.

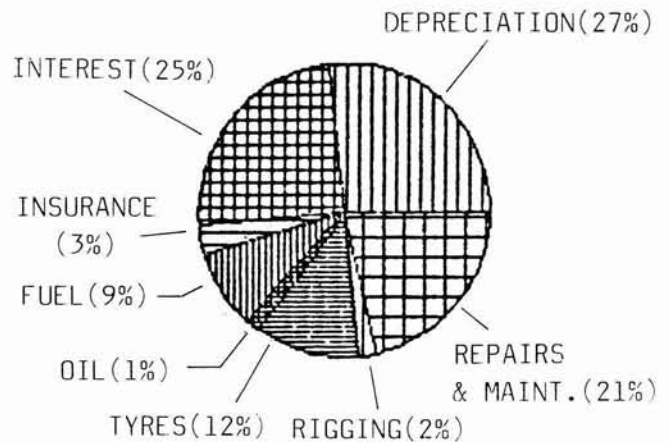


Figure 1 - Components of an example machine rate

Depreciation for Annual Tax Returns

By law, a declining value method must be used. Heavy logging machinery can currently be depreciated at a maximum rate of 20% per annum. There was, until recently, a first year allowance of 25% but this has since been withdrawn. Chainsaws can be depreciated at a maximum rate of 50%.

In annual accounting reports, depreciation is treated as an expense. It therefore reduces the taxable income. It does not have to be claimed and so can be used as a means of smoothing income (i.e. depreciation is not claimed in a low income year and instead is used to offset high income and so reduce tax in a subsequent year).

End of year accounts for the business will include a Depreciation Schedule such as that shown in Figure 2. Opening and closing entries in the Schedule are termed "book" values because they are based on the actual (or "historical") purchase price of the machine. Where inflation is high, the book value may bear little relationship to the resale value. Therefore care should be taken in its interpretation.

ASSET	BALANCE 1.4.86			PURCHASED DURING YEAR	ASSETS SOLD DURING YEAR			DEPRECIATION CLAIMED AMOUNT	BOOK VALUE 31/3/87
	COST	DEPRECIATION TO DATE	BOOK VALUE		SALE PRICE	PROFIT	LOSS		
Loader	150,000	73,200	76,800					15,360	61,440
Skidder 1	165,000	110,933	54,067		80,000	25,933		-	-
Skidder 2	260,000	-		260,000				52,000	208,000
Gang Bus	25,000	9,000	16,000					3,200	12,800
			146,867	260,000	80,000	25,933		70,560	282,240

Figure 2 - Schedule of Fixed Assets and Depreciation as at 31 March, 1987

When a machine is eventually sold, the resale value and book value must be reconciled for tax determination. If the resale value is less than the book value, then there is a book loss, and this is offset against the business's income. More commonly, inflation results in the resale value being greater than the book value, and a book profit results. This is treated as taxable income*. A book profit may be handled in three different ways :

- the resale profit is taxed in full in the year it is declared.
- the depreciable value of a replacement machine may be reduced by the amount of resale profit.
- where the resale profit is greater than \$1,000, the taxpayer may require that his books for the last three years be re-opened and the profit distributed within those years to best tax advantage.

Income Tax Legislation also makes it clear that a new owner of secondhand machinery is not entitled to claim more depreciation than the previous owner, had he retained ownership.

Depreciation for G.S.T.

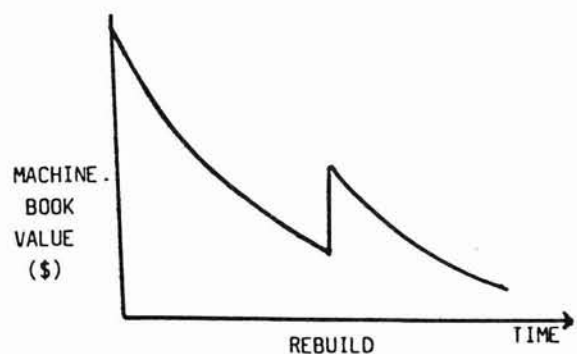
Depreciation for G.S.T. only becomes an issue where business assets are used for some private activity (or where private assets are used for some business activity). An example of the former would be where a logging contractor occasionally uses his gang bus on a rugby trip. The tax adjustment procedure is described in the G.S.T. Guide. It is notable that the adjustment includes

alteration of the diminishing value income tax rate to a straight line rate. Diminishing Value rates are multiplied by two-thirds: 20% D.V. therefore becomes a straight line rate of 13.33%.

CAPITAL EXPENDITURE OR REPAIR COST?

As has been described, there is an important distinction in accounting practice between expenditure that will be recovered over more than one year and that which is short-term in nature. The former is referred to as capital, and its costs are allocated through depreciation. Short-term costs are offset against revenue in full, in the year that they are incurred.

The cost of most repairs to logging machinery is treated as deductible in the same year. If major repairs are undertaken, it may be more correct to treat them as capital. This is especially the case with rebuilds which result in the machine's life being significantly extended. A graph of the machine book value may show the following trend :



Items such as skidder tyres, which last more than one year should be treated as capital. In practice, such detail may be unnecessarily complex and is often disregarded.

* Strictly this is correct only if the resale value is less than the purchase price. If the resale value exceeds the purchase price, this difference is treated as capital gain and is not taxed.

WHAT VALUE TO DEPRECIATE?

For plant and equipment in general, the initial costs of installation are not allowable as a deduction in the same year and must be treated as capital. Applying this principle to logging machinery would mean that all costs of delivery, optional extras, commissions, pre-inspections, etc. should be included in the first opening value.

INFLATION

As already described, the depreciable value for taxation purposes is based on the historical cost of the machinery - there is no adjustment for inflation since it was purchased. Other costs, such as; fuel, tyres or labour continue to rise with inflation. The returns, too, should rise as a result of inflation adjustment reviews. Depreciation, therefore, becomes relatively less. This is not an advantage since it results in the tax liability being greater. The example below demonstrates the effect :

	Year 1	Year 2	
		Option 1 No inflation	Option 2 10% inflation
	\$	\$	\$
Revenue (inflation linked)	150,000	150,000	165,000
Depreciation (machine value = \$100,000)	20,000	16,000	16,000
Other costs (inflation linked)	110,000	110,000	121,000
Income	20,000	24,000	28,000
Tax (say 30%)	6,000	7,200	8,400
After tax profit	14,000	16,800	19,600
Add depreciation*		16,000	16,000
Incoming funds, after tax		\$ 32,800	\$ 35,600

* Depreciation has been deducted as an expense for the purposes of calculating taxable income. However, depreciation is only a notional cost, i.e. no money actually leaves the business as depreciation itself. Accordingly, depreciation is added back to after-tax profit to determine the business's net incoming funds.

To compare the results of Options 1 and 2 above, they must be expressed in common dollar values. This involves adjustment since one dollar after 10% inflation is worth only 91 cents pre inflation :

	Pre-inflation dollars	Post-inflation dollars
	\$	\$
Incoming funds Option 1	32,800	36,080
Incoming funds Option 2	32,364	35,600

Whether expressed in pre or post inflation dollars, it can be seen that the effect of inflation is to reduce incoming funds.

DEPRECIATION AND THE CASH FLOW

The fact that each year's depreciation is a notional cost only and does not have a corresponding outflow of funds can be misleading. If the depreciation in the machine rate is too small, the business may still have sufficient incoming funds to meet all current expenses. However, the business will not be accumulating enough funds to cover machine replacement costs. Once repairs and downtime on the original machine become too expensive, there may be no alternative but to go out of business.

It is essential, therefore, that within the machine rate :

- depreciation is calculated on a realistic purchase value, resale value and a machine life.
- the machine rate should also be revised annually to reflect increases in new machine prices.

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