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Instalment Sales of Real Estate

BY WALTER MUCKLOW

The sales about which thought is invited are those of real estate in which there is an initial payment followed by a series of periodic instalments, the transaction being set forth in a contract which states the amount of the sale, specifies the payments to be made on account of the principal and provides that interest shall be calculated on the balances remaining unpaid.

The object of this paper is to compare various methods of dealing with this interest and with the realized profit on the sale which have been met in actual practice. In order to make these comparisons as clear as possible, each method discussed will be applied to the following hypothetical but typical case.

On January 1st, there is sold for \$600 a lot which cost the vendor \$60; 10 per cent. of the sales price, that is \$60, is paid in cash and the remaining \$540 is to be paid in 36 equal monthly instalments, interest at the rate of 6 per cent. per annum to be calculated on the amounts remaining unpaid from time to time.

The profit from this sale is \$540 (that is, the sales price of \$600 less the cost of \$60), but this profit is not realized at the time of the sale. It may well be argued that no profit is realized until the cost of the lot has been received and that all instalments received thereafter are profit, but this is not the view which is generally accepted nor is it in accordance with the rules laid down in the treasury regulations. For present purposes these rules are accepted without comment—although much could be said regarding them—and there is also accepted the arbitrary dictum that the vendor may split each dollar received into two parts, one being principal and the other interest.

METHOD "A"

Probably the plan which is most generally followed is this: It is agreed that there shall be made monthly payments of \$15 each and that interest shall be calculated semi-annually on the amounts remaining unpaid from time to time and shall be paid half yearly in addition to the monthly instalments.

If regular payments are made, each semi-annual calculation of interest requires six computations, one on the balance remaining

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unpaid after each instalment. While this may not be a serious objection, if there be few accounts, when the number of those accounts runs into the hundreds, or perhaps the thousands, the burden may become greater than the bookkeeper can carry and some labor-saving device is required.

Also, it must be remembered that, if the purchaser does not pay the interest and it is included in the amount upon which subsequent interest computations are based, compound interest results and in some states this is illegal.

The realized profit is 90 per cent. of each monthly payment or \$162 each year.

The final result will be as follows:

	Cash re- ceived on principal	Interest	Total amount received	Realized profit
Initial payment	\$ 60			
First year, 12 instalments	<u>180</u>			
	\$240	\$27.45	\$267.45	\$216
Second year, 12 instalments	180	16.65	196.65	162
Third year, 12 instalments	<u>180</u>	<u>5.86</u>	<u>185.86</u>	<u>162</u>
Total	\$600	\$49.96	\$649.96	\$540

METHOD "B"

In the office of one client it was found that the work of calculating the interest as above outlined was so excessive that some relief was necessary and the plan was modified by making all contracts provide that interest should be calculated and charged semi-annually "on the balance remaining due at the end of each six months."

Obviously, such a plan does not produce interest at the nominal rate, but it was found in practice that this loss of interest was, at least to some extent, offset by the fact that many purchasers made substantial payments at the close of each half year, in order to reduce the amount of interest charged to them and, as a result, collections were increased.

Applied to our example this plan works out as follows:

	Cash re- ceived on principal	Interest	Total amount received	Realized profit
Initial payment				
First year, 12 instalments	\$240	\$24.30	\$264.30	\$216
Second year, 12 instalments	180	13.50	193.50	162
Third year, 12 instalments	<u>180</u>	<u>2.70</u>	<u>182.70</u>	<u>162</u>
Totals	\$600	\$40.50	\$640.50	\$540

METHOD "C"

Under another plan which has been used with success, the purchaser agrees to make equal periodic payments of a fixed amount, the number of such payments not being stated, and interest being calculated when each payment is made, and credited to interest, the remainder of the fixed instalment being applied to the principal.

In our example, if the monthly payments were \$15 each, the account would appear as follows:

		Balance	Interest
Jan. 1. Principal, \$600			
Initial payment.....	\$60.00	\$540.00	
Feb. 1. Instalment, \$15			
Less int. for 1 mo. on \$540.....	12.30	527.70	\$2.70
Mar. 1. Instalment, \$15			
Less int. on \$527.70.....	12.36	515.34	2.64
Apr. 1. Instalment, \$15			
Less int. on \$515.34.....	12.42	502.92	2.58
Etc., etc.			

The result is as follows:

	Total	Principal	Interest
First year. Initial payment.....	\$ 60.00	\$ 60.00	
11 instalments.....	165.00	138.73	\$26.27
Total.....	\$225.00	\$198.73	\$26.27
Second year. 12 instalments.....	180.00	160.29	19.71
Third year. 12 instalments.....	180.00	170.15	9.85
Fourth year. 4 instalments.....	60.00		
5th instalment.....	11.86	70.83	1.03
Total.....	\$656.86	\$600.00	\$56.86

When an instalment is received the interest is calculated (from interest tables, if necessary) and the receipt given to the customer shows how the instalment is divided between principal and interest.

This plan is simple and accurate; it is well suited to cases in which the number of outstanding contracts is not too large, and it yields rather more than the other methods, for the term of the contract is longer.

METHOD "D"

A good many years ago, prior to the imposition of an income tax, I suggested to some clients that much labor could be saved if

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the interest were calculated in advance, added to the principal and the sum divided by the number of instalments, the result being the required periodic instalment. The method was used in a few cases, but its novelty and the supposed difficulty of ascertaining the correct amounts prevented its general adoption.

However, in recent years the number of instalment purchasers of personal property has increased greatly and those purchasers have become accustomed to instalments of equal amount including both principal and interest, so that it seems not unlikely that this method may become generally used for sales of real estate.

A quarter of a century ago the average business man and, it is to be feared, some accountants, were not familiar with and feared the use of instalment tables—if they knew that they existed—and some vendors attempted to calculate the amount of the instalments by “averaging” the interest. They said, in effect, this purchaser owes us \$600 now which will be reduced to nothing in three years, therefore the average amount due for the entire period will be \$300 and, in the case of the above example, they obtained the following figures:

Principal remaining due.....	\$540.00
Interest on one-half (\$270) for 3 years @ 6% (i.e. 18%)..	48.60
	<hr/>
Total.....	\$588.60

and this sum divided by 36 gives \$16.35.

As we shall see, the correct amount is \$16.42 and this multiplied by 36 gives \$591.12, or \$2.52 more than the vendor would have received under the above method of calculation.

The error increases as the term of the contract lengthens or as the rate of interest is raised. For example, if the term were 10 years and the rate of interest were 8 per cent. per annum, the above method would give the following result:

Unpaid principal.....	\$540
Interest on \$270, 10 years @ 8% (80%).....	216
	<hr/>
Total payments.....	\$756

and \$756 divided by 120 yields \$6.30, whereas the correct instalment is \$6.56 which, multiplied by 120, gives a total of \$787.20, or \$21.20 greater than is yielded by averaging the interest.

The correct amount of any periodic instalment such as that under consideration may be obtained without difficulty from any

one of the many tables published showing the present value of \$1.00 paid monthly, quarterly, semi-annually or annually, at various rates of interest. All that is necessary is to divide the sum to be paid by the present value, as shown in the tables, the quotient being the amount of each instalment. For example, in the above case, the tables show that the present value of \$1.00 a month for 36 months, interest being calculated on the amounts remaining at the end of each month at the rate of 6 per cent. per annum, is 32.871 and $\frac{540.00}{32.871}$ is \$16.42, or, again, the present value of \$1.00 for 120 months with interest at 8 per cent. is 82.422 and $\frac{540.00}{82.422}$ is \$6.56.

This plan yields the following results:

	Principal payments	Interest	Total	Realized profit
First year and initial payment . . .	\$240	\$16.20	\$256.20	\$216
Second year	180	16.20	196.20	162
Third year	180	16.20	196.20	162
Totals	\$600	\$48.60	\$648.60	\$540

In these figures the interest is spread evenly through the period as no tables are available to divide it otherwise.

Another way of apportioning it would be to disregard the word "interest" and say the property is sold for the total amount received, that is \$648.60, and, as it cost \$60.00, the profit is \$588.60, or about 90.75 per cent. of the total amount received. This would apportion the profits as follows:

	Total receipts	Realized profit
First year	\$256.20	\$232.50
Second year	196.20	178.05
Third year	196.20	178.05
Totals	\$648.60	\$588.60

METHOD "E"

By the use of the present-value tables above referred to it is found that the present value of \$1.00 payable for 36 months with interest at 6 per cent. per annum is 0.0304, and this multiplied by \$540 gives \$16.42 as the correct amount of each monthly instalment, and $60 + (16.41 \times 36)$ gives \$651.12. From those

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same tables one can ascertain the amount of principal and of interest which is contained in each payment, the former increasing and the latter decreasing with each instalment, and the following is the result:

	Principal received	Interest received	Total received	Realized profit
First year, initial payment and 12 instalments.....	\$229.36	\$27.68	\$257.04	\$206.42
Second year, 12 instalments.....	179.78	17.26	197.04	161.80
Third year, 12 instalments.....	190.86	6.18	197.04	171.78
Totals.....	\$600.00	\$51.12	\$651.12	\$540.00

METHOD "F"

Method "D" requires the preparation of special tables for each subdivision, or for each set of terms on which sales are made, and, in order to avoid this, the following method has been adopted.

The total amount received by the vendor, as in "D" is

The initial payment of.....	\$ 60.00	
36 instalments of \$16.42.....	591.12	\$651.12
The lot cost.....		60.00
Therefore the total gain is.....		\$591.12

which is 90.878 per cent. of the total amount received. Therefore the taxable profit would be

	Total receipts	Realized profit 90.878%
First year.....	\$257.04	\$233.40
Second year.....	197.04	178.86
Third year.....	197.04	178.86
Total.....	\$651.12	\$591.12

METHOD "G"

Where the sales price is set at such a figure that the cost price is a simple fraction of it (in the example this is 1/10 or 10%) the additional multiplication required when the percentage runs into several decimals may be avoided if all the early payments be regarded as principal until the sales price be received, after which all receipts will be regarded as interest received.

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This can be made clear by putting the example in the form of a customer's account as follows:

	Principal		Balance	Realized profit	Interest
	Dr.	Cr.		90%	
Sale.....	\$600		\$600.00		
First year:					
Initial payment.....		\$ 60.00	540.00	\$ 54.00	
12 instalments, \$16.42 each		197.04	342.96	177.34	
Second year:					
12 instalments.....		197.04	145.92	177.34	
Third year:					
8 instalments.....		131.36	14.56	118.22	
9th instalment.....		14.56		13.10	\$ 1.86
10th, 11th, 12th instalments					49.26
Totals.....	\$600	\$600.00	\$540.00	\$51.12

Under this plan the sale is brought on the books by such a journal entry as:

Contracts.....	\$600	
To lot sales.....		\$ 60
Unrealized profits.....		540

The contract is credited with all payments until the \$600 is received and all amounts above that sum are credited direct to interest receivable. Or, all amounts may be credited to the contract and, when the last payment is made or when the books are closed, whichever occurs first, the contract may be debited with the sums received above the \$600, and interest may be finally credited with the \$51.12.

A number of factors must be considered in order to determine which is the best method to follow for instalment sales in any particular case. Among them the following are some of the most important: (1) The mechanical difficulties which are inseparable from calculating and entering items relating to interest. Some years ago, before the Florida "boom" one concern carried between 10,000 and 12,000 instalment accounts on its books at the same time, on each of which interest was charged. (2) Use should be made of the information which is most available and can be used with the least labor. For example, it is wise to use such a form of customer's account as will give the facts desired with the minimum of calculation. (3) Every effort should be made to design a method which requires the least bookkeeping possible and, particularly, one which is not likely to require many cross-entries.

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The amounts received under the several plans are:

Method "A" brings in	\$649.96
Method "B" brings in	640.50
Method "C" brings in	656.86
Method "D" brings in	648.60
Method "E" brings in	651.12
Method "F" brings in	651.12
Method "G" brings in	651.12

Method "A" is simple, so far as the theory is concerned, but it does not satisfy requirement No. 1; in order to obtain the figures given above as to the annual charges of interest, 36 calculations were necessary and, although they are simple, the volume may render the task almost impossible.

Further, unless the principal and the interest be kept separate in the customer's account; that is, if the interest be included in the principal account on which succeeding amounts of interest are calculated, compound interest results and in some states this is illegal.

If there be many accounts to be charged, long journal entries are required to bring each item of interest on the books, for each such item must be journalized and if contracts are cancelled cross-entries result.

Method "B" obviously is the simplest solution possible, but it does not yield the 6 per cent. interest—only rather less than 5 per cent.: this objection can be met by charging a higher nominal rate and explaining the conditions to purchasers. A nominal rate of 7 per cent. would yield \$47.25, or nearly 6 per cent.

Method "C" is accurate, simple and well suited to cases where there are not too many outstanding contracts. The purchaser is not told the total amount he will have to pay but in practice is well satisfied with the fixed amount of the instalment.

Method "D" is incorrect and affords no convenient basis from which to calculate the realized profits—nor does it yield the full 6 per cent. interest.

Method "E" is mathematically correct but, in order to divide the instalments correctly between principal and interest, a table is required for each rate of interest used and for each term, that is for 3, 4, 5 years, etc. These tables are usually based on \$1.00 and multiplication is required to obtain the results shown above. For a large number of contracts for small sums the labor involved is disproportionate, although this method has been found to work

well where all sales have been strictly upon the same terms and where the amounts of the sales have been large.

Method "F" is both simple and correct. All the information required is obtainable from the customer's account and it is believed that it meets all the requirements of the federal income tax, for the commissioner is indifferent as to whether the taxable income be called "profit on sales" or "interest," so long as he receives the correct amount of tax.

The chief objection to it is that, whenever a sale is made, there must be made an entry for the unearned interest, although if this interest be regarded as a part of the unrealized profit, this difficulty is lessened. The journal entry would be of the following form:

Contracts.....	\$651.12	
To cost of lots.....		\$ 60.00
Unrealized profits.....		591.12

and the ledger account for unrealized profits would be debited periodically with the amount realized, that is, with the taxable profit.

If this method be followed, in the case of cancellation care must be taken to see that the property is brought back on the books at the proper cost and that the interest included above is not included in that cost.

Perhaps the most serious objection to this plan is that it usually involves the use of decimals in the calculation of the percentage.

Method "G," it seems to me, offers more advantages than does any one of the others, where there is a very large number of contracts. As will be seen, the example is stated in the form of a customer's account and all necessary information is there available; all interest is regarded as taxable income when it is collected and the taxable income is clearly shown.

It may be argued that methods "F" and "G" do not comply strictly with the letter of the regulations; however, the matter has been discussed with a number of authorities and, while no definite, official decision can be obtained in advance, the general feeling is that such a plan would be allowed on account of its clarity and its economy in the matter of labor.

It is not intended to present here any argument in favor of any one method, each of which has its useful purposes. Selection must be governed by the circumstances surrounding each case; but

it is hoped that this presentation of some of the methods of determining realized profits which have been encountered in practice may be of service to those dealing in or with instalment sales and may aid them to make the selection best suited to their needs.

So long as official recognition is given to the convention that each dollar received on an instalment sale is to be arbitrarily divided into two parts—principal and profit—it will be necessary to adopt some such method as those considered above, but one may look forward with keen interest to the day when some owner with sufficiently large interests and with sufficient courage will contest the dictum of the regulations and carry his fight, if necessary, to the supreme court of the United States. It is quite conceivable that that court may decide that no one can receive profit on any sale until he has collected the cost of that which is sold in cash or in its marketable equivalent.