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THE RESPONSIVENESS OF THE LEASE VERSUS BUY
FINANCING DECISION TO VARIOUS PARAMETERS

by

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The Responsiveness of the Lease Versus Buy Financing Decision to Various Parameters

by
Ann B. Wickham
Michael D. Boehlje*

Financial leases have gained popularity in the recent past as an alternative means of financing the acquisition of agricultural equipment and other durable assets. This increase in popularity is due, in part, to the change in tax regulations governing leasing (ERTA and TEFRA) and the change in the financial position of farmers. As a result of these changes, the viability of lease financing as an alternative to debt financing merits evaluation.

Some of the more important variables that influence the desirability of leasing compared to debt financing are the ability to predetermine a purchase option price, the tax characteristics of the lessee (especially the ability to retain or pass through the tax benefits), different security requirements with leasing, and loan characteristics such as interest rate and loan length. Previously, a major drawback to financial leases, from the farmer's perspective, has been the inability to determine a fixed purchase option price; the asset had to be purchased at fair market value at the end of the lease. With an undetermined purchase price, it is extremely difficult to determine the value of the lease and to compare it to buying the asset without making a number of assumptions. This was further complicated by the rapid appreciation in used agricultural equipment prices in the 1970s. Changes in tax law in 1981 and industry practice allowed the use of a fixed purchase price option. A set purchase option price allows the farmer to accurately evaluate the lease versus buy decision.

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With increased use of leasing as an alternative means of financing in agriculture, it is important to understand when leasing is preferred to debt financing and what parameters affect that decision. The individual firm, or lessee, must evaluate leasing as a substitute for debt financing for a particular asset.

Conceptual Framework

Much of the work that has been done on financial leases is found in the business finance literature before the implementation of ERTA. The basic premise on which the lease versus buy analysis is performed remains the same whether or not the asset will be used for agricultural purposes or whether the lease is a pre-ERTA lease or a farm financial lease as defined by TEFRA. However, some of the assumptions and tax treatments need to be adjusted to account for the fact that the lease is a farm financial lease and to comply with current law.

There is some controversy in the finance literature as to how to perform the lease versus buy analysis. Van Horne (1983), in Financial Management and Policy, considers the three most common methods of analysis for the lease versus buy decision. One method is a comparison of the present values of the cash outflows of the lease and the buy alternatives; the cash flows are discounted at the after-tax cost of borrowing.[1]/ Van Horne indicates that the after-tax cost of borrowing should be used since leasing is analogous to borrowing. With this method, the alternative with the lowest present value is desirable.

In recent work directly related to agriculture, La Due (1977) examined the lease versus buy decision for agricultural assets using a net present value approach. He based his work on data from a 1971-1972 survey of Northeastern

1/ The other two methods Van Horne considers are internal rate of return analysis and the Bower-Herringer-Williamson method.

United States machinery dealers on the availability and cost of machinery leasing and renting. He analyzed both lease with no purchase option versus buy, and lease with purchase option versus buy for tractors. Machinery values were taken from the Official Tractor and Farm Equipment Guide to estimate the purchase option price since under pre-ERTA tax law the machine had to be purchased at fair market value. No mention is made as to whether or not inflation was taken into consideration in determining the values. La Due performs a sensitivity analysis of the net present value to the lease length, the cost of capital, and the marginal tax bracket. He draws the conclusions that leasing is more likely to be a profitable alternative for a farmer with a high marginal tax bracket and/or a high cost of capital, and that the longer the lease period the less likely that leasing will be preferred to purchasing.

La Due's work provides a good background for evaluating the lease versus buy decision in agriculture but leaves many questions unanswered since the net present value model is not explicitly shown. Some of the unanswered questions are the type of depreciation method used, whether or not depreciation benefits are included after the purchase option is exercised, and the timing of the tax benefits.

In contrast, Plaxico (1983) outlines his calculations more explicitly. He examines the lease versus buy decision under TEFRA guidelines using a net present value approach. He finds that a lease will generally be preferable to purchasing the asset when the lessor faces a lower cost financing plan than the farmer and is in a higher marginal tax bracket. One area in Plaxico's analysis that needs further refinement is that of the inclusion of a non-fair market value purchase option on the lease. Also, Plaxico used the net present value procedure to analyze lease versus buy alternatives which have different lives (financing periods); this can potentially result in inconsistent results unless

proper adjustments are made. Some adjustments, as suggested by Van Horne and others, include lease common denominator replacements and annuity equivalents.

Lins (1982) also examined the lease versus buy decision under TEFRA guidelines using a net present value approach. He included a purchase option price for the lease, and the lease and loan transactions occur over the same time period. However, Lins did not account for depreciation after the purchase option has been exercised. As a result, the full tax benefits of the lease alternative have not been included. Also analyzed is the leasing arrangement from a lender's perspective. He performs a net present value analysis of the lease versus buy decision based on the lender's characteristics including tax bracket. The analysis indicates that the desirability of the lease over a loan for the lender is sensitive to the discount rate used, the tax rate of the farm borrower, and the assumptions concerning repayment of acquired funds. Lins argues that the wider the disparity between tax rates of the farmer and the lending institution, the more attractive leasing becomes to the lending institution and, through competitive pricing, to the farmer.

Robertson, Musser, and Tew (1982) use the net present value procedure to analyze the lease versus buy decision for center-pivot irrigation systems. The net present value equations used in their lease versus buy analysis are different from those commonly used. The authors separate out the equity portion of the cash flows using the debt to asset ratio for the firm. They then use the cost of equity as the discount rate. This formulation is based on land price studies. The authors state, "The formulation in this paper has been utilized by agricultural economists concerned with land prices...while the methods do not yield equivalent calculations, they would result in similar decisions in most cases" (p. 5). It appears that using this formulation rather than the traditional net present value approach results in unnecessary difficulty. Also,

Robertson, et al., have not accounted for leases with a purchase option. They do perform a sensitivity analysis of the net present value to the leverage ratio, to the marginal tax rate, to the cost of equity capital, to the depreciation method, and to the planning horizon length. It will be especially interesting to compare these sensitivity results to other results, particularly since they have used a nontraditional method of evaluating the leasing of capital assets.

Methodology

This research compared the discounted net after-tax cash expenses associated with the purchase alternative to the discounted net after-tax cash expenses associated with the lease financing alternative. Both alternatives were examined over the holding period of the equipment. This was done to incorporate all tax benefits of the financing alternatives, including those that occur after the end of the financing period such as depreciation of leased assets after the purchase option was exercised, and the tax treatment of a sale.

The after-tax cash expenses of both alternatives were discounted at the after-tax cost of debt rather than the weighted average cost of capital of the farm firm. The after-tax cost of debt was used since the decision to be made was a financing decision rather than an investment decision (Van Horne, 1983).

The equation used to determine the discounted net after-tax cost of the borrow to buy financing alternative was:

$$NATCB = \sum_{t=0}^{n} \frac{CE_t + P_t - I_t - TS_t}{(1+r)^t} \qquad \text{eq. (1)}$$

where:

NATCB	=	the discounted net after-tax cost of borrowing
CE_t	=	the cash expenses incurred in period t
P_t	=	the principal payment in period t
r	=	the after-tax cost of debt
n	=	the holding period
I_t	=	interest expense in period t
TS_t	=	tax savings in period t

Tax savings (TS) includes the tax deductibility of the depreciation expense and interest payments (+), and the tax on the gain due to the resale of the asset (-). Cash expense (CE) includes any down payment (+), investment tax credit received (-), resale value received (-), rebates (-), etc.

The equation used to determine the discounted after-tax cost of the lease financing alternative was:

$$NATCL = \sum_{t=0}^{n} \frac{CE_t + L_t - TS_t}{(1+r)^t} \qquad \text{eq. (2)}$$

where:

NATCL	=	the discounted net after-tax cost of leasing
CE_t	=	the cash expenses incurred in period t
L_t	=	the lease payment in period t
TS_t	=	tax savings in period t
r	=	the after-tax cost of debt
n	=	the holding period

Tax savings (TS) includes the tax deductibility of the lease payment and depreciation expense (+) and the tax on the gain due to resale of the asset (-). Cash expense (CE) includes any down payment (+), the purchase option expense (+), investment tax credit received (-), resale value received (-), rebates (-), etc.

In analyzing the lease versus buy decision, six scenarios were examined (see Table 1). The parameters to be examined include the marginal tax rate, interest rate, lease payment rate, inflation rate, ownership or holding period, and machinery type. In all cases quantitatively reported in the paper, a combine was being acquired. The acquisition of a tractor was also examined (see Results for a discussion). In the first scenario (Situation 1), the lease payment rate is 22 percent, the marginal tax rate is 38 percent, the interest rate is 14 percent, inflation is four percent, a combine is being purchased, and the

ownership (or holding) period is eight years. This scenario is a reasonable reflection of current conditions. The remaining five scenarios are variations of this situation, with one parameter changing for each case. Table 1 shows these variations.

Table 1. The Six Scenarios Used in the Lease Versus Buy Analysis

Situation	Lease Payment 1/	Marginal Tax Rate	Interest Rate	Inflation Rate	Holding Period
typical situation (base 1)	.22	.38	.14	.04	8
short holding period (base 2	.22	.38	.14	.04	5
high interest rate (base 3)	.22	.38	.20	.04	8
low interest rate (base 4)	.22	.38	.10	.04	8
low marginal tax rate (base 5)	.22	.16	.14	.04	8
high marginal tax rate (base 6)	.22	.50	.14	.04	8

1/ In all cases where a 22 percent lease payment rate exists, the purchase option price is 20 percent of the orginal list price.

Results

Situations

Figures 1-4 show the difference of the NPV's of the lease alternative and the buy alternative assuming different values for the holding period, lease payment rate, interest rate, and marginal tax rate. The vertical axis represents the NPV of the lease alternative minus the NPV of the purchase alternative. Thus, positive values indicate the debt alternative is preferred over the lease alternative, and negative values suggest the lease alternative is preferred over debt financing. In Situation 1, the representative situation, lease financing is preferred over debt financing when the lease payment rate

is less than 19 percent (Figure 2), when the interest rate is greater than 20 percent (Figure 3), or when the holding period is less than five years (Figure 1). Situation 2, where the holding period is reduced to five years, has leasing preferred over debt financing for a broader spectrum of parameter values. In this case, lease financing is preferred when the lease payment rate is less than 22 percent (Figure 2), when the marginal tax rate is 45 percent or greater (Figure 4), when the interest rate is greater than 15 percent (Figure 3), for both the four and five percent inflation levels, and whether the piece of equipment is a combine or a tractor.

Situation 3 raises the interest rate from 14 to 20 percent. This case is also very favorable for lease financing. Leasing is preferred over debt financing when the lease payment rate is less than 22 percent (Figure 2), when the marginal tax rate is less than 44 percent (Figure 4), when the holding period is less than nine years (Figure 1), and for both levels of inflation.

Situation 4 is the least favorable situation for lease financing. In this case, the interest rate has been lowered to ten percent. Lease financing is preferred only when the lease payment rate is less than 16 percent for this situation (Figure 2). The marginal tax rate is lowered to 16 percent in Situation 5. Here, leasing is preferred when the lease payment rate is less than 20 percent (Figure 2) or the interest rate is greater than 18 percent (Figure 3). In Base 6, the marginal tax rate has been raised to 50 percent. Leasing is preferred when the lease payment rate is less than 18 percent (Figure 2) or the ownership period is less than five years (Figure 1).

Parameter Evaluation

This section examines in detail the affect of different parameters on the lease versus buy decision and reasons for particular parameter effects. Figures 1-4 can be used not only to illustrate where leasing is preferred over

debt financing for each base scenario (point analysis), but also when the cost difference between lease and debt financing becomes greater or less for each parameter (positive or negative slope) and the sensitivity of the financing decision to the different parameters (value of and change in slope). The slope of each curve in Figures 1-4 measures the change in the difference between the NPV of the lease alternative and the NPV of the buy alternative divided by the change in the value of the parameter represented on that graph. Thus, if the overall slope is negative (downward sloping), the figure indicates that the lease financing alternative becomes more favorable relative to the purchase alternative as the parameter value increases. The sensitivity of the decision, the change in amount that one financing alternative is preferred over another as the parameters values change, is represented by the change in the slope of the curve or the steepness of the curve. If the absolute value of the slope is low or decreases as the parameter values increase, there is a low sensitivity of the lease versus buy decision to that parameter or the sensitivity of the lease versus buy decision to that parameter is lessening, respectively.

Holding Period: One parameter that significantly affects the lease versus buy decision is the holding period of the piece of equipment. The effect of this parameter has not been examined previously in the literature. The different tax treatment of the proceeds of a sale in the two financing methods is an important factor in understanding the impact of the holding period. If the holding period is five years or greater, the gain on sale or disposition is taxed at the ordinary tax rate with debt financing.[1/] With the buy and borrow alternative, assuming the equipment is five-year ACRS equipment, the piece of equipment has been fully depreciated to a $0 book value (purchase price minus

1/ It is assumed that the piece of equipment must be held for at least the period of the lease (five years in this case).

accumulated depreciation) by the end of year five. Also, assuming inflation is low (4-5 percent), the resale value (that value the farmer receives when the equipment is sold at the end of the holding period) will be less than the list price due to the formulas used to calculate resale value; the resale value is the list price times a value less than one.[2/] Thus, the entire resale value is treated as an ordinary gain and taxed fully as ordinary income at the marginal tax rate with the debt financing alternative.

In contrast, with the lease alternative, the machinery will still have a positive book value through year ten. This is due to the fact that the machine was not purchased until year five and then depreciated through year ten. As a result, all of the resale proceeds during this period from years 5 to 10 will not be taxed as ordinary income or capital gain; the portion equal to the book value will be recovery of basis and thus not taxed. In addition, for the lease alternative it is probable that the resale value will be greater than the purchase option price (especially in the early years after the lease) since industry practice is to specify a low purchase option price to encourage purchase. If the machine is held for more than one year past the lease length, the portion of the resale value that is greater than the purchase price is long-term capital gain, as opposed to a short-term capital gain. Thus, only 40 percent of that portion of the resale value greater than the purchase price is taxed. If the equipment is sold within one year after exercise of the purchase option, the gain is a short-term capital gain and taxed fully at the ordinary tax rate. As a result of the recovery of basis and/or the long-term capital gain, the tax burden at sale or disposition with the lease alternative is significantly less than the tax on the gain with the buy and borrow alternative.

2/ Resale value was calculated using the formula: remaining value = list price x RV1 x RV2Y, where RV1 and RV2 are constants obtained from the Iowa State University Cooperative Extension Service and the Agricultural Engineers Handbook and Y is the years of age or holding period. The remaining value was then adjusted to account for inflation to obtain the resale value.

Figure 1 illustrates the difference between the NPV of the lease alternative and the NPV of the buy alternative for each holding period. Note that in all cases, the relative favorability of debt financing over lease financing increases as the holding period is extended past year six. This occurs because relative costs are being examined in Figure 1 and not absolute costs. Figure 5 shows the absolute costs of lease and debt financing as well as the difference between the two for Situation 1. Note that the line representing the difference is the same as the Situation 1 line in Figure 1. The portion of the gain on resale that is taxed at the reduced long-term capital gains rate diminishes as the holding period is extended in the case of lease financing. Thus, this tax advantage of lease financing is reduced and debt financing becomes relatively less expensive as the holding period increases. This effect is reinforced by the discount rate. The more years in the future the tax advantage occurs, the less impact it has because of the discounting concept.

Why then does debt financing become relatively less expensive than lease financing as the holding period is increased from five to six years in all cases except Situation 5? Whether the net effect of the tax advantage for the lease alternative of the long-term capital gain and the increased short-term capital gain due to the reduced book value is positive (Situation 5) or negative (Situations 1, 3, 4, and 6) depends in part on the marginal tax rate. The marginal tax rate in Situation 5 is 16 percent. With a lower marginal tax rate compared to the alternatives, the tax consequences of the increase in short-term capital gain with the lease alternative and the decrease in short-term capital gain with the debt alternative are not as significant. The tax rates are much higher for the other situations which results in more significant tax consequences.

Lease Payment Rate: Within the parameter values examined in this paper, leasing is favored as the lease payment rate decreases. Figure 2 shows the relationship between the lease and buy alternatives at different lease payment rates. The lease payment rate only affects the lease alternative; it does not affect the computation of cost of the debt financing. All of the situations show upward sloping graphs (leasing is more desirable at low lease payment rates) as the lease payment rate increases, but they are of different slopes. The different slopes occur because the impact of the lease payment rate on the results is two-fold; the lease payment expense is a cash outflow and the tax deductibility of the lease payment is a cash inflow. The overriding effect is the size of the lease payment itself. As the lease payment increases, the cash expenses increase; this results in an upward sloping trend in the graphs in Figure 2 which represents the increase in the difference in the NPV of the lease alternative and the NPV of the buy alternative as the lease payment rate increases. The tax deductibility of the payment affects the change in the slope over the parameter values, or the relative favorability of one alternative over another. At a low tax rate (Situation 5), the slope is much steeper; this is because the payment increase is greater than the tax advantages of the payment. As a result, debt financing becomes relatively more attractive. A contrasting effect occurs in Situation 6 where the tax rate is 50 percent. Thus, the slope of Situation 6 is not as steep. Note in Figure 2 that Situations 1, 2, 3, and 4 are all of similar slope and have the same tax rate.

Interest Rate: With respect to the interest rate, leasing is favored over debt as the interest rate increases (see Figure 3) within the parameter values examined in this paper. One reason is the affect the interest rate has on the cost of the debt alternative, which is similar to the net effect of the lease payment rate on the lease alternative as discussed earlier. As the interest

rate increases, the cost of the debt alternative increases (resulting in the downward-sloping graph). The tax deductibility of the interest payment has a further impact in terms of the after-tax net effect of the interest payment expense which also affects the slope of the graphs. This affect is similar to that illustrated in the earlier discussion of the lease payment rate. In contrast to the lease payment rate, the interest rate also influences the decision through its impact on the discount rate. The higher the interest rate, the higher the discount rate, holding the tax rate constant. A high discount rate results in the depreciation and capital gain tax benefits occurring later in the holding period of the lease alternative having less of an impact on the decision. The impact of the discount rate also affects the slope of the graphs shown in Figure 3. It should be noted that Situations 1 and 2 have the same interest rate and tax rate, thus, the same discount rate and similar slope. Situations 5 and 6 represent different tax rates and, thus, different discount rates and tax deductibility of the interest payments. The slope of Situations 5 and 6 differ from that of Situations 1 and 2, with Situation 5 having a steeper slope and Situation 6 having a lesser slope.

Tax Rate: The implications of the marginal tax rate are much more complicated than previously thought. This analysis found that the sensitivity of the lease versus buy decision to the marginal tax rate (MTR) is a function of not only the tax situation of the farmer but the interaction of all the parameters discussed. Figure 4 shows the graph of the difference between the NPV of the lease and the NPV of the purchase at each tax rate examined for the four cases it affects. Note that Situations 2 and 4 have negative slopes, Situation 3 has a positive slope, and Situation 1 is relatively flat. Thus it is difficult to generalize about the effect of the MTR on the lease versus buy financing decision.

Situation 2 results coincide with the results obtained by La Due (1977) and Plaxico (1983); leasing is favored as the MTR increases. Lease financing also becomes less costly as the tax rate increases in Situation 4. One reason for the decline in the cost difference between leasing and debt financing (NATCL-NATCB) as the MTR increases is that the tax benefits of the capital gain of the lease alternative versus the ordinary gain of the buy alternative becomes more significant as the MTR increases. This is illustrated in Situation 2. Another reason, as illustrated in Situation 4, is that as the MTR increases for a given interest level, the discount rate decreases. Thus, the depreciation and capital gain benefits realized later in the holding period of the lease alternative are not discounted as significantly. As a result, the benefits are more fully realized.

In Situation 3, where the interest rate is 20 percent, the difference between the net after-tax cost of lease financing and the net after-tax cost of debt financing (NATCL-NATCB) increases as the MTR decreases. The reason for this occurring is that the net after-tax effect of the interest payment expense and the interest payment deductibility is less at a higher tax rate. Although a high interest rate means a larger interest payment, there is also a larger interest expense that will be tax deductible. Thus, as the marginal tax rate is increased, the after-tax net effect of the interest payment will decrease since the tax deductibility of the interest payment will increase. Additionally, the net after-tax effect of the large depreciation expense that occurs with the borrow and buy alternative will be greater as the marginal tax rate increases.

Situation 1 illustrates a combination of all of these factors as discussed here and earlier in this section of the paper. Situation 1 is relatively flat because for this scenario the factors previously discussed offset each other. This illustrates the point that there is some combination of lease parameters where the MTR is not relevant.

Resale Value: Inflation and machine type both affect the lease versus buy decision only as they impact the resale value of the machine; inflation increases the resale value, and the Agricultural Engineers Handbook indicates that a tractor (machine type 1) has a higher percentage resale value for a specified life than a combine (machine type 2). Thus, as the inflation rate increases or a tractor is acquired rather than a combine, there is more gain on the sale of the piece of equipment which increases the amount of capital gain with the lease and ordinary gain with the purchase. As a result, the favorability of the lease alternative increases relative to the purchase alternative as the inflation rate increases or a tractor rather than a combine is acquired.

Conclusions

The results found here suggest that the lease versus borrow and buy financing decision cannot be accurately made by just comparing the cost of debt financing to the cost of lease financing over the financing period. Because differences in after-tax costs and benefits, particularly in terms of the after-tax resale or salvage value, exist after the lease and financing period, the entire useful life of the asset must be considered in the lease versus buy evaluation.

Many factors affect the net after-tax cost over the life of the asset for each financing alternative including the interest rate, the lease payment rate charged, the resale value, and the marginal tax rate. Previous studies limited the time frame for analysis to the length of financing, not the life of the asset, and thus ignored the impact holding period has on the financing decision. Holding period is important because the lease and buy alternatives will have different book values and purchase prices at a subsequent resale. This results in different dollar amounts of gain and different types of capital gain from a

tax viewpoint. That is, the lease financing alternative has the potential to have some long-term capital gain resulting from resale as opposed to all short-term capital gain for the borrow and buy alternative. The long-term capital gain is taxed at a lower rate and thus more after-tax proceeds of the resale are realized under the lease alternative. However, the relative favorability of lease financing over debt financing lessens as the holding period is extended.

Another reason holding period impacts the decision is the ability of the lessee who has exercised a purchase option to depreciate the asset that he/she now owns. This depreciation is an important tax benefit of the lease financing alternative. Inflation rate and machinery type also affect the lease versus buy financing decision in that they are determinants of the resale value. This becomes important in determining the tax treatment and types of gain realized at the time of sale.

The marginal tax rate is an important parameter in the lease versus buy financing decision. But, the effect of the marginal tax rate on the financing decision cannot be generalized. The tax rate is a determinant of the discount rate to be used; it also determines the proportions of the lease payment, interest payment, and depreciation expense that are tax deductible and will thus offset cash expenses incurred. The interest rate used also has a dual impact on the lease versus buy financing decision. The interest rate determines the size of the interest expense incurred when purchasing the asset, and the amount of interest expense deductible for tax purposes. The interest rate is also a determinant of the discount rate used.

The lease payment rate impacts the lease versus buy financing decision in that it determines the lease payment expense associated with the lease financing alternative. The lease payment rate also affects the purchase option price of

the asset at the end of the lease. This will impact the amount and type of gain realized with the lease alternative upon sale of the asset.

Previous studies examined the impact of each parameter independently. Clearly, there is some interdependence among parameters when making the lease versus buy financing decision. For example, the impact of the holding period depends on the tax rate because of the tax treatment of the ordinary and capital gains. Furthermore, the amount of the gain depends on the resale value, which is a function of machine type and inflation rate, the purchase option price, and the lease payment rate. Clearly, interactions must be considered in determining the net after-tax costs of an asset over its life. To look at only one parameter when making a decision as to financing alternative is to oversimplify the analysis.

Bibliography

Adair, Ann Laing; Penson, John B., Jr.; and Duncan, Marvin. "Monitoring Lease-Financing in Agriculture." Economic Review of the Federal Reserve Bank of Kansas City 66 (June 1981): 16-27.

Edwards, William, and Ozkam, Erdal. "Machinery Leasing Cost." Cooperative Extension Service, Iowa State University, Ames, Iowa, March 1983. (Mimeographed)

Harl, Neil E. Agricultural Law 4. New York, New York: Matthew-Bender Co., 1983a.

_____. "The Tax Equity and Fiscal Responsibility Act of 1982 (TEFRA)." Department of Economics, Iowa State University, Ames, Iowa, 1983b. (mimeographed)

La Due, Eddy L. "Equipment Leasing and Renting as Alternative Sources of Investment Capital for Northeast Farmers." New York's Food and Life Sciences Bulletin, Social Sciences, Agricultural Economics 67 (August 1977): 1-15.

_____. "Leasing Machinery and Buildings." Dairy Herd Management 19 (November 1982): 21, 22f.

Lins, David, and Clark, Rex. "Should Lenders Lease?" Agri Finance 24 (October 1982): 28-34.

Plaxico, James S. "Decision Time-Lease or Buy? Farm Money Management 3 (March/April 1983): 8-12.

_____. "Economics of Equipment Leasing as an Alternative to Debt Finance." Oklahoma Current Farm Economics 4 (1982): 3-9.

Robertson, J. Douglas; Musser, Wesley N.; and Tew, Bernard V. "Lease vs. Purchase of a Center-Pivot Irrigation System in Georgia." Paper presented at the annual meeting of the Southern Agricultural Economics Association,
Orlando, Florida, 7-10 February 1982.

Van Horne, James C. Financial Management and Policy. 6th ed. Englewood Cliffs, New Jersey Prentice-Hall, Incorporated, 1983.

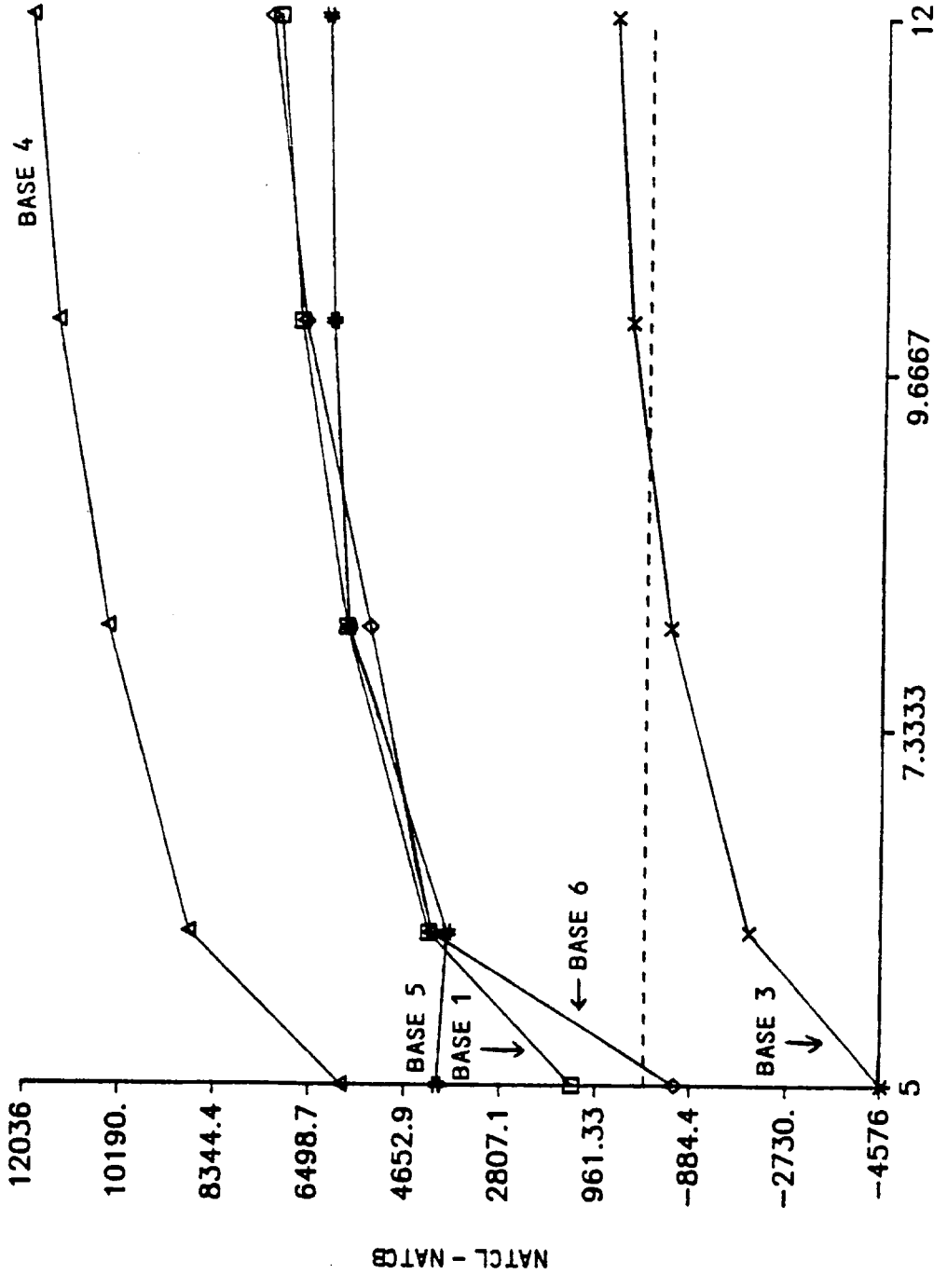

Figure 1. The net after-tax cost of the lease financing alternative minus the net after-tax cost of the buy financing alternative at different holding periods.

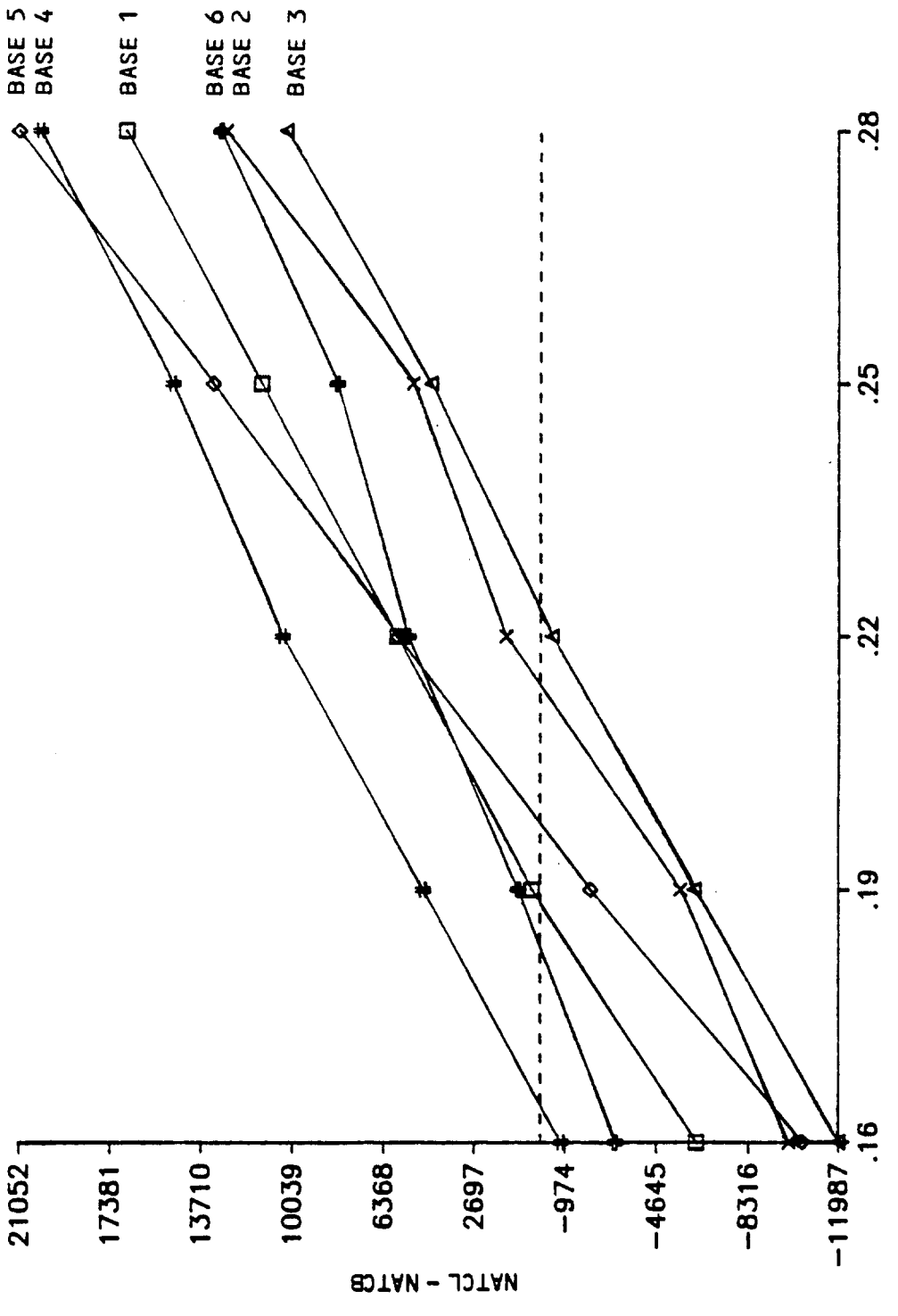

Figure 2. The net after-tax cost of the lease financing alternative minus the net after-tax cost of the buy financing alternative at different lease payment rates.

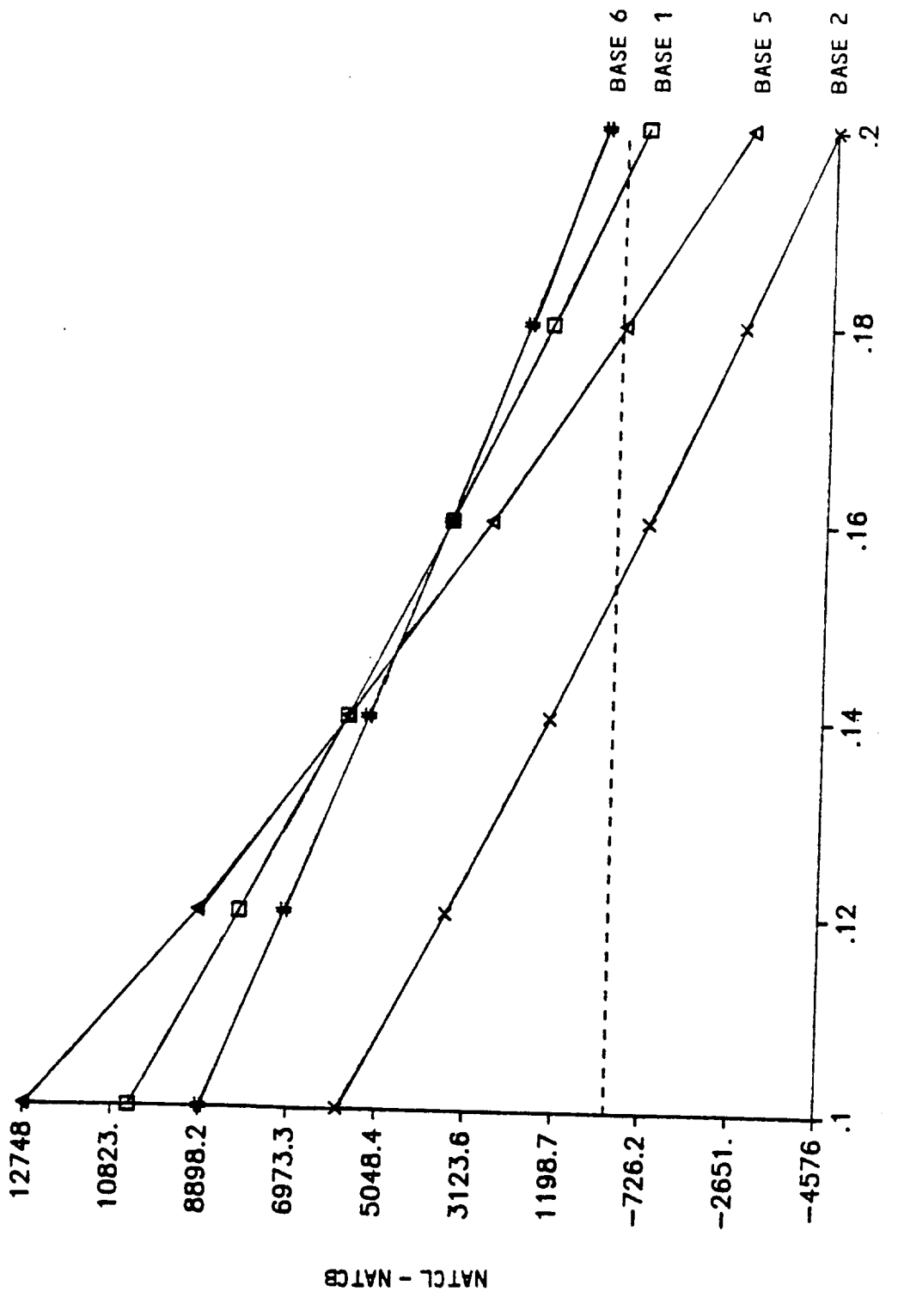

Figure 3. The net after-tax cost of the lease financing alternative minus the net after-tax cost of the buy financing alternative at different interest rates.

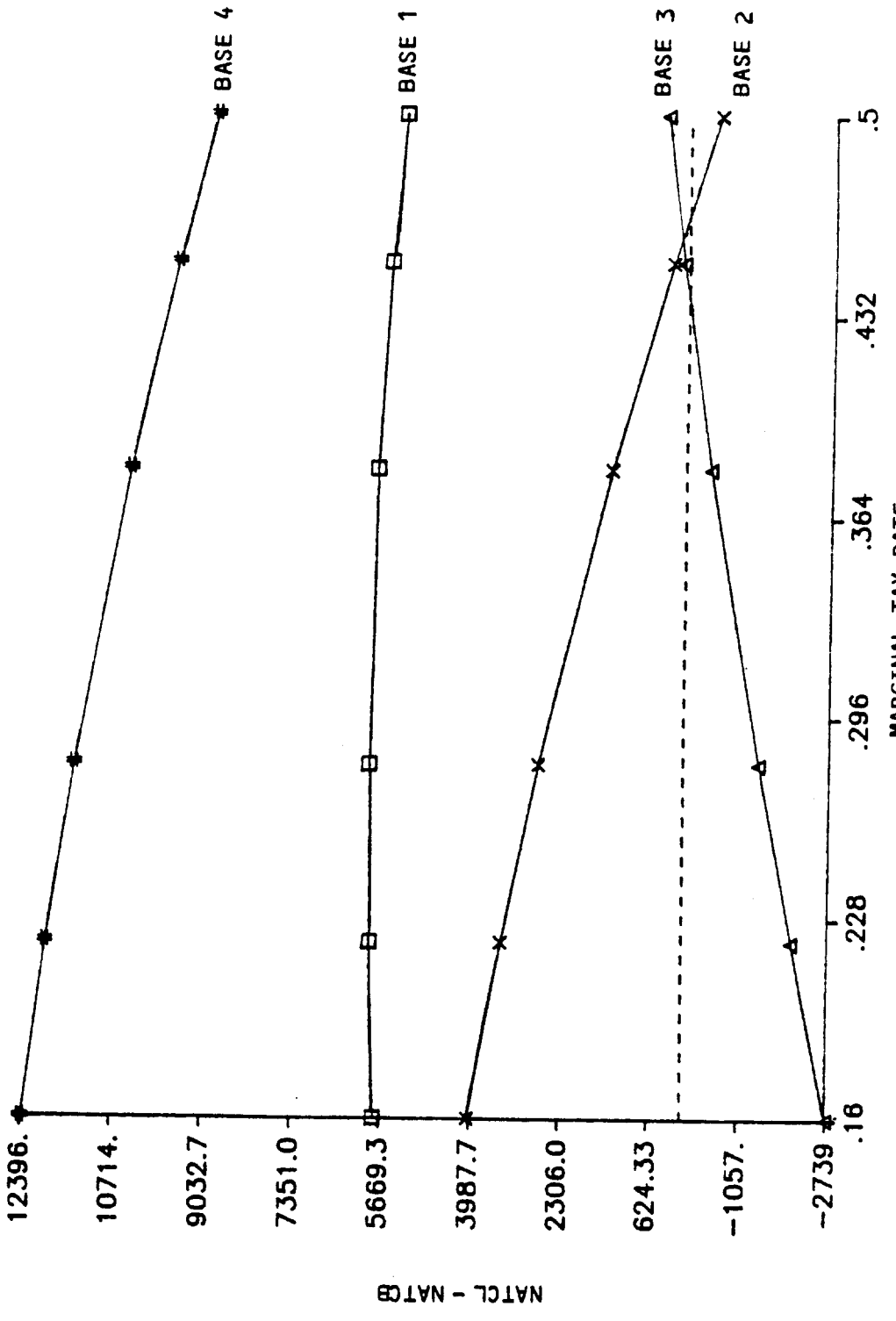

Figure 4. The net after-tax cost of the lease financing alternative minus the net after-tax cost of the buy financing alternative at different marginal tax rates.

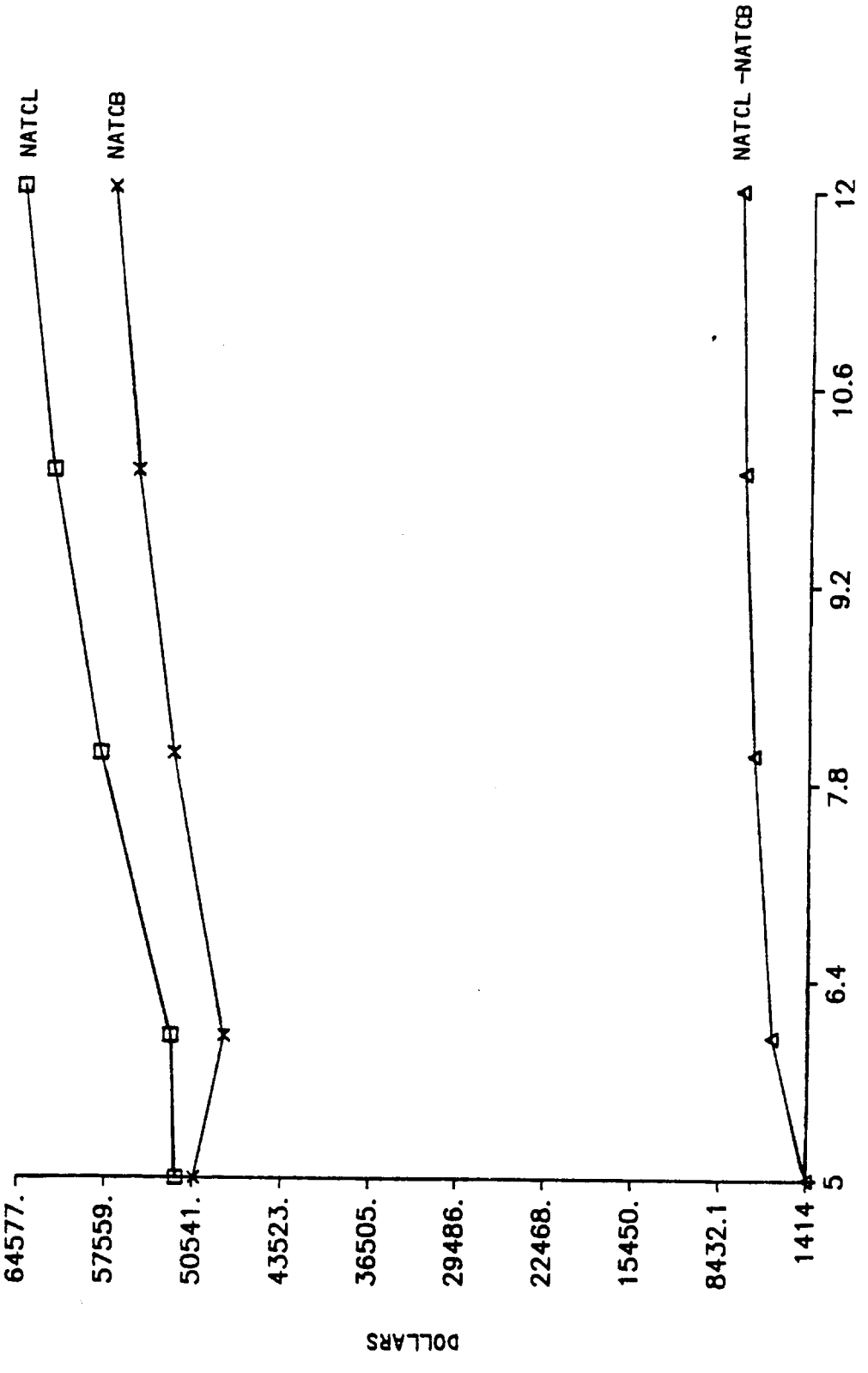

Figure 5. The net after-tax cost of lease financing and debt financing for Base 1.