

# Lease Analysis 25A

## AGRO-CHEM, INC.

Officials in Texas and other states that rely primarily on deep groundwater for drinking purposes are becoming increasingly concerned about a potentially serious problem—the pollution of aquifers by the unrestrained use of fertilizers and pesticides. A recent study conducted by the United States Geological Survey showed that, although the primary aquifer underlying Texas is not yet contaminated, several chemicals commonly found in agricultural pesticides have caused extensive contamination of wells that draw water from strata near the surface. To combat this potentially widespread problem, officials in Texas and elsewhere have proposed regulations to prevent the use of fertilizers and pesticides that do not adhere to strict safety standards. As a result, companies specializing in agricultural chemicals have been working furiously to supply new products that will not be banned under the proposed regulations.

Agro-Chem, Inc., a regional producer of agricultural chemicals based in Houston, Texas, recently developed a pesticide that meets the new regulations. Now the firm must acquire the necessary equipment to begin production. The estimated internal rate of return (IRR) of this project is 25 percent, and the project is judged to have a relatively low risk. Agro-Chem uses an after-tax cost of capital of 12 percent for such low-risk projects, 14 percent for those of average risk, and 16 percent for high-risk projects. Therefore, this low-risk project passed the hurdle rate with flying colors.

The production line equipment has an invoice price of \$1,500,000, including delivery and installation charges. It falls into the modified accelerated cost recovery system (MACRS) 5-year class, with current allowances of 0.20, 0.32, 0.19, 0.12, 0.11, and 0.06 in Years 1–6, respectively. Agro-Chem's effective tax rate is 40 percent. The manufacturer will provide a maintenance contract for \$75,000 per year, payable at the beginning of each year, if Agro-Chem buys the equipment.

Regardless of whether the equipment is purchased or leased, Audrey Jones, the firm's financial manager, does not think it will be used for more than 4 years, at which time Agro-Chem's current building lease will expire. Current plans call for the company to build a new facility, which will be designed to enable Agro-Chem to use a new production process that will replace the equipment now being considered. Hence, the current project is viewed as a "bridge" to serve only until the new equipment can become operational in the new facility 4 years from now. The expected useful life of the equipment is 8 years, at which time it should have a zero market value; however, the residual value at the end of the fourth year should be well above zero. Audrey generally assumes that assets' salvage values will be equal to their tax book values at any point in time, but she is concerned about that assumption in this instance.

Case: 25A Lease Analysis

Currently, the company has enough funds held as temporary investments in marketable securities to pay cash for the equipment plus the first year's maintenance. Agro-Chem currently borrows at an interest rate of 12 percent on 3-to-5-year secured loans, and Audrey could get financing for the equipment under consideration at this same rate on a 4-year loan with end-of-year interest payments. However, she plans to draw down the securities portfolio and pay cash for the equipment if it is purchased.

Lonestar Capital, Inc., the leasing subsidiary of a major regional bank, has offered to purchase the equipment and then lease it to Agro-Chem for annual payments of \$475,000, with the first payment due upon delivery and additional payments due at the beginning of each succeeding year of the 4-year lease term. This price includes a service contract under which the equipment would be maintained in good working order. The service contract, if purchased separately, would cost \$75,000 per year, payable at the start of the year. Lonestar would buy the equipment from the manufacturer under the same terms that were offered to Agro-Chem, including the service contract. Like Agro-Chem, Lonestar generally assumes that the most likely residual value for equipment of this type is the tax book value at the end of the lease term. Some Lonestar executives think, however, that the residual value in this case will be much higher because of the expanding nature of the business. Lonestar is not expected to pay any taxes over the next 4 years, because the firm still has tax losses to carry forward. Finally, Lonestar views lease investments such as this as an alternative to lending, so if it does not write the lease, it will lend the \$1,500,000 that would have been invested in the lease to some other party in the form of a term loan that would earn 12 percent before taxes.

Audrey Jones has always had the final say on all of Agro-Chem's lease-versus-purchase decisions, but the actual analysis of the relevant data is conducted by Agro-Chem's assistant treasurer, Keith Thompson. Traditionally, Agro-Chem's method of evaluating lease decisions has been to calculate the "present value cost" of the lease payments versus the present value of the total charges if the equipment is purchased. However, in a recent evaluation, Audrey and Keith got into a heated discussion about the appropriate discount rate to use in determining the present value costs of leasing and of purchasing. The following points of view were expressed:

- (1) Audrey argued that the discount rate should be the firm's weighted average cost of capital. She believes that a lease-versus-purchase decision is in effect a capital budgeting decision, and as such it should be evaluated at the company's cost of capital. In other words, one method or the other will provide a net cash savings in any year, and the dollars saved using the most advantageous method will be invested to yield the firm's cost of capital. Therefore, she believes the average cost of capital (14 percent) is the appropriate opportunity rate to use in evaluating lease-versus-purchase decisions.
- (2) Keith, on the other hand, believes that the cash flows generated in a lease-versus-purchase situation are more certain than are the cash flows generated by the firm's average project. Consequently, these cash flows should be discounted at a lower rate because of their lower risk. At the present time, the firm's cost of secured debt reflects the lowest risk rate to Agro-Chem. Therefore, 12 percent should be used as the discount rate in the lease-versus-purchase decision.

To settle the debate, Audrey and Keith asked Agro-Chem's CPA firm to review the situation and to advise them on which discount rate was appropriate. This led to even more confusion because the firm's accountants, Bill Evans and Jack Trainor, were also unable to reach agreement on which rate to use. Bill agreed with Audrey that the discount rate should be based on the average cost of capital, but on the grounds that leasing is simply an alternative to other means of financing. Leasing is

a substitute for “financing,” which is a mix of debt and equity, and it saves the cost of raising capital; this cost is the firm’s weighted average cost of capital. Jack, however, thought that none of the discount rates mentioned so far adequately accounted for the tax effects inherent in any capital budgeting decision, and he suggested the use of the after-tax cost of secured debt.

In the last lease-versus-purchase decision, the weighted average cost of capital (14 percent) was used, but now Audrey is uncertain about the validity of this procedure. She is beginning to lean toward Jack’s alternative, but she wonders if it would be appropriate to use a low-risk discount rate for evaluating all the cash flows in the analysis. Audrey is also concerned that using a discount rate based on the after-tax cost of a secured loan might be inappropriate when the funds used to purchase the equipment would come from internal sources, specifically marketable securities. Perhaps the discount rate should reflect the 7 percent return earned on the firm’s marketable securities portfolio. Conversely, the cost of equity capital might also deserve consideration, because there have been discussions about using the funds in the portfolio to repurchase Agro-Chem common stock on the open market.

Audrey is especially concerned about the risk of the expected residual value. Although she regards the other cash flows, and to a lesser extent the tax shelters, as being quite certain, the salvage value at the end of the fourth year is relatively uncertain, having a distribution of possible outcomes that makes its risk comparable to that of Agro-Chem’s average capital budgeting project. The Production Department head estimates that the equipment’s residual value could be as low as \$0 when dismantling charges are considered or as high as \$510,000. Further, he believes that the probability of occurrence of the extreme values is 0.25 each while the probability of the most likely residual value, \$255,000, is 0.50.

To settle all the disputes, the parties to the lease-versus-buy decision agreed that an outside consultant should be hired to conduct the analysis. Assume you are that consultant. You have been asked to conduct a thorough analysis of the lease decision. At a minimum, you should address all the issues being debated by the company’s staff. In addition, Ed Cooke, Agro-Chem’s president and past financial VP, believes that the lease should be characterized as an operating lease and not shown on the balance sheet in order to make the firm look better to outside investors. He asks you to comment on the lease’s accounting classification.

Cooke also asks you to evaluate the lease from the point of view of the lessor, Lonestar Capital, in order to ascertain the lease’s profitability to them. Such information will be useful to Agro-Chem when negotiating the final terms of the lease. Thus, based on the original case assumptions, Cooke wants you to determine the range of lease payments that would be acceptable to both the lessor and the lessee. Audrey also wants to ask Lonestar to include a cancellation clause in the lease agreement, but Cooke is concerned about the impact of such a clause on the riskiness to the parties, hence on the terms of the lease. Audrey is also considering negotiating end-of-year rather than beginning-of-year lease payments, and Cooke wonders what effect that might have on the size of the lease payments. Yet another point Cooke raises is the effect of Agro-Chem’s tax rate on its lease-versus-purchase decision. The firm is considering the acquisition of another company that has large tax loss carryforwards, and that would result in a much lower tax rate for Agro-Chem.

Finally, as the meeting was about to break up, Cooke surprised Audrey by stating that there is a chance that the company may not be moving 4 years hence, in which case they would want to continue using the equipment. Cooke asks you to consider what effect, if any, that might have on the lease-versus-purchase decision.

Your task now is to prepare a report that addresses all the preceding concerns, and to make a recommendation as to whether the equipment should be leased or purchased. Audrey asked you to answer the following questions to help structure your report.

## QUESTIONS

### Part A: Lessee's Analysis

1. The conventional format for analyzing lease-versus-purchase decisions assumes that the money to buy the equipment will be obtained by borrowing. In this case, however, Agro-Chem has sufficient internally generated capital, held in the form of marketable securities, to buy the equipment outright. What impact does this fact have on the analysis?
2. Should Agro-Chem lease or purchase the equipment? Assume that, if the decision is made to purchase the equipment, it will be sold for its book value on the first day of Year 5, hence the full Year 4 depreciation can be taken. Further, use the 12.0 percent before-tax (7.2 percent after-tax) cost of debt as the residual value discount rate. (Hint: Use Part A of Table 1 as a guide.)
3. Justify the discount rate you used in the preceding calculation process. Now assume that Audrey asks you to adjust the analysis to reflect the higher risk of the residual value. What impact does this have on Agro-Chem's lease-versus-purchase decision? (Hint: The 14 percent cost of capital used to evaluate average-risk projects is already an after-tax cost.)
4. Now suppose the assumption that the company would be moving after 4 years, hence would not continue to need the equipment, was changed, and you were to assume that they would not move, hence would continue using the leased equipment for its full economic life. This would mean that Agro-Chem would have to purchase it from the lessor (at the fair market value) when the lease expired. How, if at all, would this affect the analysis?
5. a. Based on the information given in the case, would you classify this lease as a financial lease or as an operating lease? For accounting purposes, a lease is classified as a financial lease, hence must be capitalized and shown directly on the balance sheet, if the lease contract meets any one of the following conditions:
  - (1) The lessee can buy the asset at the end of the lease term for a bargain price.
  - (2) The lease transfers ownership to the lessee before the lease expires.
  - (3) The lease lasts for 75 percent or more of the asset's estimated useful life.
  - (4) The present value of the lease payments is 90 percent or more of the asset's value.b. Does the differential accounting treatment of operating versus financial leases make comparative financial statement analysis more difficult for outside financial analysts? If so, how might analysts overcome the problem?
6. In some instances, a company might be able to lease assets at a cost less than the cost the firm would incur if it financed the purchase with a loan. If the equipment represented a significant addition to the lessee's assets, could this affect its overall cost of capital, and thus the capital budgeting decision that preceded the lease analysis? Might this affect capital budgeting decisions related to other assets? Explain.
7. Now assume Audrey estimates that the residual value could be as low as \$0 or as high as \$510,000. Further, she subjectively assigns a probability of occurrence of 0.25 to the extreme values and 0.50 to the base case value, \$255,000. Describe how Audrey's estimates could be incorporated into the analysis. If you are using the spreadsheet model, calculate Agro-Chem's net advantage to leasing (NAL) at each residual value. What is the expected NAL? (For this analysis, assume a 7.2 percent after-tax discount rate on all cash flows.)

### Part B: Lessor's Analysis

8. Now evaluate the proposed lease from the point of view of the lessor, Lonestar Capital, Inc. Assume that the residual value is equal to the book value at the end of the fourth year, and use a 12.0 percent after-tax discount rate for all cash flows. Are the current terms favorable to Lonestar? (Hint: Use Part B of Table 1 as a guide.)

### Part C: Combined Analysis

9. Based on a 4-year use of the asset, a 7.2 percent after-tax discount rate on the cash flows of the lessee, and a 12 percent after-tax discount rate on the cash flows of the lessor (that is, the original conditions), you should have found that the lease is advantageous to both Agro-Chem and Lonestar. Is there a range of lease payments that would be acceptable to both the lessor and the lessee? At which end of the range do you think the actual payment would be set? If you are using the spreadsheet model, specify the actual range of payments.
10. There is a possibility that Agro-Chem will move to its new production facility earlier than anticipated, and hence prior to the expiration of the lease. Thus, Audrey is considering asking Lonestar to include a cancellation clause in the lease contract. What impact would a cancellation clause have on the riskiness of the lease to Agro-Chem? How would it affect the risk to Lonestar? If you were Lonestar's leasing manager, would you change the lease terms if a cancellation clause were added? If so, what changes might be made?
11. Leases are sometimes written so that the lessee makes payments at the end of each year rather than in advance. If the lessor structured the analysis with deferred payments, how would this affect (a) the NAL from the lessee's standpoint and (b) the rate of return earned by the lessor? Could the lease payments be adjusted, if they were made on a deferred basis, to produce the same NAL as existed when the payments were made in advance?
12. Assume now that Lonestar has no tax credits to carry forward, hence is in the 40 percent tax bracket. Also, assume that both parties to the lease estimate a \$255,000 residual value and discount it at a 7.2 percent after-tax discount rate. What do you think would happen to Lonestar's NPV under these conditions? If you are using the spreadsheet model, do the calculations.
13. What effect do you think Agro-Chem's tax rate has on its lease-versus-purchase decision? If you are using the model, find Agro-Chem's NAL at tax rates of 0, 10, 20, 30, 40, 50, and 60 percent. Explain your results.

**TABLE 1**  
**Selected Cash Flow Data**  
**(In Thousands of Dollars)**

<i>MACRS Depreciation Table:</i>				
Year	MACRS Rate	Depreciation Basis	Annual Depreciation	Ending Book Value
1	20%	\$1,500.00	\$300.00	\$1,200.00
2	32			
3	19	1,500.00		
4	12	1,500.00	180.00	255.00
5	11	1,500.00	165.00	90.00
6	6	1,500.00	90.00	0.00

  

<i>Part A: Lessee's Analysis:</i>					
	Year 0	Year 1	Year 2	Year 3	Year 4
<i>Cost of Owning:</i>					
Equipment cost	(\$1,500.00)				
Maintenance	(\$ 75.00)	(\$ 75.00)		(\$ 75.00)	
Maintenance tax savings	30.00	30.00		30.00	
Depreciation shield		120.00		114.00	72.00
Residual value					255.00
RV tax					0.00
Net owning CF	<u>(\$1,545.00)</u>	<u>\$ 75.00</u>	<u>_____</u>	<u>\$ 69.00</u>	<u>\$327.00</u>
<i>Cost of Leasing:</i>					
Lease payment	(\$ 475.00)	(\$475.00)		(\$475.00)	
Payment tax savings	90.00	190.00		190.00	
Net leasing CF	<u>(\$ 285.00)</u>	<u>(\$285.00)</u>	<u>_____</u>	<u>(\$285.00)</u>	<u>\$0.00</u>

  

<i>Part B: Lessor's Analysis:</i>					
	Year 0	Year 1	Year 2	Year 3	Year 4
Equipment cost	(\$1,500.00)				
Maintenance	(\$ 75.00)	(\$ 75.00)		(\$ 75.00)	
Maintenance tax savings	0.00	0.00		0.00	
Depreciation shield		0.00		0.00	0.00
Residual value					255.00
RV tax					0.00
Lease payment	475.00	475.00		475.00	
Lease payment tax	0.00	0.00		0.00	
	<u>(\$1,100.00)</u>	<u>\$ 400.00</u>	<u>_____</u>	<u>\$ 400.00</u>	<u>\$255.00</u>