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Technical Report

Analyzing Distressed Properties

Wayne E. Etter
Professor

and

Scott Shaffer
President
CDS Real Estate Advisors, Inc.
Houston, Texas



May 1990

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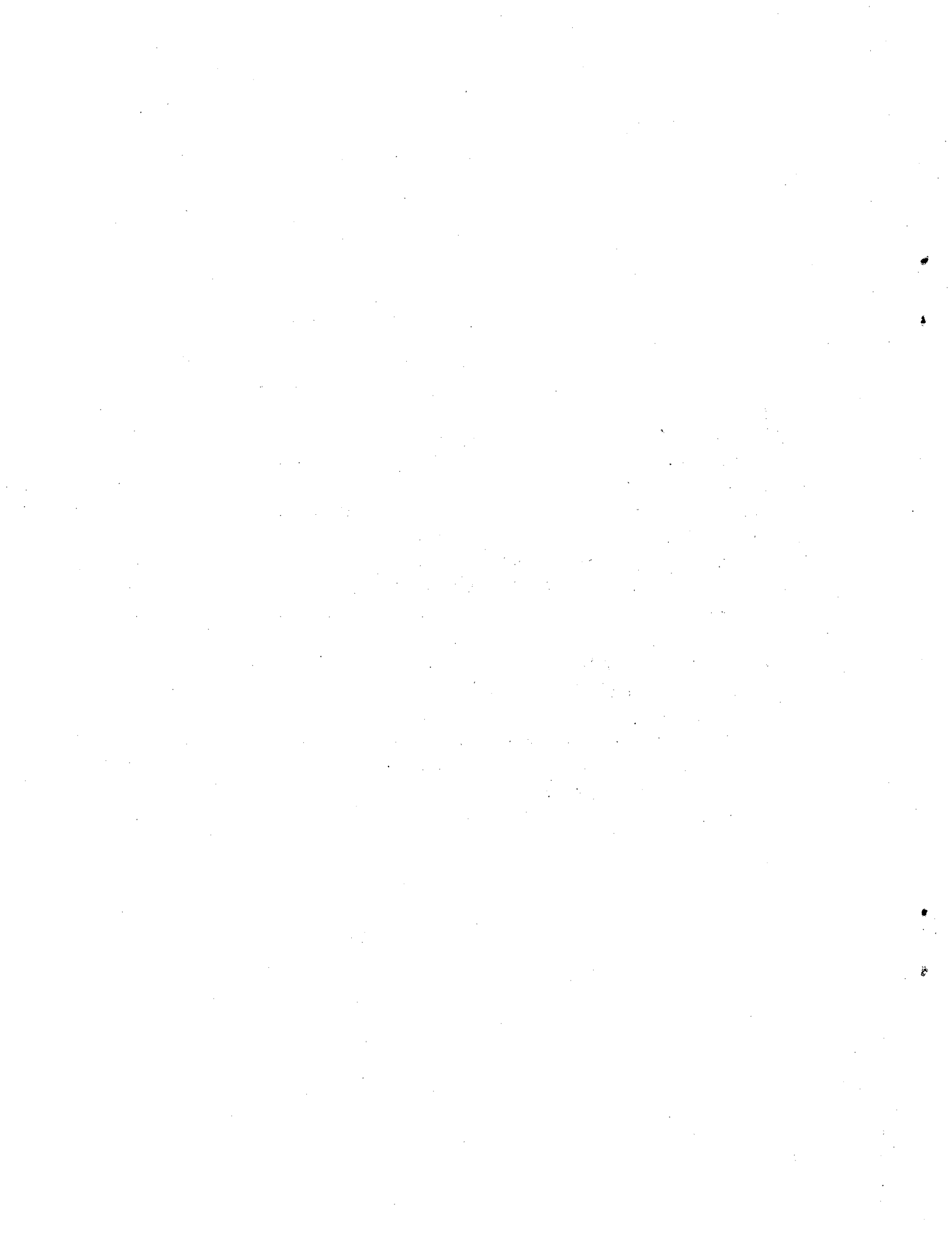
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Solutions Through Research

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Summary

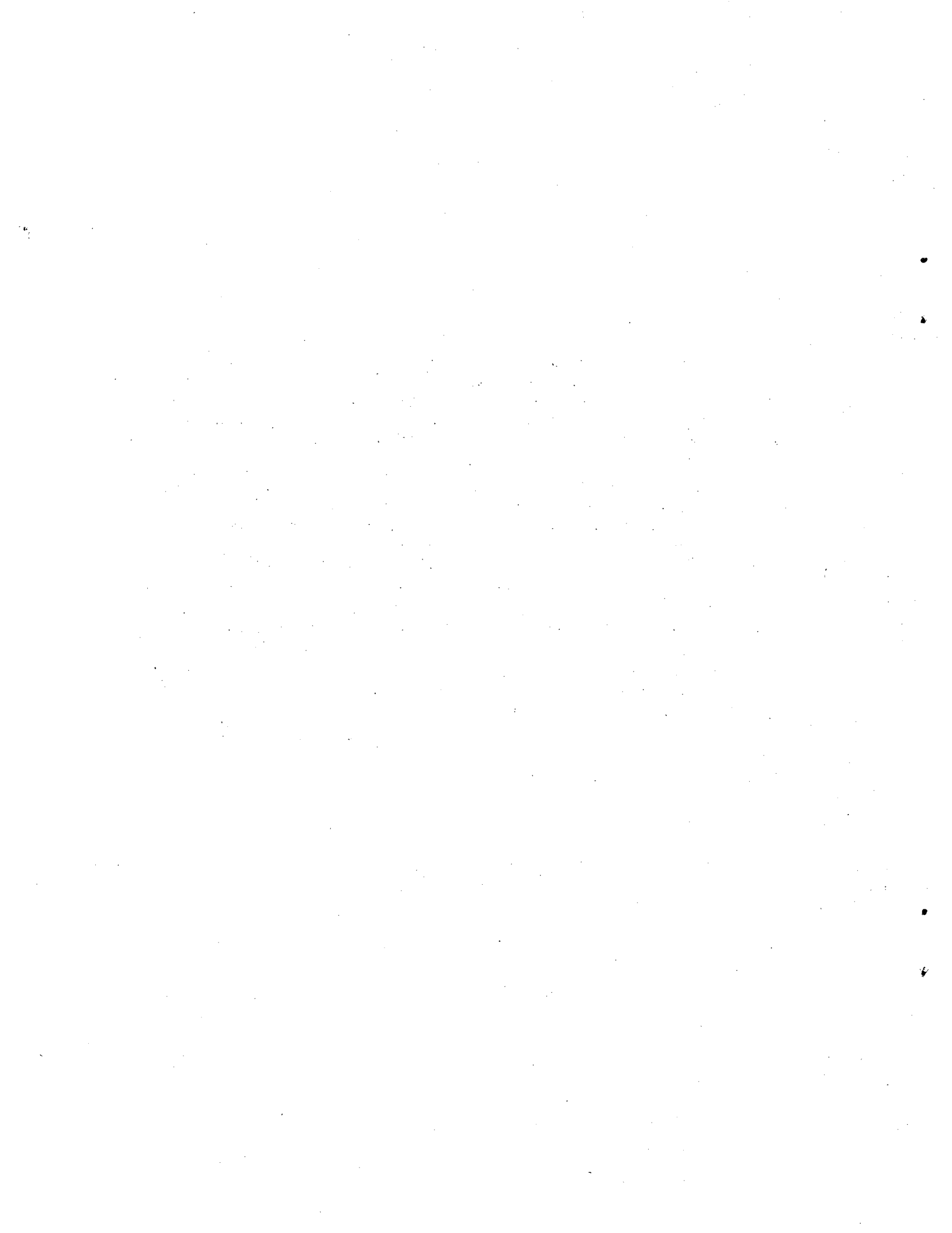
Today, there are many distressed properties in Texas. However, the deterioration of the commercial real estate market and the subsequent demise of several of the state's financial institutions have meant that many of these problems cannot be solved by the institution that made the original loan. Instead, they are the responsibility of public and private successor institutions. This report establishes an analytical approach for dealing with distressed properties.

The first step in the analytical approach is identifying the property's primary problems and considering potential solutions: selling the property "as is;" holding the property or working with the borrower to avoid default until market conditions improve; advancing the funds necessary for improvement and then selling the project; or advancing the funds necessary for improvement and then operating the project.

The solutions that are economically feasible then are evaluated and compared with the advantages of selling the property "as is." The property should be sold "as is" if the benefits of immediate sale exceed the present value of selling the property after the proposed solution is in place.

Components of analysis such as cost and related considerations, financial feasibility and market research are described in the first part of the report and applied to a representative problem property in the second part.

This report examines the economic factors in a workout. Real Estate Center technical report 785, *The Legal Feasibility of a Loan Workout*, by Judon Fambrough, discusses legal issues.



Texas entered the nineties with a surplus of distressed properties. Many of them, unable to generate sufficient net operating income (NOI) to service debt, have been foreclosed and are in the hands of the original lender. But because the deterioration of the commercial real estate market in Texas has resulted in the downfall of several of the state's major commercial banks and savings and loan associations (S&L), many of these problems no longer can be solved by the particular financial institution that made the loan; instead, solving these problems is the responsibility of public and private successor institutions.

Whether the final decision about these properties is made by a private institution (commercial bank or S&L) or a public institution (the Federal Deposit Insurance Corporation or the Resolution Trust Corporation), the best decision will be made if a systematic approach is used to evaluate and manage these properties. Establishing an analytical approach for dealing with distressed properties is the objective of this report.

The analysis begins with identification of the property's primary problems and consideration of proposed solutions. Then, each proposed solution's economic feasibility must be evaluated; the proposed solutions that are economically feasible then must be compared with the advantages of selling the property "as is" for its current value. The property should be sold "as is" if the benefits of immediate sale exceed the present value of selling the property after the proposed solution is in place.

The analytical approach for dealing with problem properties is developed in the first part of this report and its application to a problem property is demonstrated in the final part.

Cost Considerations

The lender originally extends a loan with the expectation that the borrower will repay the principal with interest. However, analysis of a problem property requires recognition that the objective now is selecting the course of action that provides maximum recovery. In some cases, this will be less than the amount owed. Thus, the concept of sunk cost is an important consideration for the lender in dealing with a problem property—the amount owed is important, but it is not

relevant to this decision. No future course of action can affect the amount previously loaned; it can affect only the amount recovered. If a certain course of action is the best available solution, it must not be rejected simply because it will not result in full repayment of the loan.

Losses suffered from nonfull repayment represent a significant federal insurance problem that ultimately becomes a taxpayer problem, but it is not related to the current market value of specific properties. Failure to grasp this distinction re-

sults in an overstatement of the current real estate overhang and postpones the recovery of Texas real estate markets. While national attention is focused on the disposition of distressed real estate, similar energy has yet to be spent on analyzing the institutional failures that contributed to the crises. Analysis of such institutional problems is outside the scope of this report.

In addition to sunk cost, opportunity cost is important when considering holding a nonperforming property or when working with the borrower rather than selling the property at its current value. If the property is sold, the proceeds can be invested or loaned elsewhere to earn profits for the lender—thus, opportunity cost is the profit foregone from other possible courses of action. Although the ultimate pay-off may be higher if the property is held, the opportunity cost of holding the property must be considered.

Finally, the out-of-pocket costs of holding a nonperforming property or working with the borrower must be considered. Included among such costs are utilities, insurance, property taxes, maintenance, attorney fees, security and other property management costs.

Other Considerations

The poor financial condition of many lending institutions restricts their flexibility in dealing with nonperforming loans. Although selling a problem property for its current market value may be an appropriate solution in some cases, an institution bordering on insolvency may not want to sell the property if a loss will result. Although this report examines the development of an analytical procedure for minimizing the loss from and maximizing the value of a problem property, it must be recognized that other special consider-

ations beyond the scope of this presentation sometimes will prevail.

Second, once a solution is established as feasible economically, it may be necessary to consider its legal feasibility.

Identifying the Problem

Analysis first requires identification of the problem. Is the principal reason for the property's difficulty a market problem (a lack of demand for space), a physical problem with the property or a management problem? In many cases, some element of each likely will be involved; generally, however, the most significant problem will be an apparent lack of demand for the space. If the property is complete, but empty, there likely are market problems. If the property is incomplete, the failure to complete may result from a realization that there would be an insufficient number of tenants to operate the property successfully upon completion.

Physical problems with ingress, egress, signage, visibility, quality of construction and so forth may be inhibiting the progress of leasing the property or achieving the expected rental rate. The cost of correcting these problems should be weighed against the probability that it will result in the property being leased. In some cases, the property may be incomplete and a decision will need to be made about completing the property—again, it is necessary to consider whether the property can be leased when it is completed. The cost of eliminating any environmental hazards also must be taken into account.

Management problems may exist as well. Developers lacking adequate management skills may not be aware of possible solutions or the need to test their feasibility. When this is the case, lenders should supply the necessary expertise.

Options and Solutions

After the property's primary problems are identified, four broad solutions become available to the lender. The analytical problem is not only to judge which of the proposed solutions is best, but to decide whether or not the best solution sufficiently benefits the lender.

The first option is to sell the property "as is" for its current market value. The property's value may be equal only to the land value because the improvement is deemed useless. Presumably, this will result in a loss to the lender, but this may be the best course of action if the project has little potential. By disposing of the property, the out-of-pocket holding costs and the opportunity costs of maintaining it will be avoided.

The second option is to hold the property or work with the borrower to avoid default until market conditions improve. However, this option results in both out-of-pocket holding costs and opportunity costs to the lender.

The third option is to advance the funds necessary for improvement and then sell the project. This may involve completing or rehabilitating the property, initiating a new marketing program or restructuring the financial arrangements with the borrower. This requires deciding whether advancing the additional funds will make the project financially feasible and whether the project's value will increase by more than the amount of the additional funds advanced. Besides the additional investment, this option involves both out-of-pocket holding costs and opportunity costs.

The fourth option is the same as the third except that after advancing the funds necessary for improvement, the project is operated rather than sold. This option involves the same considerations as option three in determining if the addi-

tional funds will make the project economically feasible and if the project's value will increase by more than the amount of the funds advanced.

In considering the third and fourth options, lenders must judge the merits of acquiring a property and investing adequate funds to cause it to perform at the highest level possible in the current market with the expectation that over time the lender will be rewarded with the property's enhanced market value. Lenders must be convinced that the property is a sound investment for the price (the sum of the property's current market value plus rehabilitation cost).

Economic Feasibility

Next, each proposed solution's economic feasibility must be established. **An income property is economically feasible if the demand for the space is adequate and if it can generate adequate NOI to support sufficient debt to finance the property and provide a satisfactory cash return to its owner.** Thus, ascertaining a proposed solution's economic feasibility requires both market research and financial analysis.

Analysis of economic feasibility is part of the overall development decision. If a proposed development does not appear economically feasible, it should be abandoned. However, in the case of a problem property, the lender already has advanced funds to the project; the goal of analysis is to make the best of a bad situation. Nevertheless, the workout situation parallels the analysis of a proposed development in that a proposed solution must be shown to result in leasable space for which there is sufficient market demand at a rate sufficient to generate the required NOI.

Market Research

Market research is usually considered in connection with new developments. De-

velopers, lenders and investors want to know if the to-be-built space will generate sufficient demand when put on the market. But market research also can play an equally important role for problem properties. Many distressed properties lacked market research prior to their development. Making the decisions that were broadly described in the preceding section will require considerable dependence on a market study; therefore, undertaking a market study will be an important first step with nearly all problem properties. The market research report for a problem property should provide information beyond that ordinarily found in a report prepared for a new development.

Market research is concerned with analyzing supply and demand for space within a given market and should provide answers to questions such as:

- What types of space are available in the market?
 - How much space of each type is available in the market?
 - What types of space users now are in the market?
 - What types of space are being demanded?
 - What changes in the demand for space are foreseen?
 - What is the underlying cause of the expected change in future demand?
 - Is an expected increase in the demand for space a result of the expansion of businesses within the market area?
 - Is an expected increase in the demand for retail shopping space related to increased residential population in the market?
 - When will there be a need for additional space?
- Are there any current unmet needs for space?

If it is determined that there is no unmet demand for space in the market area that the property can meet now or later, the property should be sold for its current value. If it is determined that there is an unmet need for space that the property reasonably can be expected to supply, the research should provide an estimate of the square footage required to meet the demand, the price that users are willing to pay for the space and an estimate of the time required to lease the space.

Another possible conclusion from the market study is that the property is unsuited for its intended use. If this conclusion is reached, the costs and benefits of conversion must be evaluated.

The report also should address the property's physical problems, if any. Do any physical shortcomings need to be corrected before the property can be expected to be leased at a certain rate?

Finally, the report should address the implementation of a *marketing plan* for the property. Merely identifying an unmet need is insufficient; the market must be made aware of the available space. Specific elements of such a plan may include the following:

- **Conceptual options:** Is there a better use for the property or, if the current use is best, does the property need a new identity or image?
- Evaluate the property's identity and image
- Identify alternative uses
- Define potential target markets
- **Marketing research:** Who is the customer? What does the customer need or want? How can this project meet these needs better than the competition?

- Develop customer profiles
- Identify competitive advantages
- Project market share objectives-goals
- **Marketing strategies:** How can the product and marketing be positioned competitively? Who specifically will be the customer?
- Establish customer-based market position
- Outline market-driven approach
- Identify specific tenant-occupant targets
- **Pricing policies:** What will be the price and terms available for the lease or purchase of the product and how will these be presented?
- Outline pricing options
- Recommend terms and policy alternatives
- Develop packaging concepts
- **Marketing methods:** Who is going to sell or lease the product? Where and how will this be done?
- Match marketing tasks with qualified organizations
- Determine best format for presentation
- Recommend compensation and expenses
- **Marketing materials:** What on- and off-site sales and promotional tools should be developed to assist sales and leasing?
- Outline sales presentation
- Evaluate advertising and promotional programs
- Suggest marketing and presentation tools
- Prepare material budget
- **Performance standards:** What are the goals and objectives? What prob-

lems can be anticipated in achieving them?

- Recommend occupancy levels
- Set income goals
- Identify potential problem areas

Financial Feasibility

The analyst also must test the proposed solution's financial feasibility before its implementation. Given the current market value of the property and the proposed solution's cost, a workout is financially feasible if it results in the property being able to generate adequate NOI to support sufficient debt to finance the property and to provide a satisfactory cash return to a potential buyer. Financial feasibility depends on the following:

- Given a solution's implementation, how much rent will the project produce, what are the expected operating expenses and how much NOI will the project generate?
- Given current market conditions and lending requirements, how large a loan will the NOI support?
- Given the probable equity contribution of a potential buyer, can the property be financed?

Even if a solution is found to be financially feasible, it must be evaluated further. The property's expected increase in value resulting from the proposed solution should be compared with the cost of the proposed solution—is the increase in value greater than the cost of improvements? If not, the property should be sold immediately for its current market value. This decision depends on the following:

- What is the estimated maximum price a potential buyer will pay for the property?
- Given the current market capitalization rate, what is the estimated capitalized income value of the property?

- What is the property's current estimated market value?
- What is the solution's estimated cost?
- Will there be any special out-of-pocket holding costs?

Financially feasible solutions that require holding the property until a higher market value is achieved must be tested with discounted cash flow analysis. To pursue the final stage of the analysis, it is necessary to estimate the following:

- How long must the property be held for the proposed plan to work?
- What cash benefits will be received during the holding period?
- What is the estimated maximum price a potential buyer can be expected to pay at the end of the holding period?
- What is the estimated capitalized income value of the property at the end of the holding period?
- What rate of discount should be applied to the expected cash benefits during the holding period and to the expected resale proceeds? What is the opportunity cost of not selling the property for its current value?

The best proposed solution is one that is both economically feasible and provides the greatest present value differential over immediately selling the property for its current value plus the cost of the solution. If none of the proposed solutions provides a positive present value differential over immediately selling the property for its current value plus the cost of the solution, it should be sold "as is."

The following case analysis demonstrates these techniques.

Case Analysis: Big City Savings Association

The Big City Savings Association

(BCSA) currently owns three buildings in the River Bend Business Park. The Prime Building, designed for a single research and development (R&D) tenant, contains 52,230 square feet of gross leasable area and is currently leased on a triple-net basis. The other two buildings, No. 1 Riverside and No. 2 Riverside, are multitenant office-service center type buildings. These two buildings contain a total of 32,200 square feet; currently, a single tenant occupies 6,134 square feet. This space also is leased on a triple-net basis.

The executive committee of the BCSA is reviewing a market and financial analysis of these properties. The report was prepared by a consultant and is dated February 28, 1989. Two principal problems face BCSA. First, the local rental market is weak. Second, structural repairs costing an estimated \$350,000 are required for the properties to be competitive. The Prime Building lease (52,230 square feet) will expire on May 14, 1990. Although the building is currently 100 percent occupied, there is concern about the tenant's willingness to renew the lease unless the lease rate is reduced and the building is repaired. The other tenant occupies only 18 percent of the available office-service center space (6,134 square feet) and is on a month-to-month lease.

The executive committee must decide whether to sell the properties for their current value (option one) or improve the property, operate it and sell it at the end of an estimated five-year holding period (option four). Option two (work out with owner) is not applicable because BCSA already owns the property; option three is not viable because of the present weak market (making the necessary repairs will not increase the properties' market value until they are occupied and successfully operated).

The report provides current market information on the land, office-service center and R&D building markets. In addition, the report provides a financial feasibility analysis and a discounted cash flow analysis for each property type based on conclusions drawn from the consultant's market study. The following material is excerpted from the report.

Market Study Introduction: River Bend Business Park

The River Bend Business Park is a 75.3-acre land development located in a western mountain state. The development is owned by a major U.S. corporation and was designed to accommodate office, commercial, light industrial and warehouse-distribution uses.

At present, 65 acres of developed land are available for sale in the River Bend Business Park. Besides the properties owned by BCSA, the River Bend Business

Park contains a retail strip center and a high-tech R&D building.

Market Analysis

Land Market

Land sales in the River Bend Business Park area have ranged from \$1.25 to \$5 per square foot during the past one and one-half years (see Table 1). Currently, tracts ranging from one to ten acres are being offered in the \$2.80 to \$3.50 per-square-foot range.

Office-Service Center Market

Office-service center buildings can be finished out to include air-conditioned office, drop-ceiling assembly or warehouse lease space. Different finish-out ratios are possible, but generally 30 percent to 50 percent is office and 50 percent to 70 percent is assembly or warehouse space or both. Typical tenants include a wide range of service companies engaged in sales, assembly, light manufacturing and distribution.

Table 1. River Bend Business Park Area Land Market, February 1989

Park	Total Acres	Date of Sale	Price per Square Foot (\$)	Use
<i>Sites Sold and Closed</i>				
River Bend Business Park	3.5	12/87	\$5	Retail center
Government Office	6.5	1987:3	4.50	Post office
Washington Executive Park	10	10/88	2	Tire store
	17	12/88	1.93	Kraft Foods
Lemon Creek Business Center	2-10	To close 1989	1.25-1.50	Commercial
<i>Sites for Sale</i>				
River Bend Business Park	10.2		3-3.50	Users,
	5.3		3	brokers,
	4.4		3.25-3.50	commercial,
	10.15		3	industrial
	13.5		3-3.25	
Hi-Glo Hi-Tech	1-3		2.80-3.50	Users, commercial, industrial

Source: Real Estate Center at Texas A&M University

Table 2. River Bend Business Park Area Office-Service Center Lease Market, February 1989

Building Address	Total GLA	Occupancy Rate (%)	Space Requirement	Finish-Out (%)	Quoted Rate (\$)	Taxes, Insurance, CAM (\$)	Gross Rate (\$)
909 Ashton	9,250	0	9,250	30-40 office 60-70 warehouse	n.a.		
Western Industrial Park	21,500	60	6,000	25 office	\$3.80	0	\$3.80
Sunshine Park	20,000	63	2,500	30-35 office	4-4.50	\$1.75	5.75-6.25
Atlantic Business Park	20,000	90	3,300-6,720	30 office 70 warehouse	3	1.50	4.50
High Point	88,000	50	3,000-5,000	50 office 50 warehouse	3-3.25	1.50	4.50-4.75
Highway 180	20,000	10	3,000	50 office 50 warehouse	2.50	1.50-1.75	4-4.25

Source: Real Estate Center at Texas A&M University

Competitive Offerings: Lease Space

Six properties within six miles of the River Bend Business Park are included in the evaluation of competitive lease space (see Table 2). Three of these properties are within two miles of the River Bend Business Park. These three properties contain a total of 50,750 square feet of leasable space similar to the two office-service center buildings owned by BCSA. Currently, about 25,000 square feet of space is vacant in these three properties. Current lease rates for these buildings range from \$3.80 to \$4.50 per square foot.

Three additional properties containing 128,000 square feet of similar space are located within three to six miles of the River Bend Business Park. Currently, about 64,000 square feet of space is vacant in these three properties. Current lease rates for these buildings range from \$2.50 to \$3.25 per square foot.

Absorption Trends

On-site leasing agents for the Atlantic Business Park reported having leased 30,000 square feet of dock high or drive-in service center space or both in the park during the past three months. (In nearby Hanover Business Park, about 15,500

square feet were reported leased from July to September 1988.)

Broker's Opinion of Lease Market Opportunities

Brokers active in the River Bend Business Park market area and familiar with office-service center lease space offerings believe that with complete, permanent repair of the properties, the triple net lease rate for the office-service center properties will range from \$2.50 to \$3 per square foot.

Competitive Offerings: For Sale and Sold Properties

Seven properties are included in the review of the office-service center market (see Table 3). Two buildings in the Atlantic Business Park sold for just less than \$18 per square foot in August 1988 and are the most comparable to the No. 1 and No. 2 Riverside buildings in terms of building type, size and configuration. The two buildings total 40,744 square feet and were finished out similarly to the properties owned by BCSA. Unlike the River Bend Business Park, however, the Atlantic Business Park is located in a fully developed, mature market area with residential and commercial activity surrounding the park.

**Table 3. River Bend Business Park Area Office-Service Center
For-Sale Market, February 1989**

Building Address	Total GLA	Total Acres	Date of Sale	Finish-Out (%)	Quoted Price (\$)	Price per Square Foot (\$)
<i>Sold and Closed</i>						
Atlantic Business Park	40,744	1.98	8/02/88	28 office 72 warehouse	\$ 730,000	\$17.90
Hillspring Industrial Park	63,280	3.71	11/25/87	n.a.	925,000	14.60
<i>For Sale</i>						
909 Ashton	9,250	0.65		none		
Sunshine Park	20,000	n.a.		40 office 20 assembly	1,000,000	50
The Pines Building	9,000	0.65		30 office	260,000	28.80
High-Tech Rentals	10,000	0.65		30 office	280,000	28.80
Condo units for sale by owners	1,680 to 1,710	condo		25 office 75 warehouse	70,000	41

Source: Real Estate Center at Texas A&M University

Less comparable in terms of the type of improvement, but illustrative of recent sales in the industrial market, is the November 1987 sale of the Hillspring Industrial Park buildings. The buildings, totaling 63,280 square feet, are used as warehouse distribution facilities and were sold for \$14.60 per square foot.

Five "for sale" buildings represent the buildings available to prospective purchasers of the No. 1 and No. 2 Riverside buildings. With the exception of the I-450 Park building, all of the properties for sale are located within two miles of the River Bend Business Park. They range from 9,000 to 20,000 square feet and their asking prices range from \$28.80 to \$50 per square foot.

Area Sales Trends

Historical data were obtained for the office-service center market for the period of January 1, 1987, to February 3, 1989, for buildings built between 1979 and 1988 and having 25,000 to 75,000 square feet of leasable space. Eight sales of this type occurred between November 25, 1987, and December 30, 1988, with approximately 400,000 square feet of leasable space. These data indicate that buildings comparable to BCSCA's office-service centers sold for prices averaging \$17.40 per

square foot during 1987-88. Overall, prices paid ranged from \$14.62 to \$25.77 per square foot.

Brokers' Opinion of For-Sale Market Opportunities

Assuming the properties are not repaired, brokers believe that the No. 1 and No. 2 Riverside buildings could be sold for \$5 to \$10 per square foot.

Research and Development Building Market

To facilitate research, R&D buildings contain more elaborate structural features (electrical, plumbing, heating and cooling) than office-service center buildings. Environmental controls for assembly and manufacture of high-tech products characterize many of these buildings. Office finish-out and general construction quality also are higher in these buildings than in office-service center buildings.

Competitive Offerings: Lease Space

Three buildings are included in the offerings of competitive lease space (see Table 4). These buildings range from 51,000 to 84,000 square feet and contain approximately 194,000 square feet. Virtu-

Table 4. River Bend Business Park Area Research and Development Lease Market, February 1989

Building Address	Total GLA	Occupancy Rate (%)	Space Requirement	Finish-Out (%)	Quoted Rate (\$)	Taxes, Insurance, CAM (\$)	Gross Rate (\$)
Sunshine Business Center	51,000	5	50,000	50 office 50 assembly	\$6-7	\$1.25-1.35	\$7.25-35
Southern Building	84,000	0	84,000	50 office 18 warehouse 10 computer	5.95	1.10	7.15
16 Glasgow Drive	59,433	0	50,000	35 office 50 assembly 15 warehouse	4.50	2-2.50	6.50-7.50

Source: Real Estate Center at Texas A&M University

ally all of this space is vacant.

The Sunshine Business Center Building is most comparable to the Prime Building; it contains 51,000 square feet of leasable space. The building is 50 percent office and 50 percent air-conditioned assembly space. The building is vacant; the asking triple net lease rate is \$6 to \$7 per square foot.

The Southern Building and the 16 Glasgow Drive building are less comparable. However, they help define market conditions for R&D space in the River Bend Business Park market area. The quoted triple net rental rates for these two properties range from \$4.50 to \$5.95 per square foot.

Absorption Trends

No information was obtained.

Broker's Opinion of Lease Market Opportunities

If the Prime Building is rehabilitated, the broker interviewed believes that the net lease rate of the building will be in the \$5 to \$6 per-square-foot range.

Competitive Offerings: Sold and For-Sale Properties

No R&D buildings within ten miles of the River Bend Business Park sold between January 1, 1987, and February 3, 1989. Four buildings totaling 258,000 square feet were sold within ten to 15

miles of the park. These buildings ranged from \$37.25 per square foot to \$58.06 per square foot; the average price was \$43.80 per square foot.

The Sunshine Business Center Building, the Southern Building and the 16 Glasgow Drive building are for sale (see Table 5). These properties previously were described in the section on properties available for lease. The Sunshine Business Center, most comparable to the BCSA building, is offered "as is" at \$37 per square foot. The Southern Building is 50 percent larger and more extensively finished than the Sunshine Business Center; it is offered at \$46 per square foot. The 16 Glasgow Drive building also is more fully finished and is located in one of the area's prime business parks. The asking price is \$58 per square foot.

Broker's Opinion of For-Sale Market Opportunities

Assuming the property is not repaired, it could sell for \$15 to \$25 per square foot.

Financial Feasibility Analysis

Based on the foregoing market analysis, the buildings must be repaired if they are to be leased. The next step is to deter-

**Table 5. River Bend Business Park Area Research and Development
For-Sale Market, February 1989**

Building Address	Total GLA	Total Acres	Date of Sale	Finish-Out (%)	Quoted Price (\$)	Price per Square Foot (\$)
<i>For Sale Properties</i>						
Sunshine Business Center	51,000	4.5		20 office 80 warehouse	\$1,900,000	\$37
Southern Building	84,000	6.6		50 office 18 warehouse 10 computer	4,900,000	58
16 Glasgow Drive	59,433	5.3		35 office 50 assembly 15 warehouse	2,750,000	46

Source: Real Estate Center at Texas A&M University

mine if expenditures for needed structural repairs will result in the property being able to generate adequate NOI to support sufficient debt to finance the property and provide a satisfactory cash return to a potential buyer. If they will, and if the property's expected resale value is greater than the "as is" value plus the cost of improvements, the solution is considered financially feasible. (For more on this topic, see Real Estate Center technical report 603, *Financial Feasibility Analysis*.)

This analysis is accomplished by first estimating the NOI the property will produce if the rent, vacancy and operating expense expectations are met.

Based on the projected NOI, the amount of debt financing the property can expect to receive is estimated. The debt coverage approach is one method of estimating this amount. To determine the amount of the maximum loan using this approach, the following formula is used.

$$\text{Maximum loan} = \frac{\text{NOI/debt coverage ratio (DCR)}}{\text{mortgage constant (MC)}}$$

Dividing the NOI by the lender's required DCR gives the maximum mortgage payment; dividing the maximum mortgage payment by the MC gives the maximum mortgage loan. As the required debt coverage ratio is increased, the maximum mortgage payment declines; as the MC is

increased, the maximum mortgage loan declines.

Many mortgage lenders also estimate a property's economic value and relate the amount of the loan to this value. Economic value is estimated by capitalizing a property's NOI.

$$\text{Economic value} = \frac{\text{NOI}}{\text{capitalization rate}}$$

This estimate of value then is compared with the property's cost; if cost exceeds the property's economic value, the lender will attempt to ascertain the reason the property's cost is disproportionate to its ability to generate income. Why does the mortgage lender base the amount of the loan on the property's economic value rather than its cost? If the property does not produce sufficient NOI to repay the loan, foreclosure and sale of the property by the lender might be necessary. Further, potential buyers will estimate the property's market value on the basis of its NOI and make their offer for the property accordingly. If the loan is based on the property's cost, selling the property may bring less than the amount loaned. To protect against this, lenders lend against economic value; to provide a margin of safety, lenders typically do not lend in excess of 75 percent of economic value.

$$\text{Maximum loan} = .75 \times \text{economic value}$$

This process provides two estimates of the probable financing the property will receive: one based on the debt coverage ratio approach and one based on the economic value approach. A lender using both approaches normally would select the lesser of the two loan amounts.

Finally, the probable equity contribution of a potential buyer is estimated. Although there are several variables to consider in establishing a real property's long-term desirability as an investment, it must first be demonstrated that the project will produce a positive before-tax cash flow; i.e., after the mortgage is paid from the NOI, cash must be available for the owner.

Beyond the requirements of a positive before-tax cash flow, an investor may require a minimum before-tax cash-on-cash return:

$$\text{Before-tax cash-on-cash return} = \frac{\text{before-tax cash flow}}{\text{initial equity}}$$

Initial equity is defined as total project cost minus the amount of the mortgage loan. If the investor sets a minimum cash-on-cash return, then the maximum initial equity is thus defined:

$$\text{Initial equity} = \frac{\text{before-tax cash flow}}{\text{required before-tax cash-on-cash return}}$$

As an alternative to defining a minimum cash-on-cash return, an investor may determine that the loan should be greater than or equal to a particular percentage of cost and thereby specify the maximum initial cash investment. In either case, the investor's requirement is a function of the income stream because the equity investment plus the mortgage loan must be sufficient to finance the project.

To estimate the purchaser's maximum price, the minimum loan amount is added to the investor's estimated maximum equity. As a check, the estimated resale value also can be estimated using the income capitalization approach. However, unless this estimate is less than purchaser's maximum price, it will not be used.

The maximum price, however estimated, must equal or exceed the "as is" value plus the cost of improvements if the solution is to be financially feasible.

Number One Riverside and Number Two Riverside Buildings

Unless structural repairs costing \$133,500 are completed immediately, there is little likelihood of leasing this space. Further, ongoing repairs costing \$5,000 annually will be required. The financial feasibility analysis is based on the assumption that an average of 900 to 1,000 square feet per month can be leased at a triple net rate of \$2.50 in each of the next 24 months following the repair of the buildings. Thereafter, lease rates are projected to accelerate ten cents per year through year five. Because the buildings will not be 100 percent occupied, BCSA must bear the operating expenses associated with the unoccupied portion of the buildings. Operating expense recapture is projected to accelerate at 5 percent annually.

The analysis of financial feasibility for the No. 1 and No. 2 Riverside buildings is presented in Table 6. In the first part of the analysis, the market study conclusions are used to estimate NOI for years one through six. (The sixth year's NOI is used to estimate the estimated resale value at the end of the fifth year.)

In the second part of the analysis, assumptions are used to estimate the resale value at the end of the fifth year. Based on expected lender requirements, the maximum loan a lender can be expected to make is \$457,480. Further, a potential investor can be expected to invest \$145,822, given a 10 percent required cash-on-cash return. Adding the maximum loan and the maximum equity investment results in an estimated resale price of \$603,302 at the end of the fifth year.

**Table 6. Financial Feasibility Analysis for Number One Riverside
and Number Two Riverside**

Step 1: Estimate the property's net operating income

The property's leasable area is 32,200 square feet.

The expected annual rent per square foot is:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
\$2.50	\$2.50	\$2.65	\$2.75	\$2.85	\$2.85

The expected expense recapture per square foot is:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
\$1.30	\$1.37	\$1.43	\$1.51	\$1.58	\$1.66

The expected vacancy and collection loss rate is:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
\$62.3	\$25.4	\$7.2	\$7.2	\$7.2	\$7.2

The expected annual operating expenses are:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
\$48,697	\$50,922	\$54,215	\$56,671	\$59,248	\$61,825

The estimated annual net operating income is:

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Potential gross income	\$122,360	\$124,453	\$131,473	\$137,011	\$142,646	\$145,190
Less expected vacancy	76,230	31,611	9,466	9,865	10,271	10,454
Effective gross income	<u>\$ 46,130</u>	<u>\$ 92,842</u>	<u>\$122,007</u>	<u>\$127,146</u>	<u>\$132,375</u>	<u>\$134,736</u>
Less operating expenses	48,697	50,922	54,215	56,671	59,248	61,825
Net operating income	<u>\$ (2,567)</u>	<u>\$ 41,920</u>	<u>\$ 67,792</u>	<u>\$ 70,475</u>	<u>\$ 73,127</u>	<u>\$ 72,911</u>

Estimate market financing requirements at resale:

Amortization period	25
Interest rate	12
Required debt coverage ratio	1.25
Lender's capitalization rate	11
Maximum loan/value ratio	75
Required cash-on-cash return	10
Resale market capitalization rate	11

Table 6—Continued

Step 2: Estimate the price a future purchaser may be expected to pay for the property

Purchaser's maximum price based on financial feasibility analysis:

	Year 6
Net operating income	\$72,911
Maximum mortgage loan payment	<u>58,329</u>
Before-tax cash flow	<u>\$14,582</u>
The lender's maximum loan:	
Economic value approach	\$497,119
Debt coverage ratio approach	\$457,480
The purchaser's maximum equity:	
Cash-on-cash return approach	\$145,822
Purchaser's maximum price:	
The lender's maximum loan	\$457,480
The investor's maximum equity	<u>145,822</u>
Maximum price	<u>\$603,302</u>

Estimated resale value based on income capitalization approach:

Net operating income	\$72,911
Resale market capitalization rate	11
Estimated resale value	\$662,826

Determine the amount invested if the property is held:

Discount rate: 12%

	Year 1	Year 2	Year 3	Year 4	Year 5
Planned property improvements	\$133,500	\$5,000	\$5,000	\$5,000	\$5,000
Present value of property improvements	\$132,756				
As-is value	<u>180,000</u>				
Total cost	<u>\$312,756</u>				
Minimum estimated resale value	\$603,302				
Total cost	<u>312,756</u>				
Excess of estimated resale value over cost	<u>\$290,546</u>				

*Figures were rounded to the nearest cent.

Source: Real Estate Center at Texas A&M University

Table 7. Financial Feasibility Analysis of the Prime Building

Step 1: Estimate the property's net operating income

The property's leasable area is 52,230 square feet.

The expected annual rent per square foot is:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
\$8.75	\$7.43	\$6.50	\$6.50	\$6.50	\$6.50

The expected vacancy and collection loss rate is:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
0	0	0	0	0	0

The expected annual operating expenses are:

Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
\$78,989	\$79,995	\$84,742	\$88,724	\$92,904	\$92,904

The estimated annual net operating income is:

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Potential gross income	\$457,013	\$388,069	\$339,495	\$339,495	\$339,495	\$339,495
Less expected vacancy	0	0	0	0	0	0
Effective gross income	<u>\$457,013</u>	<u>\$388,069</u>	<u>\$339,495</u>	<u>\$339,495</u>	<u>\$339,495</u>	<u>\$339,495</u>
Less operating expenses	78,989	79,995	84,742	88,724	92,904	92,904
Net operating income	<u>\$378,024</u>	<u>\$308,074</u>	<u>\$254,753</u>	<u>\$250,771</u>	<u>\$246,591</u>	<u>\$246,591</u>

Step 2: Estimate the price a future purchaser may be expected to pay for the property

Estimate market financing requirements at resale:

Amortization period	25
Interest rate	12
Required debt coverage ratio	1.25
Lender's capitalization rate	11
Maximum loan/value ratio	75
Required cash-on-cash return	10
Resale market capitalization rate	11

Table 7—Continued

Purchaser's maximum price based on financial feasibility analysis:

	Year 6
Net operating income	\$246,591
Maximum mortgage loan payment	<u>197,273</u>
Before-tax cash flow	\$ 49,318
The lender's maximum loan:	
Economic value approach	\$1,681,302
Debt coverage ratio approach	\$1,547,238
The purchaser's maximum equity:	
Cash-on-cash return approach	\$ 493,182
Purchaser's maximum price:	
The lender's maximum loan	\$1,547,238
The investor's maximum equity	<u>493,182</u>
Maximum price	\$2,040,420

Estimated resale value based on income capitalization approach:

Net operating income	\$246,591
Resale market capitalization rate	11
Estimated resale value	\$2,241,736

Determine the amount invested if the property is held:

Discount rate: 12%

	Year 1	Year 2	Year 3	Year 4	Year 5
Planned property improvements	\$ 216,516	\$10,000	\$10,000	\$10,000	\$10,000
Present value of property improvements	\$ 220,437				
As-is value	1,000,000				
Total cost	<u>\$1,220,437</u>				
Minimum estimated resale value	\$2,040,020				
Total cost	1,220,437				
Excess of estimated resale value over cost	<u>\$ 819,583</u>				

Source: Real Estate Center at Texas A&M University

**Table 8. Discounted Cash Flow Analysis for Number One Riverside
and Number Two Riverside**

Step 3: Estimate the net present value of holding the property

Determine the amount invested if the property is held:

Discount rate: 12%

	Year 1	Year 2	Year 3	Year 4	Year 5
Planned property improvements	\$133,500	\$5,000	\$5,000	\$5,000	\$5,000
Present value of property improvements	\$132,756				
As-is value	180,000				
Total cost	<u>\$312,756</u>				
	Year 1	Year 2	Year 3	Year 4	Year 5
Net operating income	(\$2,567)	\$41,920	\$67,792	\$70,475	\$73,127
Reversionary value					603,302
Total benefits if held	(\$2,567)	\$41,920	\$67,792	\$70,475	<u>\$676,429</u>
Present value of total benefits	\$507,991				
Total cost	312,756				
Net present value of holding property	<u>\$195,235</u>				

Source: Real Estate Center at Texas A&M University

Table 9. Discounted Cash Flow Analysis of the Prime Building

Step 3: Estimate the net present value of holding the property

Determine the amount invested if the property is held:

Discount rate: 12%

	Year 1	Year 2	Year 3	Year 4	Year 5
Planned property improvements	\$ 216,516	\$10,000	\$10,000	\$10,000	\$10,000
Present value of property improvements	\$ 220,437				
As-is value	1,000,000				
Total cost	<u>\$1,220,437</u>				
	Year 1	Year 2	Year 3	Year 4	Year 5
Net operating income	\$ 378,024	\$308,074	\$254,753	\$250,771	\$ 246,591
Reversionary value					2,040,420
Total benefits if held	\$ 378,024	\$308,074	\$254,753	\$250,771	<u>\$2,287,011</u>
Present value of total benefits	\$2,221,525				
Total cost	1,220,437				
Net present value of holding property	<u>\$1,001,088</u>				

Source: Real Estate Center at Texas A&M University

The current "as is" value of the property is \$180,000; the present value of the needed improvements is \$132,756; therefore, the total cost is \$312,756. Because the estimated resale value exceeds the cost, the solution is considered to be financially feasible. However, because the sale is expected to take place five years after the buildings are repaired, the future sales price and holding period benefits must be discounted to the present to determine the feasibility of repairing the buildings. BCSA's required rate of return is 12 percent.

Prime Building

Unless structural repairs costing \$216,516 are completed by May 1990, the current tenant cannot be expected to renew the lease. Further, ongoing repairs costing \$10,000 annually are required. Even with these repairs, a significant reduction in the rental rate is required for the lease to be renewed by the current tenant. A rental rate of \$6.50 will be used. Although the tenant will pay part of the operating expenses, BCSA can expect to absorb a portion of operating expenses equal to \$1.50 per square foot.

The analysis of financial feasibility for the Prime Building is presented in Table 7. In the first part of the analysis, the market study conclusions are used to estimate NOI for years one through six. (The sixth year's NOI is used to determine the estimated resale value at the end of the fifth year.)

In the second part of the analysis, assumptions are used to estimate the resale value at the end of the fifth year. Based on expected lender requirements, the maximum loan a lender can be expected to make is \$1,547,238. Further, a potential investor can be expected to invest \$493,182, given a 10 percent required cash-on-cash return. Adding the maximum

loan and the maximum equity investment results in an estimated resale price of \$2,040,020 at the end of the fifth year.

The current "as is" value of the property is \$1,000,000; the present value of the needed improvements is \$220,437; therefore, the cost is \$1,220,437. Because the estimated resale value exceeds the cost, the solution is considered to be financially feasible. However, the future resale price and the holding period benefits must be discounted to the present value to provide a proper determination of feasibility.

Discounted Cash Flow Analysis

Because the proposed solutions require the properties to be operated by BCSA for five years before the increase in value can be expected, a discounted cash flow analysis is used to determine if the increase in the properties' value at the end of the five-year period is greater than the cost. **Even if this question is answered positively, the riskiness of this course of action still must be evaluated.**

As reported in Tables 8 and 9, the present value of the expected benefits of making the necessary structural repairs and operating the property for five years exceeds the cost; using a 12 percent discount rate (BCSA's required rate of return), the net present value for the No. 1 and No. 2 Riverside buildings is \$195,235 (see Table 8) and the net present value of the Prime Building is \$1,001,088 (see Table 9). On the basis of these calculations, it may be concluded that BCSA should proceed with the structural repairs because the present value of the future benefits exceeds their cost.

Conclusion

Before proceeding, however, the riskiness of this course of action must be considered because the positive net present value is totally dependent on successful operation of the property for five years

and then sale of the properties. On this point, there is a considerable difference between the two analyses.

For the Prime Building, the current tenant must be contacted quickly about the terms of a lease renewal. If the current tenant fails to renew the lease, the probability of securing another tenant is low. Without a tenant, the Prime Building should be sold now for its "as is" value; if the current tenant remains, the building should be held by BCSA.

On the other hand, the No. 1 and No. 2 Riverside buildings must be leased to

achieve the positive net present value. The lease-up marketing strategy should include direct mail and cold calls to existing businesses within a five-mile radius of the site to market 1,000- to 1,500-square-foot areas. The brokerage community should be informed following the completion of all building repairs. The failure to pursue an aggressive leasing strategy following the building repairs will produce an even larger loss than if the properties are sold for their current "as is" value.

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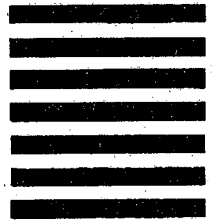
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