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ANALYSIS OF THE
VIABILITY OF S&L FIRMS

BY

FREDERICK E. BALDERSTON

GRADUATE SCHOOL OF BUSINESS ADMINISTRATION

CENTER FOR REAL ESTATE AND URBAN ECONOMICS
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ANALYSIS OF THE VIABILITY OF S&L FIRMS

by

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ABSTRACT OF

"ANALYSIS OF THE VIABILITY OF S&L FIRMS"

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Future viability of S&L firms in the United States is examined by means of computer projections under three alternative interest-rate scenarios from 1982-85: a pessimistic scenario of continuously high interest rates; an optimistic scenario of continuously falling rates; and a cyclic scenario in which rates first fall and then rise again from the early 1982 levels. Projections are made of from the accounting data for all active S&L firms from the base year 1981 through 1985 in each of these interest-rate environments, assuming first that there is no growth or decline in savings deposits; then, in a second set of projections, patterns of savings growth coordinated with each of the scenarios are inserted into the model.

In the no-growth projections, 837 firms from the active population of 3,730 firms survive all three scenarios without experiencing negative net worth; this number increases to 1,171 firms under the savings growth assumptions. At the other extreme, 85 firms had negative net worth in all three scenarios in the no-growth projections, as against 56 firms under the growth assumptions. Other results are described and interpreted.

ANALYSIS OF THE VIABILITY OF S&L FIRMS

Viability of the S&L Firm: the concept and its use here.

The future viability of a financial firm depends on its present condition (including its balance sheet composition and its management status, and its basic market position), on the set of possible future environments it faces (including the market conditions, the competitors, and the institutional or regulatory constraints), and on the strategy that the firm chooses to pursue, out of the set of possibilities available to it, from the present time forward. The firm, in this view, faces a world of uncertainties, constraints, imperfect information and risk-taking opportunities.

Other general business considerations, such as the firm's unique grasp of the engineering technologies upon which its operations and products depend, are often crucial in non-financial industries, but these are not likely to be so important in the financial industries. A further general consideration for any firm, financial or non-financial, is its relationship with the individuals or organizations having a significant equity ownership stake in it and those having significant debt claims against it.

Of the many possible dimensions of viability, we have selected a few for a restricted purpose: the derivation, through a series of computer projections over a four-year horizon in several postulated environments, of the numbers of S&L firms that are likely to be survivors and the numbers that will need to be absorbed by stronger firms.

The S&L firm is characterized simply by the magnitudes in its chart of accounts, as reported to the Federal Home Loan Bank Board in the semi-annual reports that are standard and obligatory for all insured savings and loan associations. Many significant considerations as to management and organization cannot be included in an analysis that depends upon this slender base: thus, the size and quality of branch networks, the depth and sophistication of management, and many other elements of management status that contributed, positively or negatively, to future viability are not dealt with here.

For one set of projections, we have added to the standard accounts an additional and very important set of data on the composition of each firm's mortgage portfolio. The purpose here is to take account more specifically of the future pattern of change in interest income and in amortization and prepayment backflows, so that both the income prospects and the changes in asset composition could be projected for each firm.

Now we turn to a description of three alternative market environments. These will serve as first approximations of the wider set of all future possibilities from which the environment that actually affects the industry will come. By projecting the unfolding performance of each firm in each environment, we shall be able to approximate the span of prospects of the firm in an uncertain future.

Three Possible Future Environments: an Interest-rate Characterization

We shall define here, for use in the S&L industry projections, three profiles" of future market rates of interest: a "pessimistic" profile; an "optimistic" profile; and a "cyclic" profile. Here we shall elaborate on the specifications of each of these profiles and indicate what the expected impacts of these profiles on S&L firms are likely to be.

Specifications of the three profiles

The "Pessimistic" Profile

The specifications for this profile are simple: continuation until 12/85 of the 14% short-term rate and 14% U. S. long-term rate that prevailed in Spring, 1982. The expected consequences for S&L's are negative in the extreme, with those associations that have already experienced reductions of net worth tending to be driven toward insolvency. The rate at which they approach insolvency will, however, vary because some have stronger initial net worth than others and also because the negative average spread is much larger for some than for others.

The issue of prime concern to us is to identify how many firms, of what sizes and types, are driven to insolvency in each year through 1985.

The "Optimistic" Profile

The specifications are: short-term rates (less than one-year maturities) fall to 10.5% by 12/82, then fall further by 0.75% per half year in each half of 1983,1984, and 1985. Long-term

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rates go to 13% by 12/82, then fall by 1.0% per year through 12/85.

Expected consequences: as short-term rates fall, S&L's, with about a 6-month lag, will experience a decrease in the cost of their deposit liability, about 2/3 of which is tied to short-term interest rates. Savings inflow should increase steadily with the decline in short-term interest rates, and some lengthening of maturities of new savings accounts should occur. This consequence will be incorporated into the projections that provide for savings growth, but it will be excluded from the status quo projections.

As there are more funds to lend, mortgage rates will gradually fall and the volume of lending (and the amount of loan fee income generated) should increase quite substantially.

The "Cyclic" Profile

The short-term U.S. Treasury rate goes to 11% and the long-term rate to 13% at 12/82, then the two rates <u>decline</u> by 1.0% and 0.5% per year respectively, in 1983, before rising by the same amounts in 1984 and 1985. (With this profile,we shall be able to observe the implications of an interest-rate cycle of short duration.)

The expected consequences of this modified cyclic profile would be, first, that operating losses of individual S&L's would be materially reduced in 1982 and 1983. Some S&L's would improve much more than others would, in view of the small improvement in spread between average yield and average cost of funds that would occur. As rates rise again, however, the same negative directional process described in the pessimistic profile would

take hold.

The cyclic profile should produce fewer insolvencies of firms than under the pessimistic profile --perhaps, 1/4 to 1/3 fewer-- but more than under the optimistic profile. Under the latter, we would expect that perhaps only 1/10 of the firms in the industry would go insolvent. These, however, are rank guesses, because insolvency occurs when the sum of operating losses in a firm is greater than the book net worth was at the start of the process.

Table 4.1 shows what the assumptions described above produce in the way of interest rates.

Table 4.1: Three Interest-Rate Scenarios,1982-85

	1982	1983	1984	1985
Pessimistic				
ST	14.0	14.0	14.0	14.0
LT	14.0	14.0	14.0	14.0
Optimistic				
ST	10.5	9.0	7.5	6.5
LT	13.0	12.0	11.0	10.0
Cyclic				
ST	11.0	10.0	11.0	12.0
LT	13.0	12.5	13.0	13.5

The consequent mortgage rate for new loans in each scenario would then be, as shown in Table 4.2.

Table 4.2: Current Interest Rates for New Mortgages in
Three Interest-Rate Scenaarios

Pessimistic	17.0	17.0	17.0	17.0
Optimistic	16.0	15.0	14.0	13.0
Cyclic	16.0	15.5	16.0	16.5

The above new-loan rates are predicated on the current LT US

Treasury rate plus 3.0 percentage points, or 300 basis points.
We earlier discussed how the average yield on the existing loan
portfolio would gradually converge toward the current market
yield on new loans. The suggested approach was to take the 1985
new-loan rate, subtract the 1981 average yield on the portfolio,
or in Version Two, on a component of portfolio, then take 1/10 of
the resulting difference as the annual amount of adjustment.
Assuming the above-listed new-loan rates, and assuming, for
illustration, that the average yield on existing portfolio in
1981 was 9.0%, we get the following portfolio yields under the
three scenarios:

Scenario:	1982	1983	1984	1985
Pessimistic	9.8	10.6	11.4	12.2
Optimistic	9.4	9.8	10.2	10.6
Cyclic	9.75	10.5	11.25	12.0

If we now compare the above average portfolio yields with the ST
interest rate in each scenario, we will have a rough and very
conservative estimate of the average spread and thus of the
profitability of average assets in each future year under each
scenario:

| Scenario | Average spread: | | | |
	1982	1983	1984	1985
Pessimistic	-4.2	-3.4	-2.6	-1.8
Optimistic	-1.1	+0.5	+2.7	+4.1
Cyclic	-1.25	+0.5	+0.25	0.0

The actual average interest expense per dollar of deposit
liability is well below the ST US Treasury rate now, and it is

likely to converge toward (and perhaps, eventually, slightly exceed) the ST US Treasury rate over several years as deregulation removes the restraints on passbook and other interest payments. Thus, the above spread computations, which implicitly assume that the cost of funds equals the ST US Treasury rate, overstate the cost of funds in the early years of this transition.

The individual S&L will, of course, vary from the overall yield and spread figures because its average portfolio yield in the 1981 base period may differ from the 9% level assumed in the above illustration. This will be the case in Version One, where the portfolio composition is not taken into account. It will be even more true of Version Two, where there is a specific and explicit change in the size of each portfolio component each year.

Interpretation of the S&L Firm's Bankruptcy (or, Candidacy for Absorption)

The elementary, static balance sheet test of S&L solvency is: Assets must be equal to or greater than Liabilities. This is not a sufficient test of viability when the future must be taken into account.

Looking ahead, a certainty-equivalent test of viability is that the present value of the future income stream must be equal to or greater than the present value of future costs. The problem with this test, as Lev (1974) points out, is that under different possible future states of the world, the outcomes may differ markedly, and the decision-maker who has a risk-sensitive attitude

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must be concerned with the whole distribution of possible results in that the variance as well as the mean must be taken into account.

In the projections that are planned, we have three interest-rate scenarios of the (intermediate-term) future. These may be taken as a subset of the set of possible future environments, and they have been intentionally designed to include plausible limiting cases on the "optimistic" and "pessimistic" sides. (The projection system is designed, however, to permit easily the addition of more scenarios of future interest rates.)

We can take the projected performance of each S&L firm in these three scenarios as an approximation of the probability distribution of net income over an intermediate horizon. Thus, we should test whether, from the 1981 base, the firm:

    1/ remains viable (NW greater than zero) in all three cases;
    2/ falls to NW less than zero in just one case;
    3/ falls to NW less than zero in two cases;
or 4/ falls to NW less than zero in all three cases.

Category 4/ is a reasonably clear-cut indicator that the firm is an absorption candidate. Category 1/ (especially if accompanied by an indication of reasonable size) may imply that the firm is a potential "nucleus" firm, able to absorb others. We should reserve judgment at this point on the implications of the intermediate cases, categories 2/ and 3/. In any event, categories 1/ and 4/ give us an approximate first test of the firm's viability under uncertainty. (This approach does not, however, define the firm's strategy set as well as the set of its possible environments, and then show how well it would do with

each possible matching of environment and strategy. The
accounting magnitudes which define the base are not very well
suited to a characterization of various strategies, and we will
have to leave this issue of matching strategies with environments
to future research.)

The three scenarios may not be regarded as equi-probable.
Therefore, in setting a procedure for counting the numbers of
viable and non-viable firms, we shall first count how many are
viable under each scenario (and also obtain one or two general
measures, such as the total dollar assets of the viable firms and
the total dollar assets of the non-viable firms.

Here is a tabular scheme for counting how many firms in the
population are viable and how many are candidates for absorption:

Outcome: Scenario:

                  Pessimistic   Optimistic   Cyclic

Firms:
  Not viable:

  Viable:

Total assets:
  Not viable:

  Viable:

Our second tabulation should show how many S&L firms remain
viable in all three scenarios, or two, or one, or none:

Outcome: Number of Scenarios:

                  Zero   One   Two   Three

#Firms not viable:
    Total assets:
#Firms viable:
    Total assets:

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It may also be advantageous to examine this issue by FHLB
district, and we may need, eventually, to generate the size-
distributions of the viable firms and the non-viable firms.

Treating the projections in the manner suggested should
provide considerably stronger results than those previously
reported in my article, "The Structural Option for the S&L
Industry" (Balderston, 1982) or in the work of Carron (1981).

The Data Set of S&L Firms for the Projections

The Federal Home Loan Bank Board requires every insured
savings and loan association to report at 6/30 and at 12/31 each
year its half-year income, expenses and profit (or loss), and
its balance sheet as of the end of each half-year. We have
combined the Income Statement data of the first and second halves
of 1981 to provide a full year's base data. (The FHLBB semi-
annual report form shows the standard classification of accounts.)
Availability of data in a standard chart of accounts, reported by
standardized rules, is a luxury in economic and business research
and removes many of the typical ambiguities of interpretation.

Each S&L firm is defined in the FHLBB data tape by means of
an assigned docket number. If the status of the firm (as
disclosed by its docket number's presence in one half of 1981 but
not the other) changed during 1981, we have taken special
measures. A firm present in the first half but absent in the
second half was defined as disappearing through liquidation or
through merger. Its income and expense accounts were added,
where necessary, to those of the surviving firm in any merger.

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Thus, the population of S&L firms was reduced by these
adjustments to those firms that were active during at least half
the year and were independently reporting their financial status
as of 12/31/81.

Version One: The Projections and the Results,Accounting Data Only

The total population of active firms, for our purposes, was
3,767, with total assets of $650.5 billion and total mortgage
portfolio of $505.3 billion as of 12/31/81.

Table 4.3 summarizes the results of these three projections,
consisting of a count of the number of firms that had negative
net worth from zero to four times (including negative net worth
as of 12/31/81.) Also, we have counted the times that firms
recovered to non-negative net worth.

Table 4.3:Summary Results, Accounting Data Only

Number of times with NW<0	Number of Recoveries, NW>0	Number of S&L Firms	Total Assets ($ billions)
0	0	837	152.7
1	0	2,678	468.0
2	1	6	1.9
2	0	124	17.8
3	1	38	5.7
3	0	17	1.7
4	3	1	0.01
4	2	3	0.8
4	1	11	0.7
4	0	15	1.2
Totals		3,730	650.5

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In 37 cases, the total mortgage portfolio of the firm was zero at 12/31/81. These cases were removed from the total file of 3,767 firms (in an earlier projection they had all been concentrated in the category of those firms that had negative book net worth in all three scenarios) because they clearly were not active firms in 1981. Thus, the total number of active firms is shown as 3,730 firms.

We may, with some caution, interpret these summary data. First, the "pessimistic" interest-rate environment was so hostile that about 3/4 of the population of firms were pushed to negative net worth. This, as clearly as anything could, illustrates the scope of the difficulties that this entire financial sector would have faced in the next few years had interest rates remained at their 1981 and early 1982 levels. The 837 hardy survivors of all three scenarios, however, deserve a closer look to determine what their other characteristics are, as to size, net worth at the end of the projection period in each scenario, etc. This group of firms may include a considerable number that would qualify as nucleus firms, to absorb those firms that cannot survive.

The clearest group of absorption candidates consists of firms that had negative net worth either three or four times: this adds up to 85 firms. An intermediate group of 130 firms had negative net worth on two occasions, although 6 of these firms did recover to positive net worth on one occasion.

A group of 215 firms, then, by the crude test of being pushed to negative net worth in less than severe postulated environments, are candidates for absorption. We examine below the

characteristics of these firms and the total assets involved. What does appear truly striking, however, is that this total number of non-survivors is manageably small, unless the take-over losses and subsidies would be really substantial per firm. During the first seven months of 1982, there were, altogether, 247 disappearances of firms through merger.

Clearly in need of further exploration, also, is the specific pattern of losses facing the 2,678 S&L firms that had one occasion of negative net worth. We shall return to this issue in a later section of this discussion.

Projections of the Accounting Characterization of S&L Firms, Allowing for Growth in Savings Liability

Throughout much of its post-World War II history, the savings and loan industry has experienced strong growth in deposit liability and in total assets per firm. This growth, in fact, has enabled some S&L firms to overcome temporary ill effects of poor portfolio composition by "growing out of trouble". The market mechanism appeared historically to "turn on" and "turn off" savings growth at different stages of the business and credit-market cycle, enabling S&L firms to experience heavy savings inflows when short-term interest rates are low or falling and causing them to lose savings liability when credit was very tight. As financial institutions come to pay market rates of interest on a higher and higher proportion of their deposit liabilities and borrowings, this countercyclical behavior may not continue in quite the same pattern. Nevertheless, growth is

likely to be positively associated with reduced market rates of
interest.   We made different savings growth assumptions for the
1982-85 period in each of the three interest-rate scenarios, as
shown in Table 4.4.

Table 4.4: Annual Savings Growth Rates in Three Scenarios

Scenario:	1982	1983	1984	1985
Pessimistic	5.0%	5.0%	5.0%	5.0%
Optimistic	10.0%	12.5%	15.0%	17.5%
Cyclical	10.0%	12.5%	10.0%	7.5%

It would have been plausible to assume zero savings growth in the
pessimistic scenario, but as we had already made a full set of
projections for that case, it was of interest to allow for the
testing of the consequences of growth even in the hostile
interest-rate environment of the pessimistic scenario.   (A
further point worth noting is that we did not adjust upward the
advertising and promotion expenses of firms in reflection of the
effort to attract savings growth.   It would have been plausible
to do this, but not doing so may merely overstate profitability a
little.)

When savings growth does occur, we allow for it to be added
entirely to the market-rate components of total   savings
liability. The cash inflow, in turn, is invested in new mortgages
at the current long-term lending rate, which is pegged to the
long-term US Treasury rate prevailing (according to   our
assumption) for that year, plus 3.0 percentage points. Loan fee
income is taken in during the year to the extent of 2.0% times

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the new mortgage volume. Future-year interest income is credited

at the long-term mortgage rate prevailing each year, reflecting

the presumption that new loans will in most cases be variable-

rate loans from now on.

The results of the projections with savings growth are in

the expected direction: the number of firms not experiencing

negative net worth in any of the three scenarios rises from 837

to 1,171. The number of firms clearly showing symptoms of failure

is greatly reduced. Table 4.5 provides a summary of the results.

Table 4.5: Summary Results, Accounting Data Plus Growth

Number of times with NW<0	Number of Recoveries, NW>0	Number of S&L Firms	Total Assets ($ billions)
0	0	1,171	219.3
1	1	1	0.02
1	0	2,483	423.3
2	1	12	3.2
2	0	7	0.1
3	2	9	0.2
3	1	15	1.4
3	0	2	0.3
4	3	1	0.01
4	2	12	1.3
4	1	10	0.8
4	0	7	0.5
Totals		3,730	650.5

In this set of projections, growth has improved the fortunes

of a number of firms. A total of 56 S&L firms had three or more

instances of negative net worth, as against 85 firms in the no-growth projections. More striking still is the finding that in the projections that allowed for savings growth, these weak firms had a total of only $4.5 billion in assets, as compared with a total of $10.1 billion in the no-growth projections. Thus, both tails of the distribution of firms are strongly affected by growth: the tail of weak firms is reduced materially in number of firms and total assets, and the tail of firms that escaped, so to speak, unscathed, by not experiencing negative net worth at all increased from 837 firms (and $152.7 billion assets) to 1,171 firms (and $219.3 billion assets).

In the second set of projections, as well as the first, we must examine the details of the projections under the pessimistic scenario, for the timing at which portions of the large number of firms affected reached negative net worth, and the amount of accumulating operating losses over time in such a hostile environment, are important to understand and interpret both for public policy and for managerial strategy.

The argument of many S&L industry spokesmen, and some regulators, is that all that the industry needs to re-establish its viability is relief from the exceptionally hostile interest-rate environment of the recent past, broader powers to manage assets and liabilities in the future (including the ability to redistribute interest-rate risks toward others or to hedge these risks), and a sympathetic and patient regulatory posture during the transition from the past to the deregulated future. These

two sets of projections show that there is something in that argument, although the industry as a whole is shown to be extremely vulnerable in at least one instance in both sets of projections. We know this to be the pessimistic scenario. Without savings growth, 2,678 S&L firms having a total of $468.0 billion in assets experience negative net worth before the end of the four-year horizon. With some savings growth (5% per year) in the second set of projections, 2,483 firms with a total of $423.2 billion in assets experience negative net worth. Modest savings growth does little to relieve the pressures of a generally hostile environment, partly because we have assumed that all of the savings growth is high-cost in such an environment, requiring payment of interest to depositors at rates equivalent to the short-term US Treasury rate.

Of course, there is no assurance that a hostile interest-rate environment will not recur at some future time, and it is very difficult to predict whether the new powers already provided to S&L firms, and added powers that they hope for, will enable them to achieve significantly better protection against adverse environmental pressures in the future. Also, we have concentrated here entirely upon interest-rate risks and upon simple income and expense considerations, thus excluding from attention the hazards of default risks, which have had major impact on S&L firms in some past episodes. Finally, these two sets of projections presume the existence of an underlying market environment whose technologies and boundaries of operation are

not changing appreciably. We know that such a presumption is going to be wrong, at least to some degree. The payments technologies are changing, financial industries and markets are becoming more interdependent, and new types of multi-product, multi-market financial firms are emerging. The executive or the regulator who takes these projections literally (or whose own independent reasoning extrapolates the future in a fashion generally similar to the effects of these projections) may find that he has taken actions analogous to those of "fighting the last war".

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