

Hedging The reduction of risk by eliminating the possibility of future gains or losses (e.g., by buying or selling forward and futures contracts).

Insurance The reduction of risk by the purchase of contingent claims (e.g., put options, call options, guarantees, insurance policies) that offset future losses by paying off under those circumstances in which losses are expected to be incurred.

In-the-money Term used to describe an option contract that has an exercise price below the current market price of an underlying asset in the case of a call option, and above the current market price of the underlying asset in the case of a put option.

Intrinsic value For call options, the greater of zero and the difference between the market value of the call's underlying asset and its exercise price. For put options, the greater of zero and the difference between the put's exercise price and the market value of its underlying asset.

London Interbank Offered Rate (LIBOR) Rate that the most creditworthy international banks dealing in Eurodollars charge each other for large loans.

Margin Amount of cash an investor deposits with a broker when borrowing from the broker to buy securities. If the price of the security purchased "on margin" falls, the broker will require the investor to put up more "margin" by making additional cash deposits.

Mark-to-market Adjust the recorded value of a security or portfolio to reflect actual current market values.

Market value (or price) The price at which willing buyers and sellers trade similar items in a free and open market.

Maturity date Date on which payment on some financial contract becomes due and payable. In the case of options, the maturity date is the final date on which the option owner can buy or sell the underlying asset.

Option The right, but not the obligation, to buy or sell some specified underlying asset for a specified price on (or before) a specified date.

- **Call option** Gives its buyer the right to buy some underlying asset at a fixed price on or before a specified date in the future.

- **Put option** Gives its buyer the right to sell some underlying asset at a fixed price on or before a specified date in the future.

- **American option** Option that can be exercised on or before the expiration date.

- **European option** Option that can be exercised only on the expiration date.

Option premium Price an option buyer must pay an option seller for an option contract.

Out-of-the-money Term used to describe an option contract that has an exercise price above the current market price of the underlying asset in the case of a call option, and below the current price of the underlying asset in the case of a put option.

Over-the-counter (OTC) Market in which securities transactions are conducted through a telephone and computer network connecting dealers in stocks and bonds, rather than on the floor of an organized exchange.

Put-call parity Relationship between put and call option prices that, if held in parity, prevents arbitrage opportunities.

Put option See **Option**.

Settlement date Date by which an executed order must be settled, either by a buyer paying for the securities with cash or by a seller delivering the securities and receiving the proceeds of the sale for them.

Speculation Assumption of risk in anticipation of gain, but often implying a higher than average possibility of loss.

Spot price Current delivery price of some physical commodity or financial asset traded in the spot market.

Strike price See **Exercise price**.

Swap Exchange of one asset or liability with particular terms and conditions for another asset or liability with different terms and conditions for a specified period of time.

Transaction costs Cost of buying or selling a security, which consists mainly of the brokerage commission, the dealer markdown or markup, or fee (as would be charged by a bank).

Zero-coupon security Security that makes no periodic interest payments but instead is sold at a deep discount from its face value.

Sally Jameson: Valuing Stock Options in a Compensation Package (Abridged)

Sally Jameson, a second-year MBA student at Harvard Business School, was thrilled but confused. It was late May 1992, graduation was approaching, and she had finally landed the job of her choice. She had just finished an early morning telephone conversation with Bob Marks, the MBA recruiting coordinator at Telstar Communications, a large, publicly held multinational company. Mr. Marks had offered Ms. Jameson a unique position in operations at Telstar, and from the description, it sounded exactly like the job that she wanted. Since her first interview with Telstar, she had been very impressed with the company and its people. While Ms. Jameson was certain that she would accept the job, there was still one unsettled, yet crucial, matter—her compensation.

During the conversation with Marks, Jameson had asked what her compensation package would be.

Marks: "Well, Sally, we are all very impressed with you and would like to offer you a starting salary of \$50,000. In addition, you will also receive a signing bonus."

Jameson: "The base salary is a little below what I had expected. Is that negotiable?"

Marks: "I'm afraid not. That's the same starting package all MBAs get. However, you will receive a bonus upon accepting our offer. You can receive \$5,000 in cash, or choose stock options instead."

Jameson: "I'm not too familiar with stock options. Could you explain to me what they are?"

Marks: "Sure. Executives at Telstar have been eligible to receive stock options for years. The goal was to tie management's compensation more closely to increases in shareholder value. Although our stock has performed erratically over the last ten years, the board continues to believe that stock options are the best form of incentive compensation. Because the options represent the right to buy Telstar stock at a set price, after a set period of time, management has an incentive to take actions to move the stock price upward. Several months ago, we had a consulting firm examine our compensation structure. They recommended that we extend eligibility for stock options to all employees as part of our new incentive-based compensation plans. Thus, the two MBAs that we hope to hire this year will be the first employees who will be offered stock options. Given that this is an experiment, we decided to give MBAs a choice between cash or options."

Jameson: "How much are these options worth?"

Marks: "To tell you the truth, I'm not really sure. All I know are the details: each of the 3,000 options you'll be granted allows you to buy one share of Telstar stock at \$35.00 per share at the time of your fifth anniversary with the firm.¹ Yesterday, our stock, which pays no dividend and is not expected to pay one in the foreseeable future, closed at \$18.75. Should you leave at any point before your fifth year, you lose the options. You can't take them with you.

¹Casewriter's note: Stock options of this sort would more typically have been written with a strike price equal to or just slightly above the current price.

Professor Peter Tufano and Research Associate Michael Lewittes prepared this case. HBS cases are developed solely as the basis for class discussion. Certain details have been disguised. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

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“I have been told by our legal staff that these incentive stock options meet the IRS code for special treatment—that means you won’t pay any taxes on the options until you actually exercise them and then sell the shares. At that point, your gains on the shares (equal to the difference between their fair market value at that time and \$35.00) will be taxed at either ordinary tax rates or at capital gains rates, depending on whether you’ve held the stock for less than or more than one year after exercising the option. If you choose the cash signing bonus, it is taxed at ordinary tax rates.² It’s your choice, Sally, but just between you and me, I’d take the cash bonus. Telstar stock is only at \$18.75; it doesn’t seem to me that these options are worth the paper that they’re printed on. I think it’s just another example of consultants trying to justify their fees. You do what you think is best; either way, though, I need to know by tomorrow if you accept the offer and, if you do, which compensation package you’d prefer.”

While Bob Marks seemed to prefer the cash bonus, Sally Jameson was less sure. Taking out her *Wall Street Journal*, she noticed that both short-term and long-term Telstar options were traded (see Exhibit 1). From an online financial database, she got a graph of Telstar’s common stock price and a plot of the historical volatility of the stock price as measured by the annualized standard deviation of the stock’s returns (see Exhibits 2 and 3). She also found data on government bill, note, and bond yields that would be useful in her analysis (see Exhibit 4).

As she thought about the problem, she decided to approach it in two steps: first, she would attempt to determine what the options were worth, assuming she stayed at Telstar for at least five years. Then, she would consider other issues, including the likelihood that she might not stay at Telstar that long.

EXHIBIT 1
Listed Telstar
Options Quotations as
of Close of Market—
May 27, 1992

Source: *Wall Street Journal*,
May 28, 1992.

Strike Price	Calls			Puts		
	Expiration Date (1992)			Expiration Date (1992)		
	June 20	July 18	Oct. 17	June 20	July 18	Oct. 17
\$17.50	1.4375	1.8750	2.5000	.1875	r	1.0625
\$20.00	.1875	.5000	1.3125	1.3750	r	r
\$22.50	r ^a	.1250	.5625	r	3.5000	r

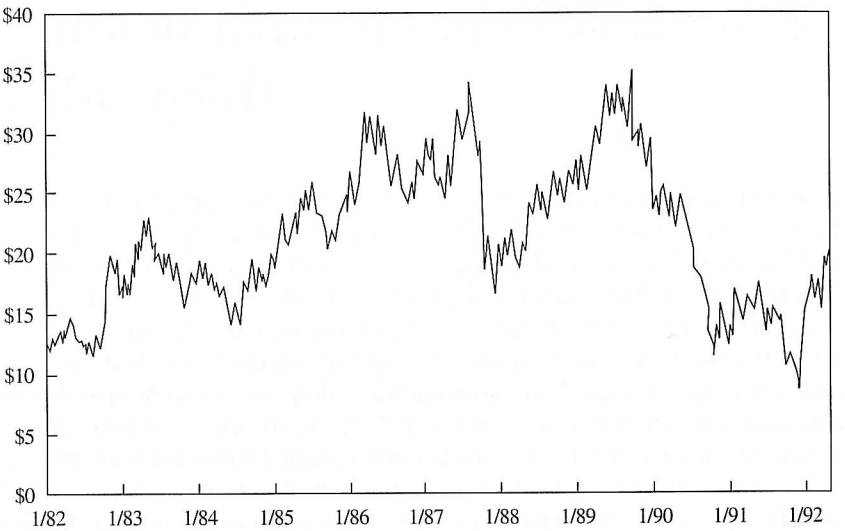
^a r = not traded

Long Term Call Options:		
Expiration Date	Strike Price	Option Price
Jan. 22, 1994	\$12.50	7.7500
Jan. 22, 1994	\$17.50	4.6250
Jan. 22, 1994	\$20.00	3.7500

²In May 1992, Ms. Jameson’s marginal tax rate would have been 28%. The maximum marginal tax rate was 31%. The capital gains tax rate was 28%.

EXHIBIT 2
Stock Price of Telstar
Common Stock, 1/4/82
through 5/27/92^a

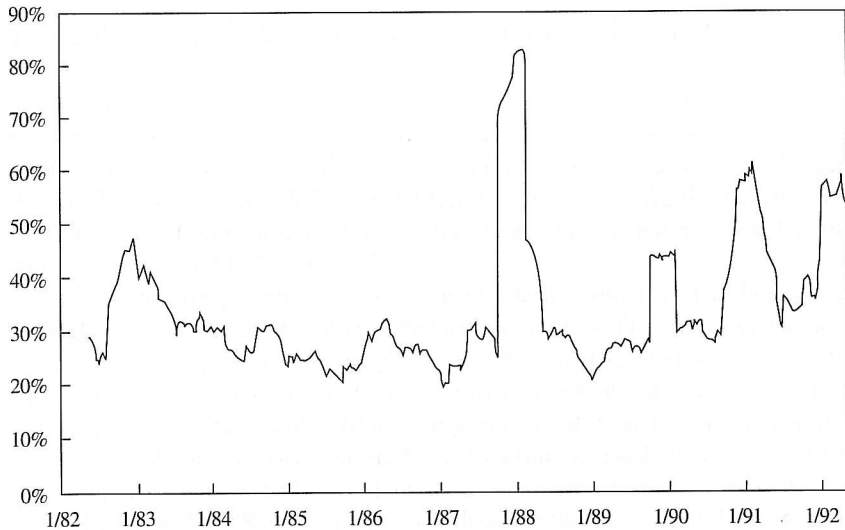
Source: Compiled from
Thomson Financial Datastream.



^aStock price has been adjusted for stock splits and dividends. On May 27, 1992, Telstar stock closed at \$18.75 per common share.

EXHIBIT 3
Volatility of Telstar
Common Stock, 1982
through May 27, 1992^a

Source: Calculated by case
writer.



^aVolatility measured by the annualized standard deviation of daily stock returns measured over the prior ninety days.

EXHIBIT 4
Treasury Security
Yields as of May 27,
1992^a

Source: Calculated from
Thomson Financial Datastream.

Annualized Treasury Bill and Bond Yields	
1-month	3.70%
2-month	3.72%
3-month	3.69%
6-month	3.81%
1-year	4.02%
2-year	5.25%
5-year	6.02%
7-year	7.08%
10-year	7.41%
30-year	7.89%

^aRates all quoted on a bond equivalent yield basis.

Student Educational Loan Fund, Inc. (Abridged)

The situation facing Rick Melnick in the fall of 1995 reminded him of the cases he had studied as a student in the MBA Class of 1992 at Harvard Business School (HBS). As one of his many responsibilities as Associate Director of Financial Management at HBS, Melnick oversaw the School's Student Educational Loan Fund (SELF), a tax-exempt, separately incorporated but related unit of HBS. SELF had been established in 1961 to fund loans to HBS students. In response to student desires, the SELF board of directors proposed a new policy for the program. Under the new plan, students would receive monthly-paid, fixed-rate loans instead of the traditional semi-annually-paid, variable-rate loans that had been offered since SELF's inception. On his desk, Melnick had proposals from two banks on a variety of schemes to fund the new loans. There was no lack of financial products available, including swaps, caps, floors, and swap-tions. In deciding among these alternatives, Melnick felt that he needed to consider the overall goal of SELF, in addition to economic and other business criteria.

The HBS MBA Program and Alternative Sources of Student Loans

Tuition for the two-year MBA program at HBS was \$42,000 for the Class of 1996, with an additional \$4,700 for education materials. Health insurance and living and personal expenses added several thousand dollars more to the cost of the program. The cost of the program coupled with the loss of income during the two years forced 52% of students to obtain some form of student loan, and the average loan balance at graduation was projected to be \$45,372.¹

There were many sources of loans available to students.² The Federal government, through the U.S. Department of Education's Student Financial Assistance Programs, offered several types of subsidized and unsubsidized student loans, including Stafford and Perkins loans. The terms and eligibility requirements of these loans varied, although generally they were available only to U.S. citizens and permanent residents who were not in default of previous federal government student loans. Stafford loans allowed students who were U.S. citizens or permanent residents to borrow up to \$18,500 annually. Up to \$8,500 of this was subsidized in the case of students demonstrating financial need; no interest accrued on subsidized loans during the student's enrollment and until six months after graduation. The interest rate on Stafford loans was reset on

¹Includes loans from all sources.

²Regardless of the source of the loan, interest payments on student loans were not tax deductible under United States tax law, in contrast to mortgage interest payments.

Professor Peter Tufano and Charles M. Williams Fellow Cameron Poetzsch prepared this case. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management. This case is an abridged version of an earlier case, Student Educational Loan Fund, Inc., HBS No. 296-046.

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July 1 each year, based on the 13-week T-bill rate; the maximum rate was capped at 8.25%. The upfront fee on Stafford loans was 4%. Level monthly repayments commenced six months after graduation and extended for up to 10 years.³

Perkins loans were lower cost loans, reserved for U.S. citizens or permanent residents with extreme loan needs and high education debt levels. There were government-imposed, university-wide limits on the total funds available for Perkins loans, and they were generally available only to students in the second year of the MBA program. Up to \$5,000 could be borrowed annually under the Perkins program. The interest rate on Perkins loans was fixed at 5%, and there were no upfront fees. Level monthly repayments commenced 10 months after graduation and extended over 10 years.

Student loans were also available from U.S. commercial banks, although these too were usually restricted to U.S. citizens and permanent residents. The terms of bank loans varied widely. Typically, they allowed students to borrow an amount equal to the cost of education minus other financial aid. A co-applicant was sometimes required for loans over \$7,500. Loan approval was based on the credit history and repayment ability of the student and co-applicant. The interest rate on these loans was not subsidized by either the Federal government or HBS, and was typically 1.5%–2.0% above prime, with upfront fees of 5%–10%. Some bank loans required students to pay interest while enrolled in school, while others accrued interest and capitalized it at graduation. Monthly repayments extended over 10 to 25 years.⁴

HBS Student Loans

In addition to these external loan sources, HBS students could also borrow money from the School itself. The HBS Student Loan Program allowed students to borrow up to \$25,000, provided that their total MBA-related debt would not exceed \$62,000 at graduation. The \$25,000 limit had been established in 1994 in an attempt to limit the exposure of HBS to defaults by students with high loan balances. U.S. citizens and permanent residents were required to exhaust government borrowing sources before applying for HBS loans. Unlike the other loans, HBS loans were not restricted to U.S. citizens or permanent residents but instead were available to students of several foreign countries. Many of these foreign students found it hard to obtain loans in their home countries, where education was often free or significantly cheaper than in the United States and therefore there were few established sources of student financial aid.

A satisfactory credit history was required to receive an HBS loan, and the school reserved the right to check the credit histories of applicants. However, unlike bank loans, no co-applicant was needed. The Financial Aid Office at HBS was responsible for processing and approving applications for HBS loans. After a student was approved for an HBS student loan, he or she signed a promissory note. The loan funds were then advanced by HBS and applied against the student's term bill, the largest item on which was tuition. Funds in excess of the outstanding balance of charges on the student's term bill were remitted directly to the student via check a number of weeks after the promissory note was signed. Additional funds could be advanced throughout the student's enrollment in the MBA program, subject to the student's continuing to meet loan eligibility requirements. Students typically borrowed at the beginning of each semester.

³Depending on the lender, monthly repayments either (i) were calculated using the 8.25% maximum interest rate and then fixed prior to the first repayment for the entire term of the loan or (ii) were calculated using the prevailing interest rate and then fixed each July 1 for the following 12 months only. HBS used the former method.

⁴Monthly repayments on bank loans either (i) were calculated using the initial interest rate and fixed prior to the first repayment for the entire term of the loan or (ii) were calculated using the prevailing interest rate and fixed until any subsequent interest rate change.

Interest accrued on HBS loans from the date on which the promissory note was signed. However, no interest payments were required while a student was enrolled in the MBA program, so all interest accrued during this period was capitalized at graduation.⁵ Repayments on HBS loans were made in up to 10 semi-annual installments, commencing six months after graduation and continuing for up to five years. The principal repayment required at each installment increased according to a predetermined schedule that did not vary as a function of the original principal amount outstanding, except for the final payment. Accordingly, large HBS loans involved a final balloon payment that was often a significant percentage of the original amount borrowed, while loans for smaller amounts were often repaid in less than five years. Students were permitted to prepay HBS loans at any time with no penalty.

See Exhibit 1 for a summary and comparison of the alternative student loans. See Exhibit 2 for sample amortization schedules for HBS loans of different sizes.

SELF

HBS loans were made from funds that were originally contributed by donors to the school for the exclusive purpose of making loans. Since the 1960s, the annual aggregate value of HBS loans made had grown rapidly as the student body had become increasingly diverse. SELF was originally set up to accommodate this rapid expansion. By purchasing HBS student loans at graduation each year, SELF freed up donor loan funds for use by incoming students. SELF bought many, but not all, of the loans outstanding under the HBS loan program. In a typical year, SELF bought from HBS approximately 225 loans, with an average balance that had recently ranged from \$15,000 to \$22,000. See Exhibit 3 for SELF's financial statements.

For each loan that SELF bought, it paid HBS the outstanding balance of the loan (principal plus accrued interest) and received the right to all future cash flows from the loan. The process remained transparent to students, however. Harvard University's central student billing office in the Holyoke Center continued to administer the loans, sending bills to students and collecting payments. Any payments received by Holyoke from SELF-owned loans were consolidated and remitted to SELF monthly by check. SELF was dependent on the Holyoke Center for all data on outstanding HBS student loans, which at times made it challenging for SELF to obtain the data it desired.

Interest rates were reset twice a year, in late May and late November, based on SELF's cost of capital over the preceding six months.⁶ This was calculated as the weighted average of SELF's cost of debt, based on credit lines established with its bank, and its cost of equity, which had been arbitrarily set at 10% for the past several years.⁷ However, SELF voluntarily sought to moderate the interest rate it charged students, and thus the interest rate on HBS student loans showed less volatility than SELF's cost of capital. For example, when the prime rate had been 18%, students had been charged only 12%.

The ability of students to prepay, or default on, their loans made it difficult to predict SELF's cash inflows. Students often made large prepayments in the first quarter of

⁵That is, accrued interest was added to the original principal to obtain a new ("capitalized") principal amount, on which future interest calculations would be based.

⁶For example, the interest rate set in early June 1995 was based on SELF's cost of capital from November 1994 through April 1995. This interest rate was used to calculate the interest charge that was applied to HBS student loans for the subsequent July 1995–December 1995 half-year. This interest charge appeared on statements mailed in early December 1995 for payment by December 31, 1995. The interest charge was calculated on a simple, not compound, basis.

⁷It was difficult for SELF to determine its cost of equity given the different sources of funds it relied on. One benchmark was the returns on the Harvard University endowment, which were 11.8%, 16.4%, and 8.4% for FY 1992, FY 1993, and the first nine months of FY 1994, respectively.

the year, coinciding with yearly bonuses. For example, on past occasions when Wall Street had experienced a record year, the overall amount of prepayments had jumped significantly.⁸ It was extremely difficult to obtain accurate or comprehensive data on prepayment patterns, but Melnick had managed to compile some limited estimates for selected recent classes, as shown in Exhibit 4. Also, HBS students occasionally defaulted on their HBS loans. Net loan write-offs (defaults), which had averaged about 1.4% over the past few years, varied from year to year and represented a sustained delay in repayment or a permanent failure to pay.

The New HBS Student Loans

While many students had taken advantage of HBS loans over the years, there was some dissatisfaction on the part of students with the terms of the loans. Melnick and some members of SELF's board of directors believed there were several reasons for this. Requiring payments semi-annually rather than monthly resulted in larger payments that did not coincide with the regular pattern of cash inflows from salaries, necessitating more complex financial planning on the part of students. Melnick believed that this contributed to a higher rate of delinquency. The increasing size of the payments over time, particularly the large balloon payment at the end, was difficult for other financial institutions to understand and evaluate; this often made it more difficult for students to be approved for housing and other loans.

With this in mind, Melnick had proposed a new set of terms for the HBS loans. His proposal envisioned a mortgage-like structure, with equal monthly payments over five years and a fixed interest rate set in advance.⁹ Students would still be permitted to make prepayments at any time without penalty. For example, using the capitalized balances shown in Exhibit 2 and assuming a loan term from July 1996 to June 2001 and a fixed interest rate of 9%, the monthly payments would be \$111.55 for the \$5,000 loan and \$446.19 for the \$20,000 loan.¹⁰

Funding SELF

To finance the purchase of student loans each year, SELF had historically relied on lines of credit at its two banks. These lines were identical. At the time of the case, each provided a commitment of up to \$7.5 million. Interest on the loans was charged at the prime rate, and interest payments were required monthly. See Exhibit 5 for capital markets data as of November 1995 and Exhibit 6 for historical interest rates.

SELF was required to maintain compensating cash balances equal to 5% of the unused part of the commitment; these compensating balances earned no interest for SELF. SELF was also required to maintain a debt to net worth ratio of not more than four to one. SELF was permitted to drawn down and repay the lines at will, without penalty. This ability was critical for SELF, given the large and erratic prepayments it received from its borrowers. SELF used the two credit lines identically, borrowing in equal amounts as required, and repaying in equal amounts as loan repayments and prepayments were received from students.

⁸Placement data for the HBS Class of 1995 were: Consulting, 38%; Investment Banking, 17%; Manufacturing, 20%; Other Service Industries, 25%.

⁹The interest rate would still vary during a student's enrollment in the MBA program; only after graduation would the rate be fixed.

¹⁰The proposal actually entailed monthly repayments commencing six months after graduation (i.e., 12/96 or 1/97) and extending for five years from that date; different assumptions are used in the example above purely for purposes of comparison with the traditional loans.

These credit lines were secured by the assets of SELF (i.e., the loans receivable from students) but were non-recourse to Harvard University.¹¹ However, the University issued a "comfort letter" to the two banks, stating that it would maintain a specified minimum amount of equity in SELF.¹² The credit lines had a term of one year, and thus had to be renewed annually. This had never been a problem in the past.

With the impending switch to the new fixed-rate, mortgage-style HBS student loans, Melnick had asked his banks to outline several interest rate derivative products that could be combined with the existing prime-based loan in order to address the mismatch between SELF's new loans and its funding. Representative quotes for some of these products, including fixed-for-floating swaps, caps, floors, and basis swaps, are outlined in Exhibit 7.

A fixed-for-floating swap was a contract where SELF and the bank would exchange a fixed interest rate for a floating rate. In this instance, SELF would pay a fixed rate of interest (5.76%) on a "notional principal" in return for receiving a floating rate of interest (LIBOR) on the same notional principal. By combining this type of swap with LIBOR-based floating rate debt, it would effectively transform that debt into fixed rate debt.¹³ In practice, the payments would be *netted*, with SELF paying the bank if LIBOR is less than 5.76%, and the bank paying SELF if LIBOR exceeded 5.76%. SELF would not be required to make any up-front payments to enter into this swap.

Purchasing a cap would give SELF the right, but not the obligation, to receive the excess of a floating interest rate over the fixed cap rate. For example, if SELF bought a 6% cap on 1-month U.S. Dollar LIBOR on \$10 million notional principal, it would receive $(\frac{1}{2}) \times (\text{LIBOR} - 6\%) \times \10 million in any month in which LIBOR exceeded 6%. (If LIBOR were below 6%, SELF would receive no payments.) By buying a cap, a borrower whose interest payments were tied to LIBOR could set an upper limit or cap on its borrowing costs. Parties who bought caps were required to pay money up-front to enter into this option; for the 6% cap, this would cost 1.52% of the notional principal amount.

A floor was an option which paid its holder the difference if LIBOR fell below a preset amount. Often borrowers sold floors, and by doing this, gave their counterparty (its bank) the right, but not the obligation, to receive the excess of a fixed floor rate over a floating interest rate. For example, if SELF *sold* a 6% floor on 1-month U.S. Dollar LIBOR on \$10 million notional principal, SELF would have to *pay* $(\frac{1}{2}) \times (6\% - \text{LIBOR})$ whenever LIBOR was below 6% in a month. By selling a floor, a borrower whose interest payments were tied to LIBOR could set a lower limit or floor on its borrowing costs. Parties who sold floors received money up-front to enter into this option contract; for the 6% floor, SELF would receive 2.12% of the notional principal amount. Often, a borrower would buy a cap and sell a floor to constrain its interest payments within a prespecified band.

Entering a basis swap would obligate SELF to exchange one floating rate for another. For example, SELF could enter into a basis swap to exchange Prime for LIBOR. Each month it would pay the current LIBOR rate and receive the Prime Rate less 2.80%. As with the fixed-floating swap, the payments would be netted and no money would change hands at the initiation of the swap. By combining a basis swap with its Prime-based borrowings, SELF could transform its loan into a LIBOR-based floating rate borrowing.

¹¹Harvard University was rated Aaa/AAA.

¹²A "comfort letter" is a declaration of intent or assurance by one party to a contract, or an auditor or other entity with knowledge of that party, to another party to the contract.

¹³"Notional principal" is the amount of "principal" used for calculating the periodic "interest" payments due to each party. Unlike the principal on a traditional loan, it is not exchanged at the commencement of the swap contract. The notional principal could amortize according to various methods. The rates given in Exhibit 7 reflect "mortgage-style amortization" which would match the SELF loans, where the principal declined as it would under a mortgage with equal monthly payments.

SELF could bundle its existing bank loans with one or more of these contracts in order to transform its current Prime-based borrowing into another type of borrowing. At any time, SELF could prepay its Prime-based loan without penalty, but cancelling the derivative contracts might be more complicated. SELF could effectively “cancel” the derivative contracts in three ways. The first involved marking-to-market the outstanding value of the contract (calculating its present value) and then either paying to or receiving from its counterparty the present value of the remaining portion of the contract at then-prevailing interest rates. While the bank was not contractually required to agree to this, it almost always did. Second, SELF could enter the exact opposite contract with its original counterparty, which would result in a net exposure each month of zero. Third, SELF could enter the opposite contract with another counterparty, and then, subject to approval by the original counterparty, assign the original contract to the new counterparty, effectively removing SELF from the picture.

EXHIBIT 1 Alternative Student Loan Programs

Source: “MBA Financial Aid: Overview and Instructions,” HBS, 1995–1996.

	Stafford	Perkins	Bank	HBS (Traditional)
Eligibility	U.S. citizens and permanent residents	U.S. citizens and permanent residents	U.S. citizens and permanent residents	U.S. citizens and permanent residents; citizens of Australia, Canada, Mexico, New Zealand, and most West European countries
Limits:				
Annual	\$8,500 (subsidized)	\$5,000	Education cost minus other financial aid	N/A
Aggregate	\$18,500 (total)	\$30,000	Education cost minus other financial aid	\$25,000
Other	\$138,500 (total)	Subject to availability, given government-imposed, university-wide funding limits	Subject to bank’s discretion	Total MBA-related debt at graduation must be no more than \$62,000
Fees	N/A	Subject to availability, given government-imposed, university-wide funding limits	Subject to bank’s discretion	Total MBA-related debt at graduation must be no more than \$62,000
Interest rate	4% Reset each July 1 based on recent 13-week T-Bill rate plus 3.1%; capped at 8.25%	None 5% fixed	5–10% Varies (typically prime plus 1.5%–2.0%)	None Reset every 6 months based on SELF’s cost of capital
Repayments:				
Commence	6 months after graduation	6–9 months after graduation	Varies (usually up to 6 months after graduation)	6 months after graduation
Style	Level monthly payments, subject to adjustment at each interest rate change	Level monthly payments	Varies (usually level monthly payments, fixed for the lifetime of the loan, or adjusted with interest rate changes)	Semi-annual; principal amortization increases gradually, culminating in final balloon payment
Loan maturity (maximum)	10 years	10 years	10–25 years	5 years

EXHIBIT 2 Amortization Schedule for Traditional HBS Loans

Source: SELF, Inc.

Date	Interest Rate ^a	Repayment		Total	Ending Balance
		Interest	Principal		
09/95 (Beg. SY) ^b					\$5,000 ^c
06/96 (Graduation)	9.0%			0	5,374 ^d
12/96	8.5	228	750	978	4,624
06/97	8.0	185	750	935	3,874
12/97	8.5	165	1,000	1,165	2,874
06/98	9.0	129	1,000	1,129	1,874
12/98	9.5	89	1,500	1,589	374
06/99	10.5	20	374	393	0

Date	Interest Rate ^a	Repayment		Total	Ending Balance
		Interest	Principal		
09/95 (Beg. SY) ^b					\$20,000 ^c
06/96 (Graduation)	9.0%				21,494 ^d
12/96	8.5	914	750	1,664	20,744
06/97	8.0	830	750	1,580	19,994
12/97	8.5	850	1,000	1,850	18,994
06/98	9.0	855	1,000	1,855	17,994
12/98	9.5	855	1,500	2,355	16,494
06/99	10.5	866	1,500	2,366	14,994
12/99	11.5	862	2,000	2,862	12,994
06/00	12.0	780	2,000	2,780	10,994
12/00	11.0	605	2,500	3,105	8,494
06/01	10.5	446	8,494	8,940	0

^aInterest rate applied to period ending at the specified date. Interest rates are hypothetical.
^bAssumed borrowing date.
^cAmount initially borrowed.
^dInterest accrued from 9/95 to 6/96 is capitalized at 6/96.

EXHIBIT 3 SELF Financial Statements (\$ thousands)

Source: SELF, Inc.

	At or for Year Ended June 30,		
	1993	1994	1995
Balance Sheet:			
Assets:			
Cash and cash-compensating balances ^a	\$626	\$885	\$814
Principal and accrued interest receivable	13,258	12,277	11,523
Less: reserve for delinquent notes and related interest ^b	(847)	(520)	(429)
Net notes receivable	12,412	11,757	11,095
Receivable from Harvard University ^c	556	646	624
Total assets	\$13,594	\$13,288	\$12,533
Liabilities and Net Worth:			
Notes payable and accrued interest	\$10,568	\$9,855	\$8,687
Paid-in capital	3,338	3,338	3,338
Accumulated surplus (deficit)	(312)	95	508
Total liabilities and net worth	\$13,594	\$13,288	\$12,533
Income Statement:			
Interest income	\$870	\$974	\$929
Interest expense	533	536	630
Net interest income	337	438	298
Provision for delinquent notes ^d	1,081	854	861
Bad debt recoveries ^d	663	845	1,007
Net bad debt expense	418	9	(146)
Administrative expenses	16	22	31
Excess (deficiency) of revenue over expenses	\$(96)	\$407	\$413
Cash Flow Statement:			
Cash flows from operating activities:			
Excess of revenue over expenses	\$(96)	\$407	\$413
Net bad debt expense	418	9	(146)
Write-off of notes and interest receivable ^e	(785)	(1,039)	(685)
Recoveries of notes and interest receivable ^e	523	704	739
Loans purchased from Harvard University	(5,303)	(3,349)	(3,205)
Loans repaid (net of write-offs and recoveries)	3,938	4,354	3,971
Other changes in operating working capital	524	(122)	42
Net cash provided by operating activities	(782)	963	1,129
Cash flows from financing activities:			
Increase in notes payable	5,010	6,315	4,555
Principal repayments	(4,899)	(7,019)	(5,754)
Net cash used by financing activities	111	(704)	(1,199)
Net increase (decrease) in cash	\$(671)	\$259	\$(70)

^aSELF is required by its banks to maintain cash-compensating balances equivalent to 5% of the unused portion of its bank loan commitments. These balances were \$516,000, \$258,000, and \$318,000 in 1993, 1994, and 1995, respectively.

^bSELF establishes a reserve against 50% of the principal and 100% of the accrued interest due on notes receivable for which at least \$250 is at least 90 days overdue. Notes are written off if they remain delinquent for five consecutive quarters.

^cPrincipal and interest repayments on notes receivable that have been collected by Harvard University on behalf of SELF but not yet remitted to SELF.

^dAccounting provisions and recoveries.

^eCash write-offs and recoveries.

EXHIBIT 4
Principal Balance
on SELF Loans for
Recent HBS Classes

Source: SELF, Inc.

Class	Borrowers	Original Principal	Scheduled Balance (12/31/94)	Actual Balance ^a (12/31/94)
1991	209	3,793,194	2,186,694	1,061,732
1992	250	5,210,899	3,960,899	2,239,035
1993	242	5,302,767	4,697,767	3,665,726
1994	214	3,359,643	3,199,143	2,724,509

^aIncluding prepayments and defaults.

EXHIBIT 5
U.S. Capital Markets
Data, November 21,
1995

Source: compiled from
BLOOMBERG.

Maturity	U.S. Treasuries ^a	AAA ^b	AA ^b	A ^b	BBB ^b
3-month	5.52%	5.90%	6.03%	6.06%	6.13%
6-month	5.50	5.89	6.03	6.06	6.12
1-year	5.45	5.83	5.93	6.08	6.14
2-year	5.49	5.79	5.80	5.93	6.08
3-year	5.56	5.92	5.94	5.98	6.27
5-year	5.69	6.05	6.12	6.30	6.39
10-year	5.95	6.31	6.36	6.54	6.79
30-year	6.27	6.85	6.88	7.04	7.37

Other Interest Rates

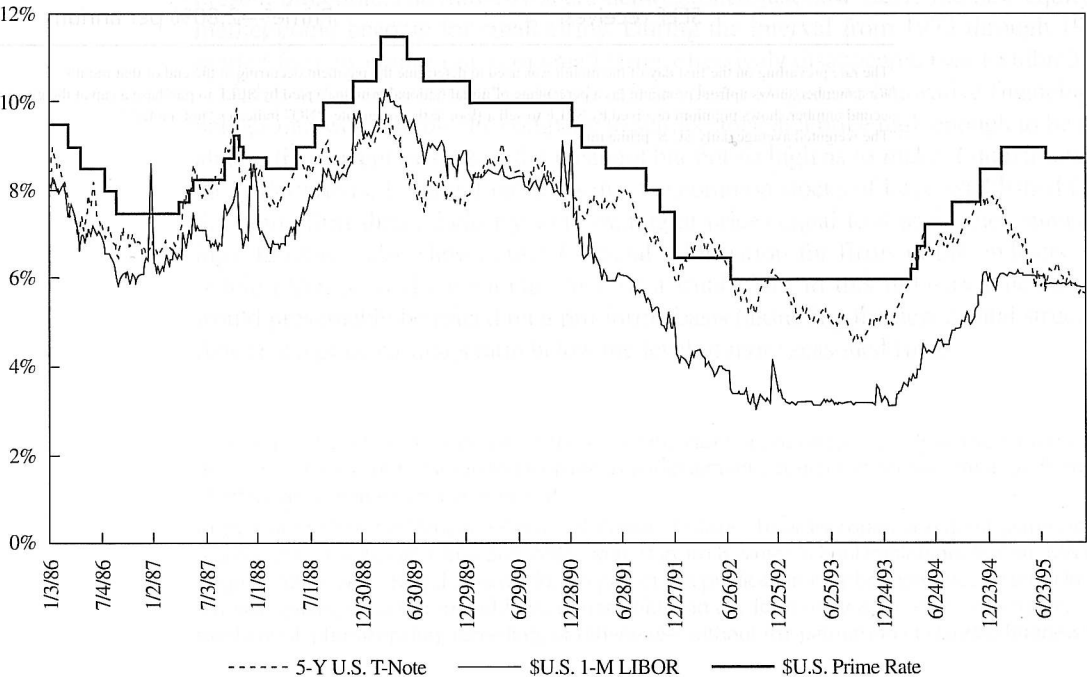
One-month LIBOR:	5.82%
Prime rate:	8.75%

^aU.S. Treasury bills, notes, and bonds

^bComposite rates for debt of industrial companies rated AAA, AA2, A2, and BBB2, respectively.

EXHIBIT 6 Historical Interest Rates, 1/86–11/95^a

Source: Compiled from BLOOMBERG.



^aOn 11/21/95, the 5-year T-Note, 1-month LIBOR, and prime rates were 5.69%, 5.82%, and 8.75%, respectively.

EXHIBIT 7
Representative Terms
of Selected Financial
Instruments,
November 21, 1995

Source: SELF, Inc.

Swaps		
Notional amount:	\$10 million	
Floating rate:	1-month \$U.S. LIBOR ^a	
Maturity:	5 years	
Payment frequency:	Monthly	
SELF receives:	1-month \$U.S. LIBOR ^a	
SELF pays:	5.76% per annum	

Caps/Floors		
Notional amount:	\$10 million	
Floating rate:	1-month \$U.S. LIBOR ^a	
Maturity:	5 years	
Payment frequency:	Monthly	

Premium paid by/to SELF: ^b		
Rate	Cap	Floor
4%	NQ	0.22%
5%	NQ	0.81%
6%	1.52%	2.12%
7%	0.90%	3.98%
8%	0.55%	6.13%
9%	0.34%	NQ
10%	0.22%	NQ
NQ = not quoted		

Basis Swap	
Notional amount:	\$10 million
Maturity:	5 years
Payment frequency:	Monthly
SELF pays:	1-month \$U.S. LIBOR ^a
SELF receives:	Prime ^c —2.80% per annum

^aThe rate prevailing on the first day of the month was used to determine the payment occurring at the end of that month.
^bFirst number shows upfront premium (as a percentage of initial notional principal) paid by SELF to purchase a cap at the given rate; second number shows premium received by SELF to sell a floor at the given rate. "NQ" indicates "not quoted."
^cThe weighted average daily \$U.S. prime rate.

Arley Merchandise Corporation

In the fall of 1984, the Arley Merchandise Corporation was considering how to raise \$5 million to repay debt and position itself for future growth. The company was a leading privately owned manufacturer of curtains, draperies, and bedcoverings. It had enjoyed 32 years of continuous profitability. Present management of Arley had increased their ownership of the company's common stock following a December 31, 1981, leveraged buyout of shares owned by a founder of the company for almost \$8 million in cash and notes. Arley's three senior officers currently owned 54.4% of the outstanding shares in approximately equal proportions. The investment firm that participated in the leveraged buyout owned 19.3% of the stock. The balance of the shares (26.3%) were owned in smaller blocks of less than 5%.

Arley's decision to raise new financing followed a two-year period of sharply increasing earnings. For the fiscal year ending June 1982, Arley had earned \$.15 per share. In the two subsequent years, earnings per share had surged to \$.41 and \$1.03, respectively (see Exhibit 1).

While the company desired to raise capital through an initial public offering of shares, it was not anxious to do so while earnings per share were rising at a rate in excess of 150% per year. Instead, Arley's owners hoped to fully demonstrate the earning power of the company *before* bringing it public in order to achieve a more attractive selling price for the firm's shares. Unfortunately, just as the company's income statements began to reflect its full earning power, investor enthusiasm for new issues of common stock of small firms was rapidly receding (see Exhibit 2).

The dollar volume of new issues of common stock of small firms during the first 10 months of 1984 fell to 30% of the level it had reached in the prior year. While this volume was still significant by historical standards, there was little reason to believe that the downward spiral was any more likely to flatten out or reverse than continue in its present direction. The mid-1970s era demonstrated just how fickle the new equity issue market could become for small firms. During the interval from 1973 through 1979 the market for new equity issues of small firms effectively disappeared (see Exhibit 3).

Arley and its investment bankers had been discussing some innovative financing alternatives that would allow the company to sell its stock at a price high enough to be acceptable to the current owners of the business but not so high as to make it unmarketable for the underwriters. Exhibit 4 indicates that the common stocks of large established firms in the home furnishings industry were trading at prices equal to 8 or 9 times annual earnings. Exhibit 4 also shows other financial information for firms in this industry. A new public offering of the common stock of a small firm in this industry (such as Arley) would presumably be priced on a pro forma basis (assuming the new capital structure for Arley) at a price/earnings ratio below the level of more seasoned firms.

Professor William E. Fruhan prepared this case. HBS cases are developed solely as the basis for class discussion. Cases are not intended to serve as endorsements, sources of primary data, or illustrations of effective or ineffective management.

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Arley's current owners felt that any price less than \$8 per share was unacceptable, while Arley's investment bankers did not feel that a price above \$6.50 per share would represent an acceptable underwriting risk given existing conditions in the financial markets.

The price gap that had to be bridged was about \$1.50 per share. Several alternatives for bridging the gap were considered, each of which included some form of money-back guarantee to an investor purchasing a newly issued Arley share. The money-back guarantee might take several forms. It could be \$8 per share in cash, \$8 per share in Arley notes, or \$8 per share in market value of Arley common or preferred stock as of the date the guarantee was utilized. The point in time at which the money-back guarantee might be exercised was also an issue under consideration. It might take effect, for example, at the end of one year, at the end of two years, at the end of five years, or at the end of 10 years. Alternatively, the guarantee could be exercisable continuously over some time period rather than on a specific date. While the potential variations in the design of the proposed security seemed unlimited, Arley's investment banker recommended the following terms for the offering:

- 750,000 units consisting of
- 750,000 shares of common stock
- and
- 750,000 rights to sell common stock

Each unit would consist of one share of common stock and one right to sell common stock, each right entitling the holder to sell to the company one share of common stock at \$8, subject to adjustment, during a 15 business day period beginning two years from the date of issuance. The company may pay for the common stock in cash or an equivalent amount of the company's senior subordinated notes due 10 years from the date of issuance, as the company may specify by notice to the holders of the rights no later than 60 days prior to the commencement of the rights period. In the event notes were offered as payment in whole or in part for shares of common stock, cash would nevertheless be paid if the aggregate value of the common stock to be repurchased by the company were not more than \$1 million. The common stock and rights included in the units were separately transferable immediately upon issuance at the option of the holder.

The notes, if issued, would bear interest payable quarterly at 128% of the 10-year Treasury rate determined as of the date of the notice. The notes may be redeemed at the option of the Company, in whole or in part, at any time after two years from the date of issuance at redemption prices declining from 106% of par at the end of two years to 100% of par at the end of five years. The notes would be subject to a mandatory sinking fund commencing four years from the date of issuance, calculated to retire 75% of the notes prior to maturity. The notes would be subordinated to all senior indebtedness (as defined) of the company (\$14,310,000 at September 21, 1984).

The sale of the units at \$8 per unit would raise a total of \$5,054,000 net of underwriting discounts and expenses associated with the offering. The proceeds of the offering would be utilized to repay bank debt currently borrowed at the prime rate (12.5%).

Around the date of the proposed Arley offering, low-rated straight debt was trading in a yield range of 14%–16% (see Exhibit 5). Convertible subordinated debentures were trading at interest rates equal to about 70% of the rate appropriate for straight debt of equivalent bond ratings. Convertible debt also carried a conversion premium of about 20% (see Exhibit 5). Baa-rated debt of industrial firms was yielding about 115% of 10-year Treasury debt, a figure somewhat below the average ratio for the past two or three years (see Exhibit 6). Ninety-day Treasury bills were yielding approximately 10% (see Exhibit 7).

EXHIBIT 1 Historical Financial Data, 1980–1984 (thousands of dollars except per-share data)

	Fiscal Year Ending					First Quarter Ending	
	June 30, 1980	June 30, 1981	June 30, 1982	June 24, 1983	June 22, 1984	September 23, 1983	September 21, 1984
Income Statement Data							
Net sales	\$36,658	\$40,015	\$46,830	\$49,968	\$67,561	\$14,101	\$17,348
Cost of goods sold	28,078	29,453	35,652	36,070	46,861	9,689	11,670
Gross profit	8,580	10,562	11,178	13,898	20,710	4,412	5,678
Selling, shipping, and administrative expenses	6,195	6,785	8,351	8,819	10,478	2,426	3,056
Interest expense	268	301	1,011	1,911	1,841	358	580
Income before taxes	2,117	3,476	1,816	3,168	8,391	1,628	2,042
Net income	\$902	\$1,742	\$945	\$1,667	\$4,167	\$814	\$1,021
Weighted average shares outstanding	8,945	8,945	6,500	4,055	4,055	4,055	4,094
Earnings per share	\$.10	\$.19	\$.15	\$.41	\$1.03	\$.20	\$.25
Dividends per share ^a	0	0	0	0	0	0	0
Balance Sheet Data							
Working capital	\$8,690	\$9,847	\$9,774	\$10,131	\$11,039	—	\$10,607
Total assets	15,424	18,672	20,684	22,944	29,173	—	39,977
Total long-term debt (less current maturities)	2,334	1,892	10,673	9,520	6,761	—	9,248
Redeemed stock	—	—	(7,796)	—	—	—	—
Stockholders' investment	7,805	9,737	2,888	4,553	8,720	—	10,290

^aArley had paid no dividends in the past and did not anticipate paying any dividends in the foreseeable future.

EXHIBIT 2 Underwritten Initial Public Equity Offering of Small U.S. Firms 1983–1984 (millions of dollars)

Source: Venture Capital Journal.

	Number of Issues Underwritten	Index of Offerings for 1983 Dollars Underwritten	Number of Issues Underwritten	Index of Offerings for 1983 Dollars Underwritten
January	19	\$163	43	\$353
February	26	345	24	147
March	42	432	27	141
April	29	268	19	89
May	42	349	23	135
June	68	932	16	96
July	75	772	20	109
August	64	678	22	188
September	56	396	16	110
October	53	467	16	79
Total 10 months	\$474	\$4,802	226	\$1,447

Note: Small firms are defined as having less than \$10 million of net worth prior to their initial public equity offerings.

EXHIBIT 3
Historical
Underwritten Initial
Public Offerings of
Small U.S. Firms,
1968–1983 (millions
of dollars)

Source: *Venture Capital
Journal*; Standard & Poor's
Statistical Service, "Security
Price Index Record."

	Number of Issues Underwritten	Total Size of Offerings	S&P 500 Average
1968	358	\$745	106.5
1969	698	1,367	91.1
1970	198	375	90.1
1971	248	551	99.2
1972	409	896	117.5
1973	69	160	94.8
1974	9	16	67.1
1975	4	16	88.7
1976	29	145	104.7
1977	22	75	93.8
1978	21	129	96.1
1979	46	183	107.9
1980	185	307	135.8
1981	390	2,646	122.6
1982	153	1,131	140.6
1983	611	5,740	164.9
1983 10 months	474	4,802	163.6
1984 10 months	226	1,447	166.1

Note: Small firms are defined as those with less than \$5 million of net worth prior to their initial public offerings through 1975. In 1976, the cutoff point was raised to include all firms with less than \$10 million of net worth prior to their initial public offerings.

EXHIBIT 4 Financial Information on Selected Home Furnishings Manufacturers

Source: Value Line Investment Survey and the CRSP database.

	Financial Information as of Year End 1983 (in \$Millions)					1984 Data		Historical Volatility (%) ^a							
	Sales	Net Income	Book	Assets	Book	MV of Equity	ROE	P/E Ratio	Market		Last	Avg	Max	Min	Bond Rating ^b
			Value of Equity		Value of Debt				Value/Book Value						
Armstrong	\$1,439	\$63	\$620	\$955	\$105	\$684	0.141	8.0	1.1	26	33	57	20	A	
Basset Furniture	342	32	204	141	1	396	0.138	8.7	1.2	27	23	38	3	nr	
Flexsteel Industries	102	6	40	57	7	91	0.167	7.7	1.3	48	34	53	17	nr	
Henreddon Furniture	132	14	100	119	7	196	0.145	10.8	1.5	21	22	36	9	nr	
Lane	227	18	126	146	0	197	0.159	8.1	1.3	23	18	28	6	nr	
La-Z-Boy	255	23	117	140	14	156	0.165	7.1	1.2	24	28	37	14	nr	
Leggett & Platt	354	16	96	202	57	176	0.180	8.2	1.4	29	33	44	17	Ba	
Mohasco	644	13	206	369	59	146	0.070	9.4	0.7	27	34	47	20	nr	
Thomas	222	9	90	135	16	112	0.159	9.6	1.5	27	39	57	22	nr	
Arley	50	4	5	23	9	Na									

^aAnnualized volatility based on prior 90 days of trading data. The average, maximum, and minimum volatilities were calculated over the period January 1979 through November 1984. None of the companies had traded options listed.
^bnr=company did not have rated debt outstanding.

EXHIBIT 5 Corporate Offerings of Straight Debt and Convertible Debt, October–November 1984 (millions of dollars)

Source: Moody's Bond Survey; Investment Dealers' Digest.

Offering Date	Amount Sold	Issuer	Maturity	Bond Rating	Yield	Conversion Premium
Straight Debt						
10/23/84	\$1,200	Occidental Petroleum	10-year	Ba2	14.5%	
10/23/84	50	Horn & Hardart	7-year	B1	14.5	
10/23/84	30	MacLeod-Stedman	7-year	B3	15.5	
10/23/84	58	Showboat, Inc.	20-year	B3	15.8	
10/25/84	70	Cannon Group	10-year	B2	15.4	
10/30/84	200	Chrysler Financial	15-year	Ba2	13.0	
11/02/84	115	Elsinore Finance	15-year	B2	15.5	
11/08/84	180	Lear Petroleum	10-year	B1	14.5	
Convertible Debt						
10/05/84	\$100	Lorimar	20-year	B2	8.9%	20%
10/05/84	175	Texas Eastern	25-year	Baa3	12.0	28
10/05/84	60	SCM	25-year	Ba1	10.0	16
10/05/84	30	Mobile Comm. Corp.				
		of America	20-year	B1	11.0	26
10/11/84	55	Wetterau	20-year	Baa3	9.3	20
10/15/84	25	Richardson Electric	20-year	B2	9.9	17
10/24/84	75	First Boston	25-year	A3	9.3	20
11/01/84	50	Communications Industries	25-year	Ba2	9.0	19
11/02/84	35	Insilco Corp.	26-year	Baa3	9.0	25

EXHIBIT 6 Yields on Long-Term Baa Industrial Bonds versus 10-Year Treasury Bonds, January 1982–October 1984

	Yield to Maturity		
	Long-Term Baa	10-Year Treasury	Baa/Treasury
1/82	16.75%	13.93%	1.20
2/82	17.00	14.19	1.20
3/82	17.00	13.99	1.22
4/82	17.25	14.17	1.22
5/82	16.75	13.81	1.21
6/82	16.75	13.69	1.22
7/82	17.00	14.32	1.19
8/82	16.63	13.63	1.22
9/82	15.25	12.77	1.19
10/82	13.38	11.05	1.21
11/82	13.38	11.05	1.21
12/82	13.50	10.69	1.26
1/83	13/13	10.31	1.27
2/83	13/13	10.75	1.22
3/83	12.75	10.24	1.25
4/83	12.75	10.59	1.20
5/83	11.88	10.18	1.17
6/83	12.50	10.79	1.16
7/83	12.75	10.89	1.17
8/83	13.75	11.67	1.18
9/83	13.88	11.92	1.16
10/83	13.25	11/39	1.16
11/83	13.50	11.71	1.15
12/83	13.38	11.58	1.16
1/84	13.38	11.76	1.14
2/84	13.25	11.59	1.14
3/84	13.88	12.04	1.15
4/84	14.00	12.43	1.13
5/84	14.75	12.78	1.15
6/84	16.00	13.78	1.16
7/84	15.50	13.75	1.13
8/84	14.75	12.85	1.15
9/84	14.63	12.76	1.15
10/84	14.38	12.40	1.16

EXHIBIT 7 Interest Rates, November 14, 1984

Source: Compiled from datastreams.

Bond Type	Effective Annual Yield
Treasury Obligations	
1 year	10.25%
2 year	11.14%
3 year	11.41%
5 year	11.83%
10 year	12.15%
Corporate Bonds	
Aaa-rated	12.22%
Aa-rated	12.55%
A-rated	12.94%
Baa-rated	13.83%
Ba-rated	not reported